
**Industrial automation systems and
integration — Product data representation
and exchange —**

Part 212:
**Application protocol: Electrotechnical
design and installation**

*Systèmes d'automatisation industrielle et intégration — Représentation et
échange de données de produits —*

*Partie 212: Protocole d'application: Conception électrotechnique et
installation*

Reference number
ISO 10303-212:2001(E)



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 10303 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 10303-212 was prepared jointly by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 4, *Industrial data*, and IEC/TC 3, *Information structures, documentation and graphical symbols*. The draft was circulated for voting to the national bodies of both ISO and IEC.

The technical committees involved have agreed not to change any part of this part of ISO 10303 without mutual agreement.

This International Standard is organized as a series of parts, each published separately. The structure of this International Standard is described in ISO 10303-1.

Each part of this International Standard is a member of one of the following series: description methods, implementation methods, conformance testing methodology and framework, integrated generic resources, integrated application resources, application protocols, abstract test suites, application interpreted constructs, and application modules. This part is a member of the application protocol series.

A complete list of parts of ISO 10303 is available from the Internet:

[<http://www.nist.gov/sc4/editing/step/titles/>](http://www.nist.gov/sc4/editing/step/titles/)

Annexes A to E form a normative part of this part of ISO 10303. Annexes F to J are for information only.

Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product, independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing product databases and archiving.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 10303 fall into one of the following series: description methods, integrated resources, application interpreted constructs, application protocols, abstract test suites, implementation methods, and conformance testing. The series are described in ISO 10303-1. This part of ISO 10303 is a member of the application protocol series.

EXAMPLE 1 The Figure 1 shows electrotechnical equipment in a tramcar.

EXAMPLE 2 In large installations, cables are often customized during the commissioning of an electrotechnical system.

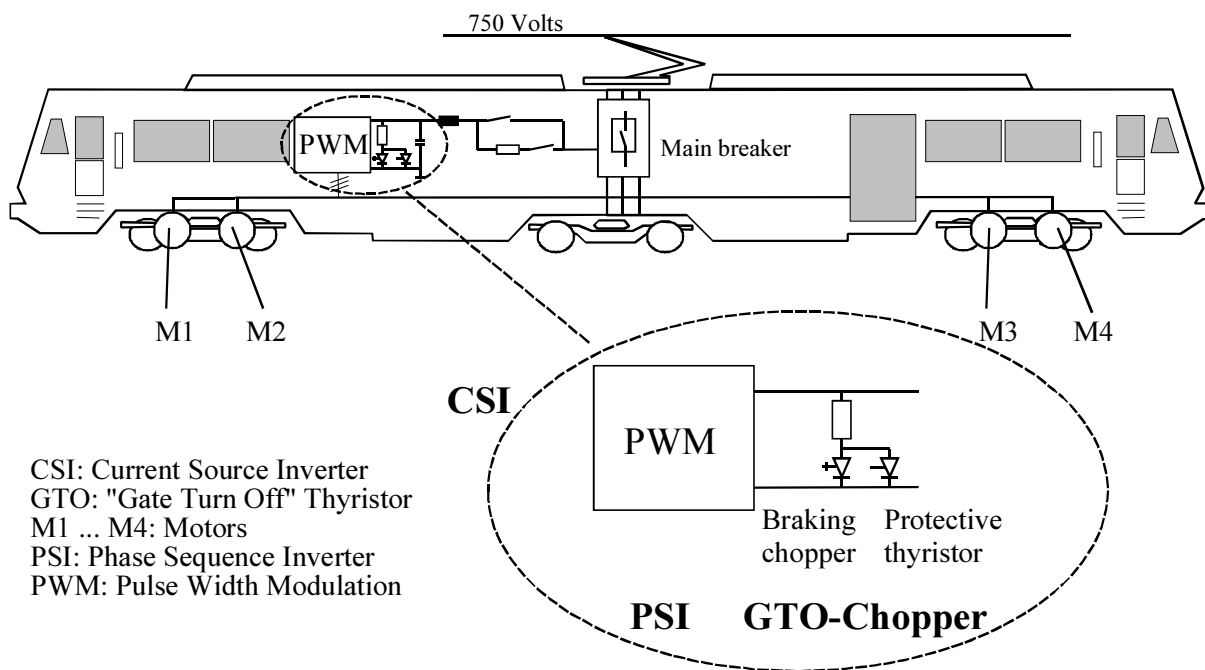


Figure 1 - Electrical equipment in a tramcar

This part of ISO 10303 specifies an application protocol (AP) for design and installation information of electrotechnical equipment used in plants, industrial systems or vehicles. This part describes the information shared between the parties involved in the design, the installation and the commissioning of the apparatus. Design is understood as a process of combining components such as relays, programmable logic controllers, or software that comprise a system. Such a system may also be used to control a chemical process in a factory. The description includes various characteristics of the

design, such as functional aspects, physical aspects or the aspects related to the installation of the equipment.

The detailed product information of procured or premanufactured parts is not included in the AP but the information needed to customize products accordingly to the requirements of the installation is included.

EXAMPLE 3 Figure 2 shows some product data that characterize an electrotechnical system. The circuitry essentially comprises the product data for main circuits and the control circuits together with the circuits for control, indication and monitoring. In Figure 2 the functions describe functional building blocks that specify the logical structure of the system, their connectivity and the signals used. The arrangement data describe how the components that make up the system are physically arranged.

Figure 3 contains the data planning model that provides a high level description of the requirements for this application protocol, as well as the relationships between the basic data components.

The planning model illustrates that an electrotechnical system is described by function-oriented product data and product-oriented product data. Both descriptions may be allocated to each other. Arrangement data, the routing of cables and the arrangement of the equipment is described by the UoFs installation, course, and site. In many cases the system components are categorized in accordance to an existing classification system. The UoF classification specifies the necessary concepts.

The information flow within the system may be described by specifying the signals that are generated, processed or transmitted within the system. The UoF messages comprises the concepts that specify the information flow.

The UoF remark allows to assign explanatory information to the system or its constituents. Organizational data such as approval or manufacturer is described by the UoF organizational_data.

Requirements and constraints levied against the system are represented by conditions that affect the products used, their functionality and their installation. Configuration_management, organizational_data, and work_management allow the handling of data concerning information about variants and options of the design, releases and approvals, or the appointment of work.

The documentation of the system is addressed by the documentation and dimensioned_documentation data. Designation data allows the identification of the equipment or its functions uniquely within the system. Technical data may be addressed by assigning property data to the elements of the data model.

This application protocol defines the context, scope, and information requirements for the exchange of design and installation information of electrotechnical equipment and specifies the integrated resources necessary to satisfy these requirements.

Application protocols provide the basis for developing implementations of ISO 10303 and abstract test suites for the conformance testing of AP implementations.

Clause 1 defines the scope of the application protocol and summarizes the functionality and data covered by the AP. Clause 3 lists the words defined in this part of ISO 10303 and gives pointers to words defined elsewhere. An application activity model that is the basis for the definition of the scope is provided in annex F. The information requirements of the application are specified in clause

4 using terminology appropriate to the application. A graphical representation of the information requirements, referred to as the application reference model, is given in annex G.

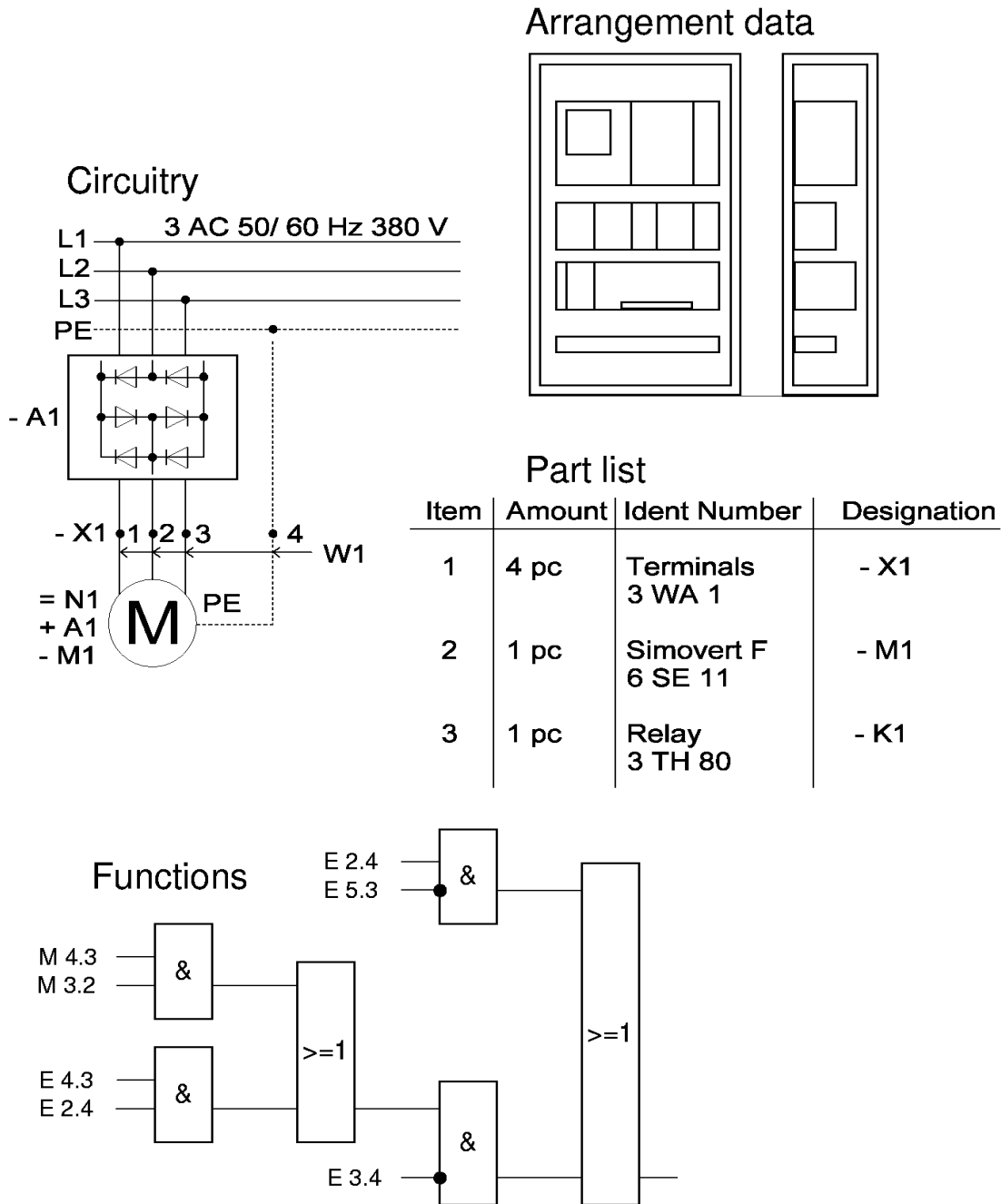


Figure 2 - Product data that characterizes industrial electrotechnical equipment

Resource constructs are interpreted to meet the information requirements. This interpretation produces the application interpreted model (AIM). This interpretation, given in 5.1, shows the correspondence between the information requirements and the AIM. The short listing of the AIM specifies the interface to the integrated resources and is given in 5.2. Note that the definitions and EXPRESS provided in the integrated resources for constructs used in the AIM may include select list items and subtypes which are not imported into the AIM. The expanded listing given in Annex A contains the complete EXPRESS for the AIM without annotation. A graphical representation of the AIM is given in annex H. Additional requirements for specific implementation methods are given in annex C.

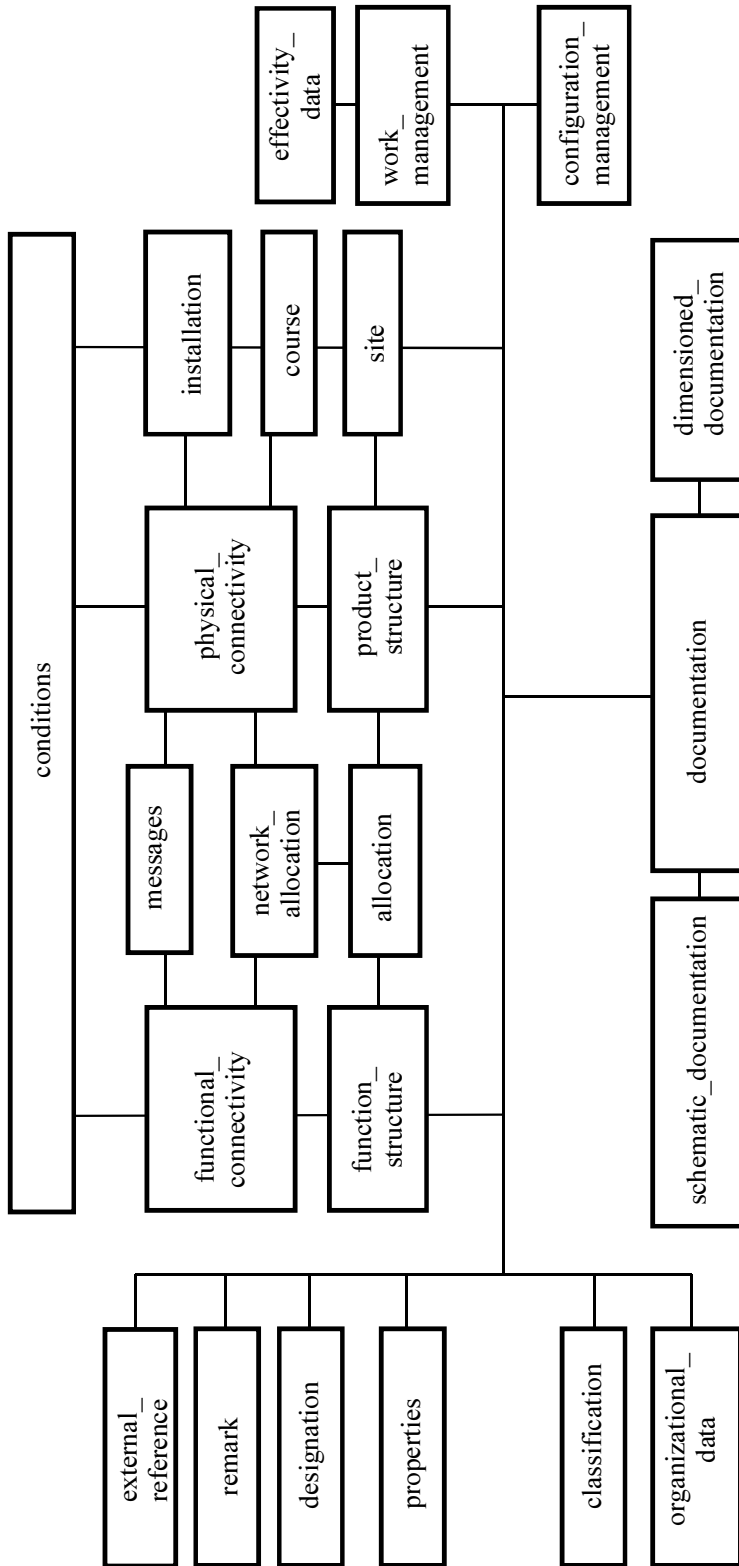


Figure 3 - Data planning model

Industrial automation systems and integration — Product data representation and exchange — Part 212: Application protocol: Electrotechnical design and installation

1 Scope

This part of ISO 10303 specifies the use of the integrated resources necessary for the scope and information requirements for the design, installation, and commissioning of electrotechnical systems. This Application protocol does not impose any restriction on the usage of these systems. Equipment for power-transmission, -distribution, and -generation, electrical machinery, electric light, electric heat, control and automation systems is in scope.

EXAMPLE 1 Electrotechnical systems may be used in plants, buildings, or transportation systems such as cars or ships, etc.

The information content of documents that describe a system in accordance to IEC 61082: *Preparation of documents used in electrotechnology* is part of the scope. Also included is the decomposition of products and functions, their interrelations, their connectivity and their schematic representation.

NOTE 1 The application activity model in annex F provides a graphical representation of the processes and information flows that are the basis for the definition of the scope of this part of ISO 10303.

The following are within the scope of this part of ISO 10303.

— Data to describe an electrotechnical system throughout design, commissioning and delivery phases;

NOTE 2 Throughout the commissioning of a system an operating time of significant duration may occur. Such a stage is often requested by the customer to verify the operating performance of the system. The data required to keep track of design changes or maintenance activities are considered to be part of the data that describe commissioning of the system.

— Data to specify the equipment used in the electrotechnical system;

— Data to describe terminals and interfaces of the equipment;

— Data to describe the functional decomposition of the system;

— Data to describe the connectivity and cabling of devices and equipment;

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- Data to specify the installation of the equipment, including physical locations and information about the shape of the equipment;
- Data for the reference designation of the design's functional modules and of the equipment used;
- Data to specify the pieces of information exchanged between the various constituents of the design;
- Data to provide the design with actual and planned technical characteristics;
- Data to document the system or its design and to keep track of version and status of the documentation;
- Data for the tracking of a design's release;
- Data to track the approval of functional and physical objects used in the system;
- Data to perform the configuration management of the equipment;
- Data to describe the requirements levied upon the design and their allocation to functional objects, physical objects, and the physical implementation;
- Data to provide information about the contractual basis and the work packages assigned to develop and implement the design;
- Data to classify and categorize the functional and physical objects that make up the electrotechnical system in accordance to standardized or user specific classification systems;
- Data to the assignment of comments or instructions to the product data;

The following are outside the scope of this part of ISO 10303.

- Detailed product information or manufacturing information of procured premanufactured parts;
- Data for the simulation and testing of electrotechnical systems;

EXAMPLE 2 Information about test patterns, behavioural models, etc.

- Detailed mechanical design information of electric/electronic products;
- The management of the process used for the design of electrotechnical systems;
- The process plans for the procurement, assembly or shipping of electrotechnical systems or their constituents;
- The administrative procurement and cost data used by an enterprise.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10303. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10303 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

IEC 61082-1:1991, *Preparation of documents used in electrotechnology — Part 1: General requirements.*

IEC 61360:1995, *Standard data element types with associated classification scheme for electric components.*

ISO 639:1988, *Code for the representation of names of languages.*

ISO/IEC 646:1991, *Information technology — ISO 7-bit coded character set for information interchange.*

ISO/IEC 6937:1994, *Information technology — Coded character set for text communication — Latin alphabet.*

ISO/IEC 8824-1:1998, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation.*

ISO/IEC 8859-1:1998, *Information technology — 8-bit single-byte coded graphic character sets — Part 1: Latin alphabet No. 1.*

ISO/IEC 10646, *Information technology — Universal Multiple-Octet Coded Character Set (UCS).*

ISO 10303-1:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 1: Overview and fundamental principles.*

ISO 10303-11:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 11: Description methods: The EXPRESS language reference manual.*

ISO 10303-21:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 21: Implementation methods: Clear text encoding of the exchange structure.*

ISO 10303-31:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 31: Conformance testing methodology and framework: General concepts.*

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ISO 10303-32:1998, *Industrial automation systems and integration — Product data representation and exchange — Part 32: Conformance testing methodology and framework: Requirements on testing laboratories and clients.*

ISO 10303-41:2000, *Industrial automation systems and integration — Product data representation and exchange — Part 41: Integrated generic resource: Fundamentals of product description and support.*

ISO 10303-42:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 42: Integrated generic resources: Geometric and topological representation.*

ISO 10303-43:2000, *Industrial automation systems and integration — Product data representation and exchange — Part 43: Integrated generic resource: Representation structures.*

ISO 10303-44:2000, *Industrial automation systems and integration — Product data representation and exchange — Part 44: Integrated generic resource: Product structure configuration.*

ISO 10303-45:1998, *Industrial automation systems and integration — Product data representation and exchange — Part 45: Integrated generic resource: Materials.*

ISO 10303-46:1994, *Industrial automation systems and integration — Product data representation and exchange — Part 46: Integrated generic resources: Visual presentation.*

ISO 10303-49:1998, *Industrial automation systems and integration — Product data representation and exchange — Part 49: Integrated generic resources: Process structure and properties.*

ISO 10303-504:2000, *Industrial automation systems and integration — Product data representation and exchange — Part 504: Application interpreted construct: Draughting annotation.*

ISO 10303-506:2000, *Industrial automation systems and integration — Product data representation and exchange — Part 506: Application interpreted construct: Draughting elements.*

3 Terms, definitions, and abbreviations

For the purposes of this International Standard, the following definitions apply.

3.1 Terms defined in IEC 61082-1

For the purposes of this part of ISO 10303, the following terms defined in IEC 61082-1 apply.

- attached representation;
- block diagram;
- circuit diagram;
- connection diagram;
- detached representation;
- diagram;
- document;
- function diagram;
- overview diagram.

3.2 Terms defined in ISO 10303-1

For the purposes of this part of ISO 10303, the following terms defined in ISO 10303-1 apply.

- application;
- application activity model (AAM);
- application interpreted model (AIM);
- application object;
- application protocol (AP);
- application reference model (ARM);
- conformance testing;
- implementation method;
- integrated resource;
- model;
- PICS proforma;
- product;

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- product data;
- unit of functionality (UoF).

3.3 Terms defined in ISO 10303-31

For the purposes of this part of ISO 10303, the following terms defined in ISO 10303-31 apply.

- conformance class.

3.4 Terms defined in ISO 10303-42

For the purposes of this part of ISO 10303, the following terms defined in ISO 10303-42 apply.

- b spline curve;
- composite curve;
- conic;
- coordinate space;
- curve;
- line;
- polyline;
- trimmed curve.

3.5 Terms defined in ISO 10303-44

For the purposes of this part of ISO 10303, the following terms defined in ISO 10303-44 apply.

- constituent.

3.6 Terms defined in ISO 10303-46

For the purposes of this part of ISO 10303, the following terms defined in ISO 10303-46 apply.

- layer;
- presentation;
- visualization.

3.7 Other terms and definitions

For the purposes of this part of ISO 10303, the following terms and definitions apply.

3.7.1

circuit

an arrangement of networks, devices, or media that allows the flow or association of information, energy, or material within a physical or non-physical product

3.7.2

coded character set

a set of unambiguous rules that establishes a character set and the one-to-one relationship between each character of the set and its coded representation

3.7.3

component

an occurrence of a product used in an assembled product

NOTE A component may be a piece of equipment or a functional module.

3.7.4

connectivity

the entire arrangement of conductors or networks for joining ports, terminals or other conductors

3.7.5

electrotechnical equipment

the apparatus that supports the distribution, generation, storage, transformation, or utilization of electrical energy

3.7.6

electrotechnical system

a system performing its objectives by using mainly electrotechnical equipment

3.7.7

function block

a base element into which the functionality of an electrotechnical system may be decomposed

NOTE A function block may be decomposed into other function blocks.

3.7.8

functionality

the intended purpose or use of a piece of equipment

3.7.9

human-interpretable string

a sequence of alphanumeric characters intended to be interpreted by humans only, even though the information may be stored or displayed by a computer

3.7.10

GIS position

a position specified through a global information system

3.7.11

industrial system

a system designed or suitable for industrial use

EXAMPLE Systems designed to be used in a production environment with a high resistance against shock or magnetic fields.

3.7.12

interface

a complex access mechanism to the functionality of a component

NOTE In most cases an interface comprises a combination of one or more ports.

3.7.13

occurrence

the use of a typical item at a specific place in a design. Each occurrence is a separate item that refers to the typical item

EXAMPLE Potentiometers is a data class containing catalog items. One instance of the class of potentiometers specifies a potentiometer of type P104 with a resistance of 400 Ohm. The data class of occurrences contains two instances specifying potentiometers R1 and R2 of type P104 that are currently in use. R1 is set to a potential divider ratio of 75% and R2 is set to a potential divider ratio of 10%. Both have the resistance of 400 Ohm because both are occurrences of P104.

3.7.14

port

an access point to a functionality

NOTE Even though, in most cases, a port is implemented by the use of one or more terminals, it is not required for a port to have a physical equivalent.

3.7.15

system

a set of interdependent elements constituted to achieve a given objective by performing a specified function. This includes the equipment used, as well as non-physical items like software, that ensures proper control and interaction of the equipment

3.7.16

terminal

an access point to a piece of equipment

3.8 Abbreviations

For the purpose of this part of ISO 10303, the following abbreviations apply.

- AAM application activity model;
- AIM application interpreted model;
- AP application protocol;
- ARM application reference model;
- ASCII American Standard Code for Information Interchange
- CAD computer aided design;
- GIS geographic information system;
- id identifier;
- RGB a colorimetric system identifying colours by specifying their red, green and blue portions;
- UoF unit of functionality.

4 Information requirements

This subclause specifies the information required for the design, installation, and commissioning of electrotechnical systems.

The information requirements are specified as a set of units of functionality, application objects, and application assertions. These assertions pertain to individual application objects and to relationships between application objects. The information requirements are defined using the terminology of the subject area of this application protocol.

NOTE 1 A graphical representation of the information requirements is given in annex G.

NOTE 2 The information requirements correspond to those of the activities identified as being within the scope of this application protocol in annex F.

NOTE 3 The mapping table specified in 5.1 shows how the integrated resources and application interpreted constructs are used to meet the information requirements of this application protocol.

4.1 Units of functionality

This subclause specifies the units of functionality (UoF) for the Electrotechnical design and installation application protocol. This part of ISO 10303 specifies the following units of functionality:

- allocation (AL1);
- classification (CA1);
- conditions (CD1);
- configuration_management (CF1);
- course (CO1);
- designation (DE1);
- dimensioned_documentation (DI1);
- documentation (DO1);
- effectivity_data (EF1);
- external_reference (ER1);
- function_structure (F1);
- functional_connectivity (C1);
- installation (IN1);
- messages (M1);

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- network_allocation (NA1);
- organizational_data (OD1);
- physical_connectivity (PC1);
- product_structure (PD1);
- properties (PR1);
- remark (R1);
- schematic_documentation (SC1);
- site (SI1);
- work_management (W1).

The units of functionality and a description of the functions that each UoF supports are given below. The application objects included in the UoFs are defined in 4.2.

4.1.1 allocation (AL1)

The allocation UoF defines information that supports assignment of the elements designated in both the function_structure UoF and the product_structure UoF. The allocation UoF provides the relationship between the description of the equipment and the appropriate functional description of that equipment.

NOTE Allocation of connectivity is not in the scope of this UoF.

The following application objects are used by the allocation UoF:

- Functional_unit_allocation;
- Offered_function_allocation;
- Preferred_item_allocation.

4.1.2 classification (CA1)

The classification UoF specifies all concepts to categorize the packages of information contained in the product data. This includes the information about the documents that specify the classification method.

The following application objects are used by the classification UoF:

- Class_reference;
- Classification_association;
- Classification_attribute;
- Classification_system;

- General_classification;
- General_classification_hierarchy.

4.1.3 conditions (CD1)

The conditions UoF describes the information that is specified in requirements levied against the design or its implementation.

NOTE Requirements laid down in textual form, as property values, or as interface requirements are included.

The following application objects are used by the conditions UoF:

- Requirement;
- Requirement_assignment;
- Requirement_document_assignment;
- Requirement_relationship.

4.1.4 configuration_management (CF1)

The configuration_management UoF specifies the concepts for the specification of the planned use of equipment and on the configurations the equipment may be used in. Specification (see 4.2.323) of variants are included in the scope of the configuration_management UoF.

The following application objects are used by the configuration_management UoF:

- Alternative_solution;
- Class_category_association;
- Class_condition_association;
- Class_inclusion_association;
- Class_specification_association;
- Class_structure_relationship;
- Complex_product;
- Complex_product_relationship;
- Component_placement;
- Configuration;
- Descriptive_specification;
- Device_relationship;

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- Final_solution;
- Instance_placement;
- Product_class;
- Product_class_relationship;
- Product_component;
- Product_identification;
- Product_specification;
- Product_structure_relationship;
- Solution_instance_assignment;
- Specification;
- Specification_category;
- Specification_category_hierarchy;
- Specification_expression;
- Specification_inclusion;
- Supplier_solution;
- Technical_solution.

4.1.5 course (CO1)

The course UoF specifies the data used to describe a three-dimensional path to specify the path of pieces of equipment.

EXAMPLE Examples for pieces of equipment with an assigned path are cable ducts or wireways.

The following application objects are used by the course UoF:

- Curve_3d;
- Node;
- Node_relationship;
- Path;
- Path_node;
- Path_node_relationship;

- Path_relationship;
- Path_segment.

4.1.6 designation (DE1)

The designation UoF describes concepts used to identify equipment items and function blocks. An item designator may be composed from other designators. The concepts to describe this structure and methods to categorize the constituents of an item designation are in the scope of this UoF. Identification of documents, signals or locations is also addressed by the designation UoF.

The following application objects are used by the designation UoF:

- Document_designation;
- Object_designation;
- Object_designation_relationship;
- Object_reference_designation;
- Signal_designation;
- Terminal_designation.

4.1.7 dimensioned_documentation (DI1)

The dimensioned_documentation UoF specifies concepts to present the electrotechnical system or parts thereof in pictorial or textual form. Dimensioned drawings or schematic diagrams may be used for that purpose.

EXAMPLE Examples for drawings addressed by dimensioned_documentation UoF are installation diagrams, ground plans, etc.

The following application objects are used by the dimensioned_documentation UoF:

- Angular_dimension;
- Chained_dimension_pair;
- Curve_dimension;
- Datum_feature_callout;
- Datum_target_callout;
- Diameter_dimension;
- Dimension;
- Dimension_callout;
- Dimension_line;

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- Dimension_line_terminator;
- Dimension_sequence_pair;
- Dimension_symbol;
- Directed_curve;
- Draughting_callout;
- Geometrical_tolerance;
- Geometrical_tolerance_symbol;
- Leader;
- Leader_directed_dimension;
- Leader_terminator;
- Linear_dimension;
- Ordinate_dimension;
- Parallel_dimension_pair;
- Point_marker_symbol;
- Predefined_symbol;
- Projection_line;
- Radius_dimension;
- Structured_dimension_callout;
- Terminator_symbol;
- Unstructured_dimension_callout.

4.1.8 documentation (DO1)

The documentation UoF specifies concepts to present the electrotechnical system or parts thereof in pictorial or textual form using two-dimensional drawings.

NOTE The concepts used to visualize dimensioned drawings are not included in this UoF.

EXAMPLE Examples for drawings addressed by documentation UoF are circuit diagrams, connection lists, terminal diagrams, etc.

The following application objects are used by the documentation UoF:

- Annotation_curve;

- Annotation_element;
- Annotation_placed_annotation;
- Annotation_subfigure;
- Annotation_subfigure_definition;
- Annotation_subfigure_definition_element;
- Annotation_symbol;
- Appearance;
- Cartesian_coordinate_space_2d;
- Colour;
- Curve_2d;
- Curve_appearance;
- Draughting_annotation;
- Draughting_model;
- Drawing;
- Drawing_assignment;
- Drawing_sequence;
- Drawing_sheet;
- Drawing_sheet_layout;
- Drawing_sheet_relationship;
- Drawing_view;
- Externally_defined_hatching;
- Externally_defined_line_font;
- Externally_defined_symbol;
- Externally_defined_text_font;
- Externally_defined_tile;
- Externally_defined_tiling;
- Fill_area;

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- Fill_area_appearance;
- Fill_area_boundary;
- Group;
- Group_annotation_element;
- Group_element;
- Hatching_pattern;
- Layer;
- Line_font;
- Model_placed_annotation;
- Point_2d;
- Predefined_colour;
- Predefined_line_font;
- Predefined_text_font;
- Rectangular_area;
- Sheet_placed_annotation;
- Solid_fill_area;
- Sub_group;
- Text;
- Text_appearance;
- Text_font;
- Text_string;
- Tile;
- User_defined_colour;
- User_defined_hatching;
- User_defined_line_font;
- User_defined_symbol;
- User_defined_symbol_definition;

- User_defined_tile;
- User_defined_tiling;
- View_displayed_model;
- View_placed_annotation;
- Visibility.

4.1.9 effectivity_data (EF1)

The effectivity_data UoF provides the capability to represent information concerning the validity of data. The validity of data can be expressed by effectivities that specify time ranges within which data may be used. Retention periods specify how long data have to be kept and when they may be deleted. Both concepts can use explicit dates or dates expressed by events to represent the relevant points in time.

The following application objects are used by the effectivity_data UoF:

- Dated_configuration;
- Duration;
- Effectivity;
- Effectivity_assignment;
- Effectivity_relationship;
- Event_reference;
- Lot_configuration;
- Manufacturing_configuration;
- Product_class;
- Product_identification;
- Product_design;
- Retention_period;
- Serial_configuration.

4.1.10 external_reference (ER1)

The external_reference UoF specifies a reference mechanism to assign additional information to the product data. This information may be available in either electronic or nonelectronic form.

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NOTE Content or format of the referenced data need not be in accordance with this part nor with any other part of ISO 10303.

EXAMPLE Simulation data can be assigned to the product data by using the external_reference UoF.

The following application objects are used by the external_reference UoF:

- Coded_size;
- Digital_document;
- Digital_file;
- Document;
- Document_assignment;
- Document_content_property;
- Document_creation_property;
- Document_file;
- Document_file_relationship;
- Document_format_property;
- Document_location_property;
- Document_size_property;
- Document_type_property;
- Document_representation;
- Document_structure;
- Document_version;
- Document_version_relationship;
- External_file_id_and_location;
- Hardcopy;
- Language;
- Physical_document;
- Rectangular_size;
- Specific_document_classification.

4.1.11 function_structure (F1)

The function_structure UoF specifies the concepts for the description of the functional decomposition of an electrotechnical system. The data describes a segment of an electrotechnical system independent of the specific product used in that segment. The functionality that the segment is to perform is identified. The functions may be either primitive, i.e., its internal structure is not further described, or it may be composed from other functions.

NOTE The concepts for the specification of the connectivity among the function blocks are not part of the function_structure UoF.

The following application objects are used by the function_structure UoF:

- Composition_relationship;
- Function_definition;
- Function_definition_relationship;
- Function_unit;
- Function_unit_relationship;
- Function_version;
- Function_version_relationship;
- Functionality;
- Single_function_unit;
- Specified_function_unit.

4.1.12 functional_connectivity (FC1)

The functional_connectivity UoF specifies all those concepts that are required to specify the connectivity among the function blocks describing an electrotechnical system. The specification of the interface through which a function block can be interconnected with other function blocks and the concepts to specify the connectivity among them are included.

EXAMPLE Figure 4 shows the functionality of a gas-insulated switchgear. The functionality is described by the function_structure UoF and functional_connectivity UoF. The product data that describes the switchgear comprises concepts from product_structure UoF and physical_connectivity UoF.

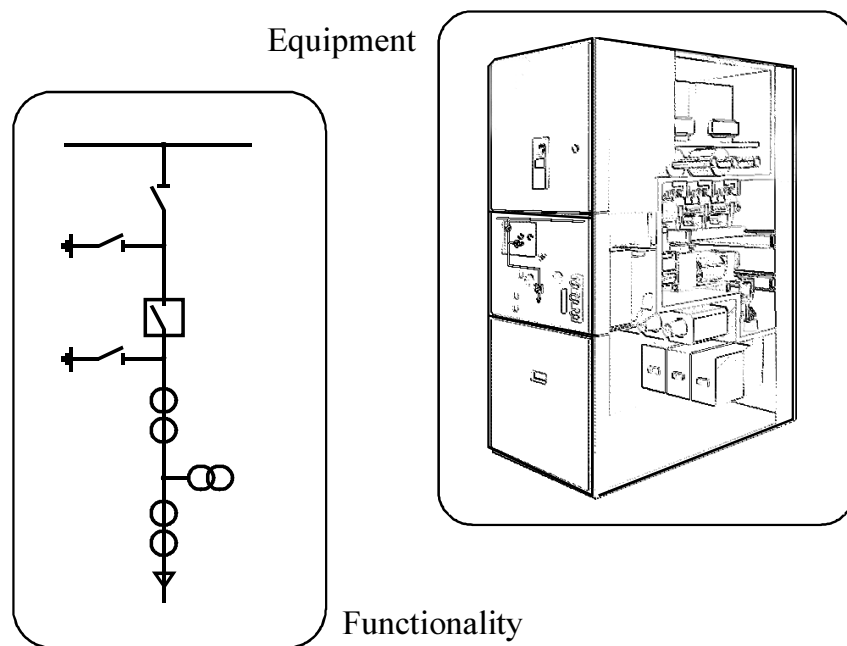


Figure 4 - Functionality of a gas - insulated switchgear

The following application objects are used by the functional_connectivity UoF:

- Function_interface;
- Functional_connectivity_definition;
- Functional_connectivity_definition_relationship;
- Interface_port;
- Interface_port_relationship;
- Interface_port_connectivity;
- Network;
- Port;
- Port_association;
- Port_relationship;

4.1.13 installation (IN1)

The installation UoF describes the arrangement of the items that make up the electrotechnical system. The data needed for cable routing and cable pulling is in the scope of the installation UoF. Concepts that specify routes are also in the scope of the installation UoF.

EXAMPLE Figure 5 shows sectional views of an electrical installation using cabletrays and control cabinets. The arrangement of the equipment and the laying of the cables is described by using concepts from installation UoF, course UoF, and site UoF.

NOTE The content of the text shown in Figure 5 is for presentation purposes only. Its meaning is not essential for this part of 10303.

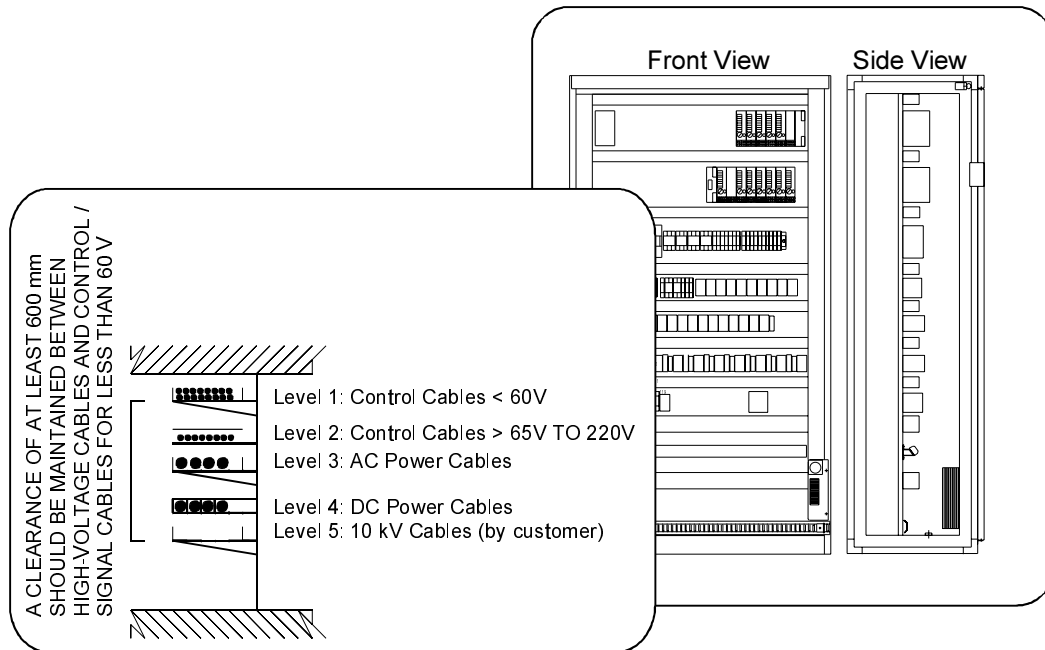


Figure 5 - Example of an installation; installation of devices on cabletrays or in cabinets

The following application objects are used by the installation UoF:

- Cable_pull_information;
- General_location_relationship;
- Free_segment;
- Route;
- Route_relationship;
- Routed_object;
- Routed_segment;
- Section;
- Section_end;

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- Section_interface;
- Section_interface_relationship;
- Section_relationship.

4.1.14 messages (M1)

The messages UoF specifies the concepts used to describe the flow of information within an electrotechnical system. The concepts to specify the physical representation of the information within the system and the concepts that specify the information content are included. The physical parameters that cause the information flow can be also described.

The following application objects are used by the messages UoF:

- Notification;
- Notification_relationship;
- Preferred_equipment_assignment;
- Process_variable;
- Process_variable_relationship;
- Process_variable_system_assignment;
- Signal;
- Signal_relationship;
- Signal_system_assignment;
- Signal_value.

4.1.15 network_allocation (NA1)

The network_allocation UoF defines information that supports the allocation of functional connectivity information to the connectivity established by the equipment used in the electrotechnical system. This includes the data to relate the functional connect nodes to their physical counterparts.

The following application objects are used by the network_allocation UoF:

- Connectivity_allocation;
- Port_allocation;
- Preferred_item_terminal_allocation.

4.1.16 organizational_data (OD1)

The organizational_data UoF specifies the concepts to assign organizational information to the product data. This information provides the basis for the management of the product data.

EXAMPLE Examples for organizational information are approval information, information about ownership, time stamps, etc.

The following application objects are used by the organizational_data UoF:

- Address;
- Approval;
- Approval_relationship;
- Approval_status;
- Certification;
- Date_and_person_assignment;
- Date_and_person_or_organization;
- Date_time;
- Date_time_assignment;
- Date_time_interval_assignment;
- Duration;
- Organization;
- Organization_relationship;
- Person;
- Person_in_organization;
- Person_in_organization_relationship;
- Person_organization_assignment;
- Security_classification;
- Security_level;
- Time_interval.

4.1.17 physical_connectivity (PC1)

The physical_connectivity UoF specifies the concepts required to specify the connectivity among the equipment within an electrotechnical system. The specification of the interface through which a piece

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of equipment may be interconnected with other devices and the concepts to specify the connectivity among the equipment are included.

EXAMPLE Figure 6 shows a wiring harness of a vehicle. To describe its assembly structure and connectivity concepts of product_structure UoF and physical_connectivity UoF are used.

NOTE The content of the text shown in Figure 6 is for presentation purposes only. Its meaning is not essential for this part of 10303.

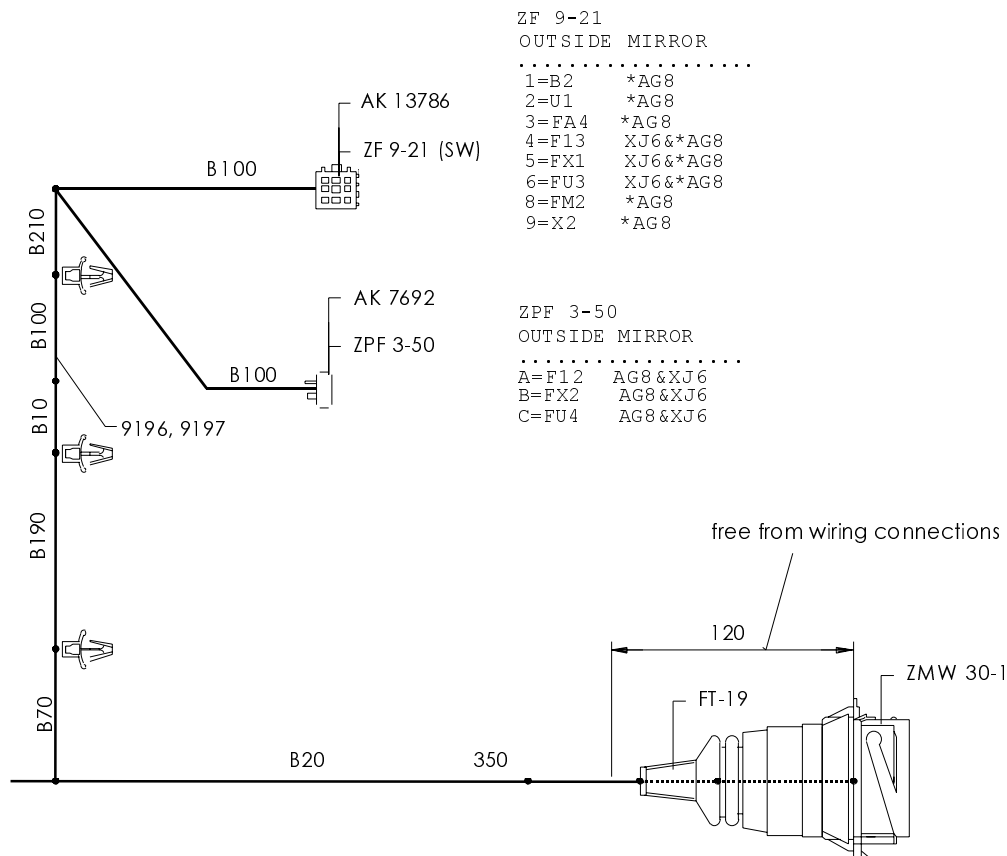


Figure 6 - Example of a product description: output of a wiring harness

The following application objects are used by the physical_connectivity UoF:

- Connection;
- Connectivity_definition;
- Connectivity_definition_relationship;
- Interface;
- Interface_terminal;
- Interface_terminal_relationship;
- Interface_terminal_connection;

- Predefined_connection;
- Terminal;
- Terminal_relationship.

4.1.18 product_structure (PD1)

The product_structure UoF specifies the concepts for the description of the hierarchical structure of the equipment used within an electrotechnical system.

NOTE The concepts for the specification of connectivity among products are not part of the product_structure UoF.

The following application objects are used by the product_structure UoF:

- Alias_designation;
- Alias_identification;
- Alias_version;
- Alternate_item_relationship;
- Application_context;
- Assembly_component_relationship;
- Assembly_substitute_relationship;
- Assembly_definition;
- Component_placement;
- Design_discipline_item_definition;
- Device;
- Item;
- Item_definition_relationship;
- Item_identification;
- Item_version;
- Item_version_relationship;
- Make_from_relationship;
- Next_higher_assembly;
- Numerical_precision;

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- Part;
- Physical_assembly_relationship;
- Physical_instance;
- Product_constituent;
- Promissory_usage;
- Quantified_device;
- Selected_device;
- Shape;
- Shape_assignment;
- Single_device;
- Specific_classification_hierarchy;
- Specific_item_classification;
- Specific_item_classification_hierarchy;
- Specified_device;
- Technical_system;
- Technical_system_relationship.

4.1.19 properties (PR1)

The properties UoF specifies a generic concept to assign technical or management data to the information packages that make up the product data.

The following application objects are used by the properties UoF:

- Aggregated_value;
- Binary_value;
- Body_breadth;
- Body_height;
- Body_length;
- Component_colour;
- Cross_section;

- Data_element;
- Data_element_association;
- Data_element_definition;
- Data_element_definition_relationship;
- Data_element_relationship;
- Data_element_specification;
- Data_element_value;
- External_library_reference;
- Format_of_value;
- Logical_value;
- Mass;
- Material;
- Mounting_features;
- Numerical_value;
- Operating_temperature;
- Outside_diameter;
- Predefined_data_element;
- Property_reference;
- Rated_current;
- Rated_power;
- Rated_voltage;
- Single_value;
- Storage_temperature;
- String_value;
- User_defined_data_element.

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4.1.20 remark (R1)

The remark UoF specifies the concepts to associate additional human-interpretable information to the product data. Markings applied to the equipment are also supported by the remark UoF.

EXAMPLE Examples for the information supported by remark UoF include information such as comments, assembly instructions, manufacturing instructions, etc.

The following application objects are used by the remark UoF:

- Generic_note;
- Linear_pattern_location;
- Marking;
- Multi_language_note;
- Note;
- Note_association;
- Set_of_notes.

4.1.21 schematic_documentation (SC1)

The schematic_documentation UoF specifies the concepts used to present product data in schematic diagrams.

NOTE The concepts used to visualize dimensioned drawings are not included in this UoF.

EXAMPLE Examples for schematic constructs are symbols, schematic connections, or cross references.

The following application objects are used by the schematic_documentation UoF:

- Cartesian_coordinate_space_with_grid;
- Connect_area;
- Connecting_line;
- Cross_reference;
- Detached_representation_reference;
- Direction_range;
- Item_presentation;
- Note_reference;
- Page_connector;

- Page_connector_presentation;
- Page_connector_reference;
- Reference_grid;
- Reference_grid_layout;
- Schematic_node;
- Schematic_text;
- Typical_schematic_node;
- Typical_schematic_text.

4.1.22 site (SI1)

The site UoF describes the location where the equipment is positioned. Location (see 4.2.192) is understood as a defined volume of space that contains equipment. Hierarchical decomposition of locations or neighbourhood relationships between locations are supported. Global positioning system data may be applied to specify the three-dimensional position.

The following application objects are used by the site UoF:

- Cartesian_point;
- Cartesian_coordinate_space_3d;
- General_location_relationship;
- Gis_position;
- Hierarchical_location_relationship;
- Location;
- Location_assignment;
- Location_relationship;
- Neighbourhood_location_relationship.

4.1.23 work_management (W1)

The work_management UoF specifies the concepts for activity specific, project specific, and contract specific information. This UoF also supports concepts to keep track of changes that result from various activities throughout the lifecycle of an electrotechnical system.

The following application objects are used by the work_management UoF:

- Activity;

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- Activity_element;
- Activity_method;
- Activity_method_assignment;
- Activity_relationship;
- Contract;
- Organization_in_contract;
- Project;
- Project_relationship;
- Work_order;
- Work_request.

4.2 Application objects

This subclause specifies the application objects for the Electrotechnical design and installation application protocol. Each application object is an atomic element that embodies a unique application concept and contains attributes specifying the data elements of the object. The application objects and their definitions are given below.

4.2.1 Activity

An Activity is the fact of achieving or accomplishing an action.

The data associated with an Activity are the following:

- activity_type;
- actual_end_date;
- actual_start_date;
- chosen_method;
- concerned_organization;
- description;
- id;
- internal;
- planned_end_date;
- planned_start_date;
- requestor;
- resolved_request;
- status;
- supplying_organization.

4.2.1.1 activity_type

The activity_type specifies the kind of the Activity. The value is either user defined or predefined.

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The predefined value of activity_type is one of the following:

- amendment;
- analysis;
- cancellation;
- delivery change;
- design change;
- design;
- mock-up creation;
- order;
- prototype building;
- rectification;
- restructuring;
- spare part creation;
- stop notice;
- testing;
- work definition.

NOTE See 4.2.1.1.1 - 4.2.1.1.14 for the definition of each predefined value for activity_type.

4.2.1.1.1 amendment

amendment: An activity to add information to product data.

4.2.1.1.2 analysis

analysis: An activity to determine the behaviour of an item version under certain physical circumstances.

4.2.1.1.3 cancellation

cancellation: An activity to delete an item from the bill of material or to cancel the whole bill of material.

4.2.1.1.4 delivery change

delivery change: An activity to change an element delivery.

4.2.1.1.5 design change

design change: An activity to change the design or data such as geometry, master data, or properties of an item or an assembly.

4.2.1.1.6 design

design: An activity concerning the development of the design of an item or a product.

4.2.1.1.7 mock-up creation

mock-up creation: An activity to create an experimental model or replica of an item.

4.2.1.1.8 order

order: An activity to issue written direction to a manufacturer, tradesman, etc., to supply something.

4.2.1.1.9 prototype creation

prototype creation: An activity to manufacture the preliminary version of an item or product.

4.2.1.1.10 rectification

rectification: An activity to correct the data, documentation, or structure belonging to an item.

4.2.1.1.11 restructuring

restructuring: An activity to create a new structure or position within a bill of material without changing the data of the items.

4.2.1.1.12 spare part creation

spare part creation: An activity to design a spare part or to classify an item as a spare part.

4.2.1.1.13 stop notice

stop notice: An activity to stop the manufacturing process of an item.

4.2.1.1.14 testing

testing: An activity to test an item or a product.

4.2.1.1.15 work definition

work definition: An Activity to manage several sub-activities related to this Activity by an Activity_ - relationship (see 4.2.5) with a 'relation_type' of value 'decomposition'..

4.2.1.2 actual_end_date

The actual_end_date specifies the date when the Activity was actually finished.

The actual_end_date need not be specified for a particular Activity.

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See 4.3.3 for the application assertion.

4.2.1.3 actual_start_date

The `actual_start_date` specifies the date when the Activity was actually started.

The `actual_start_date` need not be specified for a particular Activity.

See 4.3.4 for the application assertion.

4.2.1.4 chosen_method

The `chosen_method` specifies the Activity method used to carry out the Activity.

The `chosen_method` need not be specified for a particular Activity.

See 4.3.1 for the application assertion.

4.2.1.5 concerned_organization

The `concerned_organization` specifies the Organization (see 4.2.223) that is affected by the result of the Activity.

EXAMPLE The production site that has to change the process due to a design change activity is an example for `concerned_organization`.

See 4.3.10 for the application assertion.

4.2.1.6 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the Activity.

The `description` need not be specified for a particular Activity.

4.2.1.7 id

The `id` specifies the identifier of the Activity.

4.2.1.8 internal

The `internal` specifies whether or not the Activity is performed internally within the organization. An Activity that is not performed internally is accomplished externally by another organization.

The `internal` need not be specified for a particular Activity.

4.2.1.9 planned_end_date

The `planned_end_date` specifies the date when the Activity is or was supposed to be finished.

The `planned_end_date` need not be specified for a particular Activity.

Each `planned_end_date` may be one of the following: `Date_time` (see 4.2.79), `Duration` (see 4.2.126), or `Event_reference` (see 4.2.130).

See 4.3.5, 4.3.7, and 4.3.8 for the application assertions.

4.2.1.10 `planned_start_date`

The `planned_start_date` specifies the date when the Activity is or was supposed to be started.

The `planned_start_date` need not be specified for a particular Activity.

Each `planned_start_date` may be one of the following: `Date_time` (see 4.2.79) or `Event_reference` (see 4.2.130).

See 4.3.6 and 4.3.9 for the application assertions.

4.2.1.11 `requestor`

The `requestor` specifies the party that requested the Activity and the date the request was submitted.

The `requestor` need not be specified for a particular Activity.

See 4.3.2 for the application assertion.

4.2.1.12 `resolved_request`

The `resolved_request` specifies the `Work_request` (see 4.2.365) that is resolved by the Activity.

See 4.3.12 for the application assertion.

4.2.1.13 `status`

The `status` specifies the level of completion of the Activity.

EXAMPLE An example of status is 'open'.

The `status` need not be specified for a particular Activity.

4.2.1.14 `supplying_organization`

The `supplying_organization` specifies the `Organization` (see 4.2.223) that carries out the work.

See 4.3.11 for the application assertion.

4.2.2 `Activity_element`

An `Activity_element` is an item of work that is part of an Activity (see 4.2.1).

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The data associated with an `Activity_element` are the following:

- `associated_activity`;
- `element`;
- `role`.

4.2.2.1 associated_activity

The `associated_activity` specifies the `Activity` (see 4.2.1) the `Activity_element` belongs to.

See 4.3.13 for the application assertion.

4.2.2.2 element

The `element` specifies the piece of product data that is under work.

Each `element` may be one of the following: `Activity_method` (see 4.2.3), `Activity_relationship` (see 4.2.5), `Alternate_item_relationship` (see 4.2.11), `Alternate_item_relationship` (see 4.2.11), `Assembly_component_relationship` (see 4.2.26), `Cable_pull_information` (see 4.2.33), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Class_structure_relationship` (see 4.2.45), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Configuration` (see 4.2.56), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Data_element` (see 4.2.70), `Data_element_association` (see 4.2.71), `Data_element_definition` (see 4.2.72), `Data_element_relationship` (see 4.2.74), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Device_relationship` (see 4.2.89), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_file_relationship` (see 4.2.107), `Document_representation` (see 4.2.110), `Document_version` (see 4.2.114), `Document_version_relationship` (see 4.2.115), `Drawing` (see 4.2.119), `Drawing_sequence` (see 4.2.121), `Drawing_sheet` (see 4.2.122), `Drawing_sheet_relationship` (see 4.2.124), `Function_definition` (see 4.2.145), `Function_definition_relationship` (see 4.2.146), `Function_interface` (see 4.2.147), `Function_unit` (see 4.2.148), `Function_unit_relationship` (see 4.2.149), `Function_version` (see 4.2.150), `Function_version_relationship` (see 4.2.151), `Functional_connectivity_definition` (see 4.2.152), `Functional_connectivity_definition_relationship` (see 4.2.153), `Generic_note` (see 4.2.159), `Interface` (see 4.2.170), `Interface_port` (see 4.2.171), `Interface_terminal` (see 4.2.174), `Item` (see 4.2.178), `Item_definition_relationship` (see 4.2.179), `Item_version` (see 4.2.182), `Item_version_relationship` (see 4.2.183), `Location` (see 4.2.192), `Location_relationship` (see 4.2.194), `Manufacturing_configuration` (see 4.2.198), `Marking` (see 4.2.199), `Node` (see 4.2.208), `Node_relationship` (see 4.2.209), `Notification` (see 4.2.213), `Notification_relationship` (see 4.2.214), `Path` (see 4.2.232), `Path_node` (see 4.2.233), `Path_node_relationship` (see 4.2.234), `Path_relationship` (see 4.2.235), `Physical_assembly_relationship` (see 4.2.241), `Physical_instance` (see 4.2.243), `Port` (see 4.2.247), `Process_variable` (see 4.2.260), `Process_variable_relationship` (see 4.2.261), `Product_class` (see 4.2.263), `Product_identification` (see 4.2.268), `Product_structure_relationship` (see 4.2.270), `Requirement` (see 4.2.285), `Route` (see 4.2.290), `Route_relationship` (see 4.2.291), `Section` (see 4.2.296), `Section_end` (see 4.2.297), `Section_interface` (see 4.2.298), `Section_interface_relationship` (see 4.2.299), `Section_relationship` (see 4.2.300), `Signal` (see 4.2.309), `Signal_relationship` (see 4.2.311), `Signal_value` (see 4.2.313), `Specification` (see 4.2.323), `Specification_category` (see 4.2.324), `Specification_expression` (see 4.2.326), `Specification_inclusion` (see 4.2.327),

Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), or Terminal (see 4.2.338).

See 4.3.14, 4.3.15, 4.3.16, 4.3.17, 4.3.18, 4.3.19, 4.3.20, 4.3.21, 4.3.22, 4.3.23, 4.3.24, 4.3.25, 4.3.26, 4.3.27, 4.3.28, 4.3.29, 4.3.30, 4.3.31, 4.3.32, 4.3.33, 4.3.34, 4.3.35, 4.3.36, 4.3.37, 4.3.38, 4.3.39, 4.3.40, 4.3.41, 4.3.42, 4.3.43, 4.3.44, 4.3.45, 4.3.46, 4.3.47, 4.3.48, 4.3.49, 4.3.50, 4.3.51, 4.3.52, 4.3.53, 4.3.54, 4.3.55, 4.3.56, 4.3.57, 4.3.58, 4.3.59, 4.3.60, 4.3.61, 4.3.62, 4.3.63, 4.3.64, 4.3.65, 4.3.66, 4.3.67, 4.3.68, 4.3.69, 4.3.70, 4.3.71, 4.3.72, 4.3.73, 4.3.74, 4.3.75, 4.3.76, 4.3.77, 4.3.78, 4.3.79, 4.3.80, 4.3.81, 4.3.82, 4.3.83, 4.3.84, 4.3.85, 4.3.86, 4.3.87, 4.3.88, 4.3.89, 4.3.90, 4.3.91, 4.3.92, 4.3.93, 4.3.94, 4.3.95, 4.3.96, 4.3.97, 4.3.98, 4.3.99, 4.3.100, 4.3.101, 4.3.102, and 4.3.103 for the application assertions.

4.2.2.3 role

The role specifies the function that is performed by the Activity_element in the context of the concerned Activity (see 4.2.1). The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- control;
- input;
- output.

NOTE See 4.2.2.3.1 - 4.2.2.3.3 for the definition of each permissible value for role.

4.2.2.3.1 control

control: The referenced element is an object that has immediate influence on the Activity (see 4.2.1) performed.

EXAMPLE Design lots used in the design of a component that fulfils a given product function may be identified as Activity_element objects that refer to this Function_unit (see 4.2.148) in the role of 'control'.

4.2.2.3.2 input

input: The referenced element serves as initial data for the associated Activity (see 4.2.1) object.

4.2.2.3.3 output

output: The referenced element is the result of the associated Activity (see 4.2.1) object.

4.2.3 Activity_method

An Activity_method is a procedure that can be used to solve a problem.

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The data associated with an `Activity_method` are the following:

- consequence;
- description;
- name.

4.2.3.1 consequence

The consequence specifies the expected positive or negative effects of the application of a particular `Activity_method`.

The consequence need not be specified for a particular `Activity_method`.

4.2.3.2 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the `Activity_method`.

4.2.3.3 name

The name specifies the identifier of the `Activity_method`.

4.2.4 Activity_method_assignment

An `Activity_method_assignment` is the relation that associates an `Activity_method` (see 4.2.3) with a `Work_request` (see 4.2.365). The associated `Activity_method` (see 4.2.3) serves as a recommended method to resolve the tasks specified in the `Work_request` (see 4.2.365).

The data associated with an `Activity_element` (see 4.2.2) are the following:

- `assigned_method`;
- `assigned_work_request`
- `relation_type`.

4.2.4.1 assigned_method

The `assigned_method` specifies the `Activity_method` (see 4.2.3).

See 4.3.104 for the application assertion.

4.2.4.2 assigned_work_request

The `assigned_work_request` specifies the `Work_request` (see 4.2.365).

See 4.3.105 for the application assertion.

4.2.4.3 relation_type

The `relation_type` specifies whether the specified `Activity_method` (see 4.2.3) may be used or not. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- non recommended method;
- recommended method.

NOTE See 4.2.4.3.1 - 4.2.4.3.2 for the definition of each predefined value for `relation_type`.

4.2.4.3.1 non recommended method

non recommended method: The specified `Activity_method` (see 4.2.3) shall not be used in order to accomplish the specified `Work_request` (see 4.2.365).

4.2.4.3.2 recommended method

recommended method: The specified `Activity_method` (see 4.2.3) may be used in order to accomplish the specified `Work_request` (see 4.2.365).

NOTE Several alternative recommended methods may exist.

4.2.5 Activity_relationship

An `Activity_relationship` is the relation between two `Activity` (see 4.2.1) objects.

The data associated with an `Activity_relationship` are the following:

- description;
- related;
- relating;
- `relation_type`.

4.2.5.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the `Activity_relationship`.

The description need not be specified for a particular `Activity_relationship`.

4.2.5.2 related

The related specifies the second of the two `Activity` (see 4.2.1) objects related by an `Activity_relationship`.

NOTE The semantic of this attribute is defined by the attribute `relation_type`.

See 4.3.106 for the application assertion.

4.2.5.3 relating

The relating specifies the first of the two Activity (see 4.2.1) objects related by an Activity_ - relationship.

NOTE The semantic of this attribute is defined by the attribute relation_type.

See 4.3.107 for the application assertion.

4.2.5.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- alternative;
- decomposition;
- derivation;
- exclusiveness;
- precedence;
- sequence;
- simultaneity.

NOTE See 4.2.5.4.1 - 4.2.5.4.7 for the definition of each predefined value for relation_type.

4.2.5.4.1 alternative

alternative: The application object defines a relationship where the related Activity (see 4.2.1) may be used alternatively instead of the relating Activity (see 4.2.1).

4.2.5.4.2 decomposition

decomposition: The Activity_relationship defines a relationship where the related Activity (see 4.2.1) is one of the components into which the relating Activity (see 4.2.1) is broken down.

4.2.5.4.3 derivation

derivation: The Activity_relationship defines a relationship where the related Activity (see 4.2.1) is derived from the relating Activity (see 4.2.1).

EXAMPLE An Activity (see 4.2.1) controlled by a Work_order (see 4.2.364) with work order type 'manufacturing release' can be derived from another Activity (see 4.2.1) controlled by another Work_order (see 4.2.364) with work order type 'design release'.

4.2.5.4.4 exclusiveness

exclusiveness: The application object defines a relationship where the relating and the related Activity (see 4.2.1) shall not have any overlap in time of execution.

4.2.5.4.5 precedence

precedence: The Activity_relationship defines a relationship where the related Activity (see 4.2.1) has higher priority than the relating Activity (see 4.2.1).

4.2.5.4.6 sequence

sequence: The Activity_relationship defines a relationship where the relating Activity (see 4.2.1) shall be completed before the related Activity (see 4.2.1) starts.

4.2.5.4.7 simultaneity

simultaneity: The Activity_relationship defines a relationship where the related Activity (see 4.2.1) is carried out simultaneously with the relating Activity (see 4.2.1).

4.2.6 Address

An Address is the place where people and organizations are located.

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The data associated with an Address are the following:

- country;
- email_address;
- fax_number;
- internal_location;
- postal_box;
- postal_code;
- region;
- street;
- street_number;
- telephone_number;
- telex_number;
- town.

4.2.6.1 country

The country specifies the name of a nation.

The country need not be specified for a particular Address.

4.2.6.2 email_address

The email_address specifies the sequence of characters that make up the appropriate address for electronic mail.

The email_address need not be specified for a particular Address.

4.2.6.3 fax_number

The fax_number specifies the number at which facsimiles can be received.

The fax_number need not be specified for a particular Address.

4.2.6.4 internal_location

The internal_location specifies the organization-defined address for internal mail delivery.

The internal_location need not be specified for a particular Address.

4.2.6.5 postal_box

The `postal_box` specifies the number of the appropriate post office box.

The `postal_box` need not be specified for a particular Address.

4.2.6.6 postal_code

The `postal_code` specifies the code that is used by the local postal service.

The `postal_code` need not be specified for a particular Address.

4.2.6.7 region

The `region` specifies the name of the area.

The `region` need not be specified for a particular Address.

4.2.6.8 street

The `street` specifies the name of the road.

The `street` need not be specified for a particular Address.

4.2.6.9 street_number

The `street_number` specifies the number of the building in a street.

The `street_number` need not be specified for a particular Address.

4.2.6.10 telephone_number

The `telephone_number` specifies the number at which telephone calls can be received.

The `telephone_number` need not be specified for a particular Address.

4.2.6.11 telex_number

The `telex_number` specifies the number at which telex messages can be received.

The `telex_number` need not be specified for a particular Address.

4.2.6.12 town

The `town` specifies the name of a city.

The `town` need not be specified for a particular Address.

4.2.7 Aggregated_value

An `Aggregated_value` is a type of `Data_element_value` (see 4.2.76) that is used to organize the values of a `Data_element` (see 4.2.70) as a list or as an array. The meaning of the order of the associated values shall be defined in the associated `Data_element_definition` (see 4.2.72).

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NOTE Multidimensional arrays are created through nesting Aggregated_value objects.

The data associated with an Aggregated_value are the following:

— member_definition.

4.2.7.1 member_definition

The member_definition specifies the constituents of Aggregated_value.

See 4.3.108 for the application assertion.

4.2.8 Alias_designation

An Alias_designation is the mechanism to associate an object with an additional designation that is used to identify the object of interest in a different context, either in another Organization (see 4.2.223), or in some other context. The Alias_designation allows to specify structured labels where the semantic of each composite can be identified. The scope of the Alias_designation shall be specified either by the attribute 'alias_scope' or by the attribute 'description'.

NOTE The Alias_designation allows to assign an alias name that is not just a simple string but a designation equipped with the information provided by the Object_designation (see 4.2.217) object.

EXAMPLE An relais may be designated as '=A00-K1' in the context of the supplier and as '=N005.A00-K1' in the context of the customer.

The data associated with an Alias_designation are the following:

— alias_extended_designation;

— alias_scope;

— description;

— is_applied_to.

4.2.8.1 alias_extended_designation

The alias_extended_designation specifies the designator. The designator may be a structured label.

See 4.3.115 for the application assertion.

4.2.8.2 alias_scope

The alias_scope specifies the Organization (see 4.2.223) in which the Alias_designation is valid.

The alias_scope need not be specified for a particular Alias_designation.

See 4.3.116 for the application assertion.

4.2.8.3 description

The description specifies the kind of the Alias_designation.

EXAMPLE The description may be 'preliminary designation'.

The description need not be specified for a particular Alias_designation.

4.2.8.4 is_applied_to

The is_applied_to specifies the object that has an Alias_designation.

Each is_applied_to may be one of the following: Device (see 4.2.88), Document_representation (see 4.2.110), Drawing (see 4.2.119), Drawing_sheet (see 4.2.122), Function_unit (see 4.2.148), Location (see 4.2.192), Port (see 4.2.247), Product_component (see 4.2.265), Signal (see 4.2.309), Technical_system (see 4.2.336), or Terminal (see 4.2.338).

See 4.3.109, 4.3.110, 4.3.111, 4.3.112, 4.3.113, 4.3.114, 4.3.117, 4.3.118, 4.3.119, 4.3.120, and 4.3.121 for the application assertions.

4.2.9 Alias_identification

An Alias_identification is the mechanism to associate an object with an additional identifier that is used to identify the object of interest in a different context, either in another Organization (see 4.2.223), or in some other context. The scope of the Alias_identification shall be specified either by the attribute 'alias_scope' or by the attribute 'description'.

NOTE The identifier may be used to identify the object of interest in a different context, either in another Organization (see 4.2.223), or in some other context.

EXAMPLE A book may have a unique document id (ISBN) and an Alias_identification as an inventory number in the context of the inventory of a company.

The data associated with an Alias_identification are the following:

- alias_id;
- alias_scope;
- description;
- is_applied_to.

4.2.9.1 alias_id

The alias_id specifies the identifier used in the context specified by alias_scope, description, or both.

4.2.9.2 alias_scope

The alias_scope specifies the Organization (see 4.2.223) in which the Alias_identification is valid.

The alias_scope need not be specified for a particular Alias_identification.

See 4.3.149 for the application assertion.

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4.2.9.3 description

The description specifies the kind of the `Alias_identification`.

EXAMPLE The description may be 'inventory number'.

The description need not be specified for a particular `Alias_identification`.

4.2.9.4 is_applied_to

The `is_applied_to` specifies the object that has an `Alias_identification`.

Each `is_applied_to` may be one of the following: `Approval_status` (see 4.2.25), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Component_colour` (see 4.2.53), `Connectivity_definition` (see 4.2.61), `Data_element_definition` (see 4.2.72), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Document` (see 4.2.101), `Document_representation` (see 4.2.110), `Document_type_property` (see 4.2.113), `Document_version` (see 4.2.114), `Drawing` (see 4.2.119), `Drawing_sheet` (see 4.2.122), `Function_definition` (see 4.2.145), `Function_unit` (see 4.2.148), `Functional_connectivity_definition` (see 4.2.152), `Functionality` (see 4.2.155), `General_classification` (see 4.2.156), `Interface_port` (see 4.2.171), `Interface_terminal` (see 4.2.174), `Item` (see 4.2.178), `Item_version` (see 4.2.182), `Location` (see 4.2.192), `Node` (see 4.2.208), `Notification` (see 4.2.213), `Organization` (see 4.2.223), `Path` (see 4.2.232), `Path_node` (see 4.2.233), `Physical_instance` (see 4.2.243), `Port` (see 4.2.247), `Process_variable` (see 4.2.260), `Product_class` (see 4.2.263), `Product_identification` (see 4.2.268), `Requirement` (see 4.2.285), `Route` (see 4.2.290), `Section` (see 4.2.296), `Section_interface` (see 4.2.298), `Security_level` (see 4.2.302), `Signal` (see 4.2.309), `Specification` (see 4.2.323), `Specification_category` (see 4.2.324), `Technical_system` (see 4.2.336), or `Terminal` (see 4.2.338).

See 4.3.122, 4.3.123, 4.3.124, 4.3.125, 4.3.126, 4.3.127, 4.3.128, 4.3.129, 4.3.130, 4.3.131, 4.3.132, 4.3.133, 4.3.134, 4.3.135, 4.3.136, 4.3.137, 4.3.138, 4.3.139, 4.3.140, 4.3.141, 4.3.142, 4.3.143, 4.3.144, 4.3.145, 4.3.146, 4.3.147, 4.3.148, 4.3.150, 4.3.151, 4.3.152, 4.3.153, 4.3.154, 4.3.155, 4.3.156, 4.3.157, 4.3.158, 4.3.159, 4.3.160, 4.3.161, 4.3.162, 4.3.163, 4.3.164, 4.3.165, 4.3.166, and 4.3.167 for the application assertions.

4.2.10 Alias_version

An `Alias_version` is a particular version of the object to which the associated alias identifier applies.

NOTE 1 The scope of the `Alias_version` is specified either through the 'alias_scope' attribute of the associated `Alias_identification` (see 4.2.9) object or `Alias_designation` (see 4.2.8) object.

NOTE 2 An `Alias_version` may be applied only if the object of interest may carry an optional or mandatory version. If so, an `Alias_version` may be assigned even if the object of interest does not yet have a version assigned.

The data associated with an `Alias_version` are the following:

- `associated_alias_id`;
- `version_id`.

4.2.10.1 associated_alias_id

The `associated_alias_id` specifies the identifier.

Each `associated_alias_id` may be one of the following: `Alias_designation` (see 4.2.8) or `Alias_identification` (see 4.2.9).

See 4.3.168 and 4.3.169 for the application assertions.

4.2.10.2 version_id

The `version_id` specifies the version of the object as known in the context of the alias identifier.

4.2.11 Alternate_item_relationship

An `Alternate_item_relationship` is the relationship between two `Item` (see 4.2.178) objects specifying that all versions of the two related `Item` (see 4.2.178) objects are interchangeable independent from their context of use.

NOTE 1 Interchangeability usually refers to form, fit, function, and quality. Additional properties, such as performance, noise, endurance, or reliability, may also be considered as a prerequisite for the interchangeability.

NOTE 2 If more than one `Alternate_item_relationship` is in place, the union of the attributes `fulfilled_requirements` is the criteria for the interchangeability.

EXAMPLE The `Alternate_item_relationship` indicates that an amplifier XX741 may be replaced by an amplifier YY741 from another manufacturer.

The two `Item` (see 4.2.178) objects are interchangeable in both directions.

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The data associated with an `Alternate_item_relationship` are the following:

- `alternate`;
- `base`;
- `fulfilled_requirements`.

4.2.11.1 `alternate`

The `alternate` specifies the Item (see 4.2.178) that may be used in place of the base Item (see 4.2.178).

See 4.3.170 for the application assertion.

4.2.11.2 `base`

The `base` specifies the Item (see 4.2.178) for which another Item (see 4.2.178) may be used as an alternate.

See 4.3.171 for the application assertion.

4.2.11.3 `fulfilled_requirements`

The `fulfilled_requirements` specifies the word or group of words describing the requirements that are covered by both the base and the alternate and are, therefore, the basis for the statement of interchangeability.

4.2.12 `Alternative_solution`

An `Alternative_solution` is a type of `Complex_product` (see 4.2.51) that is the design of one of potentially many mutually exclusive implementation options. An `Alternative_solution` may refer directly to the object to be implemented or through another `Alternative_solution`, in which case, it serves as a refinement of that `Alternative_solution`.

The data associated with an `Alternative_solution` are the following:

- `base_element`.

4.2.12.1 `base_element`

The `base_element` specifies the physical or functional object, for which the `Alternative_solution` provides a design alternative. All `Alternative_solution` objects for the same base element are mutually exclusive.

Each `base_element` may be one of the following: `Alternative_solution`, `Function_definition` (see 4.2.145), `Product_component` (see 4.2.265), or `Single_function_unit` (see 4.2.315).

See 4.3.172, 4.3.173, 4.3.174, and 4.3.175 for the application assertions.

4.2.13 Angular_dimension

An `Angular_dimension` is a type of `Dimension` (see 4.2.93) that is the graphical presentation of a value of the angle between two elements that converge on a common point or line.

The data associated with an `Angular_dimension` are the following:

- `component`;
- `extent`.

4.2.13.1 component

The `component` specifies the projection lines that show the extension of the points, lines, or surfaces that bound the measurement.

See 4.3.177 for the application assertion.

4.2.13.2 extent

The `extent` specifies the dimension line that graphically presents where the dimension value applies.

See 4.3.176 for the application assertion.

4.2.14 Annotation_curve

An `Annotation_curve` is a type of `Annotation_element` (see 4.2.15) that is a two-dimensional trimmed curve used only to annotate a drawing or a draughting shape model and that is defined in the coordinate system in which it is used.

The data associated with an `Annotation_curve` are the following:

- `assigned_appearance`.

4.2.14.1 assigned_appearance

The `assigned_appearance` specifies the presentation aspects of an `Annotation_curve`.

See 4.3.178 for the application assertion.

4.2.15 Annotation_element

An `Annotation_element` is a type of `Draughting_annotation` (see 4.2.116) that is the lowest level discrete element that can either serve as an annotation itself, or be used as a constituent of other annotations.

Each `Annotation_element` is either an `Annotation_curve` (see 4.2.14), an `Annotation_subfigure` (see 4.2.17), an `Annotation_symbol` (see 4.2.20), a `Fill_area` (see 4.2.139), a `Schematic_node` (see 4.2.294), or a `Text` (see 4.2.342).

4.2.16 Annotation_placed_annotation

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An `Annotation_placed_annotation` is a type of `Draughting_annotation` (see 4.2.116) that is located in the coordinate system of a symbol or subfigure.

4.2.17 `Annotation_subfigure`

An `Annotation_subfigure` is a type of `Annotation_element` (see 4.2.15) that is the visual instance of an `Annotation_subfigure_definition` (see 4.2.18) located within the coordinate system of a drawing sheet, a drawing view, a draughting model, or another subfigure.

The data associated with an `Annotation_subfigure` are the following:

- `definition`;
- `position`;
- `rotation`;
- `scale`.

4.2.17.1 `definition`

The `definition` specifies the template from which the `Annotation_subfigure` is derived.

See 4.3.179 for the application assertion.

4.2.17.2 `position`

The `position` specifies the location of the origin of the coordinate system in which the subfigure is defined relative to the origin of the coordinate system into which the subfigure is being placed.

See 4.3.180 for the application assertion.

4.2.17.3 `rotation`

The `rotation` specifies the angle, measured counter-clockwise, between the horizontal axis of the coordinate system in which the subfigure is defined and the horizontal axis of the coordinate system into which the subfigure is being placed.

4.2.17.4 `scale`

The `scale` specifies the ratio between the size of the subfigure as defined and the size of the subfigure as presented.

4.2.18 `Annotation_subfigure_definition`

An `Annotation_subfigure_definition` is a collection of defined annotation elements, along with their placements, in a coordinate space.

The data associated with an `Annotation_subfigure_definition` are the following:

- `blanking_box`;
- `coordinate_space`;
- `name`.

4.2.18.1 blanking_box

The `blanking_box` specifies an area that the `Annotation_subfigure_definition` occupies and is used to suppress the visual presentation of all other elements that are within this area.

The `blanking_box` need not be specified for a particular `Annotation_subfigure_definition`.

See 4.3.182 for the application assertion.

4.2.18.2 coordinate_space

The `coordinate_space` specifies the coordinate system that describes the two-dimensional space in which the constituents of the `Annotation_subfigure_definition` are located.

See 4.3.181 for the application assertion.

4.2.18.3 name

The `name` specifies the identifier of the `Annotation_subfigure_definition`.

The `name` need not be specified for a particular `Annotation_subfigure_definition`.

4.2.19 Annotation_subfigure_definition_element

An `Annotation_subfigure_definition_element` is an annotation that is used as a constituent of a subfigure definition.

The data associated with an `Annotation_subfigure_definition_element` are the following:

- `annotation_layers`;
- `annotation_visibility`;
- `containing_definition`;
- `used_annotation`.

4.2.19.1 annotation_layers

The `annotation_layers` specifies the draughting layers that contain the annotation.

See 4.3.185 for the application assertion.

4.2.19.2 annotation_visibility

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The `annotation_visibility` specifies whether or not each element of a subfigure is visible.

See 4.3.186 for the application assertion.

4.2.19.3 containing_definition

The `containing_definition` specifies the subfigure definition in which the annotation is placed.

See 4.3.184 for the application assertion.

4.2.19.4 used_annotation

The `used_annotation` specifies the annotation that is an element of the subfigure.

See 4.3.183 for the application assertion.

4.2.20 Annotation_symbol

An `Annotation_symbol` is a type of `Annotation_element` (see 4.2.15) that is the presentation of a symbol definition that is either externally defined, predefined, or defined explicitly as a combination of annotation elements. The `Annotation_symbol` is located within the coordinate system of a drawing sheet, drawing view, or another symbol.

Each `Annotation_symbol` is either an `Externally_defined_symbol` (see 4.2.135), a `Predefined_symbol` (see 4.2.255), or a `User_defined_symbol` (see 4.2.354).

The data associated with an `Annotation_symbol` are the following:

- `blanking_box`;
- `overriding_colour`;
- `position`;
- `rotation`;
- `scale`.

4.2.20.1 blanking_box

The `blanking_box` specifies an area that the `Annotation_element` (see 4.2.15) occupies and is used to suppress the visual presentation of all other elements that are within this area.

The `blanking_box` need not be specified for a particular `Annotation_symbol`.

See 4.3.189 for the application assertion.

4.2.20.2 overriding_colour

The `overriding_colour` specifies the colour definition that overrides the appearance characteristics already assigned to the elements of the symbol.

The overriding_colour need not be specified for a particular Annotation_symbol.

See 4.3.187 for the application assertion.

4.2.20.3 position

The position specifies the location of the origin of the coordinate system in which the symbol is defined relative to the origin of the coordinate system into which the symbol is being placed.

See 4.3.188 for the application assertion.

4.2.20.4 rotation

The rotation specifies the angle, measured counter-clockwise, between the positive x-axis of the coordinate system in which the symbol is defined and the positive x-axis of the coordinate system into which the symbol is being placed.

4.2.20.5 scale

The scale specifies the ratio between the size of the symbol as defined and the size of the symbol as presented. The scale in the x-coordinate need not equal the scale in the y-coordinate.

4.2.21 Appearance

An Appearance is a collection of visual characteristics that govern the presentation of geometric elements or annotation elements.

Each Appearance is either a Curve_appearance (see 4.2.68), a Fill_area_appearance (see 4.2.140), or a Text_appearance (see 4.2.343).

4.2.22 Application_context

An Application_context is a context in which product data is defined. An Application_context represents various types of information that relate to product data and may affect the meaning and usage of that data.

The data associated with an Application_context are the following:

- application_domain;
- description;
- life_cycle_stage.

4.2.22.1 application_domain

The application_domain is the identification of the discipline for which the product data is relevant.

EXAMPLE Examples for application_domain are 'electrical design' or 'engineering analysis'.

4.2.22.2 description

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The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Application_context.

The description need not be specified for a particular Application_context.

4.2.22.3 life_cycle_stage

The life_cycle_stage is the specification of the general stage in the product life cycle to which the product data belong. The value is either user defined or predefined.

The predefined value of life_cycle_stage is one of the following:

- conceptual design;
- development;
- implementation;
- operation;
- test.

NOTE See 4.2.22.3.1 - 4.2.22.3.5 for the definition of each predefined value for life_cycle_stage.

4.2.22.3.1 conceptual design

conceptual design: The object that refers the Application_context object is in the stage of transforming the customer's requirements into a draft design.

4.2.22.3.2 development

development: The object that refers the Application_context object is in the stage of transforming the conceptual design into an implementable system.

4.2.22.3.3 implementation

implementation: The object that refers the Application_context object is in the stage of realization.

4.2.22.3.4 operation

operation: The object that refers the Application_context object is in the stage of productive use.

4.2.22.3.5 test

test: The object that refers the Application_context object is in the stage of verification whether it satisfies the specified requirements.

4.2.23 Approval

An Approval is a judgement concerning the quality of product data that are subject of the Approval. An Approval represents a statement made by technical personnel or management personnel if certain requirements are met.

The data associated with an Approval are the following:

- actual_date;
- is_applied_to;
- is_approved_by;
- level;
- planned_date;
- scope;
- status.

4.2.23.1 actual_date

The actual_date specifies the date when the Approval was actually performed. If this information is absent, the approval has not yet occurred, i.e., it is pending.

The actual_date need not be specified for a particular Approval.

See 4.3.220 for the application assertion.

4.2.23.2 is_applied_to

The is_applied_to specifies the object to which the Approval is assigned.

Each is_applied_to may be one of the following: Activity (see 4.2.1), Activity_element (see 4.2.2), Activity_method_assignment (see 4.2.4), Activity_relationship (see 4.2.5), Alternate_item_relationship (see 4.2.11), Alternate_item_relationship (see 4.2.11), Assembly_component_relationship (see 4.2.26), Cable_pull_information (see 4.2.33), Certification (see 4.2.38), Class_category_association (see 4.2.40), Class_condition_association (see 4.2.41), Class_inclusion_association (see 4.2.42), Class_specification_association (see 4.2.44), Class_structure_relationship (see 4.2.45), Classification_association (see 4.2.46), Classification_system (see 4.2.48), Complex_product (see 4.2.51), Complex_product_relationship (see 4.2.52), Composition_relationship (see 4.2.55), Configuration (see 4.2.56), Connectivity_allocation (see 4.2.60), Connectivity_definition (see 4.2.61), Connectivity_definition_relationship (see 4.2.62), Contract (see 4.2.63), Data_element (see 4.2.70), Data_element_association (see 4.2.71), Data_element_definition (see 4.2.72), Data_element_relationship (see 4.2.74), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Device_relationship (see 4.2.89), Document (see 4.2.101), Document_file (see 4.2.106), Document_file_relationship (see 4.2.107), Document_representation (see 4.2.110), Document_version (see 4.2.114), Document_version_relationship (see 4.2.115), Drawing (see 4.2.119), Drawing_sequence (see 4.2.121), Drawing_sheet (see 4.2.122), Drawing_sheet_relationship (see 4.2.124), Function_definition (see 4.2.145), Function_definition_relationship (see 4.2.146), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_unit_relationship (see 4.2.149), Function_version (see 4.2.150), Function_version_relationship (see 4.2.151), Functional_connectivity_definition (see 4.2.152), Functional_connectivity_definition_relationship (see 4.2.153), Functional_unit_allocation (see 4.2.154), General_classification (see 4.2.156), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Item_version_relationship

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(see 4.2.183), Location (see 4.2.192), Location_relationship (see 4.2.194), Manufacturing_configuration (see 4.2.198), Marking (see 4.2.199), Material (see 4.2.201), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Route (see 4.2.290), Route_relationship (see 4.2.291), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Security_classification (see 4.2.301), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.190, 4.3.191, 4.3.192, 4.3.193, 4.3.194, 4.3.195, 4.3.197, 4.3.198, 4.3.199, 4.3.200, 4.3.201, 4.3.202, 4.3.203, 4.3.204, 4.3.205, 4.3.206, 4.3.207, 4.3.208, 4.3.209, 4.3.210, 4.3.211, 4.3.212, 4.3.213, 4.3.214, 4.3.215, 4.3.216, 4.3.217, 4.3.218, 4.3.222, 4.3.223, 4.3.224, 4.3.225, 4.3.226, 4.3.227, 4.3.228, 4.3.229, 4.3.230, 4.3.231, 4.3.232, 4.3.233, 4.3.234, 4.3.235, 4.3.236, 4.3.237, 4.3.238, 4.3.239, 4.3.240, 4.3.241, 4.3.242, 4.3.243, 4.3.244, 4.3.245, 4.3.246, 4.3.247, 4.3.248, 4.3.249, 4.3.250, 4.3.251, 4.3.252, 4.3.253, 4.3.254, 4.3.255, 4.3.256, 4.3.257, 4.3.258, 4.3.259, 4.3.260, 4.3.261, 4.3.262, 4.3.264, 4.3.265, 4.3.266, 4.3.267, 4.3.268, 4.3.269, 4.3.270, 4.3.271, 4.3.272, 4.3.273, 4.3.274, 4.3.275, 4.3.276, 4.3.277, 4.3.278, 4.3.279, 4.3.280, 4.3.281, 4.3.282, 4.3.283, 4.3.284, 4.3.285, 4.3.286, 4.3.287, 4.3.288, 4.3.289, 4.3.290, 4.3.291, 4.3.292, 4.3.293, 4.3.294, 4.3.295, 4.3.296, 4.3.297, 4.3.298, 4.3.299, and 4.3.300 for the application assertions.

4.2.23.3 is_approved_by

The `is_approved_by` specifies the Person (see 4.2.237) or Organization (see 4.2.223) responsible for the Approval and the date when the authorization was granted.

See 4.3.219 for the application assertion.

4.2.23.4 level

The level indicates the kind of activity that may be performed. The value is either user defined or predefined.

The predefined value of level is one of the following:

- disposition;
- equipment order;
- planning.

NOTE See 4.2.23.4.1 - 4.2.23.4.3 for the definition of each predefined value for level.

4.2.23.4.1 disposition

disposition: The approved item is approved for series production.

4.2.23.4.2 equipment_order

equipment_order: The approved item has reached the status in which changes are subject to a defined change process so that tools and other equipment for the production may be ordered.

4.2.23.4.3 planning

planning: The approved item is technically complete and has reached the status sufficiently stable so that other designs may be based on it.

The level need not be specified for a particular Approval.

4.2.23.5 planned_date

The planned_date specifies the date when the Approval is or was supposed to be performed.

The planned_date need not be specified for a particular Approval.

See 4.3.221 for the application assertion.

4.2.23.6 scope

The scope specifies the set of Organization (see 4.2.223) objects for which the Approval is valid.

See 4.3.263 for the application assertion.

4.2.23.7 status

The status specifies the judgement made about the product data that is the subject of this Approval.

See 4.3.196 for the application assertion.

4.2.24 Approval_relationship

An Approval_relationship is the relation between two Approval (see 4.2.23) objects.

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The data associated with an Approval_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.24.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Approval_relationship.

The description need not be specified for a particular Approval_relationship.

4.2.24.2 related

The related specifies the second of the two Approval (see 4.2.23) objects related by the Approval_relationship.

NOTE The semantic of this attribute is defined by the attribute relation_type.

See 4.3.301 for the application assertion.

4.2.24.3 relating

The relating specifies the first of the two Approval (see 4.2.23) objects related by the Approval_relationship.

NOTE The semantic of this attribute is defined by the attribute relation_type.

See 4.3.302 for the application assertion.

4.2.24.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The value of `relation_type` is one of the following:

- decomposition;
- sequence;
- precedence.

NOTE See 4.2.24.4.1 - 4.2.24.4.3 for the definition of each predefined value for `relation_type`.

4.2.24.4.1 decomposition

decomposition: The `Approval_relationship` defines a relationship where the related `Approval` (see 4.2.23) is one of the components into which the relating `Approval` (see 4.2.23) is broken down.

4.2.24.4.2 sequence

sequence: The `Approval_relationship` defines a relationship where the relating `Approval` (see 4.2.23) shall be completed before the related `Approval` (see 4.2.23) is given.

4.2.24.4.3 precedence

precedence: The `Approval_relationship` defines a relationship where the related `Approval` (see 4.2.23) has higher priority than the relating `Approval` (see 4.2.23).

4.2.25 Approval_status

An `Approval_status` is the state of acceptance of some product data.

The value is either user defined or predefined. The data associated with an `Approval_status` are the following:

- `status_name`;
- `used_classification_system`.

4.2.25.1 status_name

The `status_name` specifies the word or abbreviation that is used to refer to the `Approval_status`. The value is either user defined or predefined.

The predefined value of `status_name` is one of the following:

- approved;
- disapproved;
- withdrawn.

NOTE See 4.2.25.1.1 - 4.2.25.1.3 for the definition of each permissible value for `status_name`.

4.2.25.1.1 approved

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approved: The fact that the judgement on the referenced element is positive.

4.2.25.1.2 disapproved

disapproved: The fact that the judgement on the referenced element is negative.

4.2.25.1.3 withdrawn

withdrawn: The fact that the referenced element was cancelled.

4.2.25.2 used_classification_system

The used_classification_system specifies the Classification_system (see 4.2.48) that contains the information about how to interpret the Approval (see 4.2.23) status.

The used_classification_system need not be specified for a particular Approval_status.

See 4.3.303 for the application assertion.

4.2.26 Assembly_component_relationship

An Assembly_component_relationship is the relation between an Assembly_definition (see 4.2.27) and a Device (see 4.2.88). The Device (see 4.2.88) represents a constituent of the assembly or package.

NOTE 1 The constituent may also be an assembly.

NOTE 2 The same instance of Device (see 4.2.88) may be a constituent of more than one assembly defined through the Design_discipline_item_definition (see 4.2.86) object.

NOTE 3 An assembly may be regarded to be a package of things that belong together for some purpose. Following that idea, devices may belong to more than one of such a package. This part of ISO 10303 does not constrain the Assembly_component_relationship between the packages. One may be a subset of another, they may be disjoint, or they may partially overlap.

EXAMPLE 1 The power supply cord of an overhead projector may belong at the same time to the sales package of the projector and to the package of power supply cords that are currently in stock.

EXAMPLE 2 In Figure 7, the structure of a simple assembly is given to show how this part of ISO 10303 is to be used to specify hierarchically composed pieces of equipment. A pilot lamp is shown which is composed of the lamp L1 and the resistors R1 and R2. The connections W1 and W2 perform the internal connectivity. Templates for the lamp and the resistors exist (L and R) that characterize the properties of the components, which are independent from the context of usage, e.g., specification sheet parameters.

Two instances of Design_discipline_item_definition (see 4.2.86) represent the templates R and L. The template L has two instances of Interface_terminal (see 4.2.174) assigned to it, in order to characterize its two connect nodes. The connect nodes are indicated in the figure by triangles. The same applies to template R.

L1 is an occurrence of L, and R1 and R2 are occurrences of R. L1, R2, and R3 are represented by Device (see 4.2.88) objects which are associated by their 'definition' attributes with the Design_discipline_item_definition (see 4.2.86) representing L respectively R. The connect nodes of L1, R1, and R2 are characterized through Terminal (see 4.2.338) objects. Figure 7 shows the six instances of the object Terminal (see 4.2.338) (indicated by an 'x'). Each of the Terminal (see 4.2.338) object is associated with an Interface_terminal (see 4.2.174) through the 'associated_interface_terminal' attribute. The connectivity is performed by the Connection (see 4.2.59) objects W1 and W2 that link the appropriate Terminal (see 4.2.338) objects.

An instance of Assembly_definition (see 4.2.27), which is a subtype of Design_discipline_item_definition (see 4.2.86), specifies the pilot lamp. Three instances of Next_higher_assembly (see 4.2.207) express that this assembly is made from L1, R1, and R2. To express the association between the Interface_terminal (see 4.2.174) objects of the pilot lamp and its appropriate counterpart at the next lower level of detail, the 'uses' attribute of Interface_terminal (see 4.2.174) is employed. The curved arrows in the figure symbolize these associations.

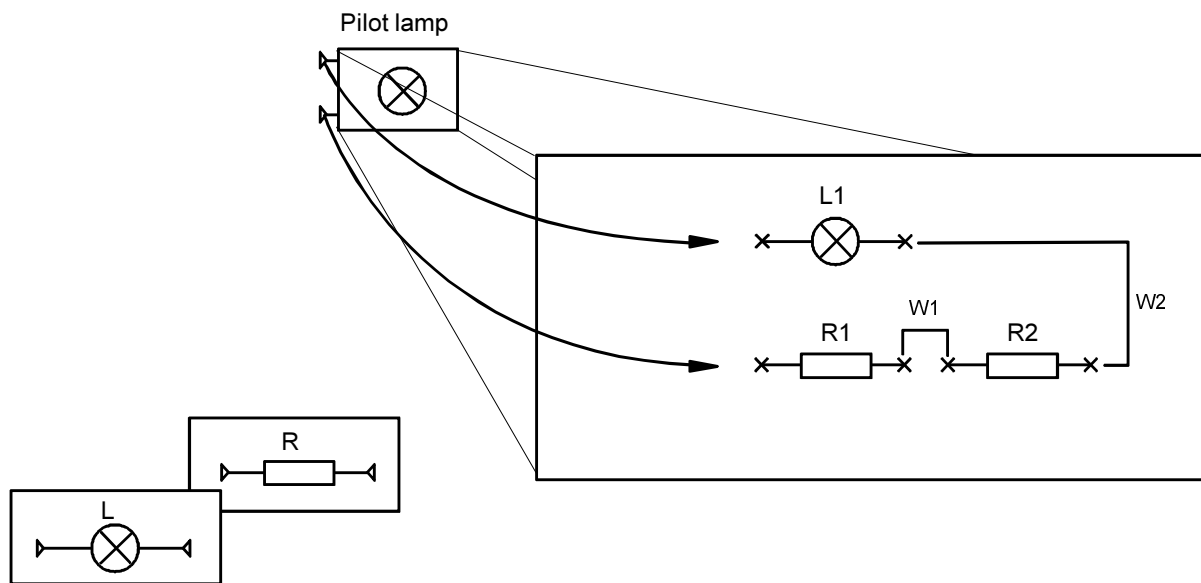


Figure 7 - Hierarchical composition

Each `Assembly_component_relationship` is either a `Next_higher_assembly` (see 4.2.207) or a `Promissory_usage` (see 4.2.274).

The data associated with an `Assembly_component_relationship` are the following:

- placement;
- related;
- relating.

4.2.26.1 placement

The placement specifies the geometrical transformation that is used to calculate the spatial position of the constituent within the assembly.

The placement need not be specified for a particular `Assembly_component_relationship`.

4.2.26.2 related

The related specifies the `Device` (see 4.2.88) that acts as a component.

See 4.3.305 for the application assertion.

4.2.26.3 relating

The relating specifies the `Assembly_definition` (see 4.2.27) that has subordinate constituents.

See 4.3.304 for the application assertion.

4.2.27 Assembly_definition

An `Assembly_definition` is a type of `Design_discipline_item_definition` (see 4.2.86) that is the definition of an `Item_version` (see 4.2.182) that contains other subordinate `Item_version` (see 4.2.182) objects.

NOTE An `Assembly_definition` can be used to define items such as an assembled module or a procurement package.

EXAMPLE A procurement package consists of a power transformer together with its mounting material.

The data associated with an `Assembly_definition` are the following:

— `assembly_type`.

4.2.27.1 `assembly_type`

The `assembly_type` specifies the kind of the `Assembly_definition`.

EXAMPLE 'functional assembly', 'manufacturing assembly', and 'design assembly' are examples of an `assembly_type`.

The `assembly_type` need not be specified for a particular `Assembly_definition`.

4.2.28 `Assembly_substitute_relationship`

An `Assembly_substitute_relationship` is a relationship that indicates that one `Assembly_component_relationship` (see 4.2.26) may be substituted for another `Assembly_component_relationship` (see 4.2.26). The subjects of the substitution are the related `Device` (see 4.2.88) objects of both `Assembly_component_relationship` (see 4.2.26) objects. The relating `Assembly_definition` (see 4.2.27) shall be the same in both `Assembly_component_relationship` (see 4.2.26) objects.

The data associated with an `Assembly_substitute_relationship` are the following:

- `base`;
- `description`;
- `substitute`.

4.2.28.1 `base`

The `base` specifies the `Assembly_component_relationship` (see 4.2.26) that is replaceable.

See 4.3.306 for the application assertion.

4.2.28.2 `description`

The `description` specifies additional information about the `Assembly_substitute_relationship`.

The `description` need not be specified for a particular `Assembly_substitute_relationship`.

4.2.28.3 `substitute`

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The substitute specifies the `Assembly_component_relationship` (see 4.2.26) that may be used instead of the base `Assembly_component_relationship` (see 4.2.26).

See 4.3.307 for the application assertion.

4.2.29 Binary_value

A `Binary_value` is a sequence of digits that may have the value 0 or 1.

NOTE `Binary_value` allows the assignment of values of data type 'binary' to data elements.

EXAMPLE An example for the use of binary values is the description of the configuration of measured-value logger boards.

The data associated with a `Binary_value` are the following:

— `value_of_binary_value`.

4.2.29.1 value_of_binary_value

The `value_of_binary_value` specifies a sequence of binary digits.

4.2.30 Body_breadth

A `Body_breadth` is the measured distance from side to side of a component in the y-axis.

The data associated with a `Body_breadth` are the following:

— `value_of_body_breadth`.

4.2.30.1 value_of_body_breadth

The `value_of_body_breadth` specifies the side to side distance value in the y-axis.

See 4.3.308 for the application assertion.

4.2.31 Body_height

A `Body_height` is the measured distance from side to side of a component in the z-axis.

The data associated with an `Body_height` are the following:

— `value_of_body_height`.

4.2.31.1 value_of_body_height

The `value_of_body_height` specifies the side to side distance value in the z-axis.

See 4.3.309 for the application assertion.

4.2.32 Body_length

A `Body_length` is the measured distance from side to side of a component in the x-axis.

The data associated with a `Body_length` are the following:

- `value_of_body_length`.

4.2.32.1 value_of_body_length

The `value_of_body_length` specifies the side to side distance value in the x-axis.

See 4.3.310 for the application assertion.

4.2.33 Cable_pull_information

A `Cable_pull_information` is a collection of facts about the installation of a cable or wire harness on a segment of its path.

NOTE Additional information can be provided by assigning `Data_element` (see 4.2.70) objects to `Cable_pull_information`.

The data associated with a `Cable_pull_information` are the following:

- `associated_object`;
- `description`;
- `id`;
- `version_id`.

4.2.33.1 associated_object

The `associated_object` specifies the equipment items to which the pulling information applies.

See 4.3.311 for the application assertion.

4.2.33.2 description

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Cable_pull_information`.

The `description` need not be specified for a particular `Cable_pull_information`.

4.2.33.3 id

The `id` specifies the identifier of the `Cable_pull_information`.

4.2.33.4 version_id

The `version_id` specifies versioning information for the `Cable_pull_information`.

The `version_id` need not be specified for a particular `Cable_pull_information`.

4.2.34 Cartesian_coordinate_space_2d

A Cartesian_coordinate_space_2d is defined by two mutually perpendicular axes.

The data associated with a Cartesian_coordinate_space_2d are the following:

- length_measure_unit;
- plane_angle_measure_unit;
- precision.

4.2.34.1 length_measure_unit

The length_measure_unit specifies the increments used to define linear distances or sizes within a Cartesian_coordinate_space_2d.

4.2.34.2 plane_angle_measure_unit

The plane_angle_measure_unit specifies the increments used to define angular distances within a Cartesian_coordinate_space_2d.

4.2.34.3 precision

The precision specifies the numerical precision required for an appropriate handling of the items located in the Cartesian_coordinate_space_2d.

See 4.3.312 for the application assertion.

4.2.35 Cartesian_coordinate_space_3d

A Cartesian_coordinate_space_3d describes a three-dimensional cartesian space.

The data associated with a Cartesian_coordinate_space_3d are the following:

- length_measure_unit;
- plane_angle_measure_unit;
- precision.

4.2.35.1 length_measure_unit

The length_measure_unit specifies the increments used to define linear distances or sizes within a Cartesian_coordinate_space_3d.

4.2.35.2 plane_angle_measure_unit

The plane_angle_measure_unit specifies the increments used to define angular distances within a Cartesian_coordinate_space_3d.

4.2.35.3 precision

The precision specifies the numerical precision required for an appropriate handling of the items located in the `Cartesian_coordinate_space_3d`.

See 4.3.313 for the application assertion.

4.2.36 Cartesian_coordinate_space_with_grid

A `Cartesian_coordinate_space_with_grid` is a type of `Cartesian_coordinate_space_2d` (see 4.2.34) that is a framework of spaced parallel lines with a spacing Δx and Δy used to ease the positioning of any graphical item.

The data associated with a `Cartesian_coordinate_space_with_grid` are the following:

- `delta_x`;
- `delta_y`;
- `origin`.

4.2.36.1 delta_x

The `delta_x` specifies the spacing parallel to the x-axis.

4.2.36.2 delta_y

The `delta_y` specifies the spacing parallel to the y-axis.

4.2.36.3 origin

The `origin` specifies the positioning of the zero point of the `Cartesian_coordinate_space_with_grid` relative to the zero point of the `Cartesian_coordinate_space_2d` (see 4.2.34).

4.2.37 Cartesian_point

A `Cartesian_point` is a position in space defined by its coordinates in a cartesian coordinate system.

The data associated with a `Cartesian_point` are the following:

- `coordinates`.

4.2.37.1 coordinates

The `coordinates` specifies the position of the `Cartesian_point` in its coordinate space. The sequence of the coordinates in the list corresponds to the sequence of the coordinates as it is given by the mathematical definition of the coordinate system.

There shall be three or more coordinates for a `Cartesian_point`.

4.2.38 Certification

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A Certification is a certificate for an object.

The data associated with a Certification are the following:

- certification_type;
- is_applied_to;
- name;
- purpose.

4.2.38.1 certification_type

The certification_type specifies the kind of certification.

EXAMPLE 'supplier certificate' is an example for the certification_type.

4.2.38.2 is_applied_to

The is_applied_to specifies the object that the certificate is applied to.

Each is_applied_to may be one of the following: Device (see 4.2.88), Item_version (see 4.2.182), Item_version_relationship (see 4.2.183), or Supplier_solution (see 4.2.334).

See 4.3.314, 4.3.315, 4.3.316, and 4.3.317 for the application assertions.

4.2.38.3 name

The name specifies the word or group of words by which the Certification is referred to.

4.2.38.4 purpose

The purpose specifies the objective of the Certification.

The purpose need not be specified for a particular Certification.

4.2.39 Chained_dimension_pair

A Chained_dimension_pair is a type of Dimension_sequence_pair (see 4.2.97) that is the relationship between two dimensions in which the terminus of one dimension initializes the next dimension in the sequence.

4.2.40 Class_category_association

A Class_category_association is the assignment of a Specification_category (see 4.2.324) to a Product_class (see 4.2.263). Additionally, this assignment specifies if the usage of one or more Specification (see 4.2.323) objects belonging to this Specification_category (see 4.2.324) is mandatory or optional for all products of that Product_class (see 4.2.263).

NOTE 1 In the case of a strict family concept for Specification_category (see 4.2.324) objects, this Class_category_association specifies that the usage of one Specification (see 4.2.323) of this Specification_category (see 4.2.324) is mandatory for all products of that Product_class (see 4.2.263). If no strict family concept for Specification_category (see 4.2.324) objects is used, this Class_category_association specifies that the usage of one or more Specification (see 4.2.323) objects of this Specification_category (see 4.2.324) is mandatory or optional for products of that Product_class (see 4.2.263).

NOTE 2 The assignment of a Specification_category (see 4.2.324) to a Product_class (see 4.2.263) cannot replace the association of single members of the Specification_category (see 4.2.324) to the Product_class (see 4.2.263).

The data associated with an Class_category_association are the following:

- associated_category;
- associated_product_class;
- mandatory.

4.2.40.1 associated_category

The associated_category specifies the Specification_category (see 4.2.324) that is associated with the Product_class (see 4.2.263).

See 4.3.319 for the application assertion.

4.2.40.2 associated_product_class

The associated_product_class specifies the Product_class (see 4.2.263) for which the Specification_category (see 4.2.324) is valid.

See 4.3.318 for the application assertion.

4.2.40.3 mandatory

The mandatory specifies whether or not one or more Specification (see 4.2.323) objects have to be used for products within the referenced Product_class (see 4.2.263). Nonmandatory Specification (see 4.2.323) objects are considered to be optional.

EXAMPLE The specification category 'radio' may be associated optional to the product class of a car; the specification category 'engine' is an example for a mandatory association.

4.2.41 Class_condition_association

A Class_condition_association is the relation between a Specification_expression (see 4.2.326) and a Product_class (see 4.2.263). This relationship contains the information that a particular Specification_expression (see 4.2.326) is valid for all products of that product class.

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The data associated with a `Class_condition_association` are the following:

- `associated_condition`;
- `associated_product_class`;
- `condition_type`;
- `description`.

4.2.41.1 `associated_condition`

The `associated_condition` specifies the `Specification_expression` (see 4.2.326) that is assigned to the `Product_class` (see 4.2.263).

See 4.3.321 for the application assertion.

4.2.41.2 `associated_product_class`

The `associated_product_class` specifies the `Product class` for which the `Specification_expression` (see 4.2.326) is valid.

See 4.3.320 for the application assertion.

4.2.41.3 `condition_type`

The `condition_type` specifies the meaning of the association. The value is either user defined or predefined.

The predefined value of `condition_type` is one of the following:

- `design case`;
- `identification`;
- `part usage`;
- `validity`.

NOTE See 4.2.41.3.1 - 4.2.41.3.3 for the definition of each predefined value for `condition_type`.

4.2.41.3.1 `design case`

`design case`: The `Specification_expression` (see 4.2.326) specifies a condition when a given object has to be designed and verified. This value of the `condition_type` is for information only and shall not be interpreted when querying design cases or usage cases. For such a query, the value of the attribute '`configuration_type`' of `Configuration` (see 4.2.56) shall be evaluated;

NOTE This value may be used to precise when a given Functionality (see 4.2.155) or a given Product_component (see 4.2.265) has to be studied by the design department so that it provides solutions appropriate for the case specified by 'associated_condition' and 'associated_product_class'.

4.2.41.3.2 identification

identification: The Specification_expression (see 4.2.326) specifies a condition that enables one to distinguish the associated Product_class (see 4.2.263) from other Product_class (see 4.2.263) objects. For a top-level node in a hierarchy of Product_class (see 4.2.263) objects, this value is not applicable. This identification is part of the identification of all subclasses of this product class;

4.2.41.3.3 part usage

part usage: The Specification_expression (see 4.2.326) specifies a condition for the usage of the components of an Alternative_solution (see 4.2.12) in the products of the associated Product_class (see 4.2.263). In this case, the Class_condition_association shall be referenced by at least one Configuration (see 4.2.56) object;

4.2.41.3.4 validity

validity: The Specification_expression (see 4.2.326) specifies a condition that is used to verify a Product_specification (see 4.2.269) for the associated Product_class (see 4.2.263). That means that the Specification_expression (see 4.2.326) evaluates to 'true' if the set of Specification (see 4.2.323) objects is valid; otherwise it evaluates to 'false' with the meaning that the specified object is invalid for the Product_class (see 4.2.263). It is valid for all products belonging to the 'associated_product_class' in case of the condition types 'identification' and 'validity'.

4.2.41.4 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Class_condition_association.

The description need not be specified for a particular Class_condition_association.

4.2.42 Class_inclusion_association

A Class_inclusion_association is the assignment of a Specification_inclusion (see 4.2.327) to a Product_class (see 4.2.263). This assignment contains the information that a particular Specification_inclusion (see 4.2.327) applies for all products of that Product_class (see 4.2.263).

The data associated with a Class_inclusion_association are the following:

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- associated_inclusion;
- associated_product_class;
- description.

4.2.42.1 associated_inclusion

The associated_inclusion specifies the Specification_inclusion (see 4.2.327) that is associated with the Product_class (see 4.2.263).

See 4.3.323 for the application assertion.

4.2.42.2 associated_product_class

The associated_product_class specifies the Product_class (see 4.2.263) for which the Specification_inclusion (see 4.2.327) is valid.

See 4.3.322 for the application assertion.

4.2.42.3 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Class_inclusion_association.

The description need not be specified for a particular Class_inclusion_association.

4.2.43 Class_reference

A Class_reference specifies the information that is required to retrieve a General_classification (see 4.2.156) object from a library compliant to ISO 13584-42.

NOTE 1 The library shall be compliant to the type referred within the 'type_of_repository' attribute.

NOTE 2 The library is not necessarily available in computer interpretable form.

EXAMPLE 1 A library available in paper form.

The data associated with a Class_reference are the following:

- code;
- supplier;
- type_of_repository;
- version.

4.2.43.1 code

The code specifies an identifier for the General_classification (see 4.2.156) object within the repository. The format of this code is defined in ISO 13584-42.

NOTE 3 The repository referred within the 'type_of_repository' attribute may impose further restrictions on the content of this attribute.

4.2.43.2 supplier

The supplier specifies the source of the repository. The format of this specification is defined in ISO 13584-26.

NOTE 4 The repository referred within the 'type_of_repository' attribute may impose further restrictions on the content of this attribute.

4.2.43.3 type_of_repository

The type_of_repository specifies the kind of repository. The content of the attributes of Class_-reference and, if present, the associated Property_reference (see 4.2.275) object shall follow the syntax specified by type_of_repository. The value is either user defined or predefined.

NOTE 5 In case when the attribute value is user defined the library shall still conform to ISO 13584.

EXAMPLE A company specific library 'RETSUA' that conforms to ISO 13584.

The predefined value of type_of_repository is one of the following:

- iec 61360 library;
- iso 13584 library.

NOTE See 4.2.43.3.1 - 4.2.43.3.2 for the definition of each predefined value for type_of_repository.

4.2.43.3.1 iec 61360 library

iec 61360 library: The repository shall conform to IEC 61360.

NOTE 6 Libraries that conform to IEC 61360 add further restrictions to ISO 13584.

4.2.43.3.2 iso 13584 library

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iso 13584 library: The repository shall conform to ISO 13584.

4.2.43.1 version

The version specifies the variant of the entry in the repository.

NOTE 7 The repository referred within the 'type_of_repository' attribute may impose certain restrictions on the content of this attribute.

4.2.44 Class_specification_association

A `Class_specification_association` is the relation between a `Specification` (see 4.2.323) and a `Product_class` (see 4.2.263). This `Specification` (see 4.2.323) serves as a potential characteristic of all products belonging to the product class.

The data associated with a `Class_specification_association` are the following:

- `associated_product_class`;
- `associated_specification`;
- `association_type`.

4.2.44.1 associated_product_class

The `associated_product_class` specifies the `Product_class` (see 4.2.263) for which the `Specification` (see 4.2.323) is valid.

See 4.3.324 for the application assertion.

4.2.44.2 associated_specification

The `associated_specification` specifies the `Specification` (see 4.2.323) that is associated with the `Product_class` (see 4.2.263).

See 4.3.325 for the application assertion.

4.2.44.3 association_type

The `association_type` specifies the kind of availability of a particular `Specification` (see 4.2.323) in a `Product_class` (see 4.2.263). The value is either user defined or predefined.

The predefined value of `association_type` is one of the following:

- availability;
- identification;
- non replaceable standard;
- part usage;
- option;
- replaceable standard.

NOTE See 4.2.44.3.1 - 4.2.44.3.5 for the definition of each predefined value for `association_type`.

4.2.44.3.1 availability

availability: The Specification (see 4.2.323) is a potential characteristic of any product belonging to a high-level Product class. It is not specified if this is an option or a standard.

4.2.44.3.2 identification

identification: The Specification (see 4.2.323) is the characteristic that enables to distinguish the associated Product_class (see 4.2.263) from other Product_class (see 4.2.263) objects. This is a kind of 'non replaceable standard'. For a top-level node in a hierarchy of Product_class (see 4.2.263) objects this value shall not be applied. This identification is part of the identification of all subclasses of this Product_class (see 4.2.263).

4.2.44.3.3 non replaceable standard

non replaceable standard: The Specification (see 4.2.323) is a characteristic of any product belonging to the product class.

EXAMPLE The specification 'South East Asia climate zone' is a 'non replaceable standard' for a system with market context 'Japan'.

4.2.44.3.4 part usage

part usage: The Specification (see 4.2.323) is a characteristic for the usage of the components of an Alternative_solution (see 4.2.12) or the usage of an Device (see 4.2.88) in the products of the associated Product_class (see 4.2.263).

4.2.44.3.5 option

option: The Specification (see 4.2.323) is a characteristic of a product if explicitly chosen. The Specification (see 4.2.323) replaces another Specification (see 4.2.323) of the same specification category if the replaced Specification (see 4.2.323) is associated with the Product class as 'replaceable standard'.

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4.2.44.3.6 replaceable standard

replaceable standard: The Specification (see 4.2.323) is a default characteristic of the products belonging to the Product_class (see 4.2.263) as long as no other specification of the same specification category is chosen;

4.2.45 Class_structure_relationship

A Class_structure_relationship is the mechanism to state that the related application object is a means for fulfilling partially or fully the requirements of the relating Product_class (see 4.2.263) or that the related application object is an element of the functional structure of the relating Product_class (see 4.2.263).

The data associated with a Class_structure_relationship are the following:

- description;
- related;
- relating;
- relation type.

4.2.45.1 description

The description specifies additional information about the Class_structure_relationship.

The description need not be specified for a particular Class_structure_relationship.

4.2.45.2 related

The related specifies the Product_component (see 4.2.265) or Single_function_unit (see 4.2.315) object related by the Class_structure_relationship.

Each related may be one of the following: Function_definition (see 4.2.145) or Product_component (see 4.2.265).

See 4.3.326 and 4.3.328 for the application assertions.

4.2.45.3 relating

The relating specifies the Product_class (see 4.2.263) object related by the Class_structure_relationship.

See 4.3.327 for the application assertion.

4.2.45.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- `functionality`;
- `realization`.

NOTE See 4.2.45.4.1 - 4.2.45.4.2 for the definition of each permissible value for `relation_type`.

4.2.45.4.1 `functionality`

`functionality`: The related `Single_function_unit` (see 4.2.315) is an element of the functional structure of the relating `Product_class` (see 4.2.263).

4.2.45.4.2 `realization`

`realization`: The related `Product_component` (see 4.2.265) is a means for fulfilling, partially or fully, the requirements identified with the relating `Product_class` (see 4.2.263).

4.2.46 `Classification_association`

The `Classification_association` is the relation between the classification information and the item that is to be categorized. The purpose of this relationship is specified by the content of the attribute role.

The data associated with a `Classification_association` are the following:

- `classification`;
- `classified_element`;
- `definitional`;
- `role`.

4.2.46.1 `classification`

The `classification` specifies the `General_classification` (see 4.2.156).

See 4.3.352 for the application assertion.

4.2.46.2 `classified_element`

The `classified_element` specifies the item that is categorized through the related `General_classification` (see 4.2.156).

Each `classified_element` may be one of the following: `Activity` (see 4.2.1), `Activity_method` (see 4.2.3), `Annotation_subfigure_definition` (see 4.2.18), `Approval` (see 4.2.23), `Approval_status` (see 4.2.25), `Complex_product` (see 4.2.51), `Connectivity_definition` (see 4.2.61), `Contract` (see 4.2.63), `Data_element` (see 4.2.70), `Data_element_association` (see 4.2.71), `Data_element_definition` (see 4.2.72), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_version` (see 4.2.114), `Drawing` (see 4.2.119), `Drawing_sheet` (see 4.2.122), `Function_definition` (see 4.2.145), `Function_unit` (see 4.2.148), `Function_version` (see 4.2.150), `Functional_connectivity_definition` (see 4.2.152), `Functionality` (see 4.2.155), `Interface_port` (see 4.2.171), `Interface_terminal` (see 4.2.174), `Item` (see 4.2.178), `Item_version` (see

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4.2.182), Location (see 4.2.192), Path (see 4.2.232), Path_node (see 4.2.233), Port (see 4.2.247), Product_class (see 4.2.263), Product_identification (see 4.2.268), Project (see 4.2.271), Requirement (see 4.2.285), Route (see 4.2.290), Section (see 4.2.296), Section_interface (see 4.2.298), Security_level (see 4.2.302), Signal (see 4.2.309), Specification_category (see 4.2.324), Terminal (see 4.2.338), Typical_schematic_node (see 4.2.347), User_defined_symbol_definition (see 4.2.355), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.329, 4.3.330, 4.3.331, 4.3.332, 4.3.333, 4.3.334, 4.3.335, 4.3.336, 4.3.337, 4.3.338, 4.3.339, 4.3.340, 4.3.341, 4.3.342, 4.3.343, 4.3.344, 4.3.345, 4.3.346, 4.3.347, 4.3.348, 4.3.349, 4.3.350, 4.3.351, 4.3.353, 4.3.354, 4.3.355, 4.3.356, 4.3.357, 4.3.358, 4.3.359, 4.3.360, 4.3.361, 4.3.362, 4.3.363, 4.3.364, 4.3.365, 4.3.366, 4.3.367, 4.3.368, 4.3.369, 4.3.370, 4.3.371, 4.3.372, 4.3.373, 4.3.374, and 4.3.375 for the application assertions.

4.2.46.3 definitional

The definitional specifies whether or not the General_classification (see 4.2.156) acts as an identifying characteristic of the item assigned by associated_classification.

NOTE If definitional is 'true', the General_classification (see 4.2.156) serves as an identification criterion for the associated item.

4.2.46.4 role

The role specifies the purpose of the General_classification (see 4.2.156). The value is either user defined or predefined.

The role need not be specified for a particular Classification_association. The role need not be specified for a particular Classification_association.

The predefined value of role is one of the following:

- electromagnetic compatibility;
- environmental conditions;
- flow direction;
- protection class.

NOTE See 4.2.46.4.1 - 4.2.46.4.4 for the definition of each predefined value for role.

4.2.46.4.1 electromagnetic compatibility

electromagnetic compatibility: The associated_classification is the classification that categorizes the classified element in respect of its ability to comply with requirements concerning electromagnetic interference.

4.2.46.4.2 environmental conditions

environmental conditions: The `associated_classification` is the classification that categorizes the classified element in respect of its ability to comply with requirements concerning its environmental surroundings.

NOTE Environmental conditions are classified in accordance to classification systems such as IEC 60721. Nonclassified data, such as the precise value of temperature, may be specified by using a `Data_element` (see 4.2.70).

4.2.46.4.3 flow direction

flow direction: The `associated_classification` is the classification that categorizes the classified element with respect to the flow of matter, energy, or information.

EXAMPLE 1 The assigned classification may give information whether the element acts as an input port, an output port, or a bi-directional port, etc.

4.2.46.4.4 protection class

protection class: The `associated_classification` is the classification that categorizes the classified element in respect of its ability to withstand environmental conditions. The protection of the environment from potentially hazardous circumstances within a piece of equipment can be also addressed by this classification.

EXAMPLE 2 Protection from electrical shock, vibration, humidity, etc.

EXAMPLE 3 IEC 60529 specifies a classification for the degree of protection provided by enclosures.

NOTE To specify the protection class that is requested in a specific environment a Requirement (see 4.2.285) may be associated to the classified element.

4.2.47 Classification_attribute

A `Classification_attribute` is a characteristic used to classify an item associated with the corresponding `General_classification` (see 4.2.156).

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The data associated with a Classification_attribute are the following:

- allowed_value;
- associated_classification;
- attribute_definition;
- description;
- id;
- name.

4.2.47.1 allowed_value

The allowed_value specifies the set of Data_element (see 4.2.70) objects that represent characteristic values of the Classification_attribute.

See 4.3.376 for the application assertion.

4.2.47.2 associated_classification

The associated_classification specifies the General_classification (see 4.2.156) the Classification_attribute is a characteristic of.

See 4.3.378 for the application assertion.

4.2.47.3 attribute_definition

The attribute_definition specifies the Data_element_definition (see 4.2.72) that characterizes the allowed values.

NOTE The specification of compound characteristics can be realized by using Data_element_relationship (see 4.2.74) with relation_type 'peer' or 'decomposition'.

See 4.3.377 for the application assertion.

4.2.47.4 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Classification_attribute.

The description need not be specified for a particular Classification_attribute.

4.2.47.5 id

The id specifies the identifier of the Classification_attribute.

EXAMPLE The names 'a' or 'b' for length or width attributes or 'r' for radius attributes are examples for identifiers of Classification_attribute objects. The meaning of such ids is usually specified in external sources.

4.2.47.6 name

The name specifies a speaking designation of the Classification_attribute.

The name need not be specified for a particular Classification_attribute.

4.2.48 Classification_system

A Classification_system is the scheme used to define the categorization of an item.

The data associated with a Classification_system are the following:

- description;
- id.

4.2.48.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Classification_system.

The description need not be specified for a particular Classification_system.

4.2.48.2 id

The id specifies the identifier of the Classification_system.

4.2.49 Coded_size

A Coded_size is a type of Rectangular_size (see 4.2.282) that is the specification of the paper size of a sheet in an abbreviated form.

EXAMPLE Examples for Coded_size information are 'A4' or 'B5'.

The data associated with a Coded_size are the following:

- size;
- referenced_standard.

4.2.49.1 size

The size specifies the information for the drawing sheet limits.

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NOTE If the largeness differs from the dimensions specified by the `Rectangular_area` (see 4.2.281) object, which is associated through `Rectangular_size` (see 4.2.282), the dimensions specified through `Rectangular_area` (see 4.2.281) apply.

4.2.49.2 referenced_standard

The `referenced_standard` specifies the normative basis that gives information how to interpret the size information.

See 4.3.379 for the application assertion.

4.2.50 Colour

A `Colour` is a characteristic of visual presentation that is the defined relationship between red, green, and blue proportions.

Each `Colour` is either a `Predefined_colour` (see 4.2.251) or a `User_defined_colour` (see 4.2.350).

4.2.51 Complex_product

A `Complex_product` is an object with the capability that it can be realized by, decomposed into or specialized as `Product_constituent` (see 4.2.266) objects in a functional, logical, or physical way. Each `Complex_product` stands for a specific version. The capability of providing different views of the same `Complex_product` or a version thereof is not supported.

Each `Complex_product` is either an `Alternative_solution` (see 4.2.12) or a `Product_component` (see 4.2.265).

The data associated with a `Complex_product` are the following:

- `id`;
- `version_id`.

4.2.51.1 id

The `id` specifies the identifier of the `Complex_product`.

4.2.51.2 version_id

The `version_id` specifies the identification of a particular version of a `Complex_product`.

The `version_id` need not be specified for a particular `Complex_product`.

4.2.52 Complex_product_relationship

A `Complex_product_relationship` is a relationship between two `Complex_product` (see 4.2.51) objects. The `Complex_product_relationship` shall only be used to relate `Complex_product` (see 4.2.51) objects that are of the same kind.

The data associated with a `Complex_product_relationship` are the following:

- description;
- related;
- relating;
- `relation_type`.

4.2.52.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Complex_product_relationship`.

The description need not be specified for a particular `Complex_product_relationship`.

4.2.52.2 related

The related specifies the second of the two objects related by the `Complex_product_relationship`.

NOTE The semantics of this attribute are defined by the attribute `relation_type`.

See 4.3.380 for the application assertion.

4.2.52.3 relating

The relating specifies the first of the two objects related by the `Complex_product_relationship`.

NOTE The semantics of this attribute are defined by the attribute `relation_type`.

See 4.3.381 for the application assertion.

4.2.52.4 `relation_type`

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- derivation;
- substitution;
- version hierarchy;
- version sequence.

NOTE 1 See 4.2.52.4.1 - 4.2.52.4.4 for the definition of each predefined value for `relation_type`.

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4.2.52.4.1 derivation

derivation: The `Complex_product_relationship` defines a relationship where the related `Complex_product` (see 4.2.51) is derived from the relating `Complex_product` (see 4.2.51);

NOTE 2 The relationship does not imply inheritance of any kind between the application objects that are related.

4.2.52.4.2 redundancy

redundancy: The `Complex_product_relationship` defines a relationship where the related `Complex_product` (see 4.2.51) is replicated by the relating `Complex_product` (see 4.2.51).

EXAMPLE 1 To provide for a fail-safe service a `Product_component` (see 4.2.265) is replicated. If one `Product_component` (see 4.2.265) fails, the other is still in service.

4.2.52.4.3 substitution

substitution: The `Complex_product_relationship` defines a relationship where the related `Complex_product` (see 4.2.51) replaces the relating `Complex_product` (see 4.2.51).

4.2.52.4.4 version hierarchy

version hierarchy: The `Complex_product_relationship` defines a relationship where the related `Complex_product` (see 4.2.51) is a sub version of the relating `Complex_product` (see 4.2.51);

EXAMPLE 2 'version hierarchy' is used, whenever a revision of one particular version is prepared, e.g., 'version 1.1'.

4.2.52.4.5 version sequence

version sequence: The `Complex_product_relationship` defines a relationship where the relating `Complex_product` (see 4.2.51) is the preceding version and the related `Complex_product` (see 4.2.51) is the following version.

NOTE 3 The relationship does not imply inheritance of any kind between the application objects that are related.

EXAMPLE 3 'version sequence' is used, whenever a new version is prepared, e.g., 'version 1.0' is the preceding version for the following 'version 2.0'.

4.2.53 Component_colour

A `Component_colour` is the sensation produced on the eye by rays of light reflected or emitted by the body of a piece of equipment.

The data associated with a `Component_colour` are the following:

- `coding_system`;
- `colour_id`.

4.2.53.1 `coding_system`

The `coding_system` specifies the method that shall be applied to interpret the content of the '`colour_id`' attribute.

The `coding_system` need not be specified for a particular `Component_colour`.

See 4.3.382 for the application assertion.

4.2.53.2 `colour_id`

The `colour_id` specifies uniquely the identity of the colour `coding_system` that is within scope of this part of ISO 10303.

4.2.54 `Component_placement`

A `Component_placement` is the information pertaining to the placement of a `Product_component` (see 4.2.265), which is defined in its own coordinate space, in the coordinate space of a reference `Product_component` (see 4.2.265).

EXAMPLE An example for the use of a `Component_placement` is the placement of the `Product_component` (see 4.2.265) 'motor control centre' dependent on requirements of the customer.

The data associated with a `Component_placement` are the following:

- `placed_component`;
- `transformation`;
- `reference_product_component`.

4.2.54.1 `placed_component`

The `placed_component` applies only to objects that are unambiguously placed in the context of the `placed_component`.

NOTE The `Component_placement` does not define a placement for all variants of the `placed_component` in the context of '`reference_product_component`'.

See 4.3.383 for the application assertion.

4.2.54.2 `transformation`

The `transformation` specifies the placement of the `placed Product_component` (see 4.2.265).

4.2.54.3 reference_product_component

The `reference_product_component` specifies the high level `Product_component` (see 4.2.265) that is defined in the reference coordinate space.

See 4.3.384 for the application assertion.

4.2.55 Composition_relationship

A `Composition_relationship` is the relation that specifies that a `Function_definition` (see 4.2.145) consists of `Function_unit` (see 4.2.148) objects.

The data associated with a `Composition_relationship` are the following:

- `composed_function`;
- `functional_component`.

4.2.55.1 composed_function

The `composed_function` specifies a `Function_definition` (see 4.2.145) that is composed of `Function_unit` (see 4.2.148) objects.

See 4.3.385 for the application assertion.

4.2.55.2 functional_component

The `functional_component` specifies the `Function_unit` (see 4.2.148) that is a constituent of the `Function_definition` (see 4.2.145) object specified by `composed_function`.

See 4.3.386 for the application assertion.

4.2.56 Configuration

A `Configuration` is the association of a `Class_condition_association` (see 4.2.41) or a `Class_specification_association` (see 4.2.44) object with an application object in order to define a valid usage of this application object in the context of a certain `Product_class` (see 4.2.263). The validity of the association may be limited by effectivity information.

EXAMPLE The validity of the association may be limited by a time period through assigning an Effectivity (see 4.2.127) object to it.

NOTE The semantics of the kind of association is defined by the attributes `configuration_type` and `inheritance_type`.

The data associated with a Configuration are the following:

- `configuration_type`;
- `configured_element`;
- `inheritance_type`;
- `is_solution_for`.

4.2.56.1 `configuration_type`

The `configuration_type` specifies the valid usage of a Configuration object that is applied to the application object as configured element.

The value of `configuration_type` is one of the following:

- `design`;
- `usage`.

NOTE See 4.2.56.1.1 - 4.2.56.1.2 for the definition of each permissible value for `configuration_type`.

4.2.56.1.1 `design`

`design`: The item referenced as configured element has to be designed and checked before it can actually be used in a given context. This context is specified by the `Class_condition_association` (see 4.2.41) and `Class_specification_association` (see 4.2.44) objects referenced as the `is_solution_for`.

4.2.56.1.2 `usage`

`usage`: The item referenced as the configured element is controlled by a Configuration. The `Class_condition_association` (see 4.2.41) and `Class_specification_association` (see 4.2.44) objects specify the use cases and are referenced as the `is_solution_for`.

4.2.56.2 `configured_element`

The `configured_element` specifies the application object that is controlled for its valid usage by the Configuration.

Each `configured_element` may be one of the following: `Complex_product` (see 4.2.51), `Connectivity_definition` (see 4.2.61), `Device` (see 4.2.88), `Function_unit` (see 4.2.148), `Functional_connectivity_definition` (see 4.2.152), `Location` (see 4.2.192), or `Signal` (see 4.2.309).

See 4.3.389, 4.3.390, 4.3.391, 4.3.392, 4.3.393, 4.3.394, and 4.3.395 for the application assertions.

4.2.56.3 inheritance_type

The inheritance_type specifies whether or not an inheritance scheme for the configuration information in a hierarchical structure is applied to the application object referenced as the configured element. The levels within such a hierarchy are defined through Product_structure_-relationship (see 4.2.270) objects or the attribute 'base_element' of Alternative_solution (see 4.2.12).

The value of inheritance_type is one of the following:

- exception;
- inherited;
- local.

NOTE See 4.2.56.3.1 - 4.2.56.3.3 for the definition of each permissible value for inheritance_type.

4.2.56.3.1 exception

exception: No inheritance scheme is applicable and all required configuration information must be attached locally to the application object. The value indicates that the configuration information may be inconsistent to the structural levels above it or is on purpose contradictory to it. Therefore an inheritance scheme shall not continue beyond this point in the product structure tree.

EXAMPLE 1 A situation when the inheritance_type 'exception' is applicable is a strike or some other disturbance unaccounted for in the current planning.

4.2.56.3.2 inherited

inherited: A scheme for inheritance of configuration information applies. The complete configuration information shall be collected from the different levels in the structure by evaluation of results through AND combination of configuration information starting at the referenced configured element and OR combination for alternatives plus additional evaluation of effectivity information. The attribute value 'inherited' only applies for items for which the same value of configuration_type is defined.

EXAMPLE 2 Figure 8 shows how inheritance is applied along the tree of a product structure: The complete configuration information of a Device (see 4.2.88) can be obtained by adding any such information to Alternative_solution (see 4.2.12) objects which are linked through Solution_instance_assignment (see 4.2.318) objects and 'base_element' attributes respectively. Whenever more than one higher level instance is present, the current information available is branched in as many branches as instances are present. For example, the total configuration information for the Device (see 4.2.88) given in Figure 8 could be expressed as follows: (C0.0 AND C1.0 AND C2.0) OR (C0.0 AND C1.1 AND C2.1) OR (C0.0 AND C1.1 AND C2.2).

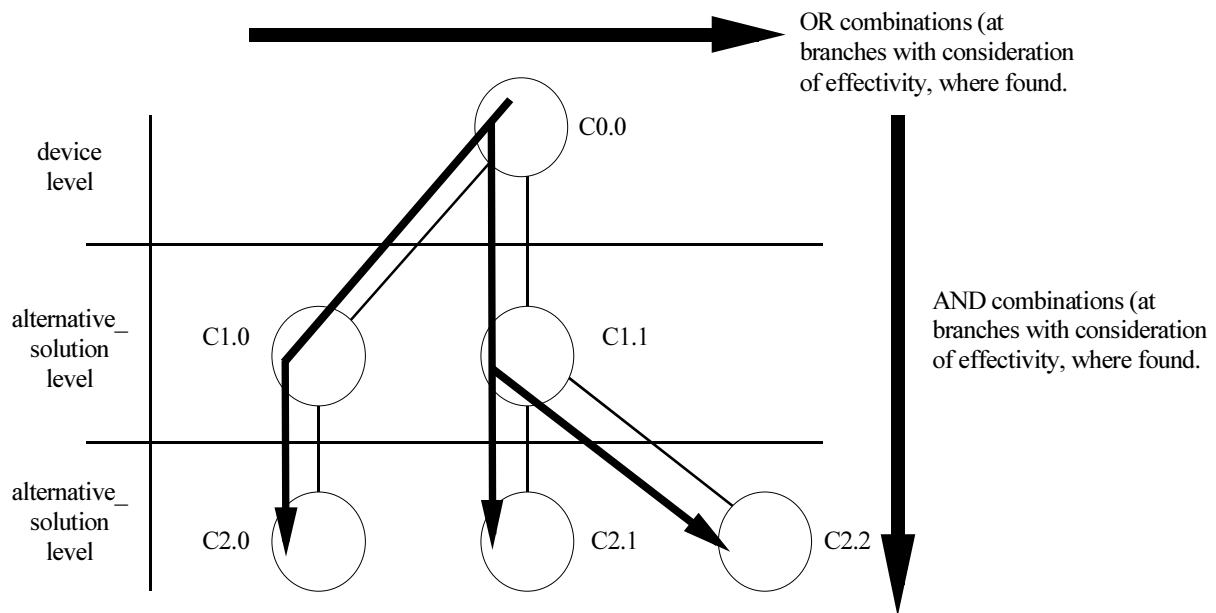


Figure 8 - Configuration inheritance scheme

4.2.56.3.3 local

local: No inheritance scheme is applicable and all required configuration information must be attached locally at the application object. Nevertheless, any potentially inherited configuration information of a higher level shall be consistent, i.e., be a subset of the locally defined configuration information;

4.2.56.4 is_solution_for

The `is_solution_for` specifies the characteristics for which the item referenced as configured element provides a solution. The characteristics are described by a `Class_specification_association` (see 4.2.44). Combinations of characteristics are defined by a `Class_condition_association` (see 4.2.41) where the 'condition_type' attribute is 'part usage'.

Each `is_solution_for` may be one of the following: `Class_condition_association` (see 4.2.41) or `Class_specification_association` (see 4.2.44).

See 4.3.387 and 4.3.388 for the application assertions.

4.2.57 Connect_area

A `Connect_area` is the specification of the zone where the schematic terminal is allowed to be connected with other terminals or connecting lines.

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The data associated with a `Connect_area` are the following:

— `defined_by`.

4.2.57.1 `defined_by`

The `defined_by` specifies the borders of an area or a point that defines a zone where the schematic terminal is allowed to be connected with other terminals or connecting lines. That zone is sometimes addressed as the 'hot spot' of the connect node.

Each `defined_by` may be one of the following: `Curve_2d` (see 4.2.66) or `Point_2d` (see 4.2.245).

See 4.3.396 and 4.3.397 for the application assertions.

4.2.58 `Connecting_line`

A `Connecting_line` is the representation of a `Connection` (see 4.2.59) in a schematic diagram. It shall be used to present connectivity.

The data associated with a `Connecting_line` are the following:

— `presents`.

4.2.58.1 `presents`

The `presents` specifies the connectivity items the `Connecting_line` is displaying.

Each `presents` may be one of the following: `Connectivity_definition` (see 4.2.61) or `Functional_connectivity_definition` (see 4.2.152).

See 4.3.398 and 4.3.399 for the application assertions.

4.2.59 `Connection`

A `Connection` is a type of `Connectivity_definition` (see 4.2.61) that is a link between `Terminal` (see 4.2.338) objects with the intention to allow the flow of information, energy, or matter. `Connection` objects may be used to divide a network in portions that can be implemented by using a specified equipment.

NOTE 1 The connections represent the information that is normally given in connection tables.

NOTE 2 The internal structure of connection bundles can be specified by decomposing a Connection into its constituting Connection objects by assigning Connectivity_definition_-relationship (see 4.2.62) objects of relation_type 'decomposition'.

EXAMPLE 1 Implementing a network by using busbars may require another subdivision into Connection objects as if the network is to be implemented with cables.

EXAMPLE 2 In Figure 9 a cable is shown. Each pin of the cable is defined as a Terminal (see 4.2.338), and each wire in the cable is defined as a Connection. In this figure the five Connection objects are grouped. Connection 3 decomposes into Connection objects 1 and 2. Connection 1 decomposes into three Connection objects, Connection 2 consists of two Connection objects.

The data associated with a connection are the following:

— connected_terminal.

4.2.59.1 connected_terminal

The connected_terminal specifies the terminals interconnected by the Connection.

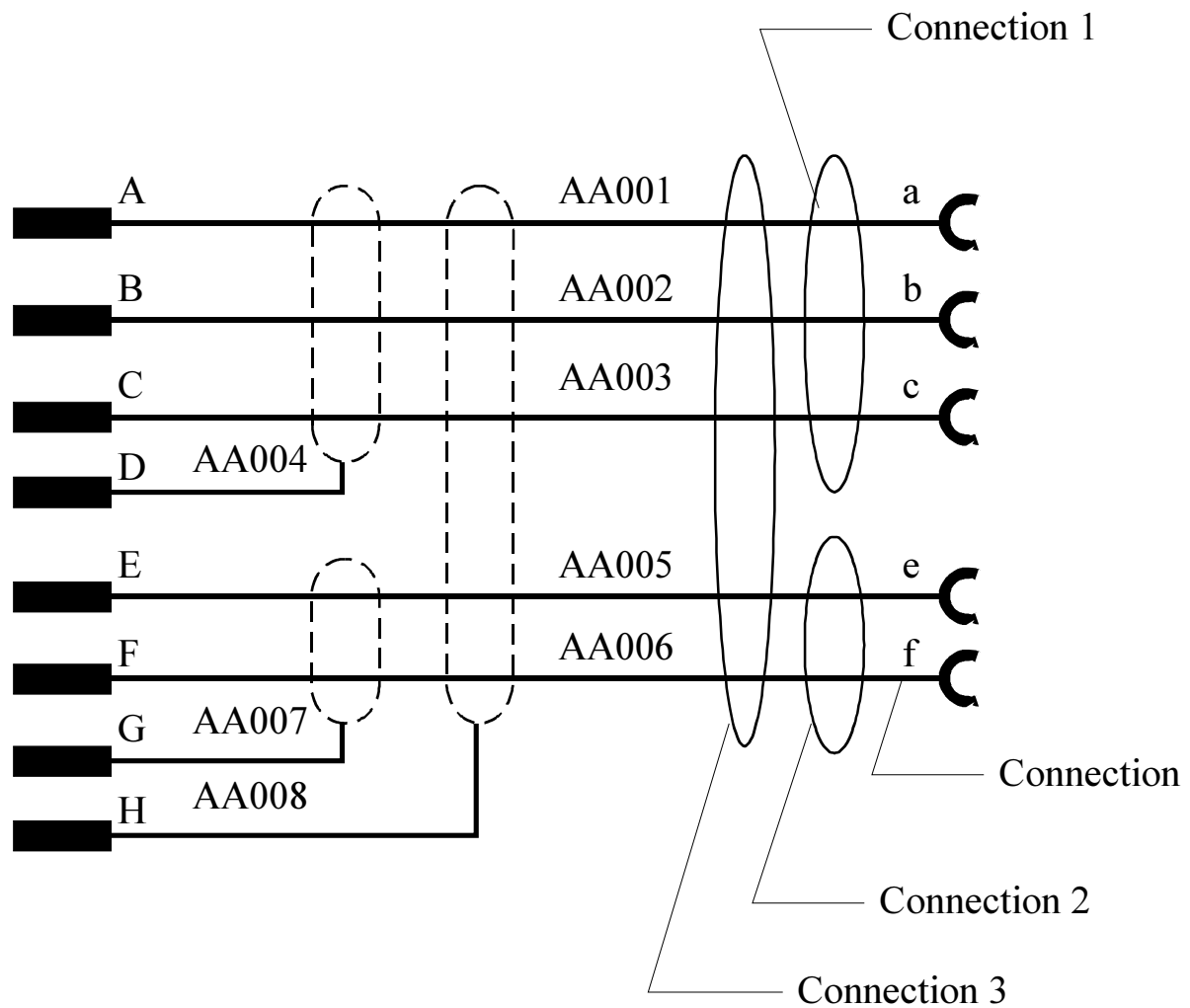


Figure 9 - Decomposition of Connection objects

See 4.3.400 for the application assertion.

4.2.60 Connectivity_allocation

A Connectivity_allocation is the relation that specifies the item selected to implement the specified Functional_connectivity_definition (see 4.2.152).

The data associated with a `Connectivity_allocation` are the following:

- `allocated_connectivity_definition`;
- `connectivity_implementation`;
- `description`.

4.2.60.1 allocated_connectivity_definition

The `allocated_connectivity_definition` specifies `Functional_connectivity_definition` (see 4.2.152) objects or `Device` (see 4.2.88) objects that are assigned by the `Connectivity_allocation` to `Connectivity_definition` (see 4.2.61) objects.

See 4.3.404 for the application assertion.

4.2.60.2 connectivity_implementation

The `connectivity_implementation` specifies `Connectivity_definition` (see 4.2.61) elements that are assigned to `Functional_connectivity_definition` (see 4.2.152) elements or `Device` (see 4.2.88) objects.

Each `connectivity_implementation` may be one of the following: `Connectivity_definition` (see 4.2.61), `Device` (see 4.2.88), `Function_unit` (see 4.2.148), or `Physical_instance` (see 4.2.243).

See 4.3.401, 4.3.402, 4.3.403, and 4.3.405 for the application assertions.

4.2.60.3 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Connectivity_allocation`.

The `description` need not be specified for a particular `Connectivity_allocation`.

4.2.61 Connectivity_definition

A `Connectivity_definition` is the specification of the ability to enable a flow of information, energy, or material within a piece of equipment.

Each `Connectivity_definition` is either a `Connection` (see 4.2.59) or an `Interface_terminal_connection` (see 4.2.175).

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The data associated with a `Connectivity_definition` are the following:

- `connectivity_of`;
- `description`;
- `id`;
- `implemented_by`;
- `version_id`.

4.2.61.4 `connectivity_of`

The `connectivity_of` specifies the `Assembly_definition` (see 4.2.27) object whose internal connectivity is specified by the `Connectivity_definition`.

See 4.3.406 for the application assertion.

4.2.61.5 `description`

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Connectivity_definition`.

The `description` need not be specified for a particular `Connectivity_definition`.

4.2.61.6 `id`

The `id` specifies the identifier of the `Connectivity_definition`.

4.2.61.7 `implemented_by`

The `implemented_by` specifies the `Device` (see 4.2.88) objects that are used to accomplish the connectivity specified by `Connectivity_definition`.

Each `implemented_by` may be one of the following: `Device` (see 4.2.88) or `Physical_instance` (see 4.2.243).

See 4.3.407 and 4.3.408 for the application assertions.

4.2.61.8 `version_id`

The `version_id` specifies versioning information for the `Connectivity_definition`.

The `version_id` need not be specified for a particular `Connectivity_definition`.

4.2.62 `Connectivity_definition_relationship`

A `Connectivity_definition_relationship` is the relation between two `Connectivity_definition` (see 4.2.61) objects.

The data associated with an `Connectivity_definition_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.62.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Connectivity_definition_relationship`.

The `description` need not be specified for a particular `Connectivity_definition_relationship`.

4.2.62.2 related

The `related` specifies the second of the two `Connectivity_definition` (see 4.2.61) objects related by the `Connectivity_definition_relationship`.

See 4.3.409 for the application assertion.

4.2.62.3 relating

The `relating` specifies the first of the two `Connectivity_definition` (see 4.2.61) objects related by the `Connectivity_definition_relationship`.

See 4.3.410 for the application assertion.

4.2.62.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- alternate;
- decomposition;
- derivation;
- redundancy;
- substitution;
- version hierarchy;
- version sequence.

NOTE 1 See 4.2.62.4.1 - 4.2.62.4.7 for the definition of each predefined value for `relation_type`.

4.2.62.4.1 alternate

alternate: The `Connectivity_definition_relationship` defines a relationship where the related `Connectivity_definition` (see 4.2.61) is a possible substitute to the relating `Connectivity_definition` (see 4.2.61).

NOTE 2 This concept refers to the possibility to replace the related `Connectivity_definition` (see 4.2.61). The actual replacement is addressed by 'substitution'.

4.2.62.4.2 decomposition

decomposition: The `Connectivity_definition_relationship` defines a relationship where the related `Connectivity_definition` (see 4.2.61) is one of the components into which the relating `Connectivity_definition` (see 4.2.61) is divided up.

4.2.62.4.3 derivation

derivation: The `Connectivity_definition_relationship` defines a deriving relationship where the related `Connectivity_definition` (see 4.2.61) is based on the relating `Connectivity_definition` (see 4.2.61).

4.2.62.4.4 redundancy

redundancy: The `Connectivity_definition_relationship` defines a relationship where the related `Connectivity_definition` (see 4.2.61) is replicated by the relating `Connectivity_definition` (see 4.2.61).

EXAMPLE To provide for a fail-safe link two connections are used to provide for the connectivity. If one connection fails, then the other is still in service.

4.2.62.4.5 substitution

substitution: The `Connectivity_definition_relationship` defines a relationship where the related `Connectivity_definition` (see 4.2.61) replaces the relating `Connectivity_definition` (see 4.2.61).

4.2.62.4.6 version hierarchy

version hierarchy: The `Connectivity_definition_relationship` defines a hierarchical relationship where the related `Connectivity_definition` (see 4.2.61) is a subversion of the relating `Connectivity_definition` (see 4.2.61).

EXAMPLE Revisions 1.1 and 1.2 of a `Connectivity_definition` (see 4.2.61).

4.2.62.4.7 version sequence

version sequence: The `Connectivity_definition_relationship` defines a succession of versions where the relating `Connectivity_definition` (see 4.2.61) is the preceding version, and the related `Connectivity_definition` (see 4.2.61) is the following version.

4.2.63 Contract

A Contract is the binding agreement that specifies the connection between the assigned parties.

The data associated with a Contract are the following:

- `contracted_element`;
- `description`;
- `id`.

4.2.63.1 contracted_element

The `contracted_element` specifies the work that is the subject of the Contract.

Each `contracted_element` may be one of the following: `Activity` (see 4.2.1), `Data_element` (see 4.2.70), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Function_definition` (see 4.2.145), `Function_unit` (see 4.2.148), `Function_version` (see 4.2.150), `Item_version` (see 4.2.182), `Location` (see 4.2.192), `Node` (see 4.2.208), `Notification` (see 4.2.213), `Path` (see 4.2.232), `Path_node` (see 4.2.233), `Physical_instance` (see 4.2.243), `Process_variable` (see 4.2.260), `Project` (see 4.2.271), `Route` (see 4.2.290), `Section` (see 4.2.296), `Section_end` (see 4.2.297), `Section_interface` (see 4.2.298), `Signal` (see 4.2.309), `Signal_value` (see 4.2.313), `Technical_system` (see 4.2.336), `Work_order` (see 4.2.364), or `Work_request` (see 4.2.365).

See 4.3.411, 4.3.412, 4.3.413, 4.3.414, 4.3.415, 4.3.416, 4.3.417, 4.3.418, 4.3.419, 4.3.420, 4.3.421, 4.3.422, 4.3.423, 4.3.424, 4.3.425, 4.3.426, 4.3.427, 4.3.428, 4.3.429, 4.3.430, 4.3.431, 4.3.432, 4.3.433, 4.3.434, and 4.3.435 for the application assertions.

4.2.63.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Contract.

The description need not be specified for a particular Contract.

4.2.63.3 id

The `id` specifies the identifier of the Contract.

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4.2.64 Cross_reference

A Cross_reference is an element that provides the reference from one part of a document to another.

Each Cross_reference is either a Detached_representation_reference (see 4.2.87), a Note_reference (see 4.2.212), or a Page_connector_reference (see 4.2.229).

4.2.65 Cross_section

A Cross_section is the transverse section of a solid.

The data associated with a Cross_section are the following:

— value_of_cross_section.

4.2.65.1 value_of_cross_section

The value_of_cross_section specifies the numerical value that represents the extent of the cross section.

See 4.3.436 for the application assertion.

4.2.66 Curve_2d

A Curve_2d is the path of a point moving in a two-dimensional coordinate space.

4.2.67 Curve_3d

A Curve_3d is the path of a point moving in a three-dimensional coordinate space.

4.2.68 Curve_appearance

A Curve_appearance is a type of Appearance (see 4.2.21) that governs the visual presentation of geometric curves and annotation curves.

The data associated with a Curve_appearance are the following:

- corner_styles;
- curve_colour;
- curve_ends;
- draughting_role;
- font;
- width.

4.2.68.1 corner_styles

The corner_styles specifies whether the appearance of an Annotation_curve (see 4.2.14) is squared or rounded at its corners.

The value of corner_styles is one of the following:

- round;
- square.

NOTE See 4.2.68.1.1 - 4.2.68.1.2 for the definition of each permissible value for relation_type.

4.2.68.1.1 round

round: The graphical presentation of a corner with corner_style round is shown in Figure 10.

4.2.68.1.2 square

square: The graphical presentation of a corner in a line with corner_style square is shown in Figure 10.



Figure 10 - Predefined corner styles

The `corner_styles` need not be specified for a particular `Curve_appearance`.

4.2.68.2 curve_colour

The `curve_colour` specifies the colour to be used for the presentation of a curve.

See 4.3.437 for the application assertion.

4.2.68.3 curve_ends

The `curve_ends` specifies whether the appearance of an `Annotation_curve` (see 4.2.14) is squared or rounded at its ends.

The value of `curve_ends` is one of the following:

- round;
- square.

NOTE See 4.2.68.3.1 - 4.2.68.3.2 for the definition of each permissible value for `curve_ends`.

4.2.68.3.1 round

round: The graphical presentation of a line with `curve_ends` of type round is shown in Figure 11.

4.2.68.3.2 square

square: The graphical presentation of a line with `curve_ends` of type square is shown in Figure 11.



squared end

round end

Figure 11 - Predefined curve end styles

The `curve_ends` need not be specified for a particular `Curve_appearance`.

4.2.68.4 draughting_role

The `draughting_role` specifies the purpose within a draughting for a particular curve appearance.

EXAMPLE A `draughting_role` could be a centreline or section line.

The `draughting_role` need not be specified for a particular `Curve_appearance`.

4.2.68.5 font

The `font` describes the style to be applied on the presentation of a curve.

See 4.3.438 for the application assertion.

4.2.68.6 width

The `width` specifies the thickness of the curve measured perpendicular to the direction of the curve.

4.2.69 Curve_dimension

A `Curve_dimension` is a type of `Dimension` (see 4.2.93) that is the graphical presentation of the value of the distance between two elements, measured along a curved path or the length of a curved element.

The data associated with a `Curve_dimension` are the following:

- `component`;
- `extent`.

4.2.69.1 component

The `component` specifies the projection lines that shows the extension of the points, lines, or surfaces that bound the measurement.

See 4.3.440 for the application assertion.

4.2.69.2 extent

The `extent` specifies the dimension line that graphically presents where the dimension value applies.

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See 4.3.439 for the application assertion.

4.2.70 Data_element

A Data_element is a technical or administrative property that may be used to characterize items or relationships between items. Data_element objects allow one to associate technical or administrative data to the product data.

NOTE 1 Data associated to distinct life cycle stages shall be associated to application objects that are related to Function_definition (see 4.2.145), Design_discipline_item_definition (see 4.2.86), or Product_component (see 4.2.265) objects with the appropriate Application_context (see 4.2.22) object assigned.

Each Data_element is either a Predefined_data_element (see 4.2.253) or a User_defined_data_element (see 4.2.351).

The data associated with a Data_element are the following:

- description;
- global_unit;
- qualifier;
- value_determination.

4.2.70.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Data_element.

The description need not be specified for a particular Data_element.

4.2.70.2 global_unit

The global_unit specifies a unit that is valid for all Value_with_unit (see 4.2.360) objects that are referenced by the Data_element.

The global_unit need not be specified for a particular Data_element.

4.2.70.3 qualifier

The qualifier specifies the interpretation of the value assigned to Data_element.

NOTE 2 The value is assigned through the 'value_of_data_element' attribute of User_defined_data_element (see 4.2.351) or by the 'data' attribute of Predefined_data_element (see 4.2.253).

The value of qualifier is one of the following:

- nominal;
- specified;
- typical.

NOTE 3 See 4.2.70.3.1 - 4.2.70.3.3 for the definition of each permissible value for qualifier.

4.2.70.3.1 nominal

nominal: The value assigned to Data_element represents a suitable approximate quantity value used to designate the assigned item.

4.2.70.3.2 specified

specified: The value assigned to Data_element represents the value as it is included in the specification. The actual value may differ from the specified value.

4.2.70.3.3 typical

typical: The value assigned to Data_element represents a value that is characteristic for that specific attribute under the circumstances the attribute is used.

The qualifier need not be specified for a particular Data_element.

4.2.70.4 value_determination

The value_determination specifies the kind of data given by Data_element. The value is either user defined or predefined.

The value_determination need not be specified for a particular Data_element. The value_determination need not be specified for a particular Data_element.

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The predefined value of value_determination is one of the following:

- calculated;
- designed;
- estimated;
- measured;
- required;
- setpoint.

NOTE 4 See 4.2.70.4.1 - 4.2.70.4.6 for the definition of each predefined value for value_determination.

4.2.70.4.1 **calculated**

calculated: The value has been calculated from a particular representation.

4.2.70.4.2 **designed**

designed: The value represents the value intended by the design.

4.2.70.4.3 **estimated**

estimated: The value has been estimated.

4.2.70.4.4 **measured**

measured: The value has been measured.

4.2.70.4.5 **required**

required: The value represents the requirement.

4.2.70.4.6 **setpoint**

setpoint: The value represents the quantity that is to be used as specified value.

4.2.71 **Data_element_association**

A Data_element_association is the assignment of a Data_element (see 4.2.70) to an item.

The data associated with a `Data_element_association` are the following:

- `associated_data_element`;
- `associated_item`;
- `definitional`;
- `description`;
- `data_element_context`.

4.2.71.1 associated_data_element

The `associated_data_element` specifies the `Data_element` (see 4.2.70) that is assigned to an item.

See 4.3.450 for the application assertion.

4.2.71.2 associated_item

The `associated_item` specifies the item that is described by the associated `Data_element` (see 4.2.70).

Each `associated_item` may be one of the following: `Activity` (see 4.2.1), `Assembly_component_relationship` (see 4.2.26), `Cable_pull_information` (see 4.2.33), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Connectivity_allocation` (see 4.2.60), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Device_relationship` (see 4.2.89), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_representation` (see 4.2.110), `Document_version` (see 4.2.114), `Drawing_sheet` (see 4.2.122), `Free_segment` (see 4.2.144), `Function_definition` (see 4.2.145), `Function_definition_relationship` (see 4.2.146), `Function_interface` (see 4.2.147), `Function_unit` (see 4.2.148), `Function_unit_relationship` (see 4.2.149), `Function_version` (see 4.2.150), `Functional_connectivity_definition` (see 4.2.152), `Functional_connectivity_definition_relationship` (see 4.2.153), `Functional_unit_allocation` (see 4.2.154), `Functionality` (see 4.2.155), `Generic_note` (see 4.2.159), `Interface` (see 4.2.170), `Interface_port` (see 4.2.171), `Interface_terminal` (see 4.2.174), `Item` (see 4.2.178), `Item_definition_relationship` (see 4.2.179), `Item_version` (see 4.2.182), `Location` (see 4.2.192), `Location_relationship` (see 4.2.194), `Marking` (see 4.2.199), `Node` (see 4.2.208), `Node_relationship` (see 4.2.209), `Notification` (see 4.2.213), `Offered_function_allocation` (see 4.2.220), `Path` (see 4.2.232), `Path_node` (see 4.2.233), `Physical_assembly_relationship` (see 4.2.241), `Physical_instance` (see 4.2.243), `Port` (see 4.2.247), `Port_allocation` (see 4.2.248), `Port_association` (see 4.2.249), `Preferred_item_allocation` (see 4.2.258), `Preferred_item_terminal_allocation` (see 4.2.259), `Process_variable` (see 4.2.260), `Product_class` (see 4.2.263), `Product_identification` (see 4.2.268), `Product_structure_relationship` (see 4.2.270), `Requirement` (see 4.2.285), `Route` (see 4.2.290), `Route_relationship` (see 4.2.291), `Routed_segment` (see 4.2.293), `Section` (see 4.2.296), `Section_end` (see 4.2.297), `Section_interface` (see 4.2.298), `Section_interface_relationship` (see 4.2.299), `Section_relationship` (see 4.2.300), `Signal` (see 4.2.309), `Signal_value` (see 4.2.313), `Technical_system` (see 4.2.336), `Technical_system_relationship` (see 4.2.337), `Terminal` (see 4.2.338), or `Work_order` (see 4.2.364).

See 4.3.441, 4.3.442, 4.3.443, 4.3.444, 4.3.445, 4.3.446, 4.3.447, 4.3.448, 4.3.449, 4.3.451, 4.3.452, 4.3.453, 4.3.454, 4.3.455, 4.3.456, 4.3.457, 4.3.458, 4.3.459, 4.3.460, 4.3.461, 4.3.462, 4.3.463, 4.3.464, 4.3.465, 4.3.466, 4.3.467, 4.3.468, 4.3.469, 4.3.470, 4.3.471, 4.3.472, 4.3.473, 4.3.474, 4.3.475, 4.3.476, 4.3.477, 4.3.478, 4.3.479, 4.3.480, 4.3.481, 4.3.482, 4.3.483, 4.3.485, 4.3.486,

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4.3.487, 4.3.488, 4.3.489, 4.3.490, 4.3.491, 4.3.492, 4.3.493, 4.3.494, 4.3.495, 4.3.497, 4.3.498, 4.3.499, 4.3.500, 4.3.501, 4.3.502, 4.3.503, 4.3.504, 4.3.505, 4.3.506, 4.3.507, 4.3.508, 4.3.509, 4.3.510, 4.3.512, 4.3.513, and 4.3.514 for the application assertions.

4.2.71.3 definitional

The definitional specifies whether or not the associated `Data_element` (see 4.2.70) acts as an identifying characteristic of the item assigned by `associated_item`.

4.2.71.4 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the `Data_element_association`.

The description need not be specified for a particular `Data_element_association`.

4.2.71.5 data_element_context

The `data_element_context` specifies an environment for which the `Data_element_association` is valid.

The `data_element_context` need not be specified for a particular `Data_element_association`.

Each `data_element_context` may be one of the following: `Organization` (see 4.2.223), `Product_class` (see 4.2.263), or `Technical_system` (see 4.2.336).

See 4.3.484, 4.3.496, and 4.3.511 for the application assertions.

4.2.72 Data_element_definition

A `Data_element_definition` is the composition of the information that specifies the meaning of the `Data_element` (see 4.2.70).

The data associated with an `Data_element_definition` are the following:

- `admitted_qualifier`;
- `allowed_unit`;
- `description`;
- `id`;
- `source`;
- `version_id`.

4.2.72.1 admitted_qualifier

The `admitted_qualifier` specifies the permitted level that the data element which is associated to the `Data_element_definition` may possess.

NOTE 1 If present, only the levels specified by the 'admitted_qualifier' attribute may occur in the corresponding Data_element (see 4.2.70) object.

The value of admitted_qualifier is one of the following:

- nominal;
- specified;
- typical.

NOTE 2 See 4.2.72.1.1 - 4.2.72.1.5 for the definition of each permissible value for admitted_qualifier.

4.2.72.1.1 nominal

nominal: The associated value represents a suitable approximate quantity used to designate an item.

4.2.72.1.2 specified

specified: The associated value represents the value as it is included in the specification. The actual value may differ from the specified value.

4.2.72.1.3 typical

typical: The associated value represents the value that is characteristic for that specific attribute under the circumstances the attribute is used.

4.2.72.2 allowed_unit

The allowed_unit specifies the units the data element which is associated to the Data_element_definition may possess.

NOTE If present, only the units specified by the 'allowed_unit' attribute may occur in the corresponding Data_element (see 4.2.70) object.

There shall be zero, one or more allowed_unit for a Data_element_definition.

4.2.72.3 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Data_element_definition.

The description need not be specified for a particular Data_element_definition.

4.2.72.4 id

The id specifies the identifier of the Data_element_definition.

4.2.72.5 source

The source specifies the query information to retrieve the Data_element_definition from a repository.

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The source need not be specified for a particular `Data_element_definition`.

Each source may be one of the following: `External_library_reference` (see 4.2.132) or `Property_reference` (see 4.2.275).

See 4.3.515 and 4.3.516 for the application assertions.

4.2.72.6 version_id

The `version_id` specifies versioning information for the `Data_element_definition`.

The `version_id` need not be specified for a particular `Data_element_definition`.

4.2.73 Data_element_definition_relationship

A `Data_element_definition_relationship` is the relation between two `Data_element_definition` (see 4.2.72) objects.

The data associated with an `Data_element_definition_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.73.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Data_element_definition_relationship`.

The `description` need not be specified for a particular `Data_element_definition_relationship`.

4.2.73.2 related

The `related` specifies the second of the two `Data_element_definition` (see 4.2.72) objects related by the `Data_element_definition_relationship`.

See 4.3.517 for the application assertion.

4.2.73.3 relating

The `relating` specifies the first of the two `Data_element_definition` (see 4.2.72) objects related by the `Data_element_definition_relationship`.

See 4.3.518 for the application assertion.

4.2.73.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- decomposition;
- dependency;
- substitution;
- value domain.

NOTE See 4.2.73.4.1 - 4.2.73.4.4 for the definition of each predefined value for `relation_type`.

4.2.73.4.1 decomposition

decomposition: The `Data_element_definition_relationship` defines a relationship where the related `Data_element_definition` (see 4.2.72) is member of a group of `Data_element_definition` (see 4.2.72) objects that is established by the relating `Data_element_definition` (see 4.2.72).

4.2.73.4.2 dependency

dependency: The `Data_element_definition_relationship` defines a relationship where the related `Data_element_definition` (see 4.2.72) is dependent upon the relating `Data_element_definition` (see 4.2.72).

4.2.73.4.3 substitution

substitution: The `Data_element_definition_relationship` defines a relationship where the related `Data_element_definition` (see 4.2.72) replaces the relating `Data_element_definition` (see 4.2.72).

4.2.73.4.4 value domain

value domain: The `Data_element_definition_relationship` defines a relationship where the values assigned to the related `Data_element_definition` (see 4.2.72) shall be within the limits indicated by the values assigned to the relating `Data_element_definition` (see 4.2.72).

EXAMPLE The output range of a 4-bit analog to digital converter is restricted to 16 discrete values, while the input voltage is restricted to a continuous range.

4.2.74 Data_element_relationship

A `Data_element_relationship` is the relation between two `Data_element` (see 4.2.70) objects.

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The data associated with an `Data_element_relationship` are the following:

- description;
- related;
- relating;
- `relation_type`.

4.2.74.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Data_element_relationship`.

The description need not be specified for a particular `Data_element_relationship`.

4.2.74.2 related

The related specifies the second of the two `Data_element` (see 4.2.70) objects related by the `Data_element_relationship`.

See 4.3.519 for the application assertion.

4.2.74.3 relating

The relating specifies the first of the two `Data_element` (see 4.2.70) objects related by the `Data_element_relationship`.

See 4.3.520 for the application assertion.

4.2.74.4 `relation_type`

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- decomposition;
- dependency;
- equivalence;
- substitution;
- tolerancing information.

NOTE 1 See 4.2.74.4.1 - 4.2.74.4.5 for the definition of each predefined value for `relation_type`.

NOTE 2 `Data_element` (see 4.2.70) objects that are related to each other in a sequential manner shall be captured as a one-dimensional array using `Aggregated_value` (see 4.2.7) objects.

4.2.74.4.1 decomposition

decomposition: The `Data_element_relationship` defines a relationship where the related `Data_element` (see 4.2.70) is one of the members of the group identified by the relating `Data_element` (see 4.2.70).

4.2.74.4.2 dependency

dependency: The `Data_element_relationship` defines a deriving relationship where the related `Data_element` (see 4.2.70) is based on the relating `Data_element` (see 4.2.70).

4.2.74.4.3 equivalence

equivalence: The `Data_element_relationship` defines a relationship where the related `Data_element` (see 4.2.70) represents the same matter of fact as by the relating `Data_element` (see 4.2.70).

EXAMPLE Two length values shall be considered to be the same, regardless of rounding differences.

4.2.74.4.4 substitution

substitution: The `Data_element_relationship` defines a relationship where the related `Data_element` (see 4.2.70) replaces the relating `Data_element` (see 4.2.70).

4.2.74.4.5 tolerancing information

tolerancing information: The `Data_element_relationship` defines a relationship where the related `Data_element` (see 4.2.70) provides information on the allowable variation of the value of the relating `Data_element` (see 4.2.70).

4.2.75 Data_element_specification

The `Data_element_specification` is the defining description of a `Data_element_definition` (see 4.2.72).

The data associated with an `Data_element_specification` are the following:

- definition;
- language_specification;
- note;
- remark;
- specification_of.

4.2.75.1 definition

The definition specifies the meaning of the associated `Data_element` (see 4.2.70) in human-interpretable language. It provides differentiation from all other `Data_element` (see 4.2.70) objects.

4.2.75.2 language_specification

The language_specification specifies a language spoken by human beings to communicate with each other verbally or in written form.

The language_specification need not be specified for a particular Data_element_specification.

See 4.3.522 for the application assertion.

4.2.75.3 note

The note specifies a statement that provides further information on the definition, which is essential to the understanding of the definition.

The note need not be specified for a particular Data_element_specification.

4.2.75.4 remark

The remark specifies human-interpretable text that gives further details about the Data_element_specification.

The remark need not be specified for a particular Data_element_specification.

4.2.75.5 specification_of

The specification_of specifies the Data_element_definition (see 4.2.72).

See 4.3.521 for the application assertion.

4.2.76 Data_element_value

A Data_element_value is the logical, numerical, or textual value of a User_defined_data_element (see 4.2.351) or an aggregate thereof.

Each Data_element_value is either an Aggregated_value (see 4.2.7) or a Single_value (see 4.2.316).

The data associated with a Data_element_value are the following:

— name.

4.2.76.1 name

The name specifies the identifier of the Data_element_value.

4.2.77 Date_and_person_assignment

A Date_and_person_assignment is a relation that associates a Date_and_person_or_organization (see 4.2.78) with an object.

The data associated with a `Date_and_person_assignment` are the following:

- `assigned_date_and_person`;
- `description`;
- `is_applied_to`;
- `role`.

4.2.77.1 `assigned_date_and_person`

The `assigned_date_and_person` specifies the `Date_and_person_or_organization` (see 4.2.78).

See 4.3.554 for the application assertion.

4.2.77.2 `description`

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Date_and_person_assignment`.

The `description` need not be specified for a particular `Date_and_person_assignment`.

4.2.77.3 `is_applied_to`

The `is_applied_to` specifies the object with which the `Date_and_person_assignment` is associated.

Each `is_applied_to` may be one of the following: `Activity` (see 4.2.1), `Activity_element` (see 4.2.2), `Activity_method_assignment` (see 4.2.4), `Activity_relationship` (see 4.2.5), `Alternate_item_relationship` (see 4.2.11), `Approval_status` (see 4.2.25), `Assembly_component_relationship` (see 4.2.26), `Assembly_substitute_relationship` (see 4.2.28), `Cable_pull_information` (see 4.2.33), `Certification` (see 4.2.38), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Class_structure_relationship` (see 4.2.45), `Classification_association` (see 4.2.46), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Configuration` (see 4.2.56), `Connectivity_allocation` (see 4.2.60), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Contract` (see 4.2.63), `Data_element` (see 4.2.70), `Data_element_association` (see 4.2.71), `Data_element_definition` (see 4.2.72), `Data_element_relationship` (see 4.2.74), `Data_element_specification` (see 4.2.75), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Device_relationship` (see 4.2.89), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_file_relationship` (see 4.2.107), `Document_representation` (see 4.2.110), `Document_version` (see 4.2.114), `Document_version_relationship` (see 4.2.115), `Drawing` (see 4.2.119), `Drawing_sequence` (see 4.2.121), `Drawing_sheet` (see 4.2.122), `Drawing_sheet_relationship` (see 4.2.124), `Free_segment` (see 4.2.144), `Function_definition` (see 4.2.145), `Function_definition_relationship` (see 4.2.146), `Function_interface` (see 4.2.147), `Function_unit` (see 4.2.148), `Function_unit_relationship` (see 4.2.149), `Function_version` (see 4.2.150), `Function_version_relationship` (see 4.2.151), `Functional_connectivity_definition` (see 4.2.152), `Functional_connectivity_definition_relationship` (see 4.2.153), `Functional_unit_allocation` (see 4.2.154), `Functionality` (see 4.2.155), `General_classification` (see 4.2.156), `Generic_note` (see 4.2.159), `Interface` (see 4.2.170), `Interface_port` (see 4.2.171), `Interface_terminal` (see 4.2.174), `Item` (see 4.2.178), `Item_definition_relationship` (see 4.2.179), `Item_version` (see 4.2.182), `Item_version_relationship` (see 4.2.183), `Location` (see

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4.2.192), Location_relationship (see 4.2.194), Marking (see 4.2.199), Material (see 4.2.201), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Organization_relationship (see 4.2.225), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Person_in_organization (see 4.2.238), Person_in_organization_relationship (see 4.2.239), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Port_association (see 4.2.249), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Requirement_document_assignment (see 4.2.287), Route (see 4.2.290), Route_relationship (see 4.2.291), Routed_segment (see 4.2.293), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Security_classification (see 4.2.301), Security_level (see 4.2.302), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.523, 4.3.524, 4.3.525, 4.3.526, 4.3.527, 4.3.528, 4.3.529, 4.3.530, 4.3.531, 4.3.532, 4.3.533, 4.3.534, 4.3.535, 4.3.536, 4.3.537, 4.3.538, 4.3.539, 4.3.540, 4.3.541, 4.3.542, 4.3.543, 4.3.544, 4.3.545, 4.3.546, 4.3.547, 4.3.548, 4.3.549, 4.3.550, 4.3.551, 4.3.552, 4.3.553, 4.3.555, 4.3.556, 4.3.557, 4.3.558, 4.3.559, 4.3.560, 4.3.561, 4.3.562, 4.3.563, 4.3.564, 4.3.565, 4.3.566, 4.3.567, 4.3.568, 4.3.569, 4.3.570, 4.3.571, 4.3.572, 4.3.573, 4.3.574, 4.3.575, 4.3.576, 4.3.577, 4.3.578, 4.3.579, 4.3.580, 4.3.581, 4.3.582, 4.3.583, 4.3.584, 4.3.585, 4.3.586, 4.3.587, 4.3.588, 4.3.589, 4.3.590, 4.3.591, 4.3.592, 4.3.593, 4.3.594, 4.3.595, 4.3.596, 4.3.597, 4.3.598, 4.3.599, 4.3.600, 4.3.601, 4.3.602, 4.3.603, 4.3.604, 4.3.605, 4.3.606, 4.3.607, 4.3.608, 4.3.609, 4.3.610, 4.3.611, 4.3.612, 4.3.613, 4.3.614, 4.3.615, 4.3.616, 4.3.617, 4.3.618, 4.3.619, 4.3.620, 4.3.621, 4.3.622, 4.3.623, 4.3.624, 4.3.625, 4.3.626, 4.3.627, 4.3.628, 4.3.629, 4.3.630, 4.3.631, 4.3.632, 4.3.633, 4.3.634, 4.3.635, 4.3.636, 4.3.637, 4.3.638, 4.3.639, 4.3.640, and 4.3.641 for the application assertions.

4.2.77.4 role

The role specifies the relationship between the point in time and the Person (see 4.2.237) or Organization (see 4.2.223) in the Date_and_person_assignment. The value is either user defined or predefined.

The predefined value of role is one of the following:

- creation;
- update.

NOTE See 4.2.77.4.1 - 4.2.77.4.2 for the definition of each predefined value for relation_type.

4.2.77.4.1 creation

creation: The assignment specifies that the referenced item has been created by the given Person (see 4.2.237) or Organization (see 4.2.223) at the given date and time.

4.2.77.4.2 update

update: The assignment specifies that the referenced item has been changed by the given Person (see 4.2.237) or Organization (see 4.2.223) at the given date and time.

4.2.78 Date_and_person_or_organization

A Date_and_person_or_organization is a Date_time (see 4.2.79) and a Person (see 4.2.237) or an Organization (see 4.2.223).

The data associated with a Date_and_person_or_organization are the following:

- associated_date;
- person_or_organization.

4.2.78.1 associated_date

The associated_date specifies the date component of a Date_and_person_or_organization.

See 4.3.642 for the application assertion.

4.2.78.2 person_or_organization

The person_or_organization specifies the Organization (see 4.2.223), the Person (see 4.2.237), or the Person_in_organization (see 4.2.238) that is part of the Date_and_person_or_organization.

Each person_or_organization may be one of the following: Organization (see 4.2.223) or Person_in_organization (see 4.2.238).

See 4.3.643 and 4.3.644 for the application assertions.

4.2.79 Date_time

A Date_time is the specification of a date and an optional time of day.

The data associated with a Date_time are the following:

- date;
- time.

4.2.79.1 date

The date specifies the calendar time conveying information about year, month, and day.

4.2.79.2 time

The time specifies a moment of occurrence measured by hour, minute, and second.

The time need not be specified for a particular Date_time.

4.2.80 Date_time_assignment

A Date_time_assignment is an association of Date_time (see 4.2.79) with some product data.

The data associated with a Date_time_assignment are the following:

- assigned_date_time;
- description;
- is_applied_to;
- role.

4.2.80.1 assigned_date_time

The assigned_date_time specifies the Date_time (see 4.2.79) that is associated with the product data.

See 4.3.676 for the application assertion.

4.2.80.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Date_time_assignment.

The description need not be specified for a particular Date_time_assignment.

4.2.80.3 is_applied_to

The is_applied_to specifies the product data with which the Date_time_assignment is associated.

Each is_applied_to may be one of the following: Activity (see 4.2.1), Activity_element (see 4.2.2), Activity_method_assignment (see 4.2.4), Activity_relationship (see 4.2.5), Alternate_item_relationship (see 4.2.11), Approval_status (see 4.2.25), Assembly_component_relationship (see 4.2.26), Assembly_substitute_relationship (see 4.2.28), Cable_pull_information (see 4.2.33), Certification (see 4.2.38), Class_category_association (see 4.2.40), Class_condition_association (see 4.2.41), Class_inclusion_association (see 4.2.42), Class_specification_association (see 4.2.44), Class_structure_relationship (see 4.2.45), Classification_association (see 4.2.46), Classification_attribute (see 4.2.47), Classification_system (see 4.2.48), Complex_product (see 4.2.51), Complex_product_relationship (see 4.2.52), Composition_relationship (see 4.2.55), Configuration (see 4.2.56), Connectivity_allocation (see 4.2.60), Connectivity_definition (see 4.2.61), Connectivity_definition_relationship (see 4.2.62), Contract (see 4.2.63), Data_element (see 4.2.70), Data_element_association (see 4.2.71), Data_element_definition (see 4.2.72), Data_element_relationship (see 4.2.74), Data_element_specification (see 4.2.75), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Device_relationship (see 4.2.89), Document (see 4.2.101), Document_file (see 4.2.106), Document_file_relationship (see 4.2.107), Document_representation (see 4.2.110), Document_version (see 4.2.114), Document_version_relationship (see 4.2.115), Drawing (see 4.2.119), Drawing_sequence (see 4.2.121), Drawing_sheet (see 4.2.122), Drawing_sheet_relationship (see 4.2.124), Free_segment (see 4.2.144), Function_definition (see 4.2.145), Function_definition_relationship (see 4.2.146), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_unit_relationship (see 4.2.149), Function_version (see 4.2.150), Function_version_relationship (see 4.2.151), Functional_connectivity_definition (see 4.2.152), Functional_connectivity_definition_

relationship (see 4.2.153), Functional_unit_allocation (see 4.2.154), Functionality (see 4.2.155), General_classification (see 4.2.156), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see 4.2.178), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Item_version_relationship (see 4.2.183), Location (see 4.2.192), Location_relationship (see 4.2.194), Marking (see 4.2.199), Material (see 4.2.201), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Organization_relationship (see 4.2.225), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Person_in_organization (see 4.2.238), Person_in_organization_relationship (see 4.2.239), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Port_association (see 4.2.249), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Requirement_document_assignment (see 4.2.287), Route (see 4.2.290), Route_relationship (see 4.2.291), Routed_segment (see 4.2.293), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Security_classification (see 4.2.301), Security_level (see 4.2.302), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.645, 4.3.646, 4.3.647, 4.3.648, 4.3.649, 4.3.650, 4.3.651, 4.3.652, 4.3.653, 4.3.654, 4.3.655, 4.3.656, 4.3.657, 4.3.658, 4.3.659, 4.3.660, 4.3.661, 4.3.662, 4.3.663, 4.3.664, 4.3.665, 4.3.666, 4.3.667, 4.3.668, 4.3.669, 4.3.670, 4.3.671, 4.3.672, 4.3.673, 4.3.674, 4.3.675, 4.3.677, 4.3.678, 4.3.679, 4.3.680, 4.3.681, 4.3.682, 4.3.683, 4.3.684, 4.3.685, 4.3.686, 4.3.687, 4.3.688, 4.3.689, 4.3.690, 4.3.691, 4.3.692, 4.3.693, 4.3.694, 4.3.695, 4.3.696, 4.3.697, 4.3.698, 4.3.699, 4.3.700, 4.3.701, 4.3.702, 4.3.703, 4.3.704, 4.3.705, 4.3.706, 4.3.707, 4.3.708, 4.3.709, 4.3.710, 4.3.711, 4.3.712, 4.3.713, 4.3.714, 4.3.715, 4.3.716, 4.3.717, 4.3.718, 4.3.719, 4.3.720, 4.3.721, 4.3.722, 4.3.723, 4.3.724, 4.3.725, 4.3.726, 4.3.727, 4.3.728, 4.3.729, 4.3.730, 4.3.731, 4.3.732, 4.3.733, 4.3.734, 4.3.735, 4.3.736, 4.3.737, 4.3.738, 4.3.739, 4.3.740, 4.3.741, 4.3.742, 4.3.743, 4.3.744, 4.3.745, 4.3.746, 4.3.747, 4.3.748, 4.3.749, 4.3.750, 4.3.751, 4.3.752, 4.3.753, 4.3.754, 4.3.755, 4.3.756, 4.3.757, 4.3.758, 4.3.759, 4.3.760, 4.3.761, 4.3.762, and 4.3.763 for the application assertions.

4.2.80.4 role

The role specifies the action associated with the Date_time_assignment. The value is either user defined or predefined.

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The predefined value of role is one of the following:

- classification date;
- creation;
- installation;
- production;
- registration;
- update.

NOTE See 4.2.80.4.1 - 4.2.80.4.6 for the definition of each predefined value for role.

4.2.80.4.1 classification date

classification date: The assignment specifies that the specified object is classified at the given date and time. This value shall only be used, if the `Date_time_assignment` refers to instances of `Classification_association` (see 4.2.46) as 'is_applied_to'.

4.2.80.4.2 creation

creation: The assignment specifies that the referenced item was created at the given date and time.

4.2.80.4.3 installation

installation: The assignment specifies that the referenced item was mounted in a product at the given date and time.

4.2.80.4.4 production

production: The assignment specifies that the referenced item was produced at the given date and time.

4.2.80.4.5 registration

registration: The assignment specifies that the referenced item was registered at the given date and time.

4.2.80.4.6 update

update: The assignment specifies that the referenced item was changed at the given date and time.

4.2.81 Date_time_interval_assignment

A `Date_time_interval_assignment` is an association of an `Interval_of_time` (see 4.2.177) with some product data.

The data associated with a `Date_time_assignment` (see 4.2.80) are the following:

- `assigned_time_interval`;
- `description`;
- `is_applied_to`;
- `role`.

4.2.81.1 `assigned_time_interval`

The `assigned_time_interval` specifies the `Interval_of_time` (see 4.2.177) that is associated with the product data.

See 4.3.825 for the application assertion.

4.2.81.2 `description`

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Date_time_assignment` (see 4.2.80).

The `description` need not be specified for a particular `Date_time_interval_assignment`.

4.2.81.3 `is_applied_to`

The `is_applied_to` specifies the set of objects of product data with which the `Date_time_interval_assignment` is associated.

There shall be at least one object that the `Date_time_interval_assignment` is assigned to.

Each `is_applied_to` may be one of the following: `Activity` (see 4.2.1), `Activity_element` (see 4.2.2), `Activity_method_assignment` (see 4.2.4), `Activity_relationship` (see 4.2.5), `Alternate_item_relationship` (see 4.2.11), `Approval_status` (see 4.2.25), `Assembly_component_relationship` (see 4.2.26), `Assembly_substitute_relationship` (see 4.2.28), `Cable_pull_information` (see 4.2.33), `Certification` (see 4.2.38), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Class_structure_relationship` (see 4.2.45), `Classification_association` (see 4.2.46), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Configuration` (see 4.2.56), `Connectivity_allocation` (see 4.2.60), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Contract` (see 4.2.63), `Data_element` (see 4.2.70), `Data_element_association` (see 4.2.71), `Data_element_definition` (see 4.2.72), `Data_element_relationship` (see 4.2.74), `Data_element_specification` (see 4.2.75), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Device_relationship` (see 4.2.89), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_file_relationship` (see 4.2.107), `Document_representation` (see 4.2.110), `Document_version` (see 4.2.114), `Document_version_relationship` (see 4.2.115), `Drawing` (see 4.2.119), `Drawing_sequence` (see 4.2.121), `Drawing_sheet` (see 4.2.122), `Drawing_sheet_relationship` (see 4.2.124), `Free_segment` (see 4.2.144), `Function_definition` (see 4.2.145), `Function_definition_relationship` (see 4.2.146), `Function_interface` (see 4.2.147), `Function_unit` (see 4.2.148), `Function_unit_relationship` (see 4.2.149), `Function_version` (see 4.2.150), `Function_version_relationship` (see 4.2.151), `Functional_connectivity_definition` (see 4.2.152), `Functional_connectivity_definition_`

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relationship (see 4.2.153), Functional_unit_allocation (see 4.2.154), Functionality (see 4.2.155), General_classification (see 4.2.156), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see 4.2.178), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Item_version_relationship (see 4.2.183), Location (see 4.2.192), Location_relationship (see 4.2.194), Marking (see 4.2.199), Material (see 4.2.201), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Organization_relationship (see 4.2.225), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Person_in_organization (see 4.2.238), Person_in_organization_relationship (see 4.2.239), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Port_association (see 4.2.249), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Requirement_document_assignment (see 4.2.287), Route (see 4.2.290), Route_relationship (see 4.2.291), Routed_segment (see 4.2.293), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Security_classification (see 4.2.301), Security_level (see 4.2.302), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.764, 4.3.765, 4.3.766, 4.3.767, 4.3.768, 4.3.769, 4.3.770, 4.3.771, 4.3.772, 4.3.773, 4.3.774, 4.3.775, 4.3.776, 4.3.777, 4.3.778, 4.3.779, 4.3.780, 4.3.781, 4.3.782, 4.3.783, 4.3.784, 4.3.785, 4.3.786, 4.3.787, 4.3.788, 4.3.789, 4.3.790, 4.3.791, 4.3.792, 4.3.793, 4.3.794, 4.3.795, 4.3.796, 4.3.797, 4.3.798, 4.3.799, 4.3.800, 4.3.801, 4.3.802, 4.3.803, 4.3.804, 4.3.805, 4.3.806, 4.3.807, 4.3.808, 4.3.809, 4.3.810, 4.3.811, 4.3.812, 4.3.813, 4.3.814, 4.3.815, 4.3.816, 4.3.817, 4.3.818, 4.3.819, 4.3.820, 4.3.821, 4.3.822, 4.3.823, 4.3.824, 4.3.826, 4.3.827, 4.3.828, 4.3.829, 4.3.830, 4.3.831, 4.3.832, 4.3.833, 4.3.834, 4.3.835, 4.3.836, 4.3.837, 4.3.838, 4.3.839, 4.3.840, 4.3.841, 4.3.842, 4.3.843, 4.3.844, 4.3.845, 4.3.846, 4.3.847, 4.3.848, 4.3.849, 4.3.850, 4.3.851, 4.3.852, 4.3.853, 4.3.854, 4.3.855, 4.3.856, 4.3.857, 4.3.858, 4.3.859, 4.3.860, 4.3.861, 4.3.862, 4.3.863, 4.3.864, 4.3.865, 4.3.866, 4.3.867, 4.3.868, 4.3.869, 4.3.870, 4.3.871, 4.3.872, 4.3.873, 4.3.874, 4.3.875, 4.3.876, 4.3.877, 4.3.878, 4.3.879, 4.3.880, 4.3.881, and 4.3.882 for the application assertions.

4.2.81.4 role

The role specifies the action associated with the Date_time_interval_assignment. The value is either user defined or predefined.

The predefined value of role is one of the following:

— installation.

NOTE See 4.2.81.4.1 for the definition of each predefined value for role.

4.2.81.4.1 installation

installation: The assignment specifies that the referenced object was mounted in a product at the given interval of time.

4.2.82 Dated_configuration

A Dated_configuration is a type of Manufacturing_configuration (see 4.2.198) that is a configuration that applies onwards from a given date, or between a start and an end date.

The data associated with a Dated_configuration are the following:

- end_date;
- start_date.

4.2.82.1 end_date

The end_date specifies the date and time when the validity of the 'configured_element' is not defined any longer. If the end_date is not specified, the Dated_configuration is considered as valid forever from the start_date.

The end_date need not be specified for a particular Dated_configuration.

4.2.82.2 start_date

The start_date specifies the first date when the Dated_configuration is valid.

4.2.83 Datum_feature_callout

A Datum_feature_callout is a type of Draughting_callout (see 4.2.117) that is used to identify a point, line, or plane as a datum and that specifies the designation to be used as identification of that datum.

4.2.84 Datum_target_callout

A Datum_target_callout is a type of Draughting_callout (see 4.2.117) that is used to identify points, lines, and surfaces of contact, on a part, used in establishing a reference datum. The callout contains an alphanumeric designation and, where applicable, a specification of the diametrical size of the target area.

4.2.85 Descriptive_specification

A Descriptive_specification is the definitional description of an item.

NOTE Usually an item that is specified by a Descriptive_specification is not represented in the assembly structure of the system.

EXAMPLE A Descriptive_specification can be used to describe the characteristics that distinguish a final part from the corresponding neutral part.

The data associated with a Descriptive_specification are the following:

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- description;
- id.

4.2.85.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Descriptive_specification.

4.2.85.2 id

The id specifies the identifier of the Descriptive_specification.

The id need not be specified for a particular Descriptive_specification.

4.2.86 Design_discipline_item_definition

A Design_discipline_item_definition is a view of an Item_version (see 4.2.182) relevant for the requirements of one or more life-cycle stages and application domains. This view collects product data for a specific task.

EXAMPLE Different methods of analysis, such as fault current analysis, voltage drop analysis, or electromagnetic interference analysis, may require distinctive viewpoints. To support this idea, the user may define the subjects of the analyses individually by defining different instances of a Design_discipline_item_definition. Each of these instances refer to the same instance of Item_version (see 4.2.182).

NOTE 1 The selection of data describing an Item (see 4.2.178) can be different for assembly purposes, packing purposes, or analysis purposes.

NOTE 2 The use of the Design_discipline_item_definition object is not confined to the design stage.

Each Design_discipline_item_definition may be an Assembly_definition (see 4.2.27).

The data associated with a Design_discipline_item_definition are the following:

- additional_context;
- associated_item_version;
- id;
- initial_context;
- name.

4.2.86.1 additional_context

The additional_context specifies the set of Application_context (see 4.2.22) objects in which this view of the Item_version (see 4.2.182) is also relevant. The additional_context shall not contain the Application_context (see 4.2.22) that is referenced as the 'initial_context'.

See 4.3.883 for the application assertion.

4.2.86.2 associated_item_version

The `associated_item_version` specifies the `Item_version` (see 4.2.182) for which the `Design_discipline_item_definition` is a view.

See 4.3.885 for the application assertion.

4.2.86.3 id

The `id` specifies the identifier of the `Design_discipline_item_definition`.

4.2.86.4 initial_context

The `initial_context` specifies the `Application_context` (see 4.2.22) in which this view of the `Item_version` (see 4.2.182) has been designed primarily.

See 4.3.884 for the application assertion.

4.2.86.5 name

The `name` specifies a speaking designation of the `Design_discipline_item_definition`.

The `name` need not be specified for a particular `Design_discipline_item_definition`.

4.2.87 Detached_representation_reference

A `Detached_representation_reference` is a type of `Cross_reference` (see 4.2.64) that is a reference made from one part of a diagram to another part between the different presentations of the electrotechnical system. Using references is a widely used technique to keep diagrams clear.

EXAMPLE Reference among the detached representations and the attached representation of a piece of equipment.

The data associated with a `Detached_representation_reference` are the following:

- `part_of`;
- `refers_to`.

4.2.87.1 part_of

The `part_of` specifies the `Annotation_element` (see 4.2.15) the `Detached_representation_reference` belongs to.

See 4.3.886 for the application assertion.

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4.2.87.2 refers_to

The refers_to specifies the Annotation_element (see 4.2.15) the Detached_representation_reference references.

See 4.3.887 for the application assertion.

4.2.88 Device

A Device is a type of Product_constituent (see 4.2.266) that is an occurrence of a Design_discipline_item_definition (see 4.2.86) object.

NOTE 1 A Device may be instantiated more than once since each instance is an individual occurrence of the piece of equipment that is characterized by the Design_discipline_item_definition (see 4.2.86).

EXAMPLE 1 In a specific circuit, the Item (see 4.2.178) 'lamp' is defined once. This Design_discipline_item_definition (see 4.2.86) carries all the information defining the lamp (e.g., its terminals) that is independent from its usage. Additionally, three Device objects for this Design_discipline_item_definition (see 4.2.86) exist because three equal lamps are used within this particular circuit. Each of these instances can be connected individually.

Each Device is either a Quantified_device (see 4.2.276), a Selected_device (see 4.2.303), a Single_device (see 4.2.314), or a Specified_device (see 4.2.328).

The data associated with a Device are the following:

- definition;
- description;
- extended_designation;
- id.

4.2.88.1 definition

The definition specifies the reference to the associated defining Design_discipline_item_definition (see 4.2.86) or Product_identification (see 4.2.268) object.

Each definition may be one of the following: Design_discipline_item_definition (see 4.2.86) or Product_identification (see 4.2.268).

See 4.3.888 and 4.3.890 for the application assertions.

4.2.88.2 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Device.

The description need not be specified for a particular Device.

4.2.88.3 extended_designation

The extended_designation specifies a structured label for the Device.

NOTE 2 The label assigned through extended_designation shall be identical to the label assigned by the 'id' attribute.

EXAMPLE 2 IEC 61346-1 specifies designations and structuring principles for devices.

The extended_designation need not be specified for a particular Device.

See 4.3.889 for the application assertion.

4.2.88.4 id

The id specifies an identifier for the Device.

4.2.89 Device_relationship

A Device_relationship is the relation between two Device (see 4.2.88) objects.

The data associated with an Device_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.89.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Device_relationship.

The description need not be specified for a particular Device_relationship.

4.2.89.2 related

The related specifies the second of the two Device (see 4.2.88) objects related by the Device_relationship.

See 4.3.891 for the application assertion.

4.2.89.3 relating

The relating specifies the first of the two Device (see 4.2.88) objects related by the Device_relationship.

See 4.3.892 for the application assertion.

4.2.89.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- associated equipment;
- derivation;
- envelope;
- redundancy;
- shield;
- substitution.

NOTE See 4.2.89.4.1 - 4.2.89.4.6 for the definition of each predefined value for relation_type.

4.2.89.4.1 associated equipment

associated equipment: The Device_relationship defines a relationship where the related Device (see 4.2.88) is equipment that is assigned to the related Device (see 4.2.88) with the intention to support it in performing its task.

EXAMPLE 1 The association of the strain relief to a connector during the installation process.

4.2.89.4.2 derivation

derivation: The Device_relationship defines a deriving relationship where the related Device (see 4.2.88) is based on the relating Device (see 4.2.88).

4.2.89.4.3 envelope

envelope: The Device_relationship defines a relationship where the related Device (see 4.2.88) is enclosed by the relating Device (see 4.2.88).

EXAMPLE 2 Using an overbraid or taping are methods to envelop wires.

4.2.89.4.4 redundancy

redundancy: The Device_relationship defines a relationship where the related Devices replicated by the relating Device (see 4.2.88).

EXAMPLE 3 To provide for a fail-safe service two drives do the work that could be done by one motor. If one drive fails, the other is still in service.

4.2.89.4.5 shield

shield: The Device_relationship defines a relationship where the relating Device (see 4.2.88) provides the screen against electromagnetic interference. The related Device (see 4.2.88) is considered to be

inside the screen. If more than one shield is present, there shall be a `Device_relationship` where the relating `Device` (see 4.2.88) is the outer shield and the related `Device` (see 4.2.88) is the inner shield.

NOTE In cases when the screens do not enclose the shielded hardware the 'description' attribute shall specify the arrangement of the screens.

4.2.89.4.6 substitution

substitution: The `Device_relationship` defines a relationship where the related `Device` (see 4.2.88) replaces the relating `Device` (see 4.2.88).

4.2.90 Diameter_dimension

A `Diameter_dimension` is a type of `Dimension` (see 4.2.93) that is the graphical presentation of the value of the diametrical size of a circular element.

The data associated with a `Diameter_dimension` are the following:

- component;
- extent.

4.2.90.1 component

The component specifies the projection lines that shows the extension of the points, lines, or surfaces that bound the measurement.

See 4.3.894 for the application assertion.

4.2.90.2 extent

The extent specifies the dimension line that graphically presents where the dimension value applies.

See 4.3.893 for the application assertion.

4.2.91 Digital_document

A `Digital_document` is a type of `Document_representation` (see 4.2.110) that is a set of data in electronic form that is intended to give further information about the product data.

NOTE The content of the `Digital_document` need not be specified by using any part of ISO 10303.

EXAMPLE A `Digital_document` contains native data from applications such as desktop publishing systems or simulation systems.

The data associated with a `Digital_document` are the following:

- file.

4.2.91.1 file

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The file specifies the `Digital_file` (see 4.2.92) that contains the data.

See 4.3.895 for the application assertion.

4.2.92 Digital_file

The `Digital_file` is a type of `Document_file` (see 4.2.106) that is a collection of related data stored under one name.

4.2.93 Dimension

A `Dimension` is a type of `Draughting_annotation` (see 4.2.116) that is the graphical presentation of a dimension value, associated information, and the necessary symbology to accurately depict its area of application.

Each `Dimension` is either an `Angular_dimension` (see 4.2.13), a `Curve_dimension` (see 4.2.69), a `Diameter_dimension` (see 4.2.90), a `Leader_directed_dimension` (see 4.2.187), a `Linear_dimension` (see 4.2.190), an `Ordinate_dimension` (see 4.2.222), or a `Radius_dimension` (see 4.2.277).

4.2.94 Dimension_callout

A `Dimension_callout` is the text and symbols in the presentation of a dimension that represent the dimension value, dimension units, tolerance information, and any related notes.

Each `Dimension_callout` is either a `Structured_dimension_callout` (see 4.2.332) or a `Unstructured_dimension_callout` (see 4.2.349).

The data associated with a `Dimension_callout` are the following:

- `defined_primary_dimension`;
- `defined_secondary_dimension`.

4.2.94.1 defined_primary_dimension

The `defined_primary_dimension` specifies the dimension in which the dimension value, tolerance information, and any associated notes of the `Dimension_callout` are given in the primary unit of measure for the drawing view, drawing sheet, or drawing in which the dimension appears.

The `defined_primary_dimension` need not be specified for a particular `Dimension_callout`.

See 4.3.896 for the application assertion.

4.2.94.2 defined_secondary_dimension

The `defined_secondary_dimension` specifies the dimension in which the dimension value, tolerance information, and any associated notes of the `Dimension_callout` are given in a different unit of measure than that given for the drawing view, drawing sheet, or drawing in which the dimension appears.

The `defined_secondary_dimension` need not be specified for a particular `Dimension_callout`.

See 4.3.897 for the application assertion.

4.2.95 Dimension_line

A `Dimension_line` is a type of `Directed_curve` (see 4.2.99) that is used in the graphical presentation of a dimension value along with other symbology, if necessary, to show the extent of the application of the value.

EXAMPLE Terminator symbols may be associated with a `Dimension_line`.

4.2.96 Dimension_line_terminator

A `Dimension_line_terminator` is an annotation symbol that is applied to a dimension line and used to identify the endpoint or point of the application of the directed annotation.

The data associated with a `Dimension_line_terminator` are the following:

- line;
- symbol.

4.2.96.1 line

The line specifies the `Dimension_line` (see 4.2.95) that the symbol applies to.

See 4.3.899 for the application assertion.

4.2.96.2 symbol

The symbol specifies an `Annotation_symbol` (see 4.2.20) that is used to identify the endpoint or point of application of the directed annotation.

See 4.3.898 for the application assertion.

4.2.97 Dimension_sequence_pair

A `Dimension_sequence_pair` is the relationship between two adjacent dimensions that share a projection line.

Each `Dimension_sequence_pair` is either a `Chained_dimension_pair` (see 4.2.39) or a `Parallel_dimension_pair` (see 4.2.230).

The data associated with a `Dimension_sequence_pair` are the following:

- predecessor;
- successor.

4.2.97.1 predecessor

The predecessor specifies the dimension that is displayed first in a dimension sequence.

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See 4.3.900 for the application assertion.

4.2.97.2 successor

The successor specifies the dimension that is displayed second in a dimension sequence.

See 4.3.901 for the application assertion.

4.2.98 Dimension_symbol

A Dimension_symbol is a type of Predefined_symbol (see 4.2.255) that is used in conjunction with a dimension value to convey the context of the dimension value.

EXAMPLE A diameter symbol may be used in conjunction with a dimension value to denote a diameter dimension.

The predefined dimension symbols that shall be supported by all implementations of this part of ISO 10303 are dependent on the height (h) of the text that the symbol accompanies. The height of the characters for the predefined symbols specified here shall be $h = 2.5$ mm. The illustrations shown in Figure 12 are oriented as they appear when associated with a horizontal dimension line.

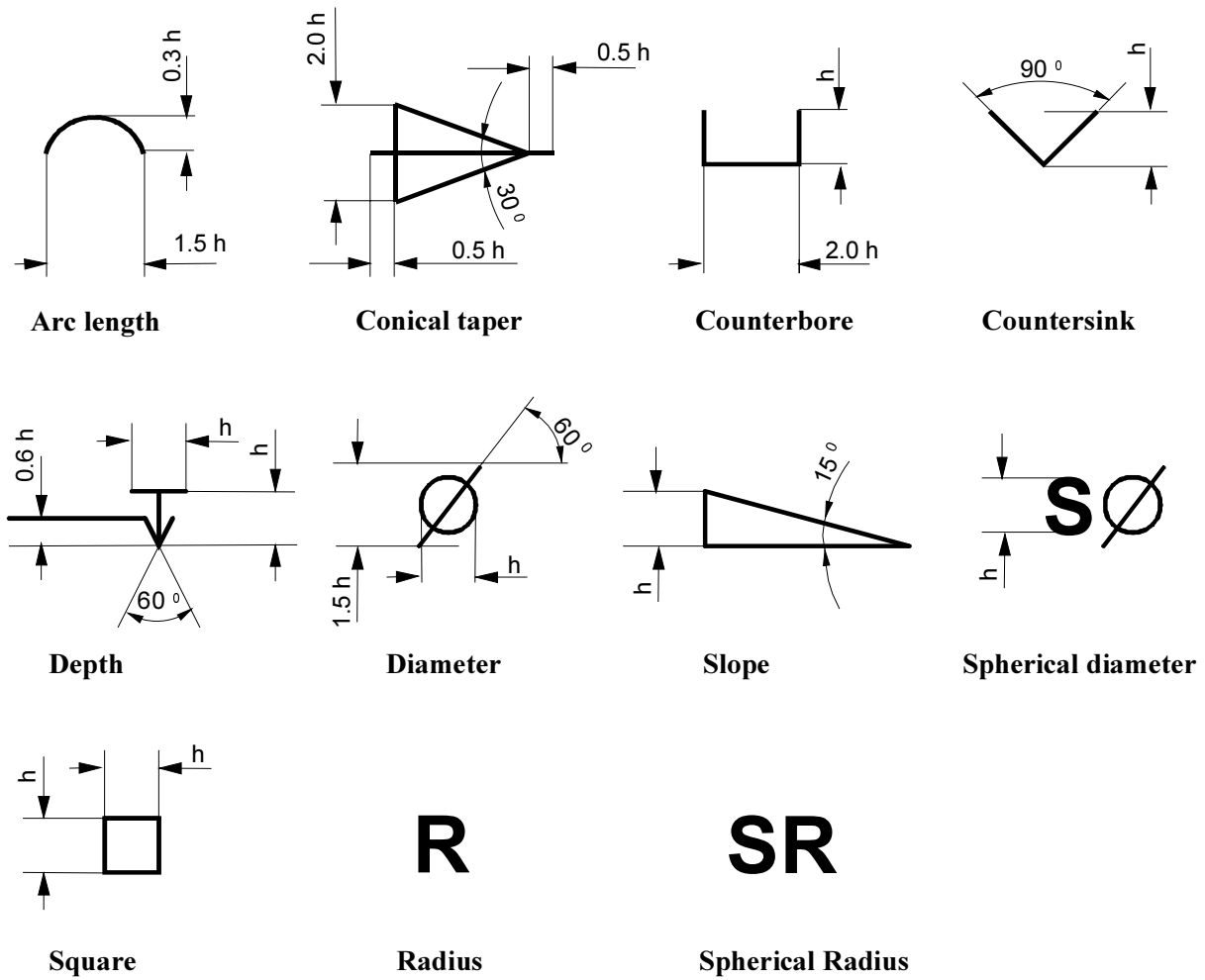


Figure 12 - Predefined dimension symbols

The data associated with a Dimension_symbol are the following:

— symbol_type.

4.2.98.1 symbol_type

The symbol_type specifies an alphanumerical string identifying the Dimension_symbol in accordance with the definitions given above.

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The value of symbol_type is one of the following:

- arc length;
- conical taper;
- counterbore;
- countersink;
- depth;
- diameter;
- slope;
- spherical diameter;
- square;
- radius;
- spherical radius.

NOTE See 4.2.98.1.1 - 4.2.98.1.11 for the definition of each permissible value for symbol_type.

4.2.98.1.1 arc length

arc length: An arc length symbol is a graphical symbol used in conjunction with a dimension value to indicate that the curve dimension is an arc length measured along the curved line or surface. An arc length symbol is depicted as one line segment that forms a part of a circle. The origin of the symbol corresponds to the starting point on the left of the arc line. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.2 conical taper

conical taper: A conical taper symbol is a graphical symbol used in conjunction with a dimension value to indicate that the value given is the ratio of the difference in the diameters of two sections taken perpendicular to the datum axis of a cone and the distance between the two sections. A conical taper symbol is depicted as an isosceles triangle and a line placed as a bisector to the angle created by the two equal sides. The origin of the symbol corresponds to the intersection point of the two equal sides. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.3 counterbore

counterbore: A counterbore symbol is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value specifies the size of a counterbored hole. A counterbored hole is a cylindrical hole of larger diameter than its basis hole. Both holes share a common centre axis and the bottom of the counterbored hole is planar and perpendicular to the centre axis. A counterbore symbol is depicted as an open rectangle. The origin of the symbol is the geometrical centre of the rectangle. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.4 countersink

countersink: A countersink symbol is a graphical symbol used in conjunction with a dimension value to indicate that the associated dimension value applies to a countersink that is concentric to a basis hole. A countersink is a conical taper detail located at the end of an existing or basis hole. The diameter of the taper detail is larger than the diameter of the basis hole at the surface and decreases at a constant rate as a function of distance along the centre axis of the basis hole until the two diameters are equal. A countersink is depicted as an open triangle. The origin of the symbol is the intersection point of the two visible sides. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.5 depth

depth: A depth symbol is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value applies to the depth of the feature. A depth symbol is depicted as an arrow with a line placed perpendicular to the end opposite the arrowhead. The origin of the symbol is the top of the arrowhead. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.6 diameter

diameter: A diameter symbol is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value applies diametrically. A diameter is depicted as a circle crossed by a line going through the centre. The origin of the symbol is the centre point of the circle. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.7 slope

slope: A slope symbol is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value specifies the ratio of the change in the vertical direction to the change in horizontal direction. A slope symbol is depicted as a right triangle. The origin of the symbol is the intersection of the two perpendicular sides of the triangle. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.8 spherical diameter

spherical diameter: A slope symbol is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value to indicate that the diametrical dimension value applies to the surface or surfaces. A spherical diameter is depicted as a diameter symbol as noted above and the letter 'S' before it. The origin of the symbol is the geometrical centre of an imaginary surrounding box around the whole symbol. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.9 square

square: A square symbol is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value applies linearly to two orthogonal geometric elements that form two adjacent sides of a square feature. A square is depicted as a rectangle. The origin of the symbol is the geometrical centre of the rectangle. The size and graphical representation of the symbol are shown in Figure 12.

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4.2.98.1.10 radius

radius: A radius symbol is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value applies radially. A radius is depicted by the letter 'R'. The origin of the symbol is the origin of the letter. The size and graphical representation of the symbol are shown in Figure 12.

4.2.98.1.11 spherical radius

spherical radius: A spherical radius is a graphical symbol used in conjunction with a dimension value to indicate that the dimension value applies radially to all points on the dimensioned surface. A spherical radius is depicted by the letters 'S' and 'R'. The origin of the symbol is the geometrical centre of an imaginary box surrounding the whole symbol. The size and graphical representation of the symbol are shown in Figure 12.

4.2.99 Directed_curve

A Directed_curve is a type of Annotation_curve (see 4.2.14) that is used to guide annotation to a specific feature or area of a drawing view or drawing sheet.

Each Directed_curve is either a Dimension_line (see 4.2.95), a Leader (see 4.2.186), or a Projection_line (see 4.2.273).

The data associated with a Directed_curve are the following:

— directed_callout.

4.2.99.1 directed_callout

The directed_callout specifies the Draughting_callout (see 4.2.117) that is directed by means of the curve.

The directed_callout need not be specified for a particular Directed_curve.

See 4.3.902 for the application assertion.

4.2.100 Direction_range

A Direction_range is the specification of the sector under which connecting lines are allowed to be drawn onto a Schematic_node (see 4.2.294).

NOTE The information provided by the `Direction_range` can be used by a routing algorithm to place connection lines automatically on a schematic diagram.

The data associated with a `Direction_range` are the following:

- `associated_connect_area`;
- `maximum_angle`;
- `minimum_angle`.

4.2.100.1 associated_connect_area

The `associated_connect_area` specifies the `Connect_area` (see 4.2.57) object that may be approached under the given angles.

See 4.3.903 for the application assertion.

4.2.100.2 maximal_angle

The `maximal_angle` specifies the end angle of the sector. The angles are defined in relation to the coordinate space of the symbol.

4.2.100.3 minimal_angle

The `minimal_angle` specifies the start angle of the sector. The angles are defined in relation to the coordinate space of the symbol.

4.2.101 Document

A Document is the reference to digital data or nondigital data that are not within the scope of ISO 10303.

The data associated with a Document are the following:

- `description`;
- `extended_designation`;
- `id`;
- `name`.

4.2.101.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the Document.

The `description` need not be specified for a particular Document.

4.2.101.2 extended_designation

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The `extended_designation` specifies a structured label for the Document.

NOTE The label assigned through `extended_designation` shall be identical to the label assigned by the 'id' attribute.

EXAMPLE IEC 62023 specifies designations and structuring principles for documents.

The `extended_designation` need not be specified for a particular Document.

See 4.3.904 for the application assertion.

4.2.101.3 id

The `id` specifies the identifier for the Document.

4.2.101.4 name

The `name` specifies a speaking designation of the Document.

The `name` need not be specified for a particular Document.

4.2.102 Document_assignment

A `Document_assignment` is a relation that associates a `Document_version` (see 4.2.114) with an item.

The data associated with a `Document_assignment` are the following:

- `assigned_document`;
- `is_assigned_to`;
- `role`.

4.2.102.1 assigned_document

The `assigned_document` specifies the `Document_version` (see 4.2.114).

Each `assigned_document` may be one of the following: `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_representation` (see 4.2.110), or `Document_version` (see 4.2.114).

See 4.3.930, 4.3.931, 4.3.932, and 4.3.933 for the application assertions.

4.2.102.2 is_assigned_to

The `is_assigned_to` specifies the item with which the `Document_version` (see 4.2.114) is associated.

Each `is_assigned_to` may be one of the following: `Activity` (see 4.2.1), `Activity_element` (see 4.2.2), `Activity_method` (see 4.2.3), `Address` (see 4.2.6), `Approval` (see 4.2.23), `Approval_status` (see 4.2.25), `Assembly_component_relationship` (see 4.2.26), `Cable_pull_information` (see 4.2.33), `Certification` (see 4.2.38), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Classification_association` (see 4.2.46), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Connectivity_definition` (see 4.2.61), `Contract` (see

4.2.63), Data_element (see 4.2.70), Data_element_definition (see 4.2.72), Data_element_specification (see 4.2.75), Descriptive_specification (see 4.2.85), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Drawing (see 4.2.119), Drawing_sheet (see 4.2.122), Drawing_view (see 4.2.125), Function_definition (see 4.2.145), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_version (see 4.2.150), Functional_connectivity_definition (see 4.2.152), Functionality (see 4.2.155), General_classification (see 4.2.156), General_classification (see 4.2.156), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see 4.2.178), Item_definition_relationship (see 4.2.179), Item_identification (see 4.2.180), Item_version (see 4.2.182), Location (see 4.2.192), Marking (see 4.2.199), Node (see 4.2.208), Notification (see 4.2.213), Object_designation (see 4.2.217), Organization (see 4.2.223), Path (see 4.2.232), Path_node (see 4.2.233), Person (see 4.2.237), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Process_variable (see 4.2.260), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Retention_period (see 4.2.289), Route (see 4.2.290), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Security_classification (see 4.2.301), Security_level (see 4.2.302), Signal (see 4.2.309), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.905, 4.3.906, 4.3.907, 4.3.908, 4.3.909, 4.3.910, 4.3.911, 4.3.912, 4.3.913, 4.3.914, 4.3.915, 4.3.916, 4.3.917, 4.3.918, 4.3.919, 4.3.920, 4.3.921, 4.3.922, 4.3.923, 4.3.924, 4.3.925, 4.3.926, 4.3.927, 4.3.928, 4.3.929, 4.3.934, 4.3.935, 4.3.936, 4.3.937, 4.3.938, 4.3.939, 4.3.940, 4.3.941, 4.3.942, 4.3.943, 4.3.944, 4.3.945, 4.3.946, 4.3.947, 4.3.948, 4.3.949, 4.3.950, 4.3.951, 4.3.952, 4.3.953, 4.3.954, 4.3.955, 4.3.956, 4.3.957, 4.3.958, 4.3.959, 4.3.960, 4.3.961, 4.3.962, 4.3.963, 4.3.964, 4.3.965, 4.3.966, 4.3.967, 4.3.968, 4.3.969, 4.3.970, 4.3.971, 4.3.972, 4.3.973, 4.3.974, 4.3.975, 4.3.976, 4.3.977, 4.3.978, 4.3.979, 4.3.980, 4.3.981, 4.3.982, 4.3.983, 4.3.984, 4.3.985, and 4.3.986 for the application assertions.

4.2.102.3 role

The role describes the relationship between the Document_version (see 4.2.114) and the associated item. The value is either user defined or predefined.

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The predefined value of role is one of the following:

- additional information;
- behaviour;
- catalogue;
- description;
- informative;
- mandatory;
- manual;
- mathematical description;
- specification.

NOTE See 4.2.102.3.1 - 4.2.102.3.9 for the definition of each predefined value for role.

4.2.102.3.1 additional information

additional information: The assigned document provides explanatory information.

4.2.102.3.2 behaviour

behaviour: The assigned document specifies information about the behaviour of the object specified by the 'is_assigned_to' attribute.

EXAMPLE State transition charts or flow diagrams can be used to provide information about the behaviour of an item.

4.2.102.3.3 catalogue

catalogue: The assigned document is the catalogue in which the object specified by the 'is_assigned_to' attribute is listed.

EXAMPLE The document can be the catalogue of the manufacturer.

4.2.102.3.4 description

description: The assigned document provides textual information about the object specified by the 'is_assigned_to' attribute.

4.2.102.3.5 informative

informative: The assigned document is for information only. It may or may not be considered.

4.2.102.3.6 mandatory

manual: The assigned element shall conform to the content of the assigned document.

4.2.102.3.7 mathematical description

mathematical description: The assigned document specifies the associated item by providing the algorithmic specification of its behaviour.

EXAMPLE The information can be used for simulation purposes.

4.2.102.3.8 specification

specification: The assigned document the considerations that led to the actual design of the object specified by the 'is_assigned_to' attribute.

4.2.103 Document_content_property

A Document_content_property specifies characteristics precisising the content of a Document_file (see 4.2.106) or of a Document_representation (see 4.2.110). At least one of the optional attributes shall be specified for each instance of this object.

In the case where a Document_content_property is referred by a Document_representation (see 4.2.110), the characteristics apply to all individual Document_file (see 4.2.106) objects, whereas in the case where it is referred by a Document_file (see 4.2.106), the characteristics apply on an individual basis.

The data associated with a Document_content_property are the following:

- detail_level;
- geometry_type;
- languages;
- real_world_scale.

4.2.103.1 detail_level

The detail_level specifies the level of detail that the Document_file (see 4.2.106) or the Document_representation (see 4.2.110) provides. The value is either user defined or predefined.

The predefined value of detail_level is one of the following:

- rough 3d shape;
- rounded edges.

NOTE See 4.2.103.1.1 - 4.2.103.1.2 for the definition of each predefined value for detail_level.

4.2.103.1.1 rough 3d shape

rough 3d shape: 3D shape model without edge rounds and fillets.

4.2.103.1.2 rounded edges

rounded edges: 3D shape model with edge rounds and fillets.

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The detail_level need not be specified for a particular Document_content_property.

4.2.103.2 geometry_type

The geometry_type specifies the kind or kinds of geometry that an object contains.

The value is either user defined or predefined.

The predefined value of detail_level is one of the following:

- 3D wireframe model;
- 2D shape;
- surface model;
- closed volume;
- solid model;
- solid and surface model;
- assembly;
- assembly with mating elements;
- 2D drawing;
- drawing derived from 3D data;
- drawing related to 3D data.

NOTE See 4.2.103.2.1 - 4.2.103.2.11 for the definition of each predefined value for detail_level.

4.2.103.2.1 3D wireframe model

3D wireframe model: The document contains a 3D shape model in wireframe representation.

4.2.103.2.2 2D shape

2D shape: The document contains a 2D shape model or contours only.

4.2.103.2.3 surface model

surface model: The document contains a 3D shape model in surface representation.

4.2.103.2.4 closed volume

closed volume: The document contains a 3D shape model in closed body topological surface representation.

4.2.103.2.5 solid model

solid model: The document contains a 3D shape model in advanced boundary representation.

4.2.103.2.6 solid and surface model

solid and surface model: The document contains a 3D shape model in surface and advanced boundary representation.

4.2.103.2.7 assembly

assembly: The document contains an assembly structure with reference to the assembled components and their transformation matrices.

4.2.103.2.8 assembly with mating elements

assembly with mating elements: The document contains an assembly structure including the mating components only, such as screws or rivets, with exact positioning information. This assembly representation is intended to be overlaid with the assembly structure for the main components.

4.2.103.2.9 2D drawing

2D drawing: The document contains a technical drawing without 3D shape representation.

4.2.103.2.10 drawing derived from 3D data

drawing derived from 3D data: : The document contains a technical drawing that has been derived from a 3D shape model.

4.2.103.2.11 drawing related to 3D data

drawing related to 3D data: : The document contains a technical drawing that visualizes a 3D shape model and possibly establishes associative links to the 3D shape model.

The `geometry_type` need not be specified for a particular `Document_content_property`.

4.2.103.3 languages

The `languages` specifies which language or languages are used in the characterized objects.

EXAMPLE 'Japanese' and 'German' are examples for the fact that annotation on a drawing is provided in the language 'Japanese' or 'German' respectively.

See 4.3.987 for the application assertion.

4.2.103.4 real_world_scale

The `real_world_scale` specifies the scale that is used in the `Document_file` (see 4.2.106) or in the `Document_representation` (see 4.2.110) the `Document_content_property` is referred by.

The `real_world_scale` need not be specified for a particular `Document_content_property`.

See 4.3.988 for the application assertion.

4.2.104 Document_creation_property

A Document_creation_property specifies characteristics of Document_file (see 4.2.106) or of Document_representation (see 4.2.110). It specifies the context of the creation of the object. At least one of the optional attributes shall be specified for each instance of this object.

In the case where a Document_creation_property is referred by a Document_representation (see 4.2.110) the characteristics apply to all individual Document_file (see 4.2.106) objects, whereas in the case it is referred by a Document_file (see 4.2.106), the characteristics apply on an individual basis.

The data associated with a Document_creation_property are the following:

- creating_interface;
- creating_system;
- operating_system.

4.2.104.1 creating_interface

The creating_interface specifies the computer application used to create the Document_file (see 4.2.106) or Document_representation (see 4.2.110) object.

EXAMPLE 1 'CATIGE V4.1.8' is an example for a creating interface of a Digital_document (see 4.2.91).

EXAMPLE 2 'Postscript Printer Driver' is an example for a creating interface of a Physical_document (see 4.2.242).

EXAMPLE 3 'SYSTEM-C-STL' is an example for a creating interface of a Physical_model (see 4.2.244) in the case of a stereolithographic model.

The creating_interface need not be specified for a particular Document_creation_property.

4.2.104.2 creating_system

The creating_system specifies the computer application or the machine which is used to create the object that is characterized.

4.2.104.3 operating_system

The operating_system specifies the operating system that is used to execute the computer application that created the characterized object.

The operating_system need not be specified for a particular Document_creation_property.

4.2.105 Document_designation

A Document_designation is a type of Object_designation (see 4.2.217) that is an identifier of a document.

EXAMPLE The title information of a document can be used as Document_designation.

4.2.106 Document_file

A Document_file is one of potentially more files on a computer system or in actual stacks of paper that make up a Document_representation (see 4.2.110).

Each Document_file is either a Digital_file (see 4.2.92) or a Hardcopy (see 4.2.166).

The data associated with a Document_file are the following:

- content;
- creation;
- description;
- document_file_type;
- external_id_and_location;
- file_format;
- id;
- size;
- version_id.

4.2.106.1 content

The content characterizes the content of the Document_file.

The content need not be specified for a particular Document_file.

See 4.3.989 for the application assertion.

4.2.106.2 creation

The creation specifies further details of the context of the creation of the Document_file.

The creation need not be specified for a particular Document_file.

See 4.3.990 for the application assertion.

4.2.106.3 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Document_file.

The description need not be specified for a particular Document_file.

4.2.106.4 document_file_type

The `document_file_type` specifies the format of the `Document_file`. It shall only be specified, if the `Document_file` does not participate in a `Document` (see 4.2.101).

The `document_file_type` need not be specified for a particular `Document_file`.

See 4.3.993 for the application assertion.

4.2.106.5 external_id_and_location

The `external_id_and_location` specifies alternatives of the identifier and location of the `Document_file`.

EXAMPLE A copy of a document may be found in another department with an different id.

See 4.3.994 for the application assertion.

4.2.106.6 file_format

The `file_format` specifies the characteristics of the `Document_file` that specify the format of the object.

The `file_format` need not be specified for a particular `Document_file`.

See 4.3.991 for the application assertion.

4.2.106.7 id

The `id` specifies the identifier which is used to locate the file either on a computer system or in a repository of paper documents.

4.2.106.8 size

The `size` specifies characteristics for the size of the `Document_file`.

The `size` need not be specified for a particular `Document_file`.

See 4.3.992 for the application assertion.

4.2.106.9 version_id

The `version_id` specifies the identification of the version that distinguishes one `Document_file` object from other versions of `Document_file` objects with the same `id`.

The `version_id` need not be specified for a particular `Document_file`.

4.2.107 Document_file_relationship

A Document_file_relationship is a relationship between two Document_file (see 4.2.106) objects. It specifies that the related Document_file (see 4.2.106) is referenced from the relating Document_file (see 4.2.106).

The data associated with a Document_file_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.107.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Document_file_relationship.

The description need not be specified for a particular Document_file_relationship.

4.2.107.2 related

The related specifies the second of the two Document_file (see 4.2.106) objects related by the Document_file_relationship.

See 4.3.995 for the application assertion.

4.2.107.3 relating

The relating specifies the first of the two Document_file (see 4.2.106) objects related by the Document_file_relationship.

See 4.3.996 for the application assertion.

4.2.107.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- addition;
- copy;
- decomposition;
- derivation;
- peer;
- reference;
- sequence;
- substitution;
- translation.

NOTE See 4.2.107.4.1 - 4.2.107.4.8 for the definition of each predefined value for `relation_type`.

4.2.107.4.1 addition

addition: The `Document_file_relationship` specifies that the related document provides supplementary or collateral information with regard to the information provided by the relating document.

4.2.107.4.2 copy

copy: The `Document_file_relationship` defines a relationship where the related `Document_representation` (see 4.2.110) is a copy of the relating `Document_representation` (see 4.2.110).

4.2.107.4.3 decomposition

decomposition: The `Document_file_relationship` defines a relationship where the related `Document_representation` (see 4.2.110) is one of potentially more sub documents of the relating `Document_representation` (see 4.2.110).

4.2.107.4.4 derivation

derivation: The `Document_file_relationship` defines a relationship where the related `Document_representation` (see 4.2.110) is derived from the relating `Document_representation` (see 4.2.110).

4.2.107.4.5 reference

reference: The application object defines a relationship where the related document is referenced from the relating.

4.2.107.4.6 sequence

sequence: The Document_file_relationship defines a logical sequence where the related Document_ - representation (see 4.2.110) comes after the relating Document_representation (see 4.2.110) (e.g. a sequence of clauses).

4.2.107.4.7 substitution

substitution: The Document_file_relationship defines a relationship where the related Document_ - representation (see 4.2.110) replaces the relating Document_representation (see 4.2.110).

4.2.107.4.8 translation

translation: The Document_file_relationship specifies that the related document is generated through a translation process from the relating document.

4.2.108 Document_format_property

A Document_format_property specifies characteristics of a Document_file (see 4.2.106) or of a Document_representation (see 4.2.110) that specify the format of the object. At least one of the optional attributes shall be specified for each instance of this object.

In the case where a Document_format_property is referred by a Document_representation (see 4.2.110), the characteristics apply to all individual Document_file (see 4.2.106) objects, whereas in the case it is referred by a Document_file (see 4.2.106) the characteristics apply on an individual basis.

The data associated with a Document_representation (see 4.2.110) are the following:

- character_code;
- data_format;
- size_format.

4.2.108.1 character_code

The character_code specifies the character code that is used in the characterized object.

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The predefined value of `character_code` is one of the following:

- binary;
- IEC 61286;
- ISO 646;
- ISO 3098-1;
- ISO 6937;
- ISO 8859-1;
- ISO 10646.

NOTE 1 See 4.2.108.1.1 - 4.2.108.1.7 for the definition of each predefined value for `character_code`.

4.2.108.1.1 binary

binary: The document contains data in binary format.

4.2.108.1.2 IEC 61286

IEC 61286: The coded character set used to encode the document data according to IEC 61286.

4.2.108.1.3 ISO 646

ISO 646: The coded character set used to encode the document data according to ISO 646.

NOTE 2 The character set in ISO 646 is identical to the character set commonly known as ASCII.

4.2.108.1.4 ISO 3098-1

ISO 3098-1: The coded character set used to encode the document data is according to ISO 3098-1.

4.2.108.1.5 ISO 6937

IEC 61286: The coded character set used to encode the document data according to ISO/IEC 6937.

4.2.108.1.6 ISO 8859-1

ISO 8859-1: The coded character set used to encode the document data according to ISO 8859-1.

NOTE 3 The character set in ISO 8859-1 is identical to the character set commonly known as LATIN-1.

4.2.108.1.7 ISO 10646

ISO 10646: The coded character set used to encode the document data according to ISO/IEC 10646.

The `character_code` need not be specified for a particular `Document_format_property`.

4.2.108.2 data_format

The `data_format` specifies the convention that was used to structure the information in the characterized object.

The predefined value of `data_format` is one of the following:

- DXF;
- IGES;
- ISO 10303-203;
- ISO 10303-214;
- TIFF CCITT GR4.

NOTE 1 See 4.2.108.2.1 - 4.2.108.2.5 for the definition of each predefined value for `data_format`.

4.2.108.2.1 DXF

DXF: The document contains data in Drawing (see 4.2.119) Exchange File format.

4.2.108.2.2 IGES

IGES: The document contains data in Initial Graphics Exchange Specification (see 4.2.323) format.

4.2.108.2.3 ISO 10303-203

ISO 10303-203: The document contains data in ISO 10303-203 format.

4.2.108.2.4 ISO 10303-214

ISO 10303-214: The document contains data in ISO 10303-214 format.

4.2.108.2.5 VDAFS

VDAFS: The document contains data in VDAFS format.

The `data_format` need not be specified for a particular `Document_format_property`.

4.2.108.3 size_format

The `size_format` specifies the dimensions of a physical presentation of the object the `size_format` applies to.

EXAMPLE 1 'ISO A0' is an example for the `size_format` of a drawing that is stored digitally.

EXAMPLE 2 '0.2 x 0.4 x 0.4 meters' is an example for the `size_format` of a wooden model.

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See 4.3.997 for the application assertion.

4.2.109 Document_location_property

A Document_location_property specifies where a Document_file (see 4.2.106) or a Document_-representation (see 4.2.110) can be found in a digital or physical data storage system. In the case where a Document_location_property is referred by a Document_representation (see 4.2.110), the characteristics apply to all individual objects, whereas in the case it is referred by a Document_file (see 4.2.106), the characteristics apply on an individual basis.

The data associated with a Document_location_property are the following:

— location_name

4.2.109.1 location_name

The location_name specifies the location, where the object, that refers to the Document_location_property, can be found.

NOTE Multiple paths may be specified for a single object, e.g., a database in the context of an electronic vault.

EXAMPLE The linking mechanism of many operating systems allows references to a single object from various places in the file system without copying its contents.

4.2.110 Document_representation

A Document_representation is used to specify a specific issue of a document.

Each Document_representation is either a Digital_document (see 4.2.91), a Physical_document (see 4.2.242), or a Physical_model (see 4.2.244).

The data associated with a Document_representation are the following:

- associated_document_version;
- common_location;
- content;
- creation;
- document_type;
- id;
- representation_format;
- size.

4.2.110.1 associated_document_version

The associated_document_version specifies the version of the logical document that is being represented.

See 4.3.1003 for the application assertion.

4.2.110.2 common_location

The common_location describes the location of a document.

NOTE Different common locations represent alternative representations of the same physical location.

See 4.3.1001 for the application assertion.

4.2.110.3 content

The content specifies characteristics of the content of the Document_representation.

The content need not be specified for a particular Document_representation.

See 4.3.998 for the application assertion.

4.2.110.4 creation

The creation specifies further details of the creation of the Document_representation.

The creation need not be specified for a particular Document_representation.

See 4.3.999 for the application assertion.

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4.2.110.5 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Document_representation.

The description need not be specified for a particular Document_representation.

4.2.110.6 id

The id specifies the identifier of the Document_representation.

4.2.110.7 representation_format

The representation_format specifies the format of the document represented by Document_representation.

The representation_format need not be specified for a particular Document_representation.

See 4.3.1000 for the application assertion.

4.2.110.8 size

The size specifies the size of the represented document.

The size need not be specified for a particular Document_representation.

See 4.3.1002 for the application assertion.

4.2.111 Document_representation

A Document_representation (see 4.2.110) is used to specify a specific issue of a document.

The data associated with a Document_representation (see 4.2.110) are the following:

- associated_document_version;
- description;
- document_type;
- id.

4.2.111.1 associated_document_version

The associated_document_version specifies the Document_version (see 4.2.114).

4.2.111.2 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Document_representation (see 4.2.110).

4.2.111.3 document_type

The document_type specifies the kind of the document represented by Document_representation (see 4.2.110).

4.2.111.4 id

The id specifies the identifier of the Document_representation (see 4.2.110).

4.2.112 Document_size_property

A Document_size_property specifies the size of a Document_file (see 4.2.106) or of a Document_representation (see 4.2.110) object. At least one of the optional attributes shall be specified for each instance of this object.

In the case where a Document_size_property is referred by a Document_representation (see 4.2.110), the size information applies to the sum of all individual objects that are collected by this object, whereas in the case it is referred by a Document_file (see 4.2.106), the size information is the one of the individual objects that is referenced.

The data associated with a Document_size_property are the following:

- file_size;
- page_count.

4.2.112.1 file_size

The file_size specifies the Value_with_unit (see 4.2.360) that represents the size of a digitally stored document. The file_size shall only be applied in cases where the Document_size_property is referred by a Digital_document (see 4.2.91) or a Document_file (see 4.2.106).

EXAMPLE '15021 Bytes' and 'less than 500 Bytes' are examples for a file_size.

The file_size need not be specified for a particular Document_size_property.

See 4.3.1004 for the application assertion.

4.2.112.2 page_count

The page_count specifies the number of pages of the application object the Document_size_property referred by. The page_count shall only be used in cases where the Document_size_property is referred by a Hardcopy (see 4.2.166) or a Physical_document (see 4.2.242).

EXAMPLE 2 pages' and 'more than 1 page' are examples of a page_count.

The page_count need not be specified for a particular Document_size_property.

See 4.3.1005 for the application assertion.

4.2.113 Document_structure

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A Document_structure is the relation between two Document_representation (see 4.2.110) objects.

The data associated with an Document_structure are the following:

- description;
- related;
- relating;
- relation_type.

4.2.113.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Document_structure.

The description need not be specified for a particular Document_structure.

4.2.113.2 related

The related specifies the second of the two Document_representation (see 4.2.110) objects related by the Document_structure.

See 4.3.1006 for the application assertion.

4.2.113.3 relating

The relating specifies the first of the two Document_representation (see 4.2.110) objects related by the Document_structure.

See 4.3.1007 for the application assertion.

4.2.113.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- addition;
- copy;
- decomposition;
- derivation;
- peer;
- reference;
- sequence;
- substitution;
- translation.

NOTE See 4.2.113.4.1 - 4.2.113.4.8 for the definition of each predefined value for `relation_type`.

4.2.113.4.1 addition

addition: The `Document_structure` specifies that the related document provides supplementary or collateral information with regard to the information provided by the relating document.

4.2.113.4.2 copy

copy: The `Document_structure` defines a relationship where the related `Document_representation` (see 4.2.110) is a copy of the relating `Document_representation` (see 4.2.110).

4.2.113.4.3 decomposition

decomposition: The `Document_structure` defines a relationship where the related `Document_representation` (see 4.2.110) is one of potentially more sub documents of the relating `Document_representation` (see 4.2.110).

4.2.113.4.4 derivation

derivation: The `Document_structure` defines a relationship where the related `Document_representation` (see 4.2.110) is derived from the relating `Document_representation` (see 4.2.110).

EXAMPLE Documentation prepared for specific target groups of end users is derived from a set of master documents. The information content is a subset of the information contained in the master document and the layout is tailored to the needs of the target group.

4.2.113.4.5 reference

reference: The application object defines a relationship where the related document is referenced from the relating.

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4.2.113.4.6 sequence

sequence: The Document_structure defines a logical sequence where the related Document_representation (see 4.2.110) comes after the relating Document_representation (see 4.2.110) (e.g. a sequence of clauses).

4.2.113.4.7 substitution

substitution: The Document_structure defines a relationship where the related Document_representation (see 4.2.110) replaces the relating Document_representation (see 4.2.110).

4.2.113.4.8 translation

translation: The Document_structure specifies that the related document is generated through a translation process from the relating document.

4.2.114 Document_type_property

A Document_type_property specifies the kind of a Document_file (see 4.2.106).

The data associated with an Document_type_property are the following:

- document_type_name;
- used_classification_system.

4.2.114.1 document_type_name

The document_type_name specifies the word or the group of words that describe the kind of object the characteristics are provided for. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- geometry;
- NC data;
- FE data;
- sample data;
- process plan;
- check plan;
- drawing.

NOTE See 4.2.114.1.1 - 4.2.114.1.8 for the definition of each predefined value for relation_type.

4.2.114.1.1 geometry

geometry: The document represents a shape model.

4.2.114.1.2 NC data

NC data: The document represents numerical control data.

4.2.114.1.3 FE data

FE data: The document represents numerical control data.

4.2.114.1.4 sample data

sample data: The document represents measured data.

4.2.114.1.5 process plan

process plan: The document represents process planning data.

4.2.114.1.6 check plan

check plan: The document represents quality control planning data.

4.2.114.1.7 drawing

drawing: The document represents a technical drawing.

4.2.114.2 used_classification_system

The `used_classification_system` specifies the `Classification_system` (see 4.2.48) the `document_type_name` is defined in.

The `used_classification_system` need not be specified for a particular `Document_type_property`.

See 4.3.1008 for the application assertion.

4.2.115 Document_version

A `Document_version` specifies a particular variant of an `Document` (see 4.2.101).

NOTE Several versions for the same `Document` (see 4.2.101) may exist at one point in time. The information about valid and invalid versions is handled by the associated organizational data.

The data associated with an `Document_version` are the following:

- `associated_document`;
- `description`;
- `id`.

4.2.115.1 associated_document

The `associated_document` specifies the `Document` (see 4.2.101) to which the `Document_version` is assigned.

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See 4.3.1009 for the application assertion.

4.2.115.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Document_version.

The description need not be specified for a particular Document_version.

4.2.115.3 id

The id specifies the identifier of the Document_version.

4.2.116 Document_version_relationship

A Document_version_relationship is the relation between two Document_version (see 4.2.114) objects.

The data associated with an Document_version_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.116.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Document_version_relationship.

The description need not be specified for a particular Document_version_relationship.

4.2.116.2 related

The related specifies the second of the two Document_version (see 4.2.114) objects related by the Document_version_relationship.

See 4.3.1010 for the application assertion.

4.2.116.3 relating

The relating specifies the first of the two Document_version (see 4.2.114) objects related by the Document_version_relationship.

See 4.3.1011 for the application assertion.

4.2.116.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- derivation;
- hierarchy;
- sequence;
- supplied document.

NOTE See 4.2.116.4.1 - 4.2.116.4.4 for the definition of each predefined value for `relation_type`.

4.2.116.4.1 derivation

`derivation`: The `Document_version_relationship` defines a deriving relationship where the related `Document_version` (see 4.2.114) is based on the relating `Document_version` (see 4.2.114).

4.2.116.4.2 hierarchy

`hierarchy`: The `Document_version_relationship` defines a hierarchical relationship where the related `Document_version` (see 4.2.114) is a sub version of the relating `Document_version` (see 4.2.114).

EXAMPLE Revision 1.1 and 1.2 of a document.

4.2.116.4.3 sequence

`sequence`: The `Document_version_relationship` defines a succession of versions where the relating `Document_version` (see 4.2.114) is the preceding version and the related `Document_version` (see 4.2.114) is the following version. For a `Document_version` (see 4.2.114), there shall be, at the most, one `Document_version_relationship` of this relation type as relating and, at most, one `Document_version_relationship` of this relation type as related.

4.2.116.4.4 supplied document

`supplied document`: The `Document_version_relationship` defines a relationship where the related `Document_version` (see 4.2.114) is an alias for the relating `Document_version` (see 4.2.114). In this case the `Document` (see 4.2.101) objects associated with the two `Document_version` (see 4.2.114) objects shall be different.

4.2.117 Draughting_annotation

A `Draughting_annotation` is text and symbology applied to either a drawing sheet, drawing view, another piece of annotation, or a draughting model, for the purpose of communicating product data and drawing interpretation information.

Each `Draughting_annotation` is either an `Annotation_element` (see 4.2.15), an `Annotation_placed_annotation` (see 4.2.16), a `Dimension` (see 4.2.93), a `Draughting_callout` (see 4.2.117), a `Model_`

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placed_annotation (see 4.2.202), a Sheet_placed_annotation (see 4.2.308), or a View_placed_annotation (see 4.2.362).

4.2.118 Draughting_callout

A Draughting_callout is a type of Draughting_annotation (see 4.2.116) that is a combination of text, annotation curves, and symbology that conveys information about a specific feature or area.

Each Draughting_callout is either a Datum_feature_callout (see 4.2.83), a Datum_target_callout (see 4.2.84), or a Geometrical_tolerance (see 4.2.160).

The data associated with a Draughting_callout are the following:

- components.

4.2.118.1 components

The components specifies the text, curves, and symbols that compose the draughting callout.

Each components may be one of the following: Annotation_curve (see 4.2.14), Annotation_symbol (see 4.2.20), or Text (see 4.2.342).

See 4.3.1012, 4.3.1013, and 4.3.1014 for the application assertions.

4.2.119 Draughting_model

A Draughting_model is the aggregation of all those elements that, taken as a whole, make up a graphical description of the product data of an electrotechnical system or of its constituents.

The data associated with a Draughting_model are the following:

- coordinate_space;
- elements;
- name.

4.2.119.1 coordinate_space

The coordinate_space specifies the coordinate system that describes the two-dimensional space in which the content of the Draughting_model is located in.

See 4.3.1015 for the application assertion.

4.2.119.2 element

The element specifies the constituents of the Draughting_model.

See 4.3.1016 for the application assertion.

4.2.119.3 name

The name specifies the identifier of the Draughting_model.

4.2.120 Drawing

A Drawing is the presentation of product data in a human-interpretable form wherein the physical and functional requirements for that product are presented in pictorial or textual form.

The data associated with a Drawing are the following:

- drawing_specification;
- drawing_type;
- id;
- language_code;
- name;
- source;
- version_id.

4.2.120.1 drawing_specification

A drawing_specification specifies the identification of the standard to which the drawing conforms. This standard specifies the presentation forms used in the drawing.

EXAMPLE A drawing_specification can be ISO 129, Technical drawings – Dimensioning.

There shall be zero, one or more drawing_specification for a Drawing.

4.2.120.2 drawing_type

The drawing_type specifies the category of the Drawing and may indicate the information content.

EXAMPLE A drawing_type could be 'circuit diagram', 'terminal diagram', or 'arrangement drawing'.

4.2.120.3 extended_designation

The extended_designation specifies a structured label for the Drawing.

NOTE The label assigned through extended_designation shall be identical to the label assigned by the 'id' attribute.

The extended_designation need not be specified for a particular Drawing.

See 4.3.1017 for the application assertion.

4.2.120.4 id

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The id specifies the identifier of the Drawing.

4.2.120.5 language_code

The language_code specifies a language spoken by human beings to communicate with each other verbally or in written form. The language symbol given in ISO 639 shall be used.

There shall be zero, one or more language_code for a Drawing.

4.2.120.6 name

The name specifies a speaking designation of the Drawing.

The name need not be specified for a particular Drawing.

4.2.120.7 source

The source specifies from where the drawing can be procured.

The source need not be specified for a particular Drawing.

4.2.120.8 version_id

The version_id specifies versioning information for the Drawing.

4.2.121 Drawing_assignment

A Drawing_assignment is a relationship that associates a Drawing (see 4.2.119) with an item.

The data associated with a Drawing_assignment are the following:

- assigned_drawing;
- is_assigned_to.

4.2.121.1 assigned_drawing

The assigned_drawing specifies the Drawing (see 4.2.119).

See 4.3.1037 for the application assertion.

4.2.121.2 is_assigned_to

The is_assigned_to specifies the item with which the Drawing (see 4.2.119) is associated.

Each is_assigned_to may be one of the following: Activity (see 4.2.1), Address (see 4.2.6), Approval (see 4.2.23), Approval_status (see 4.2.25), Cable_pull_information (see 4.2.33), Class_category_association (see 4.2.40), Class_condition_association (see 4.2.41), Class_inclusion_association (see 4.2.42), Class_specification_association (see 4.2.44), Classification_attribute (see 4.2.47), Classification_system (see 4.2.48), Complex_product (see 4.2.51), Connectivity_definition (see 4.2.61), Contract (see 4.2.63), Data_element (see 4.2.70), Data_element_definition (see 4.2.72), Data_element_specification (see 4.2.75), Design_discipline_item_definition (see 4.2.86), Device (see

4.2.88), *Function_definition* (see 4.2.145), *Function_interface* (see 4.2.147), *Function_unit* (see 4.2.148), *Function_version* (see 4.2.150), *Functional_connectivity_definition* (see 4.2.152), *Functionality* (see 4.2.155), *General_classification* (see 4.2.156), *Generic_note* (see 4.2.159), *Interface* (see 4.2.170), *Interface_port* (see 4.2.171), *Interface_terminal* (see 4.2.174), *Item* (see 4.2.178), *Item_identification* (see 4.2.180), *Item_version* (see 4.2.182), *Location* (see 4.2.192), *Marking* (see 4.2.199), *Node* (see 4.2.208), *Notification* (see 4.2.213), *Object_designation* (see 4.2.217), *Organization* (see 4.2.223), *Path* (see 4.2.232), *Path_node* (see 4.2.233), *Person* (see 4.2.237), *Physical_assembly_relationship* (see 4.2.241), *Physical_instance* (see 4.2.243), *Port* (see 4.2.247), *Process_variable* (see 4.2.260), *Product_class* (see 4.2.263), *Product_identification* (see 4.2.268), *Project* (see 4.2.271), *Retention_period* (see 4.2.289), *Route* (see 4.2.290), *Section* (see 4.2.296), *Section_end* (see 4.2.297), *Section_interface* (see 4.2.298), *Security_classification* (see 4.2.301), *Security_level* (see 4.2.302), *Signal* (see 4.2.309), *Signal_value* (see 4.2.313), *Specification* (see 4.2.323), *Specification_category* (see 4.2.324), *Specification_expression* (see 4.2.326), *Specification_inclusion* (see 4.2.327), *Technical_system* (see 4.2.336), *Terminal* (see 4.2.338), *Work_order* (see 4.2.364), or *Work_request* (see 4.2.365).

See 4.3.1018, 4.3.1019, 4.3.1020, 4.3.1021, 4.3.1022, 4.3.1023, 4.3.1024, 4.3.1025, 4.3.1026, 4.3.1027, 4.3.1028, 4.3.1029, 4.3.1030, 4.3.1031, 4.3.1032, 4.3.1033, 4.3.1034, 4.3.1035, 4.3.1036, 4.3.1038, 4.3.1039, 4.3.1040, 4.3.1041, 4.3.1042, 4.3.1043, 4.3.1044, 4.3.1045, 4.3.1046, 4.3.1047, 4.3.1048, 4.3.1049, 4.3.1050, 4.3.1051, 4.3.1052, 4.3.1053, 4.3.1054, 4.3.1055, 4.3.1056, 4.3.1057, 4.3.1058, 4.3.1059, 4.3.1060, 4.3.1061, 4.3.1062, 4.3.1063, 4.3.1064, 4.3.1065, 4.3.1066, 4.3.1067, 4.3.1068, 4.3.1069, 4.3.1070, 4.3.1071, 4.3.1072, 4.3.1073, 4.3.1074, 4.3.1075, 4.3.1076, 4.3.1077, 4.3.1078, 4.3.1079, 4.3.1080, 4.3.1081, 4.3.1082, 4.3.1083, and 4.3.1084 for the application assertions.

4.2.122 Drawing_sequence

A *Drawing_sequence* is the relation between two *Drawing* (see 4.2.119) objects.

The data associated with a *Drawing_sequence* are the following:

- *following_version*;
- *preceding_version*.

4.2.122.1 following_version

The *following_version* specifies the *Drawing* (see 4.2.119) that supersedes the preceding version of the *Drawing* (see 4.2.119).

See 4.3.1085 for the application assertion.

4.2.122.2 preceding_version

The *preceding_version* specifies the *Drawing* (see 4.2.119) that is superseded through the *Drawing* (see 4.2.119) associated by the '*following_version*' attribute.

See 4.3.1086 for the application assertion.

4.2.123 Drawing_sheet

A Drawing_sheet is the logical division of a drawing into a two-dimensional area for the presentation of product data. These divisions correspond to sheet paper sizes for plotting. A Drawing_sheet contains at least one Drawing_view (see 4.2.125) or one Draughting_annotation (see 4.2.116).

The data associated with a Drawing_sheet are the following:

- associated_drawing;
- coordinate_space;
- extended_designation;
- id;
- name;
- orientation;
- sheet_number;
- size;
- version_id.

4.2.123.1 associated_drawing

The associated_drawing specifies the Drawing (see 4.2.119) that is valid for the Drawing_sheet.

See 4.3.1089 for the application assertion.

4.2.123.2 coordinate_space

The coordinate_space specifies the coordinate system that describes the two-dimensional space in which the content of the Drawing_sheet is located.

See 4.3.1087 for the application assertion.

4.2.123.3 extended_designation

The extended_designation specifies a structured label for the Drawing_sheet.

NOTE The label assigned through extended_designation shall be identical to the label assigned by the 'sheet_number' attribute.

The extended_designation need not be specified for a particular Drawing_sheet.

See 4.3.1088 for the application assertion.

4.2.123.4 name

The name specifies a speaking designation of the Drawing_sheet.

The name need not be specified for a particular Drawing_sheet.

4.2.123.5 orientation

The orientation specifies the alignment of the Drawing_sheet.

The value of orientation is one of the following:

— landscape;

— portrait.

NOTE See 4.2.123.5.1 - 4.2.123.5.2 for the definition of each predefined value for orientation.

4.2.123.5.1 landscape

landscape: The Drawing_sheet has a format where the width of the sheet is greater than the height.

4.2.123.5.2 portrait

portrait: The Drawing_sheet has a format where the height of the sheet is greater than the width.

4.2.123.6 sheet_number

The sheet_number specifies the page number for a particular drawing sheet and its location in relation to other sheets of the drawing.

The sheet_number need not be specified for a particular Drawing_sheet.

4.2.123.7 size

The size specifies the physical size of the presentation area of the drawing sheet. This physical size corresponds to the physical size of a sheet of paper on which the drawing sheet can be placed.

See 4.3.1090 for the application assertion.

4.2.123.8 version_id

The version_id specifies versioning information for the Drawing_sheet.

4.2.124 Drawing_sheet_layout

A Drawing_sheet_layout is a type of User_defined_symbol_definition (see 4.2.355) that is the arrangement of a sheet of a drawing.

4.2.125 Drawing_sheet_relationship

A Drawing_sheet_relationship is the relation between two Drawing_sheet (see 4.2.122) objects.

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The data associated with an `Drawing_sheet_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.125.1 `description`

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Drawing_sheet_relationship`.

The `description` need not be specified for a particular `Drawing_sheet_relationship`.

4.2.125.2 `related`

The `related` specifies the second of the two `Drawing_sheet` (see 4.2.122) objects related by the `Drawing_sheet_relationship`.

See 4.3.1091 for the application assertion.

4.2.125.3 `relating`

The `relating` specifies the first of the two `Drawing_sheet` (see 4.2.122) objects related by the `Drawing_sheet_relationship`.

See 4.3.1092 for the application assertion.

4.2.125.4 `relation_type`

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- `derivation`;
- `substitution`;
- `translation`;
- `version hierarchy`;
- `version sequence`.

NOTE See 4.2.125.4.1 - 4.2.125.4.5 for the definition of each predefined value for `relation_type`.

4.2.125.4.1 `derivation`

derivation: The `Drawing_sheet_relationship` defines a deriving relationship where the related `Drawing_sheet` (see 4.2.122) is based on the relating `Drawing_sheet` (see 4.2.122).

4.2.125.4.2 substitution

substitution: The `Drawing_sheet_relationship` defines a relationship where the related `Drawing_sheet` (see 4.2.122) replaces the relating `Drawing_sheet` (see 4.2.122).

4.2.125.4.3 translation

translation: The `Drawing_sheet_relationship` defines a relationship where the related `Drawing_sheet` (see 4.2.122) is a transcription into another language of the relating `Drawing_sheet` (see 4.2.122).

4.2.125.4.4 version hierarchy

version hierarchy: The `Drawing_sheet_relationship` defines a hierarchical relationship where the related `Drawing_sheet` (see 4.2.122) is a subversion of the relating `Drawing_sheet` (see 4.2.122).

EXAMPLE Revision 1.1 and 1.2 of a drawing.

4.2.125.4.5 version sequence

version sequence: The `Drawing_sheet_relationship` defines a succession of versions where the relating `Drawing_sheet` (see 4.2.122) is the preceding version and the related `Drawing_sheet` (see 4.2.122) is the following version. For a `Drawing_sheet` (see 4.2.122) there shall be, at the most, one `Drawing_sheet_relationship` of this relation type as relating and, at most, one `Drawing_sheet_relationship` of this relation type as related.

4.2.126 Drawing_view

A `Drawing_view` is the set of instructions for producing a two-dimensional planar projection of a `Draughting_model` (see 4.2.118) from a specified position within its coordinate system.

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NOTE A `Drawing_view` may be placed multiple times on a drawing, but each is a separate `Drawing_view`. The placement within a particular `Drawing_sheet` (see 4.2.122) makes each `Drawing_view` unique to that `Drawing_sheet` (see 4.2.122).

The data associated with a `Drawing_view` are the following:

- `containing_sheet`;
- `coordinate_space`;
- `id`;
- `position`;
- `rotation`.

4.2.126.1 `containing_sheet`

The `containing_sheet` specifies the `Drawing_sheet` (see 4.2.122) object in which the `Drawing_view` is placed.

See 4.3.1094 for the application assertion.

4.2.126.2 `coordinate_space`

The `coordinate_space` specifies the `Cartesian_coordinate_space_2d` (see 4.2.34) in which the `Drawing_view` has been defined.

See 4.3.1093 for the application assertion.

4.2.126.3 `id`

The `id` specifies the identifier of the `Drawing_view`.

The `id` need not be specified for a particular `Drawing_view`.

4.2.126.4 `position`

The `position` specifies the location of the origin of the coordinate system of the `Drawing_view` relative to the origin of the coordinate system of the drawing sheet where it is placed.

See 4.3.1095 for the application assertion.

4.2.126.5 `rotation`

The `rotation` specifies the angle, measured counter-clockwise, between the horizontal axis of the coordinate system of the `Drawing_view` and the horizontal axis of the coordinate system of the `Drawing_sheet` (see 4.2.122) where it is placed.

4.2.127 `Duration`

A Duration is the definition of a period of time.

The data associated with an Effectivity (see 4.2.127) are the following:

- time;
- time_unit.

4.2.127.1 time

The time specifies the extend of the Duration.

4.2.127.2 time_unit

The time_unit specifies the unit in which the time is specified.

4.2.128 Effectivity

An Effectivity is the identification of the valid use of an aspect of product data tracked by date.

The data associated with an Effectivity are the following:

- concerned_organization;
- description;
- effectivity_context;
- end_definition;
- id;
- period;
- start_definition;
- version_id.

4.2.128.1 concerned_organization

The concerned_organization specifies the Organization (see 4.2.223) for which the Effectivity is valid.

EXAMPLE The Effectivity of the same item may be different in the various production sites of the manufacturer.

See 4.3.1101 for the application assertion.

4.2.128.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Effectivity.

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The description need not be specified for a particular Effectivity.

4.2.128.3 effectivity_context

The effectivity_context specifies the life-cycle stage for which the Effectivity is valid.

EXAMPLE The effectivity_context is 'prototype building' in order to express that the Effectivity is valid for this life-cycle stage of the concerned item.

The effectivity_context need not be specified for a particular Effectivity.

4.2.128.4 end_definition

The end_definition specifies the date, event, or period of time after the start definition or after an event when the identified item is no longer effective.

The end_definition need not be specified for a particular Effectivity.

Each end_definition may be one of the following: Date_time (see 4.2.79) or Event_reference (see 4.2.130).

See 4.3.1096 and 4.3.1099 for the application assertions.

4.2.128.5 id

The id specifies the identifier of the Effectivity.

The id need not be specified for a particular Effectivity.

4.2.128.6 period

The period specifies the period of time in which the Effectivity is valid, starting at the point in time specified by either 'start_definition' or 'end_definition'.

The period need not be specified for a particular Effectivity.

See 4.3.1098 for the application assertion.

4.2.128.7 start_definition

The start_definition specifies the date or the event when the identified item becomes effective.

The start_definition need not be specified for a particular Effectivity.

Each start_definition may be one of the following: Date_time (see 4.2.79) or Event_reference (see 4.2.130).

See 4.3.1097 and 4.3.1100 for the application assertions.

4.2.128.8 version_id

The version_id specifies versioning information for the Effectivity.

The `version_id` need not be specified for a particular Effectivity.

4.2.129 Effectivity_assignment

An Effectivity_assignment associates an Effectivity (see 4.2.127) with an item, where the effectivity of the item is controlled by the associated Effectivity (see 4.2.127).

The data associated with an Effectivity_assignment are the following:

- `assigned_effectivity`;
- `effectivity_indication`;
- `is_applied_to`;
- `role`.

4.2.129.1 assigned_effectivity

The `assigned_effectivity` specifies the Effectivity (see 4.2.127) object.

See 4.3.1136 for the application assertion.

4.2.129.2 effectivity_indication

The `effectivity_indication` specifies whether the Effectivity_assignment takes effect. A value of 'true' indicates that the Effectivity_assignment is effective, a value of 'false' that the Effectivity_assignment is ineffective.

4.2.129.3 is_applied_to

The `is_applied_to` specifies the item with which the Effectivity (see 4.2.127) object is associated.

Each `is_applied_to` may be one of the following: Activity_relationship (see 4.2.5), Alternate_item_relationship (see 4.2.11), Assembly_component_relationship (see 4.2.26), Assembly_substitute_relationship (see 4.2.28), Cable_pull_information (see 4.2.33), Class_category_association (see 4.2.40), Class_condition_association (see 4.2.41), Class_inclusion_association (see 4.2.42), Class_specification_association (see 4.2.44), Class_structure_relationship (see 4.2.45), Classification_system (see 4.2.48), Complex_product (see 4.2.51), Complex_product_relationship (see 4.2.52), Composition_relationship (see 4.2.55), Configuration (see 4.2.56), Connectivity_definition (see 4.2.61), Connectivity_definition_relationship (see 4.2.62), Data_element (see 4.2.70), Data_element_association (see 4.2.71), Data_element_definition (see 4.2.72), Data_element_relationship (see 4.2.74), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Device_relationship (see 4.2.89), Document (see 4.2.101), Document_file (see 4.2.106), Document_file_relationship (see 4.2.107), Document_representation (see 4.2.110), Document_version (see 4.2.114), Document_version_relationship (see 4.2.115), Drawing (see 4.2.119), Drawing_sequence (see 4.2.121), Drawing_sheet (see 4.2.122), Drawing_sheet_relationship (see 4.2.124), Function_definition (see 4.2.145), Function_definition_relationship (see 4.2.146), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_unit_relationship (see 4.2.149), Function_version (see 4.2.150), Function_version_relationship (see 4.2.151), Functional_connectivity_definition (see 4.2.152), Functional_connectivity_definition_relationship (see 4.2.153), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see

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4.2.178), *Item_definition_relationship* (see 4.2.179), *Item_version* (see 4.2.182), *Item_version_relationship* (see 4.2.183), *Location* (see 4.2.192), *Location_relationship* (see 4.2.194), *Marking* (see 4.2.199), *Node* (see 4.2.208), *Node_relationship* (see 4.2.209), *Notification* (see 4.2.213), *Notification_relationship* (see 4.2.214), *Path* (see 4.2.232), *Path_node* (see 4.2.233), *Path_node_relationship* (see 4.2.234), *Path_relationship* (see 4.2.235), *Physical_assembly_relationship* (see 4.2.241), *Physical_instance* (see 4.2.243), *Port* (see 4.2.247), *Process_variable* (see 4.2.260), *Process_variable_relationship* (see 4.2.261), *Product_class* (see 4.2.263), *Product_identification* (see 4.2.268), *Product_structure_relationship* (see 4.2.270), *Requirement* (see 4.2.285), *Route* (see 4.2.290), *Route_relationship* (see 4.2.291), *Section* (see 4.2.296), *Section_end* (see 4.2.297), *Section_interface* (see 4.2.298), *Section_interface_relationship* (see 4.2.299), *Section_relationship* (see 4.2.300), *Security_classification* (see 4.2.301), *Signal* (see 4.2.309), *Signal_relationship* (see 4.2.311), *Signal_value* (see 4.2.313), *Specification* (see 4.2.323), *Specification_category* (see 4.2.324), *Specification_expression* (see 4.2.326), *Specification_inclusion* (see 4.2.327), *Technical_system* (see 4.2.336), *Technical_system_relationship* (see 4.2.337), or *Terminal* (see 4.2.338).

See 4.3.1102, 4.3.1103, 4.3.1104, 4.3.1105, 4.3.1106, 4.3.1107, 4.3.1108, 4.3.1109, 4.3.1110, 4.3.1111, 4.3.1112, 4.3.1113, 4.3.1114, 4.3.1115, 4.3.1116, 4.3.1117, 4.3.1118, 4.3.1119, 4.3.1120, 4.3.1121, 4.3.1122, 4.3.1123, 4.3.1124, 4.3.1125, 4.3.1126, 4.3.1127, 4.3.1128, 4.3.1129, 4.3.1130, 4.3.1131, 4.3.1132, 4.3.1133, 4.3.1134, 4.3.1135, 4.3.1137, 4.3.1138, 4.3.1139, 4.3.1140, 4.3.1141, 4.3.1142, 4.3.1143, 4.3.1144, 4.3.1145, 4.3.1146, 4.3.1147, 4.3.1148, 4.3.1149, 4.3.1150, 4.3.1151, 4.3.1152, 4.3.1153, 4.3.1154, 4.3.1155, 4.3.1156, 4.3.1157, 4.3.1158, 4.3.1159, 4.3.1160, 4.3.1161, 4.3.1162, 4.3.1163, 4.3.1164, 4.3.1165, 4.3.1166, 4.3.1167, 4.3.1168, 4.3.1169, 4.3.1170, 4.3.1171, 4.3.1172, 4.3.1173, 4.3.1174, 4.3.1175, 4.3.1176, 4.3.1177, 4.3.1178, 4.3.1179, 4.3.1180, 4.3.1181, 4.3.1182, 4.3.1183, 4.3.1184, 4.3.1185, 4.3.1186, 4.3.1187, 4.3.1188, 4.3.1189, 4.3.1190, and 4.3.1191 for the application assertions.

4.2.129.4 role

The role specifies the relationship between the Effectivity (see 4.2.127) and the item that has an effectivity assigned to it. The value is either user defined or predefined.

The predefined value of role is one of the following:

- actual;
- planned;
- required.

NOTE See 4.2.129.4.1 - 4.2.129.4.3 for the definition of each predefined value for relation_ - type.

4.2.129.4.1 actual

actual: The actual period during which the Effectivity (see 4.2.127) lasted.

4.2.129.4.2 planned

planned: The period associated with the Effectivity (see 4.2.127) defines a planned period of time during which the associated object is or was supposed to be effective.

4.2.129.4.3 required

required: The associated object must be kept effective for this period.

4.2.130 Effectivity_relationship

An Effectivity_relationship is the relation between two Effectivity (see 4.2.127) objects.

NOTE Sometimes the effectivity is not dependent on particular dates but on the effectivity of other items. In this case, the dates are not instantiated, and an Effectivity (see 4.2.127) relationship to the reference Effectivity (see 4.2.127) exists.

The data associated with an Effectivity_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.130.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Effectivity_relationship.

The description need not be specified for a particular Effectivity_relationship.

4.2.130.2 related

The related specifies the second of the two Effectivity (see 4.2.127) objects related by the Effectivity_relationship.

See 4.3.1192 for the application assertion.

4.2.130.3 relating

The relating specifies the first of the two Effectivity (see 4.2.127) objects related by the Effectivity_relationship.

See 4.3.1193 for the application assertion.

4.2.130.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- constraint;
- inheritance.

NOTE See 4.2.130.4.1 - 4.2.130.4.2 for the definition of each predefined value for `relation_type`.

4.2.130.4.1 constraint

`constraint`: The time period between the start and end definition of the related Effectivity (see 4.2.127) shall be within the time period of the relating Effectivity (see 4.2.127).

4.2.130.4.2 inheritance

`inheritance`: The related Effectivity (see 4.2.127) shall not have a 'start definition' and 'end definition' specified but inherits the effectivity dates from the relating Effectivity (see 4.2.127).

4.2.131 Event_reference

An `Event_reference` is the definition of a point in time established with respect to an event.

The data associated with an `Event_reference` are the following:

- description;
- `event_context`;
- `event_type`;
- offset.

4.2.131.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the `Event_reference`.

The description need not be specified for a particular `Event_reference`.

4.2.131.2 event_context

The `event_context` specifies the piece of product data the `Event_reference` refers to.

EXAMPLE In the case of an `Event_reference` with event type 'start of production', the event context would refer to the `Item_version` (see 4.2.182) that is subject to production.

The `event_context` need not be specified for a particular `Event_reference`.

Each `event_context` may be one of the following: `Activity` (see 4.2.1), `Activity_element` (see 4.2.2), `Activity_method_assignment` (see 4.2.4), `Activity_relationship` (see 4.2.5), `Alternate_item_relationship` (see 4.2.11), `Approval_status` (see 4.2.25), `Assembly_component_relationship` (see 4.2.26), `Assembly_substitute_relationship` (see 4.2.28), `Cable_pull_information` (see 4.2.33),

Certification (see 4.2.38), Class_category_association (see 4.2.40), Class_condition_association (see 4.2.41), Class_inclusion_association (see 4.2.42), Class_specification_association (see 4.2.44), Class_structure_relationship (see 4.2.45), Classification_association (see 4.2.46), Classification_attribute (see 4.2.47), Classification_system (see 4.2.48), Complex_product (see 4.2.51), Complex_product_relationship (see 4.2.52), Composition_relationship (see 4.2.55), Configuration (see 4.2.56), Connectivity_allocation (see 4.2.60), Connectivity_definition (see 4.2.61), Connectivity_definition_relationship (see 4.2.62), Contract (see 4.2.63), Data_element (see 4.2.70), Data_element_association (see 4.2.71), Data_element_definition (see 4.2.72), Data_element_relationship (see 4.2.74), Data_element_specification (see 4.2.75), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Device_relationship (see 4.2.89), Document (see 4.2.101), Document_file (see 4.2.106), Document_file_relationship (see 4.2.107), Document_representation (see 4.2.110), Document_version (see 4.2.114), Document_version_relationship (see 4.2.115), Drawing (see 4.2.119), Drawing_sequence (see 4.2.121), Drawing_sheet (see 4.2.122), Drawing_sheet_relationship (see 4.2.124), Free_segment (see 4.2.144), Function_definition (see 4.2.145), Function_definition_relationship (see 4.2.146), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_unit_relationship (see 4.2.149), Function_version (see 4.2.150), Function_version_relationship (see 4.2.151), Functional_connectivity_definition (see 4.2.152), Functional_connectivity_definition_relationship (see 4.2.153), Functional_unit_allocation (see 4.2.154), Functionality (see 4.2.155), General_classification (see 4.2.156), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see 4.2.178), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Item_version_relationship (see 4.2.183), Location (see 4.2.192), Location_relationship (see 4.2.194), Marking (see 4.2.199), Material (see 4.2.201), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Organization_relationship (see 4.2.225), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Person_in_organization (see 4.2.238), Person_in_organization_relationship (see 4.2.239), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Port_association (see 4.2.249), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Requirement_document_assignment (see 4.2.287), Route (see 4.2.290), Route_relationship (see 4.2.291), Routed_segment (see 4.2.293), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Security_classification (see 4.2.301), Security_level (see 4.2.302), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.1194, 4.3.1195, 4.3.1196, 4.3.1197, 4.3.1198, 4.3.1199, 4.3.1200, 4.3.1201, 4.3.1202, 4.3.1203, 4.3.1204, 4.3.1205, 4.3.1206, 4.3.1207, 4.3.1208, 4.3.1209, 4.3.1210, 4.3.1211, 4.3.1212, 4.3.1213, 4.3.1214, 4.3.1215, 4.3.1216, 4.3.1217, 4.3.1218, 4.3.1219, 4.3.1220, 4.3.1221, 4.3.1222, 4.3.1223, 4.3.1224, 4.3.1225, 4.3.1226, 4.3.1227, 4.3.1228, 4.3.1229, 4.3.1230, 4.3.1231, 4.3.1232, 4.3.1233, 4.3.1234, 4.3.1235, 4.3.1236, 4.3.1237, 4.3.1239, 4.3.1240, 4.3.1241, 4.3.1242, 4.3.1243, 4.3.1244, 4.3.1245, 4.3.1246, 4.3.1247, 4.3.1248, 4.3.1249, 4.3.1250, 4.3.1251, 4.3.1252, 4.3.1253, 4.3.1254, 4.3.1255, 4.3.1256, 4.3.1257, 4.3.1258, 4.3.1259, 4.3.1260, 4.3.1261, 4.3.1262, 4.3.1263, 4.3.1264, 4.3.1265, 4.3.1266, 4.3.1267, 4.3.1268, 4.3.1269, 4.3.1270, 4.3.1271, 4.3.1272, 4.3.1273, 4.3.1274, 4.3.1275, 4.3.1276, 4.3.1277, 4.3.1278, 4.3.1279, 4.3.1280, 4.3.1281, 4.3.1282, 4.3.1283,

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4.3.1284, 4.3.1285, 4.3.1286, 4.3.1287, 4.3.1288, 4.3.1289, 4.3.1290, 4.3.1291, 4.3.1292, 4.3.1293, 4.3.1294, 4.3.1295, 4.3.1296, 4.3.1297, 4.3.1298, 4.3.1299, 4.3.1300, 4.3.1301, 4.3.1302, 4.3.1303, 4.3.1304, 4.3.1305, 4.3.1306, 4.3.1307, 4.3.1308, 4.3.1309, 4.3.1310, 4.3.1311, and 4.3.1312 for the application assertions.

4.2.131.3 event_type

The event_type specifies the kind of event that serves as reference.

EXAMPLE The cases 'start of production' or 'end of production' are examples for the event_type.

4.2.131.4 offset

The offset specifies the amount of time before or after the defined event that shall be used to calculate the actual point in time.

The offset need not be specified for a particular Event_reference.

See 4.3.1238 for the application assertion.

4.2.132 External_file_id_and_location

An External_file_id_and_location specifies the location of an file in an external storage system.

The data associated with an External_file_id_and_location are the following:

- external_id;
- location.

4.2.132.1 external_id

The external_id specifies the identifier of an document in the external location.

4.2.132.2 location

The location specifies the location of the Document_file (see 4.2.106) in the external storage system.

See 4.3.1313 for the application assertion.

4.2.133 External_library_reference

An External_library_reference is a mechanism to refer to an entry in an external library other than ISO 13584 or IEC 61360.

The data associated with an `External_library_reference` are the following:

- `description`;
- `external_id`;
- `library_type`.

4.2.133.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `External_library_reference`.

The `description` need not be specified for a particular `External_library_reference`.

4.2.133.2 external_id

The `external_id` specifies the unique identifier of the referenced entry in the external library.

4.2.133.3 library_type

The `library_type` specifies the type of library that is used.

4.2.134 Externally_defined_hatching

An `Externally_defined_hatching` is a type of `Fill_area_appearance` (see 4.2.140) that has a specific physical appearance defining the hatching and is found in a known source. This known source is agreed to by all parties involved in the exchange of the drawings on which the hatching pattern appears. The specific appearance is referred to as a hatch pattern and consists of a curve appearance and the angle and displacement values necessary to define a single, uniformly spaced geometric pattern. An `Externally_defined_hatching` shall include the specification of the curve appearance, the angle of the curves in the pattern relative to the horizontal axis of the coordinate system into which it is placed, and the displacement between adjacent curves in the pattern.

The data associated with an `Externally_defined_hatching` are the following:

- `hatching_name`;
- `hatching_reference`.

4.2.134.1 hatching_name

The `hatching_name` specifies the identification of a particular hatching pattern within the known source.

4.2.134.2 hatching_reference

The `hatching_reference` specifies the known source that contains a set of patterns from which the hatching pattern is selected.

4.2.135 Externally_defined_line_font

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An `Externally_defined_line_font` is a type of `Line_font` (see 4.2.189) that has a specific physical appearance defining the line font and is found in a known source. This known source is agreed to by all parties involved in the exchange of the drawings on which the line font appears. An `Externally_defined_line_font` shall include a set of values that represent the length of the visible and invisible segments of the line font. The set of values is sufficient to define all elements that constitute a single portion of the curve. This portion is then repeated over the length of the curve.

The data associated with an `Externally_defined_line_font` are the following:

- `font_id`;
- `font_reference`.

4.2.135.1 `font_id`

The `font_id` specifies the identification of a particular line font within the known source.

4.2.135.2 `font_reference`

The `font_reference` specifies the known source that contains a set of line fonts from which the line font is selected.

4.2.136 `Externally_defined_symbol`

An `Externally_defined_symbol` is a type of `Annotation_symbol` (see 4.2.20) that has a specific physical appearance defining the symbol and is found in a known source. This known source is agreed to by all parties involved in the exchange of the drawings on which the symbol appears. An `Externally_defined_symbol` shall include the specification of all the constituent components of the symbol, their size, and relative locations.

EXAMPLE IEC 60617 and IEC 81714 specify the layout of graphical symbols for use in diagrams.

The data associated with an `Externally_defined_symbol` are the following:

- `symbol_name`;
- `symbol_reference`.

4.2.136.1 `symbol_name`

The `symbol_name` specifies the identification of a particular symbol within the known source.

4.2.136.2 `symbol_reference`

The `symbol_reference` specifies the known source that contains a set of symbols from which the symbol is selected.

4.2.137 `Externally_defined_text_font`

An `Externally_defined_text_font` is a type of `Text_font` (see 4.2.344) that has a specific physical appearance defining the text font and is found in a known source. This known source is agreed to by

all parties involved in the exchange of the drawings on which the text font appears. An `Externally_defined_text_font` shall include the specification of the physical form of the characters of the font.

The data associated with an `Externally_defined_text_font` are the following:

- `font_id`;
- `font_reference`.

4.2.137.1 font_id

The `font_id` specifies the identification of a particular text font within the known source.

4.2.137.2 font_reference

The `font_reference` specifies the known source that contains a set of text fonts from which the text font is selected.

4.2.138 Externally_defined_tile

An `Externally_defined_tile` is a type of `Tile` (see 4.2.346) that has a specific physical appearance defining the tile and is found in a known source. This known source is agreed to by all parties involved in the exchange of the drawings on which the tile appears.

The data associated with an `Externally_defined_tile` are the following:

- `tile_name`;
- `tile_reference`.

4.2.138.1 tile_name

The `tile_name` specifies the identification of a particular tile within the known source.

4.2.138.2 tile_reference

The `tile_reference` specifies the known source that contains a set of tiles from which the tile is selected.

4.2.139 Externally_defined_tiling

An `Externally_defined_tiling` is a type of `Fill_area_appearance` (see 4.2.140) that has a specific physical appearance defining the tiling pattern and is found in a known source. This known source is agreed to by all parties involved in the exchange of the drawings on which the tiling appears. An `Externally_defined_tiling` shall include the repeat vectors used to define the relative positioning of tiles, the angle of the horizontal axis of the tile relative to the horizontal axis of the coordinate system into which it is placed, and the scale of the tile as presented to the tile as defined.

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The data associated with an `Externally_defined_tiling` are the following:

- `tiling_name`;
- `tiling_reference`.

4.2.139.1 `tiling_name`

The `tiling_name` specifies the identification of a particular tiling patterns within the known source.

4.2.139.2 `tiling_reference`

The `tiling_reference` specifies the known source that contains a set of pattern from which the tiling pattern is selected.

4.2.140 `Fill_area`

A `Fill_area` is a type of `Annotation_element` (see 4.2.15) that is a bounded area containing colouring, hatching, or tiling that indicate its extent and content. A `Fill_area` communicates some aspect of a physical part characteristic, distinguishes some aspect of a physical part from its surroundings, is part of another piece of annotation, or is used as an annotation by itself.

NOTE `Fill areas` are derived from geometric elements, annotation curves, or a combination of both. The two types of curves can be combined if the geometric elements do not result in a closed boundary necessary for the confinement of the filled area. Only those annotation curves used for geometric construction can be included in the boundary of a fill area.

The data associated with a `Fill_area` are the following:

- `assigned_appearance`;
- `bounds`;
- `reference_point`.

4.2.140.1 `assigned_appearance`

The `assigned_appearance` specifies the definition of the appearance characteristics of the `Fill_area`.

See 4.3.1314 for the application assertion.

4.2.140.2 `boundary`

The `boundary` specifies the outline of an `Fill_area`.

See 4.3.1315 for the application assertion.

4.2.140.3 `reference_point`

The `reference_point` specifies a point within the fill area used in the placement and initiation of the fill area appearance. The `reference_point` establishes a point through which a line of a hatching pattern passes or at which the origin of a tile is located. The `reference_point` also establishes the point

at which the first visible segment of a line font used as the curve appearance for a hatching pattern starts.

The reference_point need not be specified for a particular Fill_area.

See 4.3.1316 for the application assertion.

4.2.141 Fill_area_appearance

A Fill_area_appearance is a type of Appearance (see 4.2.21) that governs the visual presentation of a fill area.

Each Fill_area_appearance is either an Externally_defined_hatching (see 4.2.133), an Externally_defined_tiling (see 4.2.138), a Solid_fill_area (see 4.2.317), a User_defined_hatching (see 4.2.352), or a User_defined_tiling (see 4.2.357).

The data associated with a Fill_area_appearance are the following:

— draughting_role.

4.2.141.1 draughting_role

The draughting_role specifies the purpose within draughting for a particular fill area appearance.

The draughting_role need not be specified for a particular Fill_area_appearance.

4.2.142 Fill_area_boundary

A Fill_area_boundary is an annotation curve in the same coordinate space that defines the limits of a fill area. The curve is closed and not self intersecting. In a three-dimensional fill area, the curve either forms a closed curve on a planar surface or is coincident with the boundary of a closed surface.

NOTE The curves composing the Fill_area_boundary are derived from, and coincide with, the geometric curves or surfaces and the annotation curves that define the extent of the fill area.

The data associated with a Fill_area_boundary are the following:

— defining_curve.

4.2.142.1 defining_curve

The defining_curve specifies the annotation curve that defines the boundary of the fill area.

See 4.3.1317 for the application assertion.

4.2.143 Final_solution

A Final_solution is a type of Alternative_solution (see 4.2.12) that is the specification of a set of items that fulfil the same functional requirements as the neutral base element and have additional characteristics.

EXAMPLE The neutral parts are parts without paint; the final parts are the parts with paint.

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The data associated with a `Final_solution` are the following:

- `final_specification`;
- `final_status`.

4.2.143.1 `final_specification`

The `final_specification` specifies the means of finalization that is applied to the neutral part.

EXAMPLE The `final_specification` can be the `Design_discipline_item_definition` (see 4.2.86) of a certain kind of paint.

NOTE The `Design_discipline_item_definition` (see 4.2.86) that is referenced here is not a view of the equipment that results from the finalization. The resulting, coloured devices can be identified by the `Device` (see 4.2.88) objects that are associated with the `Final_solution`.

Each `final_specification` may be one of the following: `Descriptive_specification` (see 4.2.85), `Design_discipline_item_definition` (see 4.2.86), `Function_definition` (see 4.2.145), or `Physical_instance` (see 4.2.243).

See 4.3.1318, 4.3.1319, 4.3.1320, and 4.3.1321 for the application assertions.

4.2.143.2 `final_status`

The `final_status` specifies the level of completion between the neutral part and the final part.

EXAMPLE The status information 'final for shipping overseas', 'final for transport by truck', or 'final for sale' are examples for the `final_status`.

4.2.144 `Format_of_value`

A `Format_of_value` is the specification of the syntactical format of a value. If present, the '`value_of_single_value`' attribute of the corresponding `Single_value` (see 4.2.316) object shall contain only data that conform with the `Format_of_value` object.

The data associated with a `Format_of_value` are the following:

- `associated_definition`;
- `default_language_specification`;
- `source_document`;
- `value_format`.

4.2.144.1 `associated_definition`

The `associated_definition` specifies the appropriate `Data_element_definition` (see 4.2.72).

See 4.3.1322 for the application assertion.

4.2.144.2 default_language_specification

The default_language_specification specifies a language spoken by human beings to communicate with each other verbally or in written form. This language is the preselected language used in the associated String_value (see 4.2.331) object. The language symbol given in ISO 639 shall be used.

The default_language_specification need not be specified for a particular Format_of_value.

See 4.3.1323 for the application assertion.

4.2.144.3 source_document

The source_document specifies the identifier of the document in which the value_format is specified. The value is either user defined or predefined.

The predefined value of source_document is the following:

— iec 61360.

NOTE See 4.2.144.3.1 for the definition of each predefined value for source_document.

4.2.144.3.1 iec 61360

iec 61360: The value_format is in accordance with IEC 61360.

4.2.144.4 value_format

The value_format specifies the syntactical format of the value that is associated to the appropriate Data_element_definition (see 4.2.72) object.

4.2.145 Free_segment

A Free_segment is a portion of a specific path that does not have a well-defined course.

EXAMPLE 1 Figure 13 shows a transformer that is moveable on rails. The cable that feeds the transformer is mounted on the ceiling. The geometry of the section between the last isolator and the transformer changes depending on the position of the transformer. In this case, there will be two Node (see 4.2.208) objects in the ends_at attribute of the Free_segment entity.

EXAMPLE 2 If in Figure 13 the transformer were not yet installed, the last well defined node of the cable is Node (see 4.2.208) 2. In this case, there will be only one Node (see 4.2.208) object in the ends_at attribute of the Free_segment entity. Such cases occur throughout the installation of a system if some design sections are finished earlier than others.

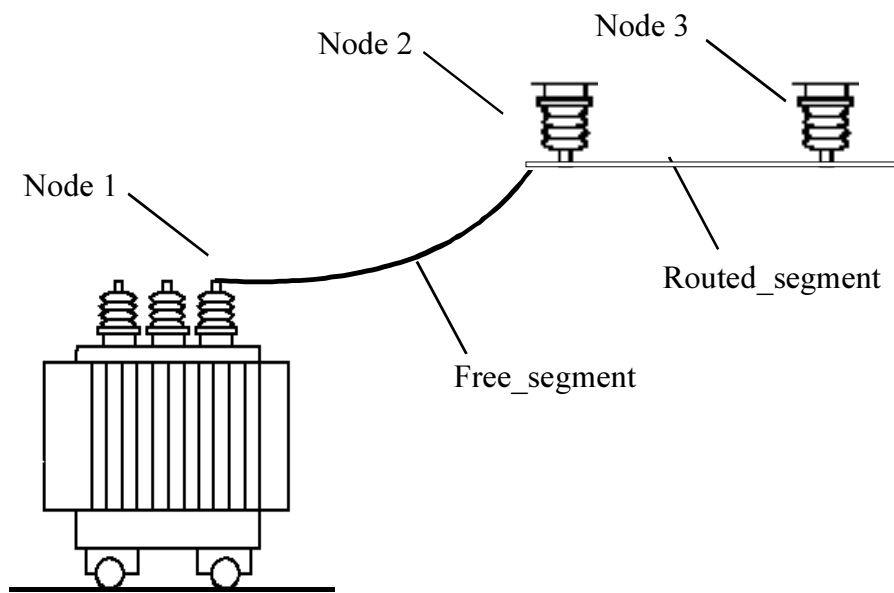


Figure 13 - Power transformer fed through an overhead cable

The data associated with a Free_segment are the following:

- description;
- ends_at;
- id.

4.2.145.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Free_segment.

The description need not be specified for a particular Free_segment.

4.2.145.2 ends_at

The ends_at specifies the Node (see 4.2.208) objects that delimits the Free_segment.

See 4.3.1324 for the application assertion.

4.2.145.3 id

The id specifies the identifier of the Free_segment.

4.2.146 Function_definition

A Function_definition is the characterization of a Function_version (see 4.2.150) in a particular application context.

The data associated with a `Function_definition` are the following:

- `additional_context`;
- `id`;
- `initial_context`;
- `name`;
- `version`.

4.2.146.1 additional_context

The `additional_context` specifies the set of `Application_context` (see 4.2.22) objects in which this view of the `Function_version` (see 4.2.150) is also relevant. The `additional_context` shall not contain the `Application_context` (see 4.2.22) that is referenced as the '`initial_context`'.

See 4.3.1325 for the application assertion.

4.2.146.2 id

The `id` specifies the identifier of the `Function_definition`.

4.2.146.3 initial_context

The `initial_context` specifies the `Application_context` (see 4.2.22) in which this view of the `Function_version` (see 4.2.150) has been designed primarily.

See 4.3.1326 for the application assertion.

4.2.146.4 name

The `name` specifies a speaking designation of the `Function_definition`.

The `name` need not be specified for a particular `Function_definition`.

4.2.146.5 version

The `version` specifies the `Function_version` (see 4.2.150) object to which the `Function_definition` relates.

See 4.3.1327 for the application assertion.

4.2.147 Function_definition_relationship

A `Function_definition_relationship` is the relation between two `Function_definition` (see 4.2.145) objects.

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The data associated with an `Function_definition_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.147.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Function_definition_relationship`.

The `description` need not be specified for a particular `Function_definition_relationship`.

4.2.147.2 related

The `related` specifies the second of the two `Function_definition` (see 4.2.145) objects related by the `Function_definition_relationship`.

See 4.3.1328 for the application assertion.

4.2.147.3 relating

The `relating` specifies the first of the two `Function_definition` (see 4.2.145) objects related by the `Function_definition_relationship`.

See 4.3.1329 for the application assertion.

4.2.147.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- `alternate`;
- `derivation`;
- `substitution`.

NOTE 1 See 4.2.147.4.1 - 4.2.147.4.3 for the definition of each predefined value for `relation_type`.

4.2.147.4.1 alternate

`alternate`: The `Function_definition_relationship` defines a relationship where the related `Function_definition` (see 4.2.145) is a possible substitute to the relating `Function_definition` (see 4.2.145).

NOTE 2 This concept refers to the possibility to replace the related Function_definition (see 4.2.145). The actual replacement is addressed by 'substitution'.

4.2.147.4.2 derivation

derivation: The Function_definition_relationship defines a deriving relationship where the related Function_definition (see 4.2.145) is based on the relating Function_definition (see 4.2.145).

4.2.147.4.3 substitution

substitution: The Function_definition_relationship defines a relationship where the related Function_definition (see 4.2.145) replaces the relating Function_definition (see 4.2.145).

4.2.148 Function_interface

A Function_interface specifies Interface_port (see 4.2.171) objects that characterize the use or the intended purpose of a functional module.

NOTE The Function_interface can provide a possible selection criterion if a given functional module needs to be substituted by a different one. Possible selection criteria may be assigned as Data_element (see 4.2.70) objects to Function_interface.

The data associated with a Function_interface are the following:

- description;
- external_access;
- id;
- interface_of.

4.2.148.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Function_interface.

The description need not be specified for a particular Function_interface.

4.2.148.2 external_access

The external_access specifies the interface by assigning Interface_port (see 4.2.171) objects to the Function_interface.

See 4.3.1331 for the application assertion.

4.2.148.3 id

The id specifies the identifier of the Function_interface.

4.2.148.4 interface_of

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The interface_of specifies the associated Function_definition (see 4.2.145).

See 4.3.1330 for the application assertion.

4.2.149 Function_unit

A Function_unit is a type of Product_constituent (see 4.2.266) that is an occurrence of a Function_definition (see 4.2.145) object. A Function_unit may be instantiated more than once, because each instance is an individual occurrence of the functional item that is characterized by the Function_definition (see 4.2.145).

EXAMPLE 1 In a specific technical system, the function 'amplifier' is defined once. This Function_definition (see 4.2.145) carries all the information defining the amplifier (e.g., its ports) that is independent from its usage. Additionally, two Function_unit objects for this amplifier exist because two equal amplifiers are used within this particular circuitry. Each of these instances may be connected individually.

Each Function_unit is either a Single_function_unit (see 4.2.315) or a Specified_function_unit (see 4.2.329).

The data associated with a Function_unit are the following:

- description;
- extended_designation;
- id;
- instantiated_function.

4.2.149.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Function_unit.

The description need not be specified for a particular Function_unit.

4.2.149.2 extended_designation

The extended_designation specifies a structured label for the Function_unit.

NOTE The label assigned through extended_designation shall be identical to the label assigned by the 'id' attribute.

EXAMPLE 2 IEC 61346-1 specifies designations and structuring principles for Function_unit objects.

The extended_designation need not be specified for a particular Function_unit.

See 4.3.1333 for the application assertion.

4.2.149.3 id

The id specifies the identifier of the Function_unit.

4.2.149.4 instanciated_function

An instanciated_function specifies the Function_definition (see 4.2.145) that serves as template for the Function_unit or Product_identification (see 4.2.268).

Each instanciated_function may be one of the following: Function_definition (see 4.2.145) or Product_identification (see 4.2.268).

See 4.3.1332 and 4.3.1334 for the application assertions.

4.2.150 Function_unit_relationship

A Function_unit_relationship is the relation between two Function_unit (see 4.2.148) objects.

NOTE The associated Function_unit (see 4.2.148) objects do not necessarily belong to the same Function_definition (see 4.2.145) object.

The data associated with an Function_unit_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.150.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Function_unit_relationship.

The description need not be specified for a particular Function_unit_relationship.

4.2.150.2 related

The related specifies the second of the two Function_unit (see 4.2.148) objects related by the Function_unit_relationship.

See 4.3.1335 for the application assertion.

4.2.150.3 relating

The relating specifies the first of the two Function_unit (see 4.2.148) objects related by the Function_unit_relationship.

See 4.3.1336 for the application assertion.

4.2.150.4 relation_type

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The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- derivation;
- implementation;
- redundancy;
- specialization;
- substitution.

NOTE See 4.2.150.4.1 - 4.2.150.4.5 for the definition of each predefined value for `relation_type`.

4.2.150.4.1 derivation

derivation: The `Function_unit_relationship` defines a deriving relationship where the related `Function_unit` (see 4.2.148) is based on the relating `Function_unit` (see 4.2.148).

4.2.150.4.2 implementation

implementation: The `Function_unit_relationship` defines a relationship where the related `Function_unit` (see 4.2.148) is the realization on the relating `Function_unit` (see 4.2.148).

EXAMPLE 1 A function 'Error handling', specified by a contractor, is implemented by functions 'Monitoring', 'Storage', and 'User interface', taken from a library of standard functions. Each of the standard functions are allocated to Device (see 4.2.88) objects representing the software and hardware components that actually process the error messages.

4.2.150.4.3 redundancy

redundancy: The `Function_unit_relationship` defines a relationship where the related `Function_unit` (see 4.2.148) is replicated by the relating `Function_unit` (see 4.2.148).

EXAMPLE 2 The flight controller in an aircraft is built up with a threefold redundancy. The modules compare their output values and can detect possible problems. The modules use different algorithms, thus avoiding that all modules show the same faulty behaviour.

4.2.150.4.4 specialization

specialization: The `Function_unit_relationship` defines a relationship where the related `Function_unit` (see 4.2.148) fulfils the requirements of the relating `Function_unit` (see 4.2.148) in a more specific way than defined for the relating `Function_unit` (see 4.2.148).

4.2.150.4.5 substitution

substitution: The `Function_unit_relationship` defines a relationship where the related `Function_unit` (see 4.2.148) replaces the relating `Function_unit` (see 4.2.148).

EXAMPLE 3 A Function_unit (see 4.2.148) is substituted by a Function_unit (see 4.2.148) of different behaviour.

4.2.151 Function_version

A Function_version is a version of an Functionality (see 4.2.155) and serves as the collector of the data characterizing a Functionality (see 4.2.155) object in various application contexts.

NOTE 1 An Function_version may be produced, consumed, used to produce other Function_version objects, or offered to the market.

NOTE 2 The collection of defining information may be incomplete, i.e., not all of the Function_definition (see 4.2.145) objects needed to define an Function_version are associated with the Function_version.

NOTE 3 The set of Function_version objects of an Functionality (see 4.2.155) represents the history of the Functionality (see 4.2.155) within a particular life cycle stage or over its complete life cycle.

NOTE 4 An Function_version may not be referenced by a Function_definition (see 4.2.145).

The data associated with a Function_version are the following:

- base_function;
- description;
- version_id.

4.2.151.1 base_function

The base_function specifies the Functionality (see 4.2.155) with which the Function_version is associated.

See 4.3.1337 for the application assertion.

4.2.151.2 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Function_version.

The description need not be specified for a particular Function_version.

4.2.151.3 version_id

The version_id specifies versioning information for the Function_version.

4.2.152 Function_version_relationship

A Function_version_relationship is the relation between two Function_version (see 4.2.150) objects.

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The data associated with an `Function_version_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.152.1 `description`

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Function_version_relationship`.

The `description` need not be specified for a particular `Function_version_relationship`.

4.2.152.2 `related`

The `related` specifies the second of the two `Function_version` (see 4.2.150) objects related by the `Function_version_relationship`.

See 4.3.1338 for the application assertion.

4.2.152.3 `relating`

The `relating` specifies the first of the two `Function_version` (see 4.2.150) objects related by the `Function_version_relationship`.

See 4.3.1339 for the application assertion.

4.2.152.4 `relation_type`

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- derivation;
- hierarchy;
- sequence;
- supplied function.

NOTE See 4.2.152.4.1 - 4.2.152.4.4 for the definition of each predefined value for `relation_type`.

4.2.152.4.1 derivation

`derivation`: The `Function_version_relationship` defines a deriving relationship where the related `Function_version` (see 4.2.150) is based on the relating `Function_version` (see 4.2.150) which is an earlier version of the same or of a different `Functionality` (see 4.2.155).

4.2.152.4.1 hierarchy

`hierarchy`: The `Function_version_relationship` defines a hierarchical relationship where the related `Function_version` (see 4.2.150) is a subversion of the relating `Function_version` (see 4.2.150).

EXAMPLE Revision 1.1 and 1.2 of a document.

4.2.152.4.2 sequence

`sequence`: The `Function_version_relationship` defines a succession of versions where the relating `Function_version` (see 4.2.150) is the preceding version and the related `Function_version` (see 4.2.150) is the following version. For a `Function_version` (see 4.2.150) there shall be, at the most, one `Function_version_relationship` of this relation type as relating and, at most, one `Function_version_relationship` of this relation type as related.

4.2.152.4.3 supplied function

`supplied function`: The `Function_version_relationship` defines a relationship between two `Function_version` (see 4.2.150) objects representing the same module in different organizational contexts.

NOTE The different organizational contexts can be represented by different organizational data.

4.2.153 Functional_connectivity_definition

A `Functional_connectivity_definition` is a specification of the ability to enable the flow of information within a functional module.

Each `Functional_connectivity_definition` is either an `Interface_port_connectivity` (see 4.2.172) or a `Network` (see 4.2.206).

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The data associated with a `Functional_connectivity_definition` are the following:

- `connectivity_of`;
- `description`;
- `id`;
- `version_id`.

4.2.153.1 `connectivity_of`

The `connectivity_of` specifies the `Function_definition` (see 4.2.145) object, the internal connectivity of which is specified by `Functional_connectivity_definition`.

See 4.3.1340 for the application assertion.

4.2.153.2 `description`

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Functional_connectivity_definition`.

The `description` need not be specified for a particular `Functional_connectivity_definition`.

4.2.153.3 `id`

The `id` specifies the identifier of the `Functional_connectivity_definition`.

4.2.153.4 `version_id`

The `version_id` specifies versioning information for the `Functional_connectivity_definition`.

The `version_id` need not be specified for a particular `Functional_connectivity_definition`.

4.2.154 `Functional_connectivity_definition_relationship`

A `Functional_connectivity_definition_relationship` is the relation between two `Functional_connectivity_definition` (see 4.2.152) objects.

The data associated with an `Functional_connectivity_definition_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.154.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Functional_connectivity_definition_relationship`.

The `description` need not be specified for a particular `Functional_connectivity_definition_relationship`.

4.2.154.2 related

The `related` specifies the second of the two `Functional_connectivity_definition` (see 4.2.152) objects related by the `Functional_connectivity_definition_relationship`.

See 4.3.1341 for the application assertion.

4.2.154.3 relating

The `relating` specifies the first of the two `Functional_connectivity_definition` (see 4.2.152) objects related by the `Functional_connectivity_definition_relationship`.

See 4.3.1342 for the application assertion.

4.2.154.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution;
- redundancy;
- version hierarchy;
- version sequence.

NOTE 1 See 4.2.154.4.1 - 4.2.154.4.7 for the definition of each predefined value for `relation_type`.

4.2.154.4.1 alternate

alternate: The `Functional_connectivity_definition_relationship` defines a relationship where the related `Functional_connectivity_definition` (see 4.2.152) is a possible substitute to the relating `Functional_connectivity_definition` (see 4.2.152).

NOTE 2 This concept refers to the possibility to replace the related `Functional_connectivity_definition` (see 4.2.152). The actual replacement is addressed by 'substitution'.

4.2.154.4.2 decomposition

decomposition: The `Functional_connectivity_definition_relationship` defines a relationship where the related `Functional_connectivity_definition` (see 4.2.152) is one of the components into which the relating `Functional_connectivity_definition` (see 4.2.152) is divided.

4.2.154.4.3 derivation

derivation: The `Functional_connectivity_definition_relationship` defines a deriving relationship where the related `Functional_connectivity_definition` (see 4.2.152) is based on the relating `Functional_connectivity_definition` (see 4.2.152).

4.2.154.4.4 substitution

substitution: The `Functional_connectivity_definition_relationship` defines a relationship where the related `Functional_connectivity_definition` (see 4.2.152) replaces the relating `Functional_connectivity_definition` (see 4.2.152).

4.2.154.4.5 redundancy

redundancy: The `Functional_connectivity_definition_relationship` defines a relationship where the related `Functional_connectivity_definition` (see 4.2.152) is replicated by the relating `Functional_connectivity_definition` (see 4.2.152).

EXAMPLE In an aircraft the connectivity from the flight controller to the steering elements is replicated for safety reasons.

4.2.154.4.6 version hierarchy

version hierarchy: The `Functional_connectivity_definition_relationship` defines a hierarchical relationship where the related `Functional_connectivity_definition` (see 4.2.152) is a subversion of the relating `Functional_connectivity_definition` (see 4.2.152).

EXAMPLE Revisions 1.1 and 1.2 of a `Functional_connectivity_definition` (see 4.2.152).

4.2.154.4.7 version sequence

version sequence: The `Functional_connectivity_definition_relationship` defines a succession of versions where the relating `Functional_connectivity_definition` (see 4.2.152) is the preceding version, and the related `Functional_connectivity_definition` (see 4.2.152) is the following version.

4.2.155 Functional_unit_allocation

A `Functional_unit_allocation` is the relation that specifies the equipment selected to implement the specified `Function_unit` (see 4.2.148).

The data associated with a `Functional_unit_allocation` are the following:

- `allocated_functional_unit`;
- `description`;
- `function_implementation`.

4.2.155.1 allocated_functional_unit

The `allocated_functional_unit` specifies the `Function_unit` (see 4.2.148) object that is implemented.

See 4.3.1344 for the application assertion.

4.2.155.2 description

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Functional_unit_allocation`.

The `description` need not be specified for a particular `Functional_unit_allocation`.

4.2.155.3 function_implementation

The `function_implementation` specifies the equipment that implements a `Function_unit` (see 4.2.148).

Each `function_implementation` may be one of the following: `Device` (see 4.2.88), `Physical_instance` (see 4.2.243), or `Product_component` (see 4.2.265).

See 4.3.1343, 4.3.1345, and 4.3.1346 for the application assertions.

4.2.156 Functionality

A Functionality is an action or behaviour by which an electrical product fulfils its purpose.

NOTE A Functionality may be either primitive, i.e., its internal structure is not further described or it may be assembled from other functions. Functionality can be used as a specification or requirement for the implementation or as a functional description of an existing circuit.

The data associated with a Functionality are the following:

- description;
- id;
- name.

4.2.156.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Functionality.

The description need not be specified for a particular Functionality.

4.2.156.2 id

The id specifies the identifier of the Functionality.

4.2.156.3 name

The name specifies a speaking designation of the Functionality.

The name need not be specified for a particular Functionality.

4.2.157 General_classification

A General_classification is a classification of an object which characterizes all objects of the same kind; such a classification is independent from the application of the classified object.

EXAMPLE 1 This information can be used as a criterion for selecting a specific type of equipment from a component database.

EXAMPLE 2 IEC 61355 specifies a classification system for documents.

EXAMPLE 3 IEC 3B/245/CDV (IEC 61346-2) specifies a classification system for objects.

EXAMPLE 4 IEC 81714-3 specifies a classification system for connect nodes and networks.

EXAMPLE 5 IEC 60529 specifies a classification system for the degree of protection provided by enclosures.

EXAMPLE 6 IEC 60721 specifies a classification system for environmental conditions.

The data associated with a General_classification are the following:

- classification_source;
- description;
- id;
- used_classification_system;
- version_id.

4.2.157.1 classification_source

The classification_source specifies a reference under which the specification of the General_classification can be found.

The classification_source need not be specified for a particular General_classification.

Each classification_source may be one of the following: Class_reference (see 4.2.43) or External_library_reference (see 4.2.132).

See 4.3.1347 and 4.3.1349 for the application assertions.

4.2.157.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the General_classification.

The description need not be specified for a particular General_classification.

4.2.157.3 id

The id specifies the identifier of the General_classification.

4.2.157.4 used_classification_system

The used_classification_system specifies the Classification_system (see 4.2.48) that contains the definition of the classification.

See 4.3.1348 for the application assertion.

4.2.157.5 version_id

The version_id specifies versioning information for the General_classification.

The version_id need not be specified for a particular General_classification.

4.2.158 General_classification_hierarchy

A General_classification_hierarchy is the specification of a hierarchical structure for General_classification (see 4.2.156) objects.

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The data associated with a `General_classification_hierarchy` are the following:

- `sub_class`;
- `super_class`.

4.2.158.1 sub_class

The `sub_class` specifies the lower level `General_classification` (see 4.2.156) in a classification-hierarchy that is included in the super class.

See 4.3.1350 for the application assertion.

4.2.158.2 super_class

The `super_class` specifies the higher level `General_classification` (see 4.2.156) in a classification-hierarchy that includes the sub class.

See 4.3.1351 for the application assertion.

4.2.159 General_location_relationship

A `General_location_relationship` is a type of `Location_relationship` (see 4.2.194) that is the relation between two `Location` (see 4.2.192) objects.

The data associated with an `General_location_relationship` are the following:

- `description`;
- `relation_type`.

4.2.159.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `General_location_relationship`.

The `description` need not be specified for a particular `General_location_relationship`.

4.2.159.2 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- alternate;
- substitution;
- version hierarchy;
- version sequence.

NOTE 1 See 4.2.159.2.1 - 4.2.159.2.3 for the definition of each predefined value for `relation_type`.

4.2.159.2.1 alternate

alternate: The `General_location_relationship` defines a relationship where the related Location (see 4.2.192) is a possible substitute to the relating Location (see 4.2.192).

NOTE 2 This relationship may be used to indicate that two different Location (see 4.2.192) objects specify the same place regardless of rounding errors or the assignment to different location trees.

NOTE 3 This concept refers to the possibility to replace the Location (see 4.2.192). The actual replacement is addressed by 'substitution'.

4.2.159.2.2 substitution

substitution: The `General_location_relationship` defines a relationship where the related Location (see 4.2.192) replaces the relating Location (see 4.2.192).

4.2.159.2.3 version hierarchy

version hierarchy: The `General_location_relationship` defines a hierarchical relationship where the related Location (see 4.2.192) is a subversion of the relating Location (see 4.2.192).

EXAMPLE Revisions 1.1 and 1.2 of a Location (see 4.2.192).

4.2.159.2.4 version sequence

version sequence: The `General_location_relationship` defines a succession of versions where the relating Location (see 4.2.192) is the preceding version, and the related Location (see 4.2.192) is the following version.

4.4.2.160 Generic_note

A `Generic_note` is human-interpretable information that gives further details on a specific thing of interest. By using notes, explanatory information may be added to the product data.

Each `Generic_note` is either a `Note` (see 4.2.210) or a `Set_of_notes` (see 4.2.305).

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The data associated with a `Generic_note` are the following:

- `description`;
- `id`;
- `version_id`.

4.2.160.1 `description`

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Generic_note`.

The `description` need not be specified for a particular `Generic_note`.

4.2.160.2 `id`

The `id` specifies the identifier of the `Generic_note`.

4.2.160.3 `version_id`

The `version_id` specifies versioning information for the `Generic_note`.

The `version_id` need not be specified for a particular `Generic_note`.

4.2.161 `Geometrical_tolerance`

A `Geometrical_tolerance` is a type of `Draughting_callout` (see 4.2.117) that is a combination of geometric characteristic symbols, tolerance values, and datum designations, where applicable, to express the permissible variation from the theoretically exact size, profile, orientation, or location of a feature or datum target.

4.2.162 `Geometrical_tolerance_symbol`

A `Geometrical_tolerance_symbol` is a type of `Predefined_symbol` (see 4.2.255) that is used to establish a tolerance zone within which the specified conditions of the tolerance apply.

The predefined `Geometrical_tolerance_symbol` that shall be supported by all implementations of this part of ISO 10303 are dependent on the height (h) of the text that the symbol accompanies. The height of the characters for the predefined symbols specified here shall be $h = 2.5$ mm. The graphics shown in Figure 14 are oriented as they appear in a horizontally placed tolerance frame.

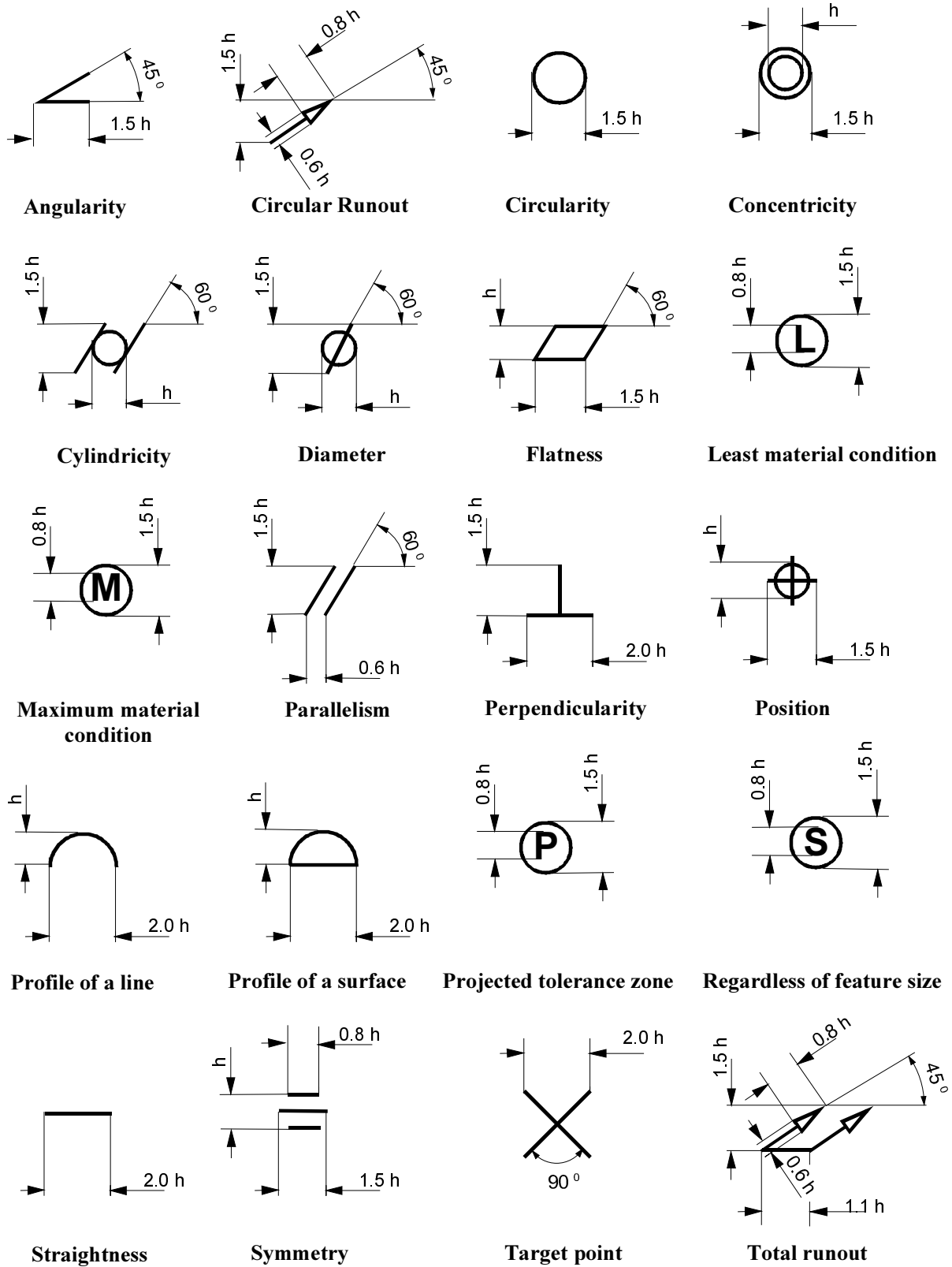


Figure 14 - Predefined geometrical tolerance symbols

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The data associated with a Geometrical_tolerance_symbol are the following:

- symbol_type.

4.2.162.1 symbol_type

The name specifies an alphanumerical string identifying the Geometrical_tolerance_symbol in accordance to the definitions given above.

The value of symbol_type is one of the following:

- angularity;
- circular runout;
- circularity;
- concentricity;
- cylindricity;
- diameter;
- flatness;
- least material condition;
- maximum material condition;
- parallelism;
- perpendicularity;
- position;
- profile of a line;
- profile of a surface;
- projected tolerance zone;
- regardless of feature size;
- straightness;
- symmetry;
- target point;
- total runout.

NOTE See 4.2.162.1.1 - 4.2.162.1.20 for the definition of each permissible value for symbol_type.

4.2.162.1.1 angularity

angularity: An angularity symbol is used to define the condition of a surface or line that is at the specified angle, other than 90 degrees, from a datum plane or axis. An angularity symbol is depicted as two line segments that form an open triangle. The origin of the symbol is the intersection point of the two lines. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.2 circular runout

circular runout: A circular-runout symbol is used to define the maximum permissible surface variation at any fixed point during one complete rotation of the part about the datum axis. A circular-runout symbol is depicted as a leader and terminated by an arrow. The origin of the symbol is the start of the leader line. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.3 circularity

circularity: A circularity symbol is used to define the condition of a surface of revolution where all points of the surface intersected by any plane, perpendicular to a common axis or passing through a common centre, are equidistant from the axis. A circularity symbol is depicted as a circle. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.4 concentricity

concentricity: A concentricity symbol is used to define the condition wherein the axis of all cross sectional elements of a cylinder, cone, or sphere are common to a datum axis. A concentricity symbol is depicted as two concentric circles. The origin of the symbol is the common centre of the circles. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.5 cylindricity

cylindricity: A cylindricity symbol is used to define two concentric cylinders between which all elements of the specified surface must lie. A cylindricity symbol is depicted as a circle, combined with two tangential and parallel lines. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.6 diameter

diameter: A diameter symbol is used to indicate that the associated notation applies diametrically. A diameter symbol is depicted as a circle, crossed by a line segment. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.7 flatness

flatness: A flatness symbol is used to define the allowable perpendicular deviation of surface elements from the plane in which they reside. A flatness symbol is depicted as a parallelogram. The origin of the symbol is the lower, left corner of the parallelogram. The size and graphical representation of the symbol are shown in Figure 14.

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4.2.162.1.8 least material condition

least material condition: A least material condition symbol is used to define that the given tolerance applies to the part feature at the tolerance limit where the material content is at its minimum. The symbol is depicted as a circle with the character 'L' positioned in its centre. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.9 maximum material condition

maximum material condition: A maximum material condition symbol is used to define that the given tolerance applies to the part feature at the tolerance limit where the material content is at its maximum. A maximum material condition symbol is depicted as a circle with the character 'M' positioned in its centre. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.10 parallelism

parallelism: A parallelism symbol is used to define the condition of a surface, axis, or line that is equidistant at all points from a datum plane or axis. A parallelism symbol is depicted as two parallel line segments. The origin of the symbol is the starting point of the first line segment on the left. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.11 perpendicularity

perpendicularity: A perpendicularity symbol is used to define the condition of a surface, axis, or line that is at right angles to a datum plane or axis. A perpendicularity symbol is depicted as two lines, one placed perpendicular to the other. The origin of the symbol is the point of intersection of the two line segments. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.12 position

position: A position symbol is used to define a condition wherein a part or feature has the same contour and is on opposite sides of a central plane, or a condition in which a feature is symmetrically disposed about the central plane of a datum feature. A position symbol is depicted as a circle, crossed by two perpendicular lines, intersected in the centre of the circle. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.13 profile of a line

profile of a line: A profile of a line symbol is used to define a tolerance zone, always perpendicular to the profile at points of the profile, within which the specified line must lie. A profile of a line symbol is depicted as an arc. The origin of the symbol is the start point on the left of the arc line. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.14 profile of a surface

profile of a surface: A profile of a surface symbol is used to define a tolerance zone, always perpendicular to the surface, within which the specified surface must lie. A profile of a surface symbol is depicted as a closed arc. The origin of the symbol is the midpoint of the line between the start point and the end point of the arc. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.15 projected tolerance zone

projected tolerance zone: A projected tolerance zone symbol is used to define the height or depth to which a tolerance of a location applies. A projected tolerance zone symbol is depicted as a circle with the character 'P' positioned at its centre. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.16 regardless of feature size

regardless of feature size: A regardless of feature size symbol is used to specify that the given tolerance applies to the feature regardless of its size variation. A regardless of feature size symbol is depicted as a circle with the character 'S' positioned in its centre. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.17 straightness

straightness: A straightness symbol is used to define a tolerance zone within which the considered element must lie and where the element is repressed by a straight line. A straightness symbol is depicted as a straight line segment, horizontal to the tolerance frame. The origin of the symbol is the left end point of the segment. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.18 symmetry

symmetry: A symmetry symbol is used to define the condition wherein all elements of the feature being toleranced must lie equidistant from the specified datum within the zone defined by the tolerance. A symmetry symbol is depicted as three parallel, horizontal line segments. The origin of the symbol is the midpoint of the middle line segment. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.19 target point

target point: A target point symbol is used to identify a specific point that is to be used as the datum reference point. A target point is depicted as two perpendicular line segments. The origin of the symbol is the intersection point of the two line segments. The size and graphical representation of the symbol are shown in Figure 14.

4.2.162.1.20 total runout

total runout: A total runout symbol is used to define the maximum permissible surface variation of all surface elements during one complete rotation of the part about the datum axis. A total runout symbol is depicted as two parallel leader lines, each terminated by an arrow. The origin of the symbol is the starting point of the leader on the left. The size and graphical representation of the symbol are shown in Figure 14.

4.2.163 Gis_position

A Gis_position is the positioning and orientation information necessary for transforming coordinate values between a local coordinate space and the global coordinate space of the earth. Transformation procedures depend on the GIS coordinate system.

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EXAMPLE 1 A detailed discussion of global positioning systems is provided in: HOFMANN - WELLENHOF B., LICHTENEGGER H., COLLINS J., *Global Positioning System - Theory and Practice*; Fourth Edition, Springer Verlag Wien, New York, 1997.

The data associated with a `Gis_position` are the following:

- height;
- scale;
- system;
- `x_axis_delta_x`;
- `x_axis_delta_y`;
- `x_coordinate`;
- `y_coordinate`;
- zone.

4.2.163.1 height

The height specifies the distance of the origin of the local coordinate system above the zero elevation datum.

NOTE The zero elevation datum, also referred as sea level, is specified by the geodetic authorities for the region in question.

4.2.163.2 scale

The scale specifies a transformation factor applied to the conversion of point coordinates between a local coordinate system and a GIS coordinate system. The precise application of the transformation will depend on the GIS system.

4.2.163.3 system

The system specifies the identifier of the GIS system being used.

EXAMPLE 2 Gauss-Krueger, Universal Transverse Mercator (UTM), and State Plane are examples of GIS systems used for global positioning.

4.2.163.4 `x_axis_delta_x`

The `x_axis_delta_x` specifies the abscissa value of the end point of a vector indicating the positive x axis of GIS coordinate space in the local coordinate system.

4.2.163.5 `x_axis_delta_y`

The `x_axis_delta_y` specifies the ordinate value of the end point of a vector indicating the orientation of the positive x axis of the GIS coordinate space in the local coordinate system.

EXAMPLE 3 The GIS coordinate system XY00 has an origin at the intersection of the equator and the Greenwich meridian; the *x*_axis of the coordinate system runs East (positive) and West (negative); the *y*_axis runs North (positive) and South (negative); the positive *z*_axis is up. An *x*_axis_delta_x of 1.0 and *x*_axis_delta_y of 1.0 indicates that the *x* axis of the GIS coordinate space makes a $+45^\circ$ angle with respect to the *x* axis of the local coordinate system. If the local coordinate space was superimposed on the GIS coordinate space, the positive *x*_axis of the local coordinate system would point in a Southeast direction (-45°).

4.2.163.6 *x*_coordinate

The *x*_coordinate specifies the distance from the *y* axis of the coordinate space defined by the GIS system and zone.

4.2.163.7 *y*_coordinate

The *y*_coordinate specifies the distance from the *x* axis of the coordinate space defined by the GIS system and zone.

4.2.163.8 zone

The zone specifies a subdivision of the earth's surface based on the GIS system.

EXAMPLE 4 The Gauss-Krueger GIS system subdivides the earth into 120 zones, each of which is 3° in longitudinal width. Each zone is identified as 3° , 6° , 9° , etc., from the Greenwich meridian.

4.2.164 Group

A Group is a collection of graphical elements and other previously defined groups generated into related sets.

The data associated with a Group are the following:

- description;
- id;
- members.

4.2.164.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Group.

The description need not be specified for a particular Group.

4.2.164.2 id

The id specifies the identifier of the Group.

4.2.164.3 members

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The members specifies the annotation elements or subgroups that are contained within the Group.

See 4.3.1352 for the application assertion.

4.2.165 Group_annotation_element

A Group_annotation_element is a type of Group_element (see 4.2.165) that is the annotation contained in a Group (see 4.2.163).

The data associated with a Group_annotation_element are the following:

- basis_annotation.

4.2.165.1 basis_annotation

The basis_annotation specifies the Draughting_annotation (see 4.2.116) that is contained in the Group (see 4.2.163).

See 4.3.1353 for the application assertion.

4.2.166 Group_element

A Group_element is an annotation or another Group (see 4.2.163) object that is a member of a Group (see 4.2.163).

Each Group_element is either a Group_annotation_element (see 4.2.164) or a Sub_group (see 4.2.333).

4.2.167 Hardcopy

A Hardcopy is a type of Document_file (see 4.2.106) that is a document or a portion thereof that is provided in nondigital form.

4.2.168 Hatching_pattern

A Hatching_pattern is a single, uniformly spaced geometric pattern of lines. The basis of the hatching pattern is an infinite straight line that is repeated across the fill area and clipped to its boundaries.

The data associated with a Hatching_pattern are the following:

- angle;
- displacement;
- hatch_line_appearance.

4.2.168.1 angle

The angle specifies the angular rotation of the curves of the hatching pattern, measured counter-clockwise, from the x-axis of the coordinate system into which the hatching pattern is placed.

4.2.168.2 displacement

The displacement specifies a vector that positions the adjacent lines of the hatch pattern from the current line.

4.2.168.3 hatch_line_appearance

The hatch_line_appearance specifies the outlook of the curves used to create a Hatching_pattern.

See 4.3.1354 for the application assertion.

4.2.169 Hierarchical_location_relationship

A Hierarchical_location_relationship is a type of Location_relationship (see 4.2.194) that specifies the relationship where the related Location (see 4.2.192) is a sub-location into which the relating Location (see 4.2.192) is divided.

NOTE It is understood that a sublocation is inside the higher-level location.

The data associated with a Hierarchical_location_relationship are the following:

- description;
- transformation.

4.2.169.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Hierarchical_location_relationship.

The description need not be specified for a particular Hierarchical_location_relationship.

4.2.169.2 transformation

The transformation specifies the geometrical transformation that is used to calculate the exact spatial position of the sublocation within the Location (see 4.2.192).

The transformation need not be specified for a particular Hierarchical_location_relationship.

4.2.170 Instance_placement

An Instance_placement is the information describing how to place a physical or functional item that is defined in its own coordinate space in the coordinate space of a superordinate Product_component (see 4.2.265).

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The data associated with an Instance_placement are the following:

- placed_instance;
- referenced_product_component;
- transformation.

4.2.170.1 placed_instance

The placed_instance specifies the item that is placed.

Each placed_instance may be one of the following: Single_device (see 4.2.314) or Single_function_unit (see 4.2.315).

See 4.3.1356 and 4.3.1357 for the application assertions.

4.2.170.2 referenced_product_component

The referenced_product_component specifies the superordinate Product_component (see 4.2.265) that is defined in the reference coordinate space.

See 4.3.1355 for the application assertion.

4.2.170.3 transformation

The transformation specifies the geometrical transformation between the local coordinate system of the item that is placed into the reference coordinate system of the associated Product_component (see 4.2.265).

4.2.171 Interface

An Interface specifies Interface_terminal (see 4.2.174) objects that characterize the use or the intended purpose of a piece of equipment.

NOTE The Interface may provide a possible selection criterion if a given piece of equipment needs to be substituted by a different one. Possible selection criteria may be assigned as Data _element (see 4.2.70) objects to the Interface.

The data associated with an Interface are the following:

- description;
- external_access;
- id;
- interface_of.

4.2.171.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Interface.

The description need not be specified for a particular Interface.

4.2.171.2 external_access

The external_access specifies the interface by assigning Interface_terminal (see 4.2.174) objects to the Interface.

See 4.3.1359 for the application assertion.

4.2.171.3 id

The id specifies the identifier of the Interface.

4.2.171.4 interface_of

The interface_of specifies the Design_discipline_item_definition (see 4.2.86) to which the Interface belongs.

See 4.3.1358 for the application assertion.

4.2.172 Interface_port

An Interface_port defines a single access point for the functionality of a piece of equipment.

The data associated with an Interface_port are the following:

- description;
- id;
- interface_port_of.

4.2.172.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Interface_port.

The description need not be specified for a particular Interface_port.

4.2.172.2 id

The id specifies the identifier of the Interface_port.

4.2.172.3 interface_port_of

The interface_port_of specifies the Function_definition (see 4.2.145) to which the Interface_port is assigned.

See 4.3.1360 for the application assertion.

4.2.173 Interface_port_connectivity

An Interface_port_connectivity is a type of Functional_connectivity_definition (see 4.2.152) that is a link between Interface_port (see 4.2.171) objects that are connected internally in the functional module.

NOTE The Interface_port_connectivity allows to specify internal networks between the access nodes of Function_definition (see 4.2.145) objects belonging to the same Function_version (see 4.2.150) without the need to describe the internal structure of the module.

EXAMPLE The internal connectivity of a jumper module can be expressed by using Interface_port_connectivity objects.

The data associated with an Interface_port_connectivity are the following:

— connected_interface_port.

4.2.173.1 connected_interface_port

The connected_interface_port specifies the linked Interface_port (see 4.2.171) objects.

See 4.3.1361 for the application assertion.

4.2.174 Interface_port_relationship

A Interface_port_relationship is the relation between two Interface_port (see 4.2.171) objects.

The data associated with an `Interface_port_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.174.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Interface_port_relationship`.

The `description` need not be specified for a particular `Interface_port_relationship`.

4.2.174.2 related

The `related` specifies the second of the two `Interface_port` (see 4.2.171) objects related by the `Interface_port_relationship`.

See 4.3.1362 for the application assertion.

4.2.174.3 relating

The `relating` specifies the first of the two `Interface_port` (see 4.2.171) objects related by the `Interface_port_relationship`.

See 4.3.1363 for the application assertion.

4.2.174.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- `decomposition`;
- `derivation`.

NOTE See 4.2.174.4.1 - 4.2.174.4.2 for the definition of each predefined value for `relation_type`.

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4.2.174.4.1 decomposition

decomposition: The `Interface_port_relationship` defines a relationship where the `Interface_port` (see 4.2.171) is one of the components into which the relating `Interface_port` (see 4.2.171) is decomposed.

4.2.174.4.2 derivation

derivation: The `Interface_port_relationship` defines a deriving relationship where the related `Interface_port` (see 4.2.171) is based on the relating `Interface_port` (see 4.2.171).

4.2.175 Interface_terminal

An `Interface_terminal` defines a single access point for a piece of equipment.

The data associated with an `Interface_terminal` are the following:

- `description`;
- `id`;
- `interface_terminal_of`;
- `maximum_number_of_conductors`;
- `uses`.

4.2.175.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Interface_terminal`.

The `description` need not be specified for a particular `Interface_terminal`.

4.2.175.2 id

The `id` specifies the identifier of the `Interface_terminal`.

4.2.175.3 interface_terminal_of

The `interface_terminal_of` specifies the `Design_discipline_item_definition` (see 4.2.86) to which the `Interface_terminal` is assigned.

See 4.3.1364 for the application assertion.

4.2.175.4 maximum_number_of_conductors

The `maximum_number_of_conductors` specifies the maximum amount of wires or cables that may be connected to the associated `Terminal` (see 4.2.338).

The `maximum_number_of_conductors` need not be specified for a particular `Interface_terminal`.

4.2.175.5 uses

The uses specifies the Terminal (see 4.2.338) in the next lower level of the hierarchy onto which the Interface_terminal is mapped.

See 4.3.1365 for the application assertion.

4.2.176 Interface_terminal_connection

An Interface_terminal_connection is a type of Connectivity_definition (see 4.2.61) that is a link between Interface_terminal (see 4.2.174) objects that are connected internally of the equipment.

NOTE The Interface_terminal_connection allows one to specify the internal connections between the access nodes of a Design_discipline_item_definition (see 4.2.86) without the need to specify the internal structure of the piece of equipment.

EXAMPLE In Figure 15 an internally wired 9-pin connector is shown. Every odd pin is connected to ground. The pins are modelled as Interface_terminal (see 4.2.174) objects that are linked by four Interface_terminal_connection objects. The connection to ground is provided by a Connection (see 4.2.59) object.

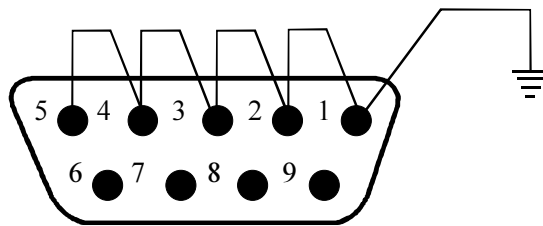


Figure 15 - Internally wired connector

The data associated with an Interface_terminal_connection are the following:

— connected_interface_terminal.

4.2.176.1 connected_interface_terminal

The connected_interface_terminal specifies the linked Interface_terminal (see 4.2.174) objects.

See 4.3.1366 for the application assertion.

4.2.177 Interface_terminal_relationship

A Interface_terminal_relationship is the relation between two Interface_terminal (see 4.2.174) objects.

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The data associated with a `Interface_terminal_relationship` are the following:

- description;
- related;
- relating;
- `relation_type`.

4.2.177.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Interface_terminal_relationship`.

The description need not be specified for a particular `Interface_terminal_relationship`.

4.2.177.2 related

The related specifies the second of the two `Interface_terminal` (see 4.2.174) objects related by the `Interface_terminal_relationship`.

See 4.3.1367 for the application assertion.

4.2.177.3 relating

The relating specifies the first of the two `Interface_terminal` (see 4.2.174) objects related by the `Interface_terminal_relationship`.

See 4.3.1368 for the application assertion.

4.2.177.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- decomposition;
- derivation.

NOTE See 4.2.177.4.1 - 4.2.177.4.2 for the definition of each predefined value for `relation_type`.

4.2.177.4.1 decomposition

decomposition: The `Interface_terminal_relationship` defines a relationship where the related `Interface_terminal` (see 4.2.174) is one of the components into which the relating `Interface_terminal` (see 4.2.174) is divided.

4.2.177.4.2 derivation

derivation: The `Interface_terminal_relationship` defines a deriving relationship where the related `Interface_terminal` (see 4.2.174) is based on the relating `Interface_terminal` (see 4.2.174).

4.2.178 Interval_of_time

An `Interval_of_time` is a period of time.

The data associated with a `Interval_of_time` are the following:

- `end_definition`;
- `start_definition`.

4.2.178.1 end_definition

The `end_definition` defines the end of the `Interval_of_time`, either by referring to a bound, or specifying the extend of the `Interval_of_time` by a `Duration` (see 4.2.126). If the `end_definition` refers to an `Event_reference` (see 4.2.130) or `Date_time` (see 4.2.79), this particular bound of the resulting interval is excluded from it.

There shall be exactly one object that defines the `end_definition` for an `Interval_of_time`.

Each `end_definition` may be one of the following: `Date_time` (see 4.2.79), `Duration` (see 4.2.126), or `Event_reference` (see 4.2.130).

See 4.3.1369, 4.3.1371, and 4.3.1372 for the application assertions.

4.2.178.2 start_definition

The `start_definition` defines the beginning of the `Interval_of_time`. The bound specified by the `start_definition` is included in the resulting interval.

There shall be exactly one object that defines the `start_definition` for an `Interval_of_time`.

Each `start_definition` may be one of the following: `Date_time` (see 4.2.79) or `Event_reference` (see 4.2.130).

See 4.3.1370 and 4.3.1373 for the application assertions.

4.2.179 Item

An `Item` is a thing produced or intended to be produced, set up, designed, or installed in an electrotechnical system. It can be either a single component or an assembly of arbitrary complexity.

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EXAMPLE The electrotechnical equipment controlling a whole plant can be considered to be an Item.

NOTE Information about Item objects shall not be misused to lay down data that is covered elsewhere in this part of ISO 10303.

The data associated with an Item are the following:

- description;
- extended_designation;
- id;
- name.

4.2.179.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Item.

The description need not be specified for a particular Item.

4.2.179.2 extended_designation

The extended_designation specifies a label for the Item that may be visualized in schematics.

NOTE The label assigned through extended_designation shall be identical to the label assigned by the 'id' attribute.

The extended_designation need not be specified for a particular Item.

See 4.3.1374 for the application assertion.

4.2.179.3 id

The id specifies the identifier of the Item.

4.2.179.4 name

The name specifies a speaking designation of the Item.

4.2.180 Item_definition_relationship

An Item_definition_relationship is a relationship between two Design_discipline_item_definition (see 4.2.86) objects.

The data associated with an `Item_definition_relationship` are the following:

- description;
- related;
- relating;
- `relation_type`.

4.2.180.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Item_definition_relationship`.

The description need not be specified for a particular `Item_definition_relationship`.

4.2.180.2 related

The related specifies the second of the two `Design_discipline_item_definition` (see 4.2.86) objects related by the `Item_definition_relationship`.

See 4.3.1375 for the application assertion.

4.2.180.3 relating

The relating specifies the first of the two `Design_discipline_item_definition` (see 4.2.86) objects related by the `Item_definition_relationship`.

See 4.3.1376 for the application assertion.

4.2.180.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- alternate;
- derivation;
- substitution.

NOTE 1 See 4.2.180.4.1 - 4.2.180.4.3 for the definition of each predefined value for `relation_type`.

4.2.180.4.1 alternate

alternate: The `Item_definition_relationship` defines a relationship where the related `Design_discipline_item_definition` (see 4.2.86) is a possible substitute to the relating `Design_discipline_item_definition` (see 4.2.86).

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NOTE 2 This concept refers to the possibility to replace the `Design_discipline_item_definition` (see 4.2.86). The actual replacement is addressed by 'substitution'.

4.2.180.4.2 derivation

derivation: The `Item_definition_relationship` defines a deriving relationship where the related `Design_discipline_item_definition` (see 4.2.86) is based on the relating `Design_discipline_item_definition` (see 4.2.86).

4.2.180.4.3 substitution

substitution: The `Item_definition_relationship` defines a relationship where the related `Design_discipline_item_definition` (see 4.2.86) replaces the relating `Design_discipline_item_definition` (see 4.2.86).

4.2.181 Item_identification

An `Item_identification` is a sequence of alphanumeric characters that labels an `Item` (see 4.2.178).

NOTE 1 If equipment is to be repaired or exchanged, the `Item_identification` allows the determination of the exact type of equipment.

NOTE 2 An `Item_identification` of an `Item` (see 4.2.178) can be unique to each organization.

EXAMPLE The order number may serve as an `Item_identification`.

The data associated with an `Item_identification` are the following:

- `coding_type`;
- `id`.

4.2.181.1 coding_type

The `coding_type` specifies the syntax used for the `id`.

The `coding_type` need not be specified for a particular `Item_identification`.

See 4.3.1377 for the application assertion.

4.2.181.2 id

The `id` specifies the identifier of the `Item_identification`.

4.2.182 Item_presentation

An `Item_presentation` is the association of an item to its presentation.

The data associated with an `Item_presentation` are the following:

- `id`;
- `presented_item`;
- `presenting_item`.

4.2.182.1 `id`

The `id` specifies the identifier of the `Item_presentation`.

The `id` need not be specified for a particular `Item_presentation`.

4.2.182.2 `presented_item`

The `presented_item` specifies the item that is presented.

Each `presented_item` may be one of the following: `Activity` (see 4.2.1), `Activity_element` (see 4.2.2), `Alias_identification` (see 4.2.9), `Classification_association` (see 4.2.46), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Connecting_line` (see 4.2.58), `Connectivity_definition` (see 4.2.61), `Cross_reference` (see 4.2.64), `Data_element` (see 4.2.70), `Data_element_definition` (see 4.2.72), `Data_element_specification` (see 4.2.75), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Document` (see 4.2.101), `Document_version` (see 4.2.114), `Free_segment` (see 4.2.144), `Function_definition` (see 4.2.145), `Function_interface` (see 4.2.147), `Function_unit` (see 4.2.148), `Function_version` (see 4.2.150), `Functional_connectivity_definition` (see 4.2.152), `Functionality` (see 4.2.155), `General_classification` (see 4.2.156), `Generic_note` (see 4.2.159), `Interface` (see 4.2.170), `Interface_port` (see 4.2.171), `Interface_terminal` (see 4.2.174), `Item` (see 4.2.178), `Item_identification` (see 4.2.180), `Item_version` (see 4.2.182), `Location` (see 4.2.192), `Node` (see 4.2.208), `Notification` (see 4.2.213), `Object_designation` (see 4.2.217), `Page_connector_presentation` (see 4.2.228), `Path` (see 4.2.232), `Path_node` (see 4.2.233), `Physical_instance` (see 4.2.243), `Port` (see 4.2.247), `Process_variable` (see 4.2.260), `Project` (see 4.2.271), `Route` (see 4.2.290), `Routed_segment` (see 4.2.293), `Section` (see 4.2.296), `Section_end` (see 4.2.297), `Section_interface` (see 4.2.298), `Security_classification` (see 4.2.301), `Security_level` (see 4.2.302), `Signal` (see 4.2.309), `Signal_value` (see 4.2.313), `Technical_system` (see 4.2.336), `Terminal` (see 4.2.338), `Work_order` (see 4.2.364), or `Work_request` (see 4.2.365).

See 4.3.1378, 4.3.1379, 4.3.1380, 4.3.1382, 4.3.1383, 4.3.1384, 4.3.1385, 4.3.1386, 4.3.1387, 4.3.1388, 4.3.1389, 4.3.1390, 4.3.1391, 4.3.1392, 4.3.1393, 4.3.1394, 4.3.1395, 4.3.1396, 4.3.1397, 4.3.1398, 4.3.1399, 4.3.1400, 4.3.1401, 4.3.1402, 4.3.1403, 4.3.1404, 4.3.1405, 4.3.1406, 4.3.1407, 4.3.1408, 4.3.1409, 4.3.1410, 4.3.1411, 4.3.1412, 4.3.1413, 4.3.1414, 4.3.1415, 4.3.1416, 4.3.1417, 4.3.1418, 4.3.1419, 4.3.1420, 4.3.1421, 4.3.1422, 4.3.1423, 4.3.1424, 4.3.1425, 4.3.1426, 4.3.1427, 4.3.1428, 4.3.1429, 4.3.1430, 4.3.1431, 4.3.1432, and 4.3.1433 for the application assertions.

4.2.182.3 `presenting_item`

The `presenting_item` specifies the `Annotation_element` (see 4.2.15) used to display the item.

See 4.3.1381 for the application assertion.

4.2.183 `Item_version`

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An `Item_version` is a particular version of an `Item` (see 4.2.178).

NOTE Several versions for the same `Item` (see 4.2.178) may exist at one point in time. The information about valid and invalid versions is handled by the associated organizational data.

The data associated with an `Item_version` are the following:

- `associated_item`;
- `description`;
- `version_id`.

4.2.183.1 associated_item

The `associated_item` specifies the associated `Item` (see 4.2.178) object.

See 4.3.1434 for the application assertion.

4.2.183.2 description

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Item_version`.

The `description` need not be specified for a particular `Item_version`.

4.2.183.3 version_id

The `version_id` specifies versioning information for the `Item_version`.

4.2.184 Item_version_relationship

An `Item_version_relationship` is a relationship between two `Item_version` (see 4.2.182) objects.

The data associated with an `Item_version_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.184.1 description

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Item_version_relationship`.

The `description` need not be specified for a particular `Item_version_relationship`.

4.2.184.2 related

The related specifies the second of the two Item_version (see 4.2.182) objects related by the Item_version_relationship.

See 4.3.1435 for the application assertion.

4.2.184.3 relating

The relating specifies the first of the two Item_version (see 4.2.182) objects related by the Item_version_relationship.

See 4.3.1436 for the application assertion.

4.2.184.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- derivation;
- hierarchy;
- sequence;
- supplied item.

NOTE See 4.2.184.4.1 - 4.2.184.4.4 for the definition of each predefined value for relation_type.

4.2.184.4.1 derivation

derivation: The Item_version_relationship defines a deriving relationship where the related Item_version (see 4.2.182) is based on the relating Item_version (see 4.2.182) which is an earlier version of the same or of a different Item (see 4.2.178).

4.2.184.4.2 hierarchy

hierarchy: The Item_version_relationship defines a hierarchical relationship where the related Item_version (see 4.2.182) is a subversion of the relating Item_version (see 4.2.182).

EXAMPLE Revision 1.1 and 1.2 of a drive.

4.2.184.4.3 sequence

sequence: The Item_version_relationship defines a succession of versions where the relating Item_version (see 4.2.182) is the preceding version, and the related Item_version (see 4.2.182) is the following version. For an Item_version (see 4.2.182), there shall be, at the most, one Item_version_relationship of this relation type as relating and, at most, one Item_version_relationship of this relation type as related.

4.2.184.4.4 supplied item

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supplied item: The `Item_version_relationship` defines a relationship between two `Item_version` (see 4.2.182) objects representing the same item in different organizational contexts.

EXAMPLE A piece of equipment that is identified in a company by the identifier 'C425' and `version_id` 'V2.0' is identified by its supplier as '2X45', `version_id` 'V3.2'.

4.2.185 Language

The `Language` specifies a language spoken by human beings to communicate with each other verbally or in written form.

The data associated with a `Language` are the following:

- `country_code`;
- `language_code`.

4.2.185.1 country_code

The `country_code` specifies the country, as addition to the language, according to the alpha-2 code specified in ISO 3166-1.

EXAMPLE Possible values for `country_code` are, e.g., 'GB' for the United Kingdom or 'US' for the United States of America.

The `country_code` need not be specified for a particular `Language`.

4.2.185.2 language_code

The `language_code` specifies the language of the text information in the Alpha-3 bibliographic code specified in ISO 639-2.

EXAMPLE Possible values for `language_code` are, e.g., 'eng' for English, 'fre' for French, 'rus' for Russian, or 'ger' for German.

4.2.186 Layer

A `Layer` is a mechanism for the organization of CAD elements. Within the CAD model, one or more levels are positioned in a stacked arrangement. These levels may have specific, defined uses and may be displayed as desired by the user.

The data associated with a Layer are the following:

- description;
- element_visibility;
- layer_id.

4.2.186.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Layer.

The description need not be specified for a particular Layer.

4.2.186.2 element_visibility

The element_visibility specifies whether or not the elements assigned to the layer are displayed in the visual presentation of the drawing.

See 4.3.1437 for the application assertion.

4.2.186.3 layer_id

The layer_id specifies the identification of a particular layer.

4.2.187 Leader

A Leader is a type of Directed_curve (see 4.2.99) that directs a dimension, a note, or a symbol to the intended place or point on a feature appearing on the drawing.

The data associated with a Leader are the following:

- target_element.

4.2.187.1 target_element

The target_element specifies the annotation element that is the target for the leader.

The target_element need not be specified for a particular Leader.

See 4.3.1438 for the application assertion.

4.2.188 Leader_directed_dimension

A Leader_directed_dimension is a type of Dimension (see 4.2.93) that is the graphical presentation of a dimension value and is guided to the feature being dimensioned with a leader.

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The data associated with a `Leader_directed_dimension` are the following:

- `component`.

4.2.188.1 component

The `component` specifies the leader that visually directs the callout to the element.

See 4.3.1439 for the application assertion.

4.2.189 Leader_terminator

A `Leader_terminator` is a graphical symbol that is applied to a leader and used to identify the endpoint or point of application of the directed annotation.

The data associated with a `Leader_terminator` are the following:

- `line`;
- `symbol`.

4.2.189.1 line

The `line` specifies the leader to which the symbol applies.

See 4.3.1441 for the application assertion.

4.2.189.2 symbol

The `symbol` specifies an `Annotation_symbol` (see 4.2.20) that is used to identify the endpoint or point of application of the directed annotation.

See 4.3.1440 for the application assertion.

4.2.190 Line_font

A `Line_font` is a defined pattern of visible and invisible segments applied to a curve in a repetitive manner.

Each `Line_font` is either an `Externally_defined_line_font` (see 4.2.134), a `Predefined_line_font` (see 4.2.254), or a `User_defined_line_font` (see 4.2.353).

4.2.191 Linear_dimension

A `Linear_dimension` is a type of `Dimension` (see 4.2.93) that is the graphical presentation of a value of linear distance measured between two points along a straight path.

The data associated with a `Linear_dimension` are the following:

- component;
- extent.

4.2.191.1 component

The component specifies the projection lines that shows the extension of the points, lines, or surfaces that bound the measurement.

See 4.3.1443 for the application assertion.

4.2.191.2 extent

The extent specifies the dimension line that graphically presents where the dimension value applies.

See 4.3.1442 for the application assertion.

4.2.192 Linear_pattern_location

A `Linear_pattern_location` is a means to locate repeating patterns along the centre-line of a product.

The data associated with a `Linear_pattern_location` are the following:

- distance;
- orientation;
- start_location.

4.2.192.1 distance

The distance specifies the span between two neighbouring patterns.

4.2.192.2 orientation

The orientation specifies the direction of the positive z axis of the `Linear_pattern_location`.

The orientation need not be specified for a particular `Linear_pattern_location`.

4.2.192.3 start_location

The start_location specifies the location of the first pattern.

See 4.3.1444 for the application assertion.

4.2.193 Location

A Location is a region of space.

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NOTE 1 A Location may provide specific environmental conditions that applies to the equipment that is situated at the Location.

NOTE 2 A Location can be used to reserve space for equipment that is not known yet. Therefore it can be appropriate to define a Location without assigning physical or abstract items to it.

NOTE 3 A Location can be used to support mechanical interference detection.

The data associated with a Location are the following:

- `defining_item`;
- `description`;
- `extended_designation`;
- `id`;
- `local_coordinate_space`;
- `position`;
- `version_id`.

4.2.193.1 `defining_item`

The `defining_item` specifies that the Location has the shape and size of the object which is associated through the '`defining_item`' attribute.

NOTE 4 The shape definition of an equipment item used to specify the shape of the Location needs to be unambiguous.

NOTE 5 The shape need not be explicitly specified through an associated Shape (see 4.2.306) object.

Each `defining_item` may be one of the following: `Design_discipline_item_definition` (see 4.2.86), `Physical_instance` (see 4.2.243), `Product_component` (see 4.2.265), `Single_device` (see 4.2.314), `Specified_device` (see 4.2.328), or `Technical_system` (see 4.2.336).

See 4.3.1447, 4.3.1450, 4.3.1451, 4.3.1452, 4.3.1453, and 4.3.1454 for the application assertions.

4.2.193.2 `description`

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the Location.

The `description` need not be specified for a particular Location.

4.2.193.3 `extended_designation`

The `extended_designation` specifies a structured label for the Location.

NOTE 6 The label assigned through `extended_designation` shall be identical to the label assigned by the 'id' attribute.

The `extended_designation` need not be specified for a particular Location.

See 4.3.1449 for the application assertion.

4.2.193.4 id

The `id` specifies the identifier of the Location.

4.2.193.5 local_coordinate_space

The `local_coordinate_space` specifies the coordinate system of the Location.

The `local_coordinate_space` need not be specified for a particular Location.

See 4.3.1445 for the application assertion.

4.2.193.6 position

The `position` specifies the spatial position of the Location. If a local coordinate system exists, the 'position' attributes specifies its origin.

The `position` need not be specified for a particular Location.

Each `position` may be one of the following: `Cartesian_point` (see 4.2.37) or `Gis_position` (see 4.2.162).

See 4.3.1446 and 4.3.1448 for the application assertions.

4.2.193.7 version_id

The `version_id` specifies versioning information for the Location.

The `version_id` need not be specified for a particular Location.

4.2.194 Location_assignment

A `Location_assignment` is an association of a Location (see 4.2.192) with an physical or abstract item.

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The data associated with a `Location_assignment` are the following:

- `assigned_location`;
- `associated_item`;
- `description`;
- `role`.

4.2.194.1 `assigned_location`

The `assigned_location` specifies the associated `Location` (see 4.2.192) object.

See 4.3.1461 for the application assertion.

4.2.194.2 `associated_item`

The `associated_item` specifies the item that is related to the `Location` (see 4.2.192).

Each `associated_item` may be one of the following: `Connectivity_definition` (see 4.2.61), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Function_definition` (see 4.2.145), `Function_unit` (see 4.2.148), `Functional_connectivity_definition` (see 4.2.152), `Physical_instance` (see 4.2.243), `Port` (see 4.2.247), `Product_component` (see 4.2.265), `Signal` (see 4.2.309), `Technical_system` (see 4.2.336), or `Terminal` (see 4.2.338).

See 4.3.1455, 4.3.1456, 4.3.1457, 4.3.1458, 4.3.1459, 4.3.1460, 4.3.1462, 4.3.1463, 4.3.1464, 4.3.1465, 4.3.1466, and 4.3.1467 for the application assertions.

4.2.194.3 `description`

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Location_assignment`.

The `description` need not be specified for a particular `Location_assignment`.

4.2.194.4 `role`

The `role` specifies the relationship between the location and the accommodated item. The value is either user defined or predefined.

The predefined value of `role` is one of the following:

- `accommodation`.

NOTE See 4.2.194.4.1 for the definition of each predefined value for `role`.

4.2.194.4.1 `accommodation`

`accommodation`: The `accommodation` specifies that the referenced item is situated in the associated location.

4.2.195 Location_relationship

A Location_relationship is the relation between two Location (see 4.2.192) objects.

Each Location_relationship is either a General_location_relationship (see 4.2.158), a Hierarchical_location_relationship (see 4.2.168), or a Neighbourhood_location_relationship (see 4.2.205).

The data associated with an Location_relationship are the following:

— related;

— relating.

4.2.195.1 related

The related specifies the second of the two Location (see 4.2.192) objects related by the Location_relationship.

See 4.3.1468 for the application assertion.

4.2.195.2 relating

The relating specifies the first of the two Location (see 4.2.192) objects related by the Location_relationship.

See 4.3.1469 for the application assertion.

4.2.196 Logical_value

A Logical_value is the representation of a 'true', 'false', or 'unknown' value.

The data associated with a Logical_value are the following:

— value_of_logical_value.

4.2.196.1 value_of_logical_value

The value_of_logical_value specifies the value of a logical variable.

4.2.197 Lot_configuration

A Lot_configuration is a type of Manufacturing_configuration (see 4.2.198) that is planned to apply from a given batch of aspects of a part.

The data associated with a Lot_configuration are the following:

— lot_id;

— lot_size.

4.2.197.1 lot_id

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The `lot_id` specifies the identification of the batch of aspects of a part to which the `Lot_configuration` applies.

4.2.197.2 `lot_size`

The `lot_id` specifies the size of the batch of aspects of a part that the `Lot_configuration` applies to.

4.2.198 `Make_from_relationship`

A `Make_from_relationship` is a type of `Item_definition_relationship` (see 4.2.179) that is a relationship between a `Design_discipline_item_definition` (see 4.2.86) which provides the definition of a raw material, or of a semi-finished part and a `Design_discipline_item_definition` (see 4.2.86) which provides the definition of an object manufactured out of that material, or semi-finished part. The inherited attribute 'related' specifies the raw material or the semi-finished part, and the inherited attribute 'relating' specifies the manufactured part.

4.2.199 `Manufacturing_configuration`

A `Manufacturing_configuration` is the association of a `Product_identification` (see 4.2.268), `Product_design` (see 4.2.267), or an `Item_version` (see 4.2.182) with a `Device` (see 4.2.88).

Each `Manufacturing_configuration` is either a `Dated_configuration` (see 4.2.82), a `Lot_configuration` (see 4.2.196), or a `Serial_configuration` (see 4.2.304).

The data associated with a `Manufacturing_configuration` are the following:

- `concerned_organization`;
- `configured_element`;
- `is_solution_for`.

4.2.199.1 `concerned_organization`

The `concerned_organization` specifies the `Organization` (see 4.2.223) in which the `Manufacturing_configuration` is valid. The case where the `concerned_organization` is an empty set means that the `Manufacturing_configuration` regards any organization that may consider the 'configured_element'.

See 4.3.1471 for the application assertion.

4.2.199.2 `configured_element`

The `configured_element` specifies an `Device` (see 4.2.88) that is controlled by a `Manufacturing_configuration`.

See 4.3.1470 for the application assertion.

4.2.199.3 `is_solution_for`

The `is_solution_for` specifies the characteristic or combination of characteristics for which the `Device` (see 4.2.88) provides a technical solution.

See 4.3.1472 for the application assertion.

4.2.200 Marking

A Marking is a sign applied to a piece of equipment used to give additional information about the part.

The data associated with a Marking are the following:

- character_string;
- figure;
- marked_device;
- marking_system;
- meaning;
- position.

4.2.200.1 character_string

The character_string specifies the list of characters that compose the marking applied to the piece of equipment.

NOTE If the marking consists of pictorial elements the 'character_string' attribute contains text that identifies the pictures.

EXAMPLE 1 A wire is marked with W001 which is the designator of this particular wire. The 'character_string' attribute contains the string 'W001'.

EXAMPLE 2 A high voltage cable is marked with a warning symbol. The 'character_string' attribute contains the string 'Warning label 47-BA'.

4.2.200.2 figure

The figure specifies the appearance of the Marking, which includes information about the colour and form of the Marking.

The figure need not be specified for a particular Marking.

See 4.3.1473 for the application assertion.

4.2.200.3 marked_device

The marked_device specifies the Device (see 4.2.88) the Marking is applied to.

See 4.3.1479 for the application assertion.

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4.2.200.4 marking_system

The marking_system specifies the Classification_system (see 4.2.48) that shall be used to interpret the Marking.

See 4.3.1475 for the application assertion.

4.2.200.5 meaning

The meaning specifies the content of the Marking.

Each meaning may be one of the following: Data_element (see 4.2.70) or Generic_note (see 4.2.159).

See 4.3.1476 and 4.3.1477 for the application assertions.

4.2.200.6 position

The position specifies the spot where the Marking is applied to the Device (see 4.2.88).

Each position may be one of the following: Cartesian_point (see 4.2.37) or Linear_pattern_location (see 4.2.191).

See 4.3.1474 and 4.3.1478 for the application assertions.

4.2.201 Mass

A Mass is the quantity of matter a component contains.

The data associated with a Mass are the following:

— value_of_mass.

4.2.201.1 value_of_mass

The value_of_mass specifies the value that indicates the mass.

See 4.3.1480 for the application assertion.

4.2.202 Material

A Material is the matter from which a component is made.

The data associated with a Material are the following:

— substance.

4.2.202.1 substance

The substance specifies human-interpretable information characterizing the matter.

4.2.203 Model_placed_annotation

A `Model_placed_annotation` is a type of `Draughting_annotation` (see 4.2.116) that is located in the coordinate system of the draughting shape model and is subject to view transformations for display.

The data associated with a `Model_placed_annotation` are the following:

- `annotation_layers`;
- `annotation_visibility`.

4.2.203.1 `annotation_layers`

The `annotation_layers` specifies the layers that contain the annotation.

See 4.3.1481 for the application assertion.

4.2.203.2 `annotation_visibility`

The `annotation_visibility` specifies whether or not each piece of annotation placed within the draughting shape model is visible.

See 4.3.1482 for the application assertion.

4.2.204 `Mounting_features`

A `Mounting_features` is the description of the methods that can be used to attach one component to its counterpart.

The data associated with a `Mounting_features` are the following:

- `fixture`.

4.2.204.1 `fixture`

The `fixture` specifies human-interpretable information describing the mounting features.

4.2.205 `Multi_language_note`

A `Multi_language_note` is a type of `Set_of_notes` (see 4.2.305) that is a group of `Note` (see 4.2.210) objects. Each `Note` (see 4.2.210) is authored in its individual language. In all cases the meaning of the text contained in the `'text_of_note'` attribute of the grouped `Note` (see 4.2.210) objects is the same.

NOTE A `Multi_language_note` shall only be associated to an attribute, not to a whole item.

EXAMPLE A `Multi_language_note` grouping two `Note` (see 4.2.210) objects with the content `'Attention - High voltage'` and `'Achtung - Hochspannung'`.

4.2.206 `Neighbourhood_location_relationship`

A `Neighbourhood_location_relationship` is a type of `Location_relationship` (see 4.2.194) that is the relation between two `Location` (see 4.2.192) objects that specifies the spatial arrangement between the related `Location` (see 4.2.192) objects.

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The data associated with an `Neighbourhood_location_relationship` are the following:

— `relation_type`.

4.2.206.1 `relation_type`

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

NOTE The relating Location (see 4.2.192) is a part of the related Location (see 4.2.192).

The predefined value of `relation_type` is one of the following:

— `above`;

— `across`;

— `adjoining`;

— `around`;

— `outside`.

NOTE See 4.2.206.1.1 - 4.2.206.1.5 for the definition of each predefined value for `relation_type`.

4.2.206.1.1 `above`

`above`: The `Neighbourhood_location_relationship` defines a relationship where the related Location (see 4.2.192) is on top of the relating Location (see 4.2.192).

4.2.206.1.2 `across`

`across`: The `Neighbourhood_location_relationship` defines a relationship where the related Location (see 4.2.192) goes from one side to another side of the relating Location (see 4.2.192).

EXAMPLE A high-voltage cable may run across a private property.

4.2.206.1.3 `adjoining`

`adjoining`: The `Neighbourhood_location_relationship` defines a relationship where the related Location (see 4.2.192) is located at the boundary of the relating Location (see 4.2.192).

4.2.206.1.4 `around`

`around`: The `Neighbourhood_location_relationship` defines a relationship where the related Location (see 4.2.192) specifies an area that surrounds the relating Location (see 4.2.192).

NOTE The relating Location (see 4.2.192) is not a part of the related Location (see 4.2.192).

4.2.206.1.5 outside

outside: The `Neighbourhood_location_relationship` defines a deriving relationship where the related Location (see 4.2.192) is external the relating Location (see 4.2.192).

4.2.207 Network

A Network is a type of `Functional_connectivity_definition` (see 4.2.152) that is the link between Port (see 4.2.247) objects with the intention to allow the flow of information.

NOTE A Network may be decomposed into its constituents. The information about the constituents is specified through `Functional_connectivity_definition_relationship` (see 4.2.153) of type 'decomposition'.

EXAMPLE 2 bit wide parallel bus is described as a Network consisting of 32 underlying Network objects. The lower level Network objects are related to the upper level Network object through `Functional_connectivity_definition_relationship` (see 4.2.153) objects of type 'decomposition'.

The data associated with a Network are the following:

— `connected_port`.

4.2.207.1 connected_port

The `connected_port` specifies the Port (see 4.2.247) objects that are joined with each other within a Network.

See 4.3.1483 for the application assertion.

4.2.208 Next_higher_assembly

A `Next_higher_assembly` is a type of `Assembly_component_relationship` (see 4.2.26) that is a relation where the attribute `related` specifies a constituent of an assembly, and the attribute `relating` specifies the immediate parent assembly of the constituent. A constituent may be a single part or an assembly.

EXAMPLE The assembly 'motor' may be assembled of single parts. The belt conveyor assembly is formed of assemblies.

4.2.209 Node

A Node is a named position that is of interest for the placement of equipment.

NOTE 1 A Route (see 4.2.290) is understood as a sequence of vertices and edges, where the vertices are Node objects.

NOTE 2 A Node does not have real world coordinates unless a `Path_node` (see 4.2.233) assigns them to the Node.

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The data associated with a Node are the following:

- assigned_location;
- description;
- id;
- implemented_by;
- position.

4.2.209.1 assigned_location

The assigned_location specifies the Location (see 4.2.192) that contains the Node.

See 4.3.1485 for the application assertion.

4.2.209.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Node.

The description need not be specified for a particular Node.

4.2.209.3 id

The id specifies the identifier of the Node.

4.2.209.4 implemented_by

The implemented_by specifies the Device (see 4.2.88) objects that are used to implement the Node.

EXAMPLE A node can be implemented by elements such as cable clips or fasteners.

See 4.3.1484 for the application assertion.

4.2.209.5 position

The position specifies the placement of the Node.

The position need not be specified for a particular Node.

See 4.3.1486 for the application assertion.

4.2.210 Node_relationship

A Node_relationship is the relation between two Node (see 4.2.208) objects.

The data associated with an Node_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.210.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Node_relationship.

The description need not be specified for a particular Node_relationship.

4.2.210.2 related

The related specifies the second of the two Node (see 4.2.208) objects related by the Node_relationship.

See 4.3.1487 for the application assertion.

4.2.210.3 relating

The relating specifies the first of the two Node (see 4.2.208) objects related by the Node_relationship.

See 4.3.1488 for the application assertion.

4.2.210.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution.

NOTE 1 See 4.2.210.4.1 - 4.2.210.4.4 for the definition of each predefined value for `relation_type`.

4.2.210.4.1 alternate

alternate: The `Node_relationship` defines a relationship where the related Node (see 4.2.208) is a possible substitute to the relating Node (see 4.2.208).

NOTE 2 This allows one to map Node (see 4.2.208) objects onto each other.

NOTE 3 This concept refers to the possibility to replace the Node (see 4.2.208). The actual replacement is addressed by 'substitution'.

4.2.210.4.2 decomposition

decomposition: The `Node_relationship` defines a relationship where the related Node (see 4.2.208) is one of the components into which the relating Node (see 4.2.208) is divided up.

4.2.210.4.3 derivation

derivation: The `Node_relationship` defines a deriving relationship where the related Node (see 4.2.208) is based on the relating Node (see 4.2.208).

4.2.210.4.4 substitution

substitution: The `Node_relationship` defines a relationship where the related Node (see 4.2.208) replaces the relating Node (see 4.2.208).

4.2.211 Note

A Note is a type of `Generic_note` (see 4.2.159) that is human-interpretable information intended to give further details on a specific part of an electrotechnical system. By using notes, explanatory information can be added to the product data.

The data associated with a Note are the following:

- kind;
- language_specification;
- text_of_note.

4.2.211.1 kind

The kind specifies the category of the Note. The value is either user defined or predefined.

The predefined value of kind is one of the following:

- additional language dependent string;
- assembly instruction;
- explanatory note;
- installation instruction;
- manufacturing instruction;
- operating instruction;
- primary language dependent string.

NOTE See 4.2.211.1.1 - 4.2.211.1.7 for the definition of each predefined value for kind.

4.2.211.1.1 additional language dependent string

additional language dependent string: The textual information of the Note is phrased in a language other than the primary language.

4.2.211.1.2 assembly instruction

assembly instruction: The Note contains information about the assembly process of the equipment to which the Note is assigned.

4.2.211.1.3 explanatory note

explanatory note: The Note contains additional descriptive information about the data.

4.2.211.1.4 installation instruction

installation instruction: The Note contains information about the erection of the equipment.

4.2.211.1.5 manufacturing instruction

manufacturing instruction: The Note contains information about the manufacturing of the equipment.

4.2.211.1.6 operating instruction

operating instruction: The Note contains information about the functioning or handling of the equipment.

4.2.211.1.7 primary language dependent string

primary language dependent string: The textual information of the Note is phrased in the original language.

4.2.211.2 language_specification

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The `language_specification` specifies a language spoken by human beings to communicate with each other verbally or in written form. The language symbol given in ISO 639 shall be used.

See 4.3.1489 for the application assertion.

4.2.211.3 `text_of_note`

The `text_of_note` specifies human-interpretable information that shall be conveyed to the user.

4.2.212 `Note_association`

The `Note_association` is the relation between the annotation information and the physical or abstract item that is described. The purpose of this relationship is specified by the content of the attributes `applied_attribute_name` and `role`.

The data associated with a `Note_association` are the following:

- `applied_attribute_name`;
- `assigned_note`;
- `associated_item`;
- `role`.

4.2.212.1 `applied_attribute_name`

The `applied_attribute_name` specifies the attribute to which the assigned `Note` (see 4.2.210) applies.

The `applied_attribute_name` need not be specified for a particular `Note_association`.

4.2.212.2 `assigned_note`

The `assigned_note` specifies the annotation.

See 4.3.1547 for the application assertion.

4.2.212.3 `associated_item`

The `associated_item` specifies the item that is described by the associated annotation.

Each `associated_item` may be one of the following: `Activity` (see 4.2.1), `Activity_method` (see 4.2.3), `Activity_relationship` (see 4.2.5), `Alias_identification` (see 4.2.9), `Alternate_item_relationship` (see 4.2.11), `Application_context` (see 4.2.22), `Approval_relationship` (see 4.2.24), `Assembly_component_relationship` (see 4.2.26), `Assembly_substitute_relationship` (see 4.2.28), `Cable_pull_information` (see 4.2.33), `Certification` (see 4.2.38), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Class_structure_relationship` (see 4.2.45), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Configuration` (see 4.2.56), `Connectivity_allocation` (see 4.2.60), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Contract` (see 4.2.63), `Data_element` (see

4.2.70), *Data_element_association* (see 4.2.71), *Data_element_definition* (see 4.2.72), *Data_element_definition_relationship* (see 4.2.73), *Data_element_specification* (see 4.2.75), *Design_discipline_item_definition* (see 4.2.86), *Device* (see 4.2.88), *Device_relationship* (see 4.2.89), *Document* (see 4.2.101), *Document_file* (see 4.2.106), *Document_file_relationship* (see 4.2.107), *Document_version* (see 4.2.114), *Drawing_sheet* (see 4.2.122), *Drawing_view* (see 4.2.125), *Effectivity* (see 4.2.127), *Effectivity_relationship* (see 4.2.129), *Event_reference* (see 4.2.130), *External_library_reference* (see 4.2.132), *Free_segment* (see 4.2.144), *Function_definition* (see 4.2.145), *Function_definition_relationship* (see 4.2.146), *Function_interface* (see 4.2.147), *Function_unit* (see 4.2.148), *Function_unit_relationship* (see 4.2.149), *Function_version* (see 4.2.150), *Functional_connectivity_definition* (see 4.2.152), *Functional_connectivity_definition_relationship* (see 4.2.153), *Functional_unit_allocation* (see 4.2.154), *Functionality* (see 4.2.155), *General_classification* (see 4.2.156), *Interface* (see 4.2.170), *Interface_port* (see 4.2.171), *Interface_terminal* (see 4.2.174), *Item* (see 4.2.178), *Item_definition_relationship* (see 4.2.179), *Item_version* (see 4.2.182), *Location* (see 4.2.192), *Location_relationship* (see 4.2.194), *Marking* (see 4.2.199), *Material* (see 4.2.201), *Node* (see 4.2.208), *Node_relationship* (see 4.2.209), *Notification* (see 4.2.213), *Offered_function_allocation* (see 4.2.220), *Organization_relationship* (see 4.2.225), *Path* (see 4.2.232), *Path_node* (see 4.2.233), *Physical_assembly_relationship* (see 4.2.241), *Physical_instance* (see 4.2.243), *Port* (see 4.2.247), *Port_allocation* (see 4.2.248), *Preferred_item_allocation* (see 4.2.258), *Preferred_item_terminal_allocation* (see 4.2.259), *Process_variable* (see 4.2.260), *Product_class* (see 4.2.263), *Product_class_relationship* (see 4.2.264), *Product_identification* (see 4.2.268), *Product_specification* (see 4.2.269), *Product_structure_relationship* (see 4.2.270), *Project* (see 4.2.271), *Project_relationship* (see 4.2.272), *Requirement* (see 4.2.285), *Route* (see 4.2.290), *Route_relationship* (see 4.2.291), *Routed_segment* (see 4.2.293), *Section* (see 4.2.296), *Section_end* (see 4.2.297), *Section_interface* (see 4.2.298), *Section_interface_relationship* (see 4.2.299), *Section_relationship* (see 4.2.300), *Signal* (see 4.2.309), *Signal_value* (see 4.2.313), *Specific_item_classification* (see 4.2.321), *Specification* (see 4.2.323), *Specification_category* (see 4.2.324), *Specification_expression* (see 4.2.326), *Specification_expression* (see 4.2.326), *Specification_inclusion* (see 4.2.327), *Technical_system* (see 4.2.336), *Technical_system_relationship* (see 4.2.337), *Terminal* (see 4.2.338), *Work_order* (see 4.2.364), or *Work_request* (see 4.2.365).

See 4.3.1490, 4.3.1491, 4.3.1492, 4.3.1493, 4.3.1494, 4.3.1495, 4.3.1496, 4.3.1497, 4.3.1498, 4.3.1499, 4.3.1500, 4.3.1501, 4.3.1502, 4.3.1503, 4.3.1504, 4.3.1505, 4.3.1506, 4.3.1507, 4.3.1508, 4.3.1509, 4.3.1510, 4.3.1511, 4.3.1512, 4.3.1513, 4.3.1514, 4.3.1515, 4.3.1516, 4.3.1517, 4.3.1518, 4.3.1519, 4.3.1520, 4.3.1521, 4.3.1522, 4.3.1523, 4.3.1524, 4.3.1525, 4.3.1526, 4.3.1527, 4.3.1528, 4.3.1529, 4.3.1530, 4.3.1531, 4.3.1532, 4.3.1533, 4.3.1534, 4.3.1535, 4.3.1536, 4.3.1537, 4.3.1538, 4.3.1539, 4.3.1540, 4.3.1541, 4.3.1542, 4.3.1543, 4.3.1544, 4.3.1545, 4.3.1546, 4.3.1548, 4.3.1549, 4.3.1550, 4.3.1551, 4.3.1552, 4.3.1553, 4.3.1554, 4.3.1555, 4.3.1556, 4.3.1557, 4.3.1558, 4.3.1559, 4.3.1560, 4.3.1561, 4.3.1562, 4.3.1563, 4.3.1564, 4.3.1565, 4.3.1566, 4.3.1567, 4.3.1568, 4.3.1569, 4.3.1570, 4.3.1571, 4.3.1572, 4.3.1573, 4.3.1574, 4.3.1575, 4.3.1576, 4.3.1577, 4.3.1578, 4.3.1579, 4.3.1580, 4.3.1581, 4.3.1582, 4.3.1583, 4.3.1584, 4.3.1585, 4.3.1586, 4.3.1587, 4.3.1588, 4.3.1589, 4.3.1590, 4.3.1591, 4.3.1592, 4.3.1593, 4.3.1594, 4.3.1595, 4.3.1596, 4.3.1597, 4.3.1598, 4.3.1599, and 4.3.1600 for the application assertions.

4.2.212.4 role

The role specifies the scope of the assigned annotation object.

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The value of role is one of the following:

- attribute only;
- whole item.

NOTE 2 See 4.2.212.4.1 - 4.2.212.4.2 for the definition of each permissible value for role.

4.2.212.4.1 attribute only

attribute only: The associated annotation applies to the attribute specified through applied_attribute_name only.

4.2.212.4.2 whole item

whole item: The associated annotation applies to the whole item associated through associated_item.

4.2.213 Note_reference

A Note_reference is a type of Cross_reference (see 4.2.64) that is a reference made from one part of a diagram to another part between a note and the item being commented.

The data associated with a Note_reference are the following:

- note_presentation;
- presentation_of_item.

4.2.213.1 note_presentation

The note_presentation specifies the image that depicts the annotation in pictorial form.

See 4.3.1601 for the application assertion.

4.2.213.2 presentation_of_item

The presentation_of_item specifies the pictorial representation.

See 4.3.1602 for the application assertion.

4.2.214 Notification

A Notification is a report of the occurrence of an event.

NOTE A Notification can be caused by a Signal (see 4.2.309). In this case the Notification represents the information transmitted by this particular Signal (see 4.2.309).

EXAMPLE A Notification can be 'emergency switch-off', 'main drive on', 'Fresh-water reservoir empty', etc.

The data associated with a Notification are the following:

- description;
- id;
- language_specification;
- text_of_message;
- trigger;
- version_id.

4.2.214.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Notification.

The description need not be specified for a particular Notification.

4.2.214.2 id

The id specifies the identifier of the Notification.

4.2.214.3 language_specification

The language_specification specifies a language spoken by human beings to communicate with each other verbally or in written form. This language is used to phrase the content of the 'text_of_message' attribute.

The language_specification need not be specified for a particular Notification.

See 4.3.1603 for the application assertion.

4.2.214.4 text_of_message

The text_of_message specifies the information conveyed by a Notification. The information shall be either for computer interpretation only, or for human interpretation.

The text_of_message need not be specified for a particular Notification.

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4.2.214.5 trigger

The trigger specifies trigger event that initiates the notification.

Each trigger may be one of the following: Process_variable (see 4.2.260), Signal (see 4.2.309), or Signal_value (see 4.2.313).

See 4.3.1604, 4.3.1605, and 4.3.1606 for the application assertions.

4.2.214.6 version_id

The version_id specifies versioning information for the Notification.

The version_id need not be specified for a particular Notification.

4.2.215 Notification_relationship

A Notification_relationship is a relation between two Notification (see 4.2.213) objects.

The data associated with a Notification_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.215.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Notification_relationship.

The description need not be specified for a particular Notification_relationship.

4.2.215.2 related

The related specifies the second of the two Notification (see 4.2.213) objects related by the Notification_relationship.

See 4.3.1607 for the application assertion.

4.2.215.3 relating

The relating specifies the first of the two Notification (see 4.2.213) objects related by the Notification_relationship.

See 4.3.1608 for the application assertion.

4.2.215.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution;
- translation.

NOTE 1 See 4.2.215.4.1 - 4.2.215.4.5 for the definition of each predefined value for `relation_type`.

4.2.215.4.1 alternate

alternate: The `Notification_relationship` defines a relationship where the related Notification (see 4.2.213) is a possible substitute to the relating Notification (see 4.2.213).

NOTE 2 This concept refers to the possibility to replace the Notification (see 4.2.213). The actual replacement is addressed by 'substitution'.

4.2.215.4.2 decomposition

decomposition: The `Notification_relationship` defines a relationship where the related Notification (see 4.2.213) is one of the components into which the relating Notification (see 4.2.213) is divided.

4.2.215.4.3 derivation

derivation: The `Notification_relationship` defines a deriving relationship where the related Notification (see 4.2.213) is based on the relating Notification (see 4.2.213).

4.2.215.4.4 substitution

substitution: The `Notification_relationship` defines a relationship where the related Notification (see 4.2.213) replaces the relating Notification (see 4.2.213).

4.2.215.4.5 translation

translation: The `Notification_relationship` defines a relationship where the related Notification (see 4.2.213) is a transcription into another language of the relating Notification (see 4.2.213).

4.2.216 Numerical_precision

A `Numerical_precision` is the information about the mathematical precision of the numerical values contained in a graphical product model.

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The data associated with a Numerical_precision are the following:

- angular_precision;
- distance_precision.

4.2.216.1 angular_precision

The angular_precision specifies the maximum value for the absolute difference between two angle values when the creating system assumes these two angles to be identical.

4.2.216.2 distance_precision

The distance_precision specifies the maximum value for the absolute difference between two coordinate values when the creating system assumes these two coordinate values to be identical.

NOTE The distance_precision is used to determine the tolerance range for continuous curve, surface connections, or for the determination of a point laying on a curve or surface.

4.2.217 Numerical_value

A Numerical_value is a type of Value_with_unit (see 4.2.360) that is an amount expressed as a multiple of a standardized quantity.

The data associated with a Numerical_value are the following:

- value_component.

4.2.217.1 value_component

The value_component specifies the numerical part of Numerical_value.

4.2.218 Object_designation

An Object_designation is an identifier used to name physical or abstract items.

NOTE The Object_designation allows to preserve the internal structure of the identification. By using the Object_designation_relationship (see 4.2.218) the structure of a reference designation can be expressed. Furthermore the information provided with Object_designation enables a company that extends an existing plant to specify the identification for the added equipment consistently with the methodology used for the already existing items.

Each Object_designation is either a Document_designation (see 4.2.105), an Object_reference_designation (see 4.2.219), a Signal_designation (see 4.2.310), or a Terminal_designation (see 4.2.339).

The data associated with an Object_designation are the following:

- designation_system;
- designator;
- type_of_object_designation.

4.2.218.1 designation_system

The designation_system specifies the methodology used to interpret the designator.

The designation_system need not be specified for a particular Object_designation.

See 4.3.1609 for the application assertion.

4.2.218.2 designator

The designator specifies an alphanumeric string identifying the physical or abstract item the Object_designation is assigned to.

4.2.218.3 type_of_object_designation

The type_of_object_designation specifies the kind of the Object_designation. The value is either user defined or predefined.

The type_of_object_designation need not be specified for a particular Object_designation. The type_of_object_designation need not be specified for a particular Object_designation.

The predefined value of type_of_object_designation is one of the following:

- function designation;
- location designation;
- product designation.

NOTE See 4.2.218.3.1 - 4.2.218.3.3 for the definition of each predefined value for type_of_object_designation.

4.2.218.3.1 function designation

function designation: The Object_designation serves as an identifier or part of an identifier designating the functional aspect of a Function_unit (see 4.2.148) or a Device (see 4.2.88) or a Location (see 4.2.192).

4.2.218.3.2 location designation

location designation: The Object_designation serves as an identifier or as part of an identifier designating the place or position where the designated equipment is located.

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4.2.218.3.3 product designation

product designation: The `Object_designation` serves as an identifier or part of an identifier designating the product aspect of a `Function_unit` (see 4.2.148), a `Device` (see 4.2.88), or a `Location` (see 4.2.192).

4.2.219 Object_designation_relationship

An `Object_designation_relationship` is an association between `Object_designation` (see 4.2.217) objects for the formation of hierarchically structured identifiers.

The data associated with an `Object_designation_relationship` are the following:

- `related_object_designation`;
- `relating_object_designation`.

4.2.219.1 related_object_designation

The `related_object_designation` specifies the `Object_designation` (see 4.2.217) objects that are the constituents of another `Object_designation` (see 4.2.217).

See 4.3.1610 for the application assertion.

4.2.219.2 relating_object_designation

The `relating_object_designation` specifies the `Object_designation` (see 4.2.217) that is composed of one or more other `Object_designation` (see 4.2.217) objects.

See 4.3.1611 for the application assertion.

4.2.220 Object_reference_designation

An `Object_reference_designation` is a type of `Object_designation` (see 4.2.217) that is the name or identifier of a physical or abstract portion of an electrotechnical system. Within its scope, the `Object_reference_designation` is unique.

4.2.221 Offered_function_allocation

An `Offered_function_allocation` is a relation that specifies a service that is accessible within a specific piece of equipment.

The data associated with a `Offered_function_allocation` are the following:

- `description`;
- `offered_functionality`;
- `performing_item`;
- `relation_type`.

4.2.221.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Offered_function_allocation`.

The `description` need not be specified for a particular `Offered_function_allocation`.

4.2.221.2 offered_functionality

The `offered_functionality` specifies an available service.

See 4.3.1614 for the application assertion.

4.2.221.3 performing_item

The `performing_item` specifies the equipment that provides the service.

Each `performing_item` may be one of the following: `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Physical_instance` (see 4.2.243), or `Product_component` (see 4.2.265).

See 4.3.1612, 4.3.1613, 4.3.1615, and 4.3.1616 for the application assertions.

4.2.221.4 relation_type

The `relation_type` specifies the meaning of the relationship.

The value of `relation_type` is one of the following:

- `dedicated function`;
- `offered function`.

NOTE See 4.2.221.4.1 - 4.2.221.4.2 for the definition of each permissible value for `relation_type`.

4.2.221.4.1 dedicated function

`dedicated function`: The service is no longer available i.e., the associated `Function_definition` (see 4.2.145) cannot be allocated further.

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4.2.221.4.2 offered function

offered function: The service is still available i.e., the associated Function_definition (see 4.2.145) can still be allocated.

4.2.222 Operating_temperature

An Operating_temperature is the allowed ambient temperature of a component under normal operating conditions.

EXAMPLE The Operating_temperature of a notebook computer ranges from 5°C to 35°C, whereas the Storage_temperature (see 4.2.330) ranges from -20°C to 60°C.

The data associated with a Operating_temperature are the following:

— temperature.

4.2.222.1 temperature

The temperature specifies the value of the Operating_temperature.

NOTE Minimum and maximum of Operating_temperature may be specified by assigning a Value_range (see 4.2.359) object.

See 4.3.1617 for the application assertion.

4.2.223 Ordinate_dimension

An Ordinate_dimension is a type of Dimension (see 4.2.93) that is the graphical presentation of a value of linear distance measure where the linear distance is parallel to an axis of the coordinate system of the item being dimensioned. The origin or datum of the linear distance dimension is a point, line, or plane surface corresponding to or coincident with an axis in the plane of the dimension and is perpendicular to the direction of measurement. Only the terminus of the dimension extent is indicated by a projection line parallel to the datum, the dimension value, and associated information.

The data associated with an Ordinate_dimension are the following:

— component.

4.2.223.1 component

The component specifies the projection line that shows the extension of the point, line, or surface.

See 4.3.1618 for the application assertion.

4.2.224 Organization

An Organization is a group of people involved in a particular business process.

The data associated with an Organization are the following:

- delivery_address;
- id;
- name;
- organization_type;
- postal_address;
- visitor_address.

4.2.224.1 delivery_address

The delivery_address specifies the address where to which goods are delivered.

The delivery_address need not be specified for a particular Organization.

See 4.3.1619 for the application assertion.

4.2.224.2 id

The id specifies the identifier of the Organization.

NOTE The assignment of this attribute is usually controlled by a registration authority. The registration authority can be a public organization that assigns identifiers to corporations, or it can be the parent corporation that assigns component identifiers to its components.

EXAMPLE The id can be the code assigned to the Organization for a listing in a stock market, or it can be a department number.

4.2.224.3 name

The name specifies a speaking designation of the Organization.

4.2.224.4 organization_type

The organization_type specifies the type of the Organization. The value is either user defined or predefined.

The predefined value of organization_type is one of the following:

- company;
- department;
- plant.

NOTE See 4.2.224.4.1 - 4.2.224.4.3 for the definition of each predefined value for organization_type.

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4.2.224.4.1 company

company: Specifies that the Organization has the legal form of a business or enterprise.

4.2.224.4.2 department

department: Specifies that the Organization is a division or office within a larger organization.

4.2.224.4.3 plant

plant: Specifies that the Organization acts as a manufacturing site.

4.2.224.5 postal_address

The postal_address specifies the address for letter mail.

The postal_address need not be specified for a particular Organization.

See 4.3.1620 for the application assertion.

4.2.224.6 visitor_address

The visitor_address specifies the address where the organization receives visitors.

The visitor_address need not be specified for a particular Organization.

See 4.3.1621 for the application assertion.

4.2.225 Organization_in_contract

An Organization_in_contract is a mechanism to associate the person who is signing a contract and the organization which the person is signing for, to a Contract (see 4.2.63).

The data associated with an Organization_in_contract are the following:

- contract;
- contracted_organization;
- role_of_organization;
- signature.

4.2.225.1 contract

The contract specifies the Contract (see 4.2.63) in which the Organization_in_contract participates.

See 4.3.1622 for the application assertion.

4.2.225.2 contracted_organization

The contracted_organization specifies the organization that participates in the contract.

See 4.3.1624 for the application assertion.

4.2.225.3 role_of_organization

The role_of_organization specifies the position of a signing organization with respect to the contract. The value is either user defined or predefined.

The predefined value of role_of_organization is one of the following:

— contractee;

— contractor.

NOTE See 4.2.225.3.1 - 4.2.225.3.2 for the definition of each predefined value for role_of_organization.

4.2.225.3.1 contractee

contractee: The tasks that are subject of the Contract (see 4.2.63) are assigned to the referenced Organization (see 4.2.223).

4.2.225.3.2 contractor

contractor: The referenced Organization (see 4.2.223) assigns the tasks that are subject of the Contract (see 4.2.63).

4.2.225.4 signature

The signature specifies the Person (see 4.2.237) or Organization (see 4.2.223) who signed the contract on behalf of the contracted organization and the date of the signature.

See 4.3.1623 for the application assertion.

4.2.226 Organization_relationship

An Organization_relationship is an association between two organizations.

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EXAMPLE A team belongs to a department which itself belongs to a company. This organizational structure may be built using the Organization_relationship mechanism.

The data associated with an Organization_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.226.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Organization_relationship.

The description need not be specified for a particular Organization_relationship.

4.2.226.2 related

The related specifies the other organization in an Organization_relationship.

See 4.3.1625 for the application assertion.

4.2.226.3 relating

The relating specifies the one organization in an Organization_relationship.

See 4.3.1626 for the application assertion.

4.2.226.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- hierarchy;
- legal succession;
- reorganization.

NOTE See 4.2.226.4.1 - 4.2.226.4.3 for the definition of each predefined value for relation_type.

4.2.226.4.1 hierarchy

hierarchy: The related Organization (see 4.2.223) is a sub organization of the relating Organization (see 4.2.223);

4.2.226.4.2 legal succession

legal succession: The related Organization (see 4.2.223) is the legal successor of the relating Organization (see 4.2.223).

NOTE An additional Date_time_assignment (see 4.2.80) may be applied to the Organization_ - relationship in order to specify the time when the succession takes place.

4.2.226.4.3 reorganization

reorganization: The related Organization (see 4.2.223) is the successor of the relating Organization (see 4.2.223) due to an organizational transfer of responsibility.

EXAMPLE The name of a department changes due to reorganization.

4.2.227 Outside_diameter

An Outside_diameter is the outer width of a component with a body of circular cross section.

The data associated with an Outside_diameter are the following:

— value_of_outside_diameter.

4.2.227.1 value_of_outside_diameter

The value_of_outside_diameter specifies the value that indicates the outside diameter.

See 4.3.1627 for the application assertion.

4.2.228 Page_connector

A Page_connector is a cross reference used in schematic diagrams to indicate that a connecting line continues elsewhere on the same sheet or on another sheet of a drawing or in other related documents.

The data associated with a Page_connector are the following:

— page_connector_id;

— part_of;

— type_of.

4.2.228.1 page_connector_id

The page_connector_id specifies an identifier for the Page_connector that is unique within its scope.

4.2.228.2 part_of

The part_of specifies the Connecting_line (see 4.2.58) of which the Page_connector is a constituent.

See 4.3.1628 for the application assertion.

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4.2.228.3 type_of

The type_of specifies the kind of the Page_connector.

The value of type_of is one of the following:

- central;
- exclusive;
- neutral.

NOTE See 4.2.228.3.1 - 4.2.228.3.3 for the definition of each permissible value for relation_type.

4.2.228.3.1 central

central: One or more other Page_connector objects of type 'central' that are referred by this Page_connector exist.

4.2.228.3.2 exclusive

exclusive: There is exactly one other Page_connector of type 'exclusive' referred by this particular Page_connector.

4.2.228.3.3 neutral

neutral: The counterpart the Page_connector is referring to is not a part of the product data defined by this part of ISO 10303. One or more counterparts to a Page_connector of type 'neutral' may exist.

4.2.229 Page_connector_presentation

A Page_connector_presentation is a visualization of a Page_connector (see 4.2.227) in a schematic diagram.

The data associated with a Page_connector_presentation are the following:

- of_page_connector;
- type_of.

4.2.229.1 of_page_connector

The of_page_connector specifies the Page_connector (see 4.2.227) object that is depicted by the Page_connector_presentation.

See 4.3.1629 for the application assertion.

4.2.229.2 type_of

The type_of specifies the kind of the Page_connector_presentation.

The value of `type_of` is one of the following:

- `none`;
- `sink`;
- `source`.

NOTE See 4.2.229.2.1 - 4.2.229.2.3 for the definition of each permissible value for `type_of`.

4.2.229.2.1 none

`none`: One or more other `Page_connector_presentation` objects of the type 'none' that are referred by the `Page_connector_presentation` exists.

4.2.229.2.2 sink

`sink`: Exactly one `Page_connector_presentation` of the kind 'source' to which the `Page_connector_presentation` refers exists.

4.2.229.2.3 source

`source`: One or more `Page_connector_presentation` objects of the kind 'sink' the `Page_connector_presentation` refers to exists.

4.2.230 Page_connector_reference

A `Page_connector_reference` is a type of `Cross_reference` (see 4.2.64) that is a reference made from one part of a diagram to another part between `Page_connector` (see 4.2.227) objects being part of the presentation of the same network.

The data associated with a `Page_connector_reference` are the following:

- `part_of`;
- `refers_to`.

4.2.230.1 part_of

The `part_of` specifies the `Page_connector_presentation` (see 4.2.228) to which the `Page_connector_reference` belongs.

See 4.3.1631 for the application assertion.

4.2.230.2 refers_to

The `refers_to` specifies the `Page_connector` (see 4.2.227) or `Page_connector_presentation` (see 4.2.228) object at which the `Page_connector_reference` points.

Each `refers_to` may be one of the following: `Page_connector` (see 4.2.227) or `Page_connector_presentation` (see 4.2.228).

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See 4.3.1630 and 4.3.1632 for the application assertions.

4.2.231 Parallel_dimension_pair

A `Parallel_dimension_pair` is a type of `Dimension_sequence_pair` (see 4.2.97) that is the relationship between two dimensions of the same type, wherein their dimension lines are parallel and share a common baseline or datum.

4.2.232 Partial_document_assignment

A `Partial_document_assignment` is a type of `Document_assignment` (see 4.2.102) that identifies a specific portion of the contents of a document or a set of documents and associates it to the product data in which this particular portion is relevant.

The data associated with a `Partial_document_assignment` are the following:

— `document_portion`.

4.2.232.1 document_portion

The `document_portion` specifies the word or group of words that convey the subject or sub contents of the `Document` (see 4.2.101).

EXAMPLE If the assigned document is a service manual of a complete power train, the 'document_portion' attribute specifies that only the information related to electric fuses is relevant.

4.2.233 Path

A `Path` is a track taken to get from a starting-point to a destination. The `Path` may be specified as an ordered collection of `Path_segment` (see 4.2.236) objects.

NOTE A `Path` is understood as a sequence of vertices and edges, where the edges are `Path_segment` (see 4.2.236) objects, and the vertices are `Path_node` (see 4.2.233) objects.

EXAMPLE A `Path` may specify the geometrical course of a cableway.

The data associated with a `Path` are the following:

— `consists_of`;

— `id`;

— `version_id`.

4.2.233.1 consists_of

The `consists_of` specifies the `Path_segment` (see 4.2.236) objects that define the geometrical or course of the `Path`. The associated `Path_segment` (see 4.2.236) objects shall specify a continuous trail.

See 4.3.1633 for the application assertion.

4.2.233.2 id

The `id` specifies the identifier of the `Path`.

4.2.233.3 version_id

The `version_id` specifies versioning information for the `Path`.

The `version_id` need not be specified for a particular `Path`.

4.2.234 Path_node

A `Path_node` is a vertex within a `Path` (see 4.2.232).

NOTE A `Path` (see 4.2.232) is understood as a sequence of vertices and edges, where the vertices are `Path_node` objects.

The data associated with a `Path_node` are the following:

- `defined_in`;
- `id`;
- `position`.

4.2.234.1 defined_in

The `defined_in` specifies the `Location` (see 4.2.192) that provides the coordinate system used to define the position of the `Path_node`.

See 4.3.1635 for the application assertion.

4.2.234.2 id

The `id` specifies the identifier of the `Path_node`.

4.2.234.3 position

The `position` specifies the three-dimensional placement of the `Path_node`.

See 4.3.1634 for the application assertion.

4.2.235 Path_node_relationship

A `Path_node_relationship` is the relation between two `Path_node` (see 4.2.233) objects.

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The data associated with an `Path_node_relationship` are the following:

- description;
- related;
- relating;
- `relation_type`.

4.2.235.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Path_node_relationship`.

The description need not be specified for a particular `Path_node_relationship`.

4.2.235.2 related

The related specifies the second of the two `Path_node` (see 4.2.233) objects related by the `Path_node_relationship`.

See 4.3.1636 for the application assertion.

4.2.235.3 relating

The relating specifies the first of the two `Path_node` (see 4.2.233) objects related by the `Path_node_relationship`.

See 4.3.1637 for the application assertion.

4.2.235.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- alternate;
- substitution.

NOTE 1 See 4.2.235.4.1 - 4.2.235.4.2 for the definition of each predefined value for `relation_type`.

4.2.235.4.1 alternate

alternate: The `Path_node_relationship` defines a relationship where the related `Path_node` (see 4.2.233) is a possible substitute to the relating `Path_node` (see 4.2.233).

NOTE 2 This concept refers to the possibility to replace the `Path_node` (see 4.2.233). The actual replacement is addressed by 'substitution'.

4.2.235.4.2 substitution

substitution: The `Path_node_relationship` defines a relationship where the related `Path_node` (see 4.2.233) replaces the relating `Path_node` (see 4.2.233).

4.2.236 Path_relationship

A `Path_relationship` is the relation between two `Path` (see 4.2.232) objects.

The data associated with a `Path_relationship` are the following:

- description;
- related;
- relating;
- relation_type.

4.2.236.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the `Path_relationship`.

The description need not be specified for a particular `Path_relationship`.

4.2.236.2 related

The related specifies the second of the two `Path` (see 4.2.232) objects related by the `Path_relationship`.

See 4.3.1638 for the application assertion.

4.2.236.3 relating

The relating specifies the first of the two `Path` (see 4.2.232) objects related by the `Path_relationship`.

See 4.3.1639 for the application assertion.

4.2.236.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- `alternate`;
- `derivation`;
- `substitution`.

NOTE 1 See 4.2.236.4.1 - 4.2.236.4.3 for the definition of each predefined value for `relation_type`.

4.2.236.4.1 `alternate`

`alternate`: The `Path_relationship` defines a relationship where the related `Path` (see 4.2.232) is a possible substitute to the relating `Path` (see 4.2.232).

NOTE 2 This concept refers to the possibility to replace the `Path` (see 4.2.232). The actual replacement is addressed by '`substitution`'.

4.2.236.4.2 `derivation`

`derivation`: The `Path_relationship` defines a deriving relationship where the related `Path` (see 4.2.232) is based on the relating `Path` (see 4.2.232).

4.2.236.4.3 `substitution`

`substitution`: The `Path_relationship` defines a relationship where the related `Path` (see 4.2.232) replaces the relating `Path` (see 4.2.232).

4.2.237 `Path_segment`

A `Path_segment` is a continuous track between two `Path_node` (see 4.2.233) objects.

NOTE A `Path` (see 4.2.232) is understood as a sequence of vertices and edges, where the edges are `Path_segment` objects.

The data associated with an `Path_segment` are the following:

- `begins_at`;
- `defined_in`;
- `ends_at`;
- `form`;
- `id`.

4.2.237.1 `begins_at`

The `begins_at` specifies the starting point of the `Path_segment`.

See 4.3.1642 for the application assertion.

4.2.237.2 defined_in

The `defined_in` specifies the Location (see 4.2.192) that provides the coordinate system to define the `Path_segment`.

See 4.3.1641 for the application assertion.

4.2.237.3 ends_at

The `ends_at` specifies the end point of the `Path_segment`.

See 4.3.1643 for the application assertion.

4.2.237.4 form

The `form` specifies a three-dimensional curve that defines the shape of the `Path_segment`. This curve shall be defined in the coordinate system specified by the Location (see 4.2.192) associated through `defined_in`.

See 4.3.1640 for the application assertion.

4.2.237.5 id

The `id` specifies the identifier of the `Path_segment`.

4.2.238 Person

A `Person` is an individual human being who has some relationship to the product data. The `Person` shall always be identified in the context of one or more organizations.

The data associated with a `Person` are the following:

- `first_name`;
- `last_name`;
- `middle_names`;
- `preferred_business_address`;
- `prefix_titles`;
- `suffix_titles`.

4.2.238.1 first_name

The `first_name` specifies the first element in the list of a person's list of forenames.

The `first_name` need not be specified for a particular `Person`.

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4.2.238.2 last_name

The last_name specifies the person's surname.

The last_name need not be specified for a particular Person.

4.2.238.3 middle_names

The middle_names specifies the other person's forenames, if there are any.

There may be one or more middle_names for a Person. The middle_names need not be specified for a particular Person.

4.2.238.4 preferred_business_address

The preferred_business_address specifies the location of the office of the Person.

The preferred_business_address need not be specified for a particular Person.

See 4.3.1644 for the application assertion.

4.2.238.5 prefix_titles

The prefix_titles specifies the word, or group of words, that specify the person's social or professional standing and appear before his or her name.

There may be one or more prefix_titles for a Person. The prefix_titles need not be specified for a particular Person.

4.2.238.6 suffix_titles

The suffix_titles specifies the word, or group of words, that specify the person's social or professional standing and appear after his or her name.

There may be one or more suffix_titles for a Person. The suffix_titles need not be specified for a particular Person.

4.2.239 Person_in_organization

A Person_in_organization is the specification of a Person (see 4.2.237) in the context of an Organization (see 4.2.223).

The data associated with an `Person_in_organization` are the following:

- `associated_organization`;
- `associated_person`;
- `id`;
- `location`;
- `role`.

4.2.239.1 associated_organization

The `associated_organization` specifies the Organization (see 4.2.223) with which the Person (see 4.2.237) is associated.

See 4.3.1646 for the application assertion.

4.2.239.2 associated_person

The `associated_person` specifies the Person (see 4.2.237).

See 4.3.1647 for the application assertion.

4.2.239.3 id

The `id` specifies an identifier of the person. The identifier shall be unique within the scope of the '`associated_organization`'.

EXAMPLE The `id` may be a staff number or a user `id` in a computer system.

4.2.239.4 location

The `location` specifies the relevant address of the `Person_in_organization`.

The `location` need not be specified for a particular `Person_in_organization`.

See 4.3.1645 for the application assertion.

4.2.239.5 role

The `role` specifies the relationship between the Person (see 4.2.237) and the Organization (see 4.2.223).

4.2.240 Person_in_organization_relationship

A `Person_in_organization_relationship` is a mechanism which allows to specify an relationship between two persons in an organization.

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EXAMPLE The owner of important product data leaves a company and therefore has a successor. This relationship may be built up using the `Person_in_organization_relationship` mechanism.

The data associated with an `Person_in_organization_relationship` are the following:

- description;
- related;
- relating;
- `relation_type`.

4.2.240.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Person_in_organization_relationship`.

The description need not be specified for a particular `Person_in_organization_relationship`.

4.2.240.2 related

The related specifies the second of the two objects related by the `Person_in_organization_relationship`.

See 4.3.1648 for the application assertion.

4.2.240.3 relating

The relating specifies the first of the two objects related by the `Person_in_organization_relationship`.

See 4.3.1649 for the application assertion.

4.2.240.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- successor.

NOTE See 4.2.240.4.1 for the definition of each predefined value for `relation_type`.

4.2.240.4.1 successor

successor: The related `Person_in_organization` (see 4.2.238) is the successor of the relating `Person_in_organization` (see 4.2.238).

4.2.241 Person_organization_assignment

A `Person_organization_assignment` is a relation that associates an `Organization` (see 4.2.223) or a `Person_in_organization` (see 4.2.238) with an item.

The data associated with a `Person_organization_assignment` are the following:

- `assigned_person_or_organization`;
- `description`;
- `is_applied_to`;
- `role`.

4.2.241.1 assigned_person_or_organization

The `assigned_person_or_organization` specifies the concerned individual or organization.

Each `assigned_person_or_organization` may be one of the following: `Organization` (see 4.2.223) or `Person_in_organization` (see 4.2.238).

See 4.3.1724 and 4.3.1730 for the application assertions.

4.2.241.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Person_organization_assignment`.

The `description` need not be specified for a particular `Person_organization_assignment`.

4.2.241.2 is_applied_to

The `is_applied_to` specifies the item with which the `Person_organization_assignment` is associated.

Each `is_applied_to` may be one of the following: `Activity` (see 4.2.1), `Activity_element` (see 4.2.2), `Activity_method_assignment` (see 4.2.4), `Activity_relationship` (see 4.2.5), `Alternate_item_relationship` (see 4.2.11), `Approval_status` (see 4.2.25), `Assembly_component_relationship` (see 4.2.26), `Assembly_substitute_relationship` (see 4.2.28), `Cable_pull_information` (see 4.2.33), `Certification` (see 4.2.38), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Class_structure_relationship` (see 4.2.45), `Classification_association` (see 4.2.46), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Configuration` (see 4.2.56), `Connectivity_allocation` (see 4.2.60), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Contract` (see 4.2.63), `Data_element` (see 4.2.70), `Data_element_association` (see 4.2.71), `Data_element_definition` (see 4.2.72), `Data_element_relationship` (see 4.2.74), `Data_element_specification` (see 4.2.75), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Device_relationship` (see 4.2.89), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_file_relationship` (see 4.2.107), `Document_representation` (see 4.2.110), `Document_version` (see 4.2.114), `Document_version_relationship` (see 4.2.115), `Drawing` (see 4.2.119), `Drawing_sequence` (see 4.2.121), `Drawing_sheet` (see 4.2.122), `Drawing_sheet_relationship` (see

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4.2.124), Free_segment (see 4.2.144), Function_definition (see 4.2.145), Function_definition_relationship (see 4.2.146), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_unit_relationship (see 4.2.149), Function_version (see 4.2.150), Function_version_relationship (see 4.2.151), Functional_connectivity_definition (see 4.2.152), Functional_connectivity_definition_relationship (see 4.2.153), Functional_unit_allocation (see 4.2.154), Functionality (see 4.2.155), General_classification (see 4.2.156), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see 4.2.178), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Item_version_relationship (see 4.2.183), Location (see 4.2.192), Location_relationship (see 4.2.194), Marking (see 4.2.199), Material (see 4.2.201), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Organization_relationship (see 4.2.225), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Person_in_organization (see 4.2.238), Person_in_organization_relationship (see 4.2.239), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Port_association (see 4.2.249), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Requirement_document_assignment (see 4.2.287), Route (see 4.2.290), Route_relationship (see 4.2.291), Routed_segment (see 4.2.293), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Security_classification (see 4.2.301), Security_level (see 4.2.302), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.1650, 4.3.1651, 4.3.1652, 4.3.1653, 4.3.1654, 4.3.1655, 4.3.1656, 4.3.1657, 4.3.1658, 4.3.1659, 4.3.1660, 4.3.1661, 4.3.1662, 4.3.1663, 4.3.1664, 4.3.1665, 4.3.1666, 4.3.1667, 4.3.1668, 4.3.1669, 4.3.1670, 4.3.1671, 4.3.1672, 4.3.1673, 4.3.1674, 4.3.1675, 4.3.1676, 4.3.1677, 4.3.1678, 4.3.1679, 4.3.1680, 4.3.1681, 4.3.1682, 4.3.1683, 4.3.1684, 4.3.1685, 4.3.1686, 4.3.1687, 4.3.1688, 4.3.1689, 4.3.1690, 4.3.1691, 4.3.1692, 4.3.1693, 4.3.1694, 4.3.1695, 4.3.1696, 4.3.1697, 4.3.1698, 4.3.1699, 4.3.1700, 4.3.1701, 4.3.1702, 4.3.1703, 4.3.1704, 4.3.1705, 4.3.1706, 4.3.1707, 4.3.1708, 4.3.1709, 4.3.1710, 4.3.1711, 4.3.1712, 4.3.1713, 4.3.1714, 4.3.1715, 4.3.1716, 4.3.1717, 4.3.1718, 4.3.1719, 4.3.1720, 4.3.1721, 4.3.1722, 4.3.1723, 4.3.1725, 4.3.1726, 4.3.1727, 4.3.1728, 4.3.1729, 4.3.1731, 4.3.1732, 4.3.1733, 4.3.1734, 4.3.1735, 4.3.1736, 4.3.1737, 4.3.1738, 4.3.1739, 4.3.1740, 4.3.1741, 4.3.1742, 4.3.1743, 4.3.1744, 4.3.1745, 4.3.1746, 4.3.1747, 4.3.1748, 4.3.1749, 4.3.1750, 4.3.1751, 4.3.1752, 4.3.1753, 4.3.1754, 4.3.1755, 4.3.1756, 4.3.1757, 4.3.1758, 4.3.1759, 4.3.1760, 4.3.1761, 4.3.1762, 4.3.1763, 4.3.1764, 4.3.1765, 4.3.1766, 4.3.1767, 4.3.1768, and 4.3.1769 for the application assertions.

4.2.241.3 role

The role specifies the responsibility of the assigned individual or organization with respect to the item to which it is applied. The value is either user defined or predefined.

The predefined value of role is one of the following:

- author;
- classification officer;
- creator;
- custodian;
- customer;
- design supplier;
- editor;
- id owner;
- inspector;
- local representative;
- location;
- manufacturer;
- operator;
- owner;
- scope;
- supplier;
- wholesaler.

NOTE See 4.2.241.3.1 - 4.2.241.3.17 for the definition of each predefined value for role.

4.2.241.3.1 author

author: The referenced item has been originated by the individual or organization.

4.2.241.3.2 classification officer

classification officer: The assigned person or organization is formally responsible for the classification of the referenced object;.

4.2.241.3.3 creator

creator: The referenced item has been created by the individual or organization.

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4.2.241.3.4 custodian

custodian: The assigned individual or organization is responsible for the existence and integrity of the referenced item.

4.2.241.3.5 customer

customer: The assigned individual or organization acts as a purchaser or consumer of the referenced item.

NOTE The customer may be part of the same organization as the supplier.

4.2.241.3.6 design supplier

design supplier: The assigned Person (see 4.2.237) or Organization (see 4.2.223) is the one who delivers the data describing the referenced object.

4.2.241.3.7 editor

editor: The assigned individual or organization is responsible for making changes of the referenced item.

4.2.241.3.8 id owner

id owner: The assigned Person (see 4.2.237) or Organization (see 4.2.223) is responsible for the designation of an identifier.

4.2.241.3.9 inspector

inspector: The task of the assigned individual or organization is to supervise the referenced item and to make reports.

4.2.241.3.10 local representative

local representative: The assigned individual or organization acts as a local contact point for the referenced item.

EXAMPLE The jobsite management of a construction site may act as local representative of its company.

4.2.241.3.11 location

location: The assigned Organization (see 4.2.223) is the place where the referenced object can be found or where it takes place.

4.2.241.3.12 manufacturer

manufacturer: The assigned individual or organization produces the referenced item.

4.2.241.3.13 operator

operator: The assigned individual or organization is running the referenced item.

4.2.241.3.14 owner

owner: The assigned individual or organization owns the referenced item.

4.2.241.3.15 scope

scope: The assigned individual or organization specifies the range of validity for the referenced item.

4.2.241.3.16 supplier

supplier: The assigned individual or organization provides the referenced item.

4.2.241.3.17 wholesaler

wholesaler: The assigned Person (see 4.2.237) or Organization (see 4.2.223) is the one who is in the sales chain between the manufacturer and the supplier.

4.2.242 Physical_assembly_relationship

A `Physical_assembly_relationship` is the mechanism to relate one `Physical_instance` (see 4.2.243) as a component to another `Physical_instance` (see 4.2.243) that plays the role of an assembly.

The data associated with a `Physical_assembly_relationship` are the following:

- `is_realization_of`;
- `physical_assembly`;
- `physical_component`.

4.2.242.1 is_realization_of

The `is_realization_of` specifies the `Device` (see 4.2.88) the of which the physical component is an occurrence.

See 4.3.1770 for the application assertion.

4.2.242.2 physical_assembly

The `physical_assembly` specifies the `Physical_instance` (see 4.2.243) that serves as the assembly in the physical structure.

See 4.3.1771 for the application assertion.

4.2.242.3 physical_component

The `physical_component` specifies the `Physical_instance` (see 4.2.243) that serves as a component in the physical structure.

See 4.3.1772 for the application assertion.

4.2.243 Physical_document

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A `Physical_document` is a type of `Document_representation` (see 4.2.110) that is a piece of product data that is archived in non-digital form.

EXAMPLE Paper plots of technical drawings, microfiche, or paper documents, such as calculations or test reports, are examples for a `Physical_document`.

The data associated with a `Physical_document` are the following:

— `component`.

4.2.243.1 component

The `component` is any portion of a `Physical_document`.

See 4.3.1773 for the application assertion.

4.2.244 Physical_instance

A `Physical_instance` is a type of `Product_constituent` (see 4.2.266) that is the denomination of a physically realized item that is identified by a lot id or by a serial number.

The data associated with a `Physical_instance` are the following:

— `description`;

— `inventory_number`;

— `is_realization_of`;

— `lot_id`;

— `serial_number`.

4.2.244.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Physical_instance`.

The `description` need not be specified for a particular `Physical_instance`.

4.2.244.2 inventory_number

The `inventory_number` specifies an alphanumeric string to identify an item in the detailed list of articles, such as goods and chattels, found to be in the possession of a person or enterprise.

The `inventory_number` need not be specified for a particular `Physical_instance`.

4.2.244.3 is_realization_of

The `is_realization_of` specifies the item that comprises the information defining the `Physical_instance`.

NOTE This information is only necessary for the 'root' component in a physical assembly. For a component this information is already specified through `Physical_assembly_relationship` (see 4.2.241) which references the defining item through the corresponding `Device` (see 4.2.88).

Each `is_realization_of` may be one of the following: `Design_discipline_item_definition` (see 4.2.86) or `Product_identification` (see 4.2.268).

See 4.3.1774 and 4.3.1775 for the application assertions.

4.2.244.4 lot_id

The `lot_id` specifies the identifier of the lot of which the `Physical_instance` is a part.

The `lot_id` need not be specified for a particular `Physical_instance`.

4.2.244.5 serial_number

The `serial_number` specifies an alphanumerical string to identify a piece of equipment uniquely within a production series. It is indelibly attached to the equipment.

EXAMPLE In the case of the replacement of a device due to a repair, the new device will have another serial number indicating that a replacement of the device has taken place.

The `serial_number` need not be specified for a particular `Physical_instance`.

4.2.245 Physical_model

A `Physical_model` is a type of `Document_representation` (see 4.2.110) that is a model of the layout of a complete system or some portion thereof made from materials such as clay or wood in a specific scale.

EXAMPLE A `Physical_model` is used to give the contractor an impression of the arrangement of switchgears and transformers within a planned power plant.

4.2.246 Point_2d

A `Point_2d` is a position in a two-dimensional cartesian coordinate space.

4.2.247 Point_marker_symbol

A `Point_marker_symbol` is a type of `Predefined_symbol` (see 4.2.255) that is used to visually present the location of a point in a drawing sheet, drawing view, or another symbol.

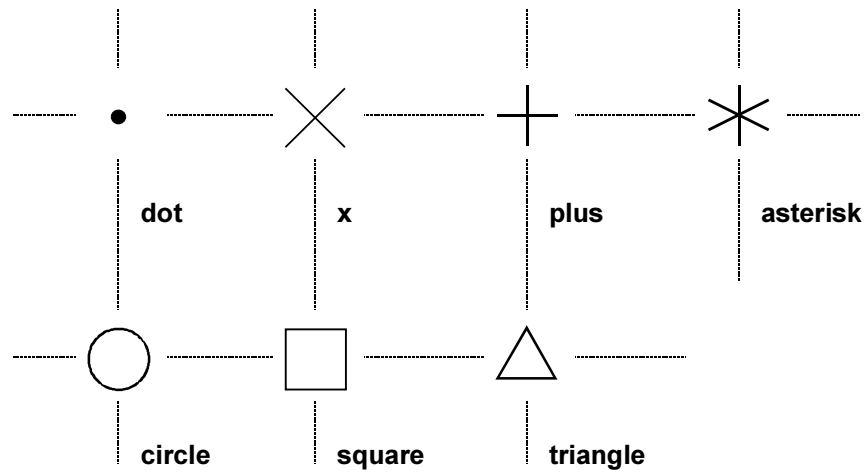


Figure 16 - Predefined point marker symbols

The data associated with a Point_marker_symbol are the following:

— symbol_type.

4.2.247.1 symbol_type

The symbol_type specifies an alphanumerical string identifying the Point_marker_symbol.

The value of `symbol_type` is one of the following:

- asterisk;
- circle;
- dot;
- plus;
- square;
- triangle;
- x.

NOTE See 4.2.247.1.1 - 4.2.247.1.7 for the definition of each permissible value for `symbol_type`.

4.2.247.1.1 asterisk

asterisk: the origin of the symbol is the geometrical centre of the asterisk. The size and graphical representation of the symbol are shown in Figure 16. The reference point lies on the intersection of the dashed lines.

4.2.247.1.2 circle

circle: the origin of the symbol is the centre. The size and graphical representation of the symbol are shown in Figure 16. The reference point lies on the intersection of the dashed lines.

4.2.247.1.3 dot

dot: a dot symbol is depicted as a circle with a fill pattern applied to it. The origin of the dot symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 16. The reference point lies on the intersection of the dashed lines.

4.2.247.1.4 plus

plus: a plus symbol is depicted as two perpendicular line segments. The origin of the symbol is the intersection point of the two line segments. The size and graphical representation of the symbol are shown in Figure 16. The reference point lies on the intersection of the dashed lines.

4.2.247.1.5 square

square: a square symbol is depicted as an even-sided rectangle. The origin of the symbol is the geometrical centre of the square. The size and graphical representation of the symbol are shown in Figure 16. The reference point lies on the intersection of the dashed lines.

4.2.247.1.6 triangle

triangle: the origin of the symbol is the geometrical centre of the triangle. The size and graphical representation of the symbol are shown in Figure 16. The reference point lies on the intersection of the dashed lines.

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4.2.247.1.7 x

x: the origin of the symbol is the intersection point of the two line segments. The size and graphical representation of the symbol are shown in Figure 16. The reference point lies on the intersection of the dashed lines.

4.2.248 Port

A Port is the occurrence of an `Interface_port` (see 4.2.171) used to access a functional module.

The data associated with a Port are the following:

- `associated_interface_port`;
- `description`;
- `extended_designation`;
- `id`;
- `port_of`.

4.2.248.1 associated_interface_port

The `associated_interface_port` specifies the `Interface_port` (see 4.2.171) that characterizes the access to the functionality of the accessed functional unit.

See 4.3.1776 for the application assertion.

4.2.248.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the Port.

The `description` need not be specified for a particular Port.

4.2.248.2 extended_designation

The `extended_designation` specifies a structured label for the Port.

NOTE The label assigned through `extended_designation` shall be identical to the label assigned by the 'id' attribute.

The `extended_designation` need not be specified for a particular Port.

See 4.3.1778 for the application assertion.

4.2.248.3 id

The `id` specifies the identifier for the Port.

4.2.248.4 port_of

The port_of specifies the Single_function_unit (see 4.2.315) to which the Port belongs.

See 4.3.1777 for the application assertion.

4.2.249 Port_allocation

A Port_allocation is the association of a Port (see 4.2.247) object and its implementation.

NOTE A Port (see 4.2.247) may be implemented through a Function_unit (see 4.2.148).

The data associated with a Port_allocation are the following:

- allocated_port;
- description;
- item_allocation;
- port_implementation.

4.2.249.1 allocated_port

The allocated_port specifies the Port (see 4.2.247) object that is subject of implementation.

See 4.3.1780 for the application assertion.

4.2.249.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Port_allocation.

The description need not be specified for a particular Port_allocation.

4.2.249.3 item_allocation

The item_allocation specifies the Functional_unit_allocation (see 4.2.154) object that allocates the Function_unit (see 4.2.148) which owns the ports to its implementation.

The item_allocation need not be specified for a particular Port_allocation.

See 4.3.1779 for the application assertion.

4.2.249.4 port_implementation

The port_implementation specifies the items that implement the Port (see 4.2.247).

See 4.3.1781 for the application assertion.

4.2.250 Port_association

A Port_association is the relation between an Interface_port (see 4.2.171) and a Port (see 4.2.247). In a hierarchical functional decomposition, the Port_association specifies the Port (see 4.2.247) of which the higher level Interface_port (see 4.2.171) is an abstraction.

The data associated with a Port_association are the following:

- associated_interface_port;
- associated_port.

4.2.250.1 associated_interface_port

The associated_interface_port specifies the higher level Interface_port (see 4.2.171).

See 4.3.1782 for the application assertion.

4.2.250.2 associated_port

The associated_port specifies the Port (see 4.2.247) to which the Interface_port (see 4.2.171) is associated.

See 4.3.1783 for the application assertion.

4.2.251 Port_relationship

A Port_relationship is the relation between two Port (see 4.2.247) objects.

The data associated with a Port_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.251.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Port_relationship.

The description need not be specified for a particular Port_relationship.

4.2.251.2 related

The related specifies the second of the two Port (see 4.2.247) objects related by the Port_relationship.

See 4.3.1784 for the application assertion.

4.2.251.3 relating

The relating specifies the first of the two Port (see 4.2.247) objects related by the Port_relationship.

See 4.3.1785 for the application assertion.

4.2.251.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- decomposition;
- redundancy.

NOTE See 4.2.251.4.1 and 4.2.251.4.2 for the definition of each predefined value for relation_type.

4.2.251.4.1 decomposition

decomposition: The Port_relationship defines a relationship where the related Port (see 4.2.247) is one of the components into which the relating Port (see 4.2.247) is broken down.

4.2.251.4.2 redundancy

redundancy: The Port_relationship defines a relationship where the related Port (see 4.2.247) is replicated by the relating Port (see 4.2.247).

EXAMPLE To provide for a fail-safe service a Port (see 4.2.247) is replicated. If one Port (see 4.2.247) fails, the other is still in service.

4.2.252 Predefined_colour

A Predefined_colour is a type of Colour (see 4.2.50) that shall be supported by implementations of this part of ISO 10303. A Predefined_colour is defined by an explicit listing of the proportions of blue, green, and red colour according to Table 1.

Table 1 - RGB values for predefined colours

Colour name	Red	Green	Blue
Colour	0.0	0.0	0.0
Red	1.0	0.0	0.0
Green	0.0	1.0	0.0
Blue	0.0	0.0	1.0
Yellow	1.0	1.0	0.0
Magenta	1.0	0.0	1.0
Cyan	0.0	1.0	1.0
White	1.0	1.0	1.0

The data associated with a `Predefined_colour` are the following:

— `colour_id`.

4.2.252.1 colour_id

The `colour_id` specifies an alphanumeric string identifying the `Predefined_colour` in accordance to the definitions given above.

4.2.253 Predefined_connection

A `Predefined_connection` is a type of `Connection` (see 4.2.59) that shall not be modified.

NOTE Changes of existing connections can occur when the wiring of an electrotechnical system is modified due to design changes or maintenance activities.

EXAMPLE In an existing electrotechnical system, changes occur due to additional customer requirements. These changes affect the connectivity within the system. This particular system contains connections that must not be modified because these connections were carefully designed to avoid electromagnetic interference. To prevent those critical connections from being redesigned, they are identified as `Predefined_connection` objects.

4.2.254 Predefined_data_element

A `Predefined_data_element` is a type of `Data_element` (see 4.2.70) that is completely specified in this part of ISO 10303. In a tree of `Data_element` (see 4.2.70) objects formed by using the `Data_element_` relationship (see 4.2.74), `Predefined_data_element` objects shall occur only as leaves.

The data associated with a `Predefined_data_element` are the following:

— `data`.

4.2.254.1 data

The data specifies the facts that are represented by the `Predefined_data_element`.

Each data may be one of the following: `Body_breadth` (see 4.2.30), `Body_height` (see 4.2.31), `Body_length` (see 4.2.32), `Component_colour` (see 4.2.53), `Cross_section` (see 4.2.65), `Mass` (see 4.2.200), `Material` (see 4.2.201), `Mounting_features` (see 4.2.203), `Operating_temperature` (see 4.2.221), `Outside_diameter` (see 4.2.226), `Rated_current` (see 4.2.278), `Rated_power` (see 4.2.279), `Rated_voltage` (see 4.2.280), or `Storage_temperature` (see 4.2.330).

See 4.3.1786, 4.3.1787, 4.3.1788, 4.3.1789, 4.3.1790, 4.3.1791, 4.3.1792, 4.3.1793, 4.3.1794, 4.3.1795, 4.3.1796, 4.3.1797, 4.3.1798, and 4.3.1799 for the application assertions.

4.2.255 Predefined_line_font

A `Predefined_line_font` is a type of `Line_font` (see 4.2.189) that has a specific physical appearance as defined in this part of ISO 10303. Table 2 gives the length of each line segment and space, in millimetres.

Table 2 - Line segment and space lengths for predefined curve font lists

Curve pattern name	Segment (mm)	Space (mm)	Segment (mm)	Space (mm)	Segment (mm)	Space (mm)	Number of Segments
Curvenuous							0
Dashed	4.0	1.5					2
Chain	7.0	1.0	1.0	1.0			4
Chain double dash	7.0	1.0	1.0	1.0	1.0	1.0	6
Dotted	1.0	1.0					2

The data associated with a `Predefined_line_font` are the following:

— `font_id`.

4.2.255.1 font_id

The `font_id` specifies an alphanumerical string identifying the `Predefined_line_font` in accordance to the definitions given in Table 2.

4.2.256 Predefined_symbol

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A `Predefined_symbol` is a type of `Annotation_symbol` (see 4.2.20) that has a specific physical appearance as defined in this part of ISO 10303.

Each `Predefined_symbol` is either a `Dimension_symbol` (see 4.2.98), a `Geometrical_tolerance_symbol` (see 4.2.161), a `Point_marker_symbol` (see 4.2.246), or a `Terminator_symbol` (see 4.2.341).

4.2.257 `Predefined_text_font`

A `Predefined_text_font` is a type of `Text_font` (see 4.2.344) that has an appearance and a character code in accordance to the referenced standard.

The data associated with a `Predefined_text_font` are the following:

— `font_id`.

4.2.257.1 `font_id`

The `font_id` is a string identifying the standard that defines the `Predefined_text_font`.

The value of `font_id` is one of the following:

— `iec 61286`;

— `iso 646`;

— `iso 3098-1`

— `iso 6937`;

— `iso 8859-1`;

— `iso 10646`.

NOTE See 4.2.257.1.1 - 4.2.257.1.5 for the definition of each predefined value for `character_code`.

4.2.257.1.1 `iec 61286`

`iec 61286`: The coded character set used to encode the data is in accordance to IEC 61286.

4.2.257.1.2 `iso 646`

`iso 646`: The coded character set used to encode the data is in accordance to the International Reference Version (IRV) of ISO/IEC 646.

NOTE The IRV of ISO/IEC 646 is identical with the character reservoir commonly known as ASCII.

4.2.257.1.3 `iso 3098-1`

`iso 3098-1`: The coded character set used to encode the data is in accordance to ISO 3098-1.

4.2.257.1.4 `iso 6937`

iso 6937: The coded character set used to encode the data is in accordance to ISO/IEC 6937.

4.2.257.1.5 iso 8859-1

iso 8859-1: The coded character set used to encode the data is in accordance to ISO 8859-1.

4.2.257.1.6 iso 10646

iso 10646: The coded character set used to encode the data is in accordance to ISO/IEC 10646.

4.2.258 Preferred_equipment_assignment

A Preferred_equipment_assignment is the association of the type of equipment to the Signal (see 4.2.309), that is the recommended equipment to process or transmit the Signal (see 4.2.309).

The data associated with a Preferred_equipment_assignment are the following:

- preferred_equipment;
- related_signal;
- valid_context.

4.2.258.1 preferred_equipment

The preferred_equipment specifies the favoured equipment.

Each preferred_equipment may be one of the following: Design_discipline_item_definition (see 4.2.86) or Function_definition (see 4.2.145).

See 4.3.1800 and 4.3.1801 for the application assertions.

4.2.258.2 related_signal

The related_signal specifies the Signal (see 4.2.309) that is to be processed.

See 4.3.1804 for the application assertion.

4.2.258.3 valid_context

The valid_context specifies circumstances under which the recommendation specified through the preferred_equipment attribute is valid.

The valid_context need not be specified for a particular Preferred_equipment_assignment.

Each valid_context may be one of the following: Organization (see 4.2.223) or Product_class (see 4.2.263).

See 4.3.1802 and 4.3.1803 for the application assertions.

4.2.259 Preferred_item_allocation

The Preferred_item_allocation is the association of those items to a Function_unit (see 4.2.148) that are the favoured realization of that Function_unit (see 4.2.148).

EXAMPLE In a mining environment, only explosion-proof equipment may be used.

The data associated with a Preferred_item_allocation are the following:

- description;
- functional_definition;
- preferred_item.

4.2.259.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Preferred_item_allocation.

The description need not be specified for a particular Preferred_item_allocation.

4.2.259.2 functional_definition

The functional_definition specifies the Function_unit (see 4.2.148) object.

See 4.3.1807 for the application assertion.

4.2.259.3 preferred_item

The preferred_item specifies the item that represents the favoured implementation of the Function_unit (see 4.2.148) object.

Each preferred_item may be one of the following: Design_discipline_item_definition (see 4.2.86) or Function_definition (see 4.2.145).

See 4.3.1805 and 4.3.1806 for the application assertions.

4.2.260 Preferred_item_terminal_allocation

A Preferred_item_terminal_allocation specifies the favoured implementation of the access nodes of a functional unit.

The data associated with a Preferred_item_terminal_allocation are the following:

- description;
- functional_definition;
- item_allocation;
- preferred_node.

4.2.260.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Preferred_item_terminal_allocation.

The description need not be specified for a particular Preferred_item_terminal_allocation.

4.2.260.2 functional_definition

The functional_definition specifies the allocated Port (see 4.2.247) objects.

See 4.3.1810 for the application assertion.

4.2.260.3 item_allocation

The item_allocation specifies the Preferred_item_allocation (see 4.2.258) object that allocates the Function_unit (see 4.2.148), which owns the ports, to its implementation.

See 4.3.1811 for the application assertion.

4.2.260.4 preferred_node

The preferred_node specifies the access nodes that are the preferred implementation of the Port (see 4.2.247) objects specified by the 'functional_definition' attribute.

Each preferred_node may be one of the following: Interface_port (see 4.2.171) or Interface_terminal (see 4.2.174).

See 4.3.1808 and 4.3.1809 for the application assertions.

4.2.261 Process_variable

A Process_variable is a parameter used to control or monitor a process.

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NOTE To be processed by an electrotechnical system a `Process_variable` needs to be converted into a `Signal` (see 4.2.309). `Process_variable` objects are considered to be outside of the electrotechnical system. They may serve as an input, output or control of the system.

EXAMPLE `Process_variable` objects are parameters such as rotational speed, temperature, or pressure.

The data associated with a `Process_variable` are the following:

- `associated_value`;
- `description`;
- `id`.

4.2.261.1 `associated_value`

The `associated_value` specifies the quantity that is assigned to the `Process_variable`.

The `associated_value` need not be specified for a particular `Process_variable`.

See 4.3.1812 for the application assertion.

4.2.261.2 `description`

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Process_variable`.

The `description` need not be specified for a particular `Process_variable`.

4.2.261.3 `id`

The `id` specifies the identifier of the `Process_variable`.

4.2.262 `Process_variable_relationship`

A `Process_variable_relationship` is the relation between two `Process_variable` (see 4.2.260) objects.

The data associated with a `Process_variable_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.262.1 `description`

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Process_variable_relationship`.

The description need not be specified for a particular Process_variable_relationship.

4.2.262.2 related

The related specifies the second of the two Process_variable (see 4.2.260) objects related by the Process_variable_relationship.

See 4.3.1813 for the application assertion.

4.2.262.3 relating

The relating specifies the first of the two Process_variable (see 4.2.260) objects related by the Process_variable_relationship.

See 4.3.1814 for the application assertion.

4.2.262.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- alternate;
- decomposition;
- substitution.

NOTE 1 See 4.2.262.4.1 - 4.2.262.4.3 for the definition of each predefined value for relation_type.

4.2.262.4.1 alternate

alternate: The Process_variable_relationship defines a relationship where the related Process_variable (see 4.2.260) is a possible substitute to the relating Process_variable (see 4.2.260).

NOTE 2 This concept refers to the possibility to replace the Process_variable (see 4.2.260). The actual replacement is addressed by 'substitution'.

4.2.262.4.2 decomposition

decomposition: The Process_variable_relationship defines a relationship where the related Process_variable (see 4.2.260) is one of the components into which the relating Process_variable (see 4.2.260) is divided.

4.2.262.4.3 substitution

substitution: The Process_variable_relationship defines a relationship where the related Process_variable (see 4.2.260) replaces the relating Process_variable (see 4.2.260).

4.2.263 Process_variable_system_assignment

A Process_variable_system_assignment is an association of a Process_variable (see 4.2.260) with an item, such that the item generates, transforms, transfers, or consumes the Process_variable (see 4.2.260).

The data associated with a Process_variable_system_assignment are the following:

- associated_process_variable;
- associated_system;
- description;
- role.

4.2.263.1 associated_process_variable

The associated_process_variable specifies the Process_variable (see 4.2.260).

See 4.3.1823 for the application assertion.

4.2.263.2 associated_system

The associated_system specifies the item that processes or generates the Process_variable (see 4.2.260).

Each associated_system may be one of the following: Connectivity_definition (see 4.2.61), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Function_definition (see 4.2.145), Function_unit (see 4.2.148), Functional_connectivity_definition (see 4.2.152), Physical_instance (see 4.2.243), Port (see 4.2.247), Technical_system (see 4.2.336), or Terminal (see 4.2.338).

See 4.3.1815, 4.3.1816, 4.3.1817, 4.3.1818, 4.3.1819, 4.3.1820, 4.3.1821, 4.3.1822, 4.3.1824, and 4.3.1825 for the application assertions.

4.2.263.3 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Process_variable_system_assignment.

The description need not be specified for a particular Process_variable_system_assignment.

4.2.263.4 role

The role specifies the relationship between the Process_variable (see 4.2.260) and the associated system. The value is either user defined or predefined.

The predefined value of role is one of the following:

- amplifier;
- monitor;
- source;
- target;
- transmitter.

NOTE See 4.2.263.4.1 - 4.2.263.4.5 for the definition of each predefined value for role.

4.2.263.4.1 amplifier

amplifier: The process variable is boosted within the assigned system.

4.2.263.4.2 monitor

monitor: The process variable is observed within the assigned system.

4.2.263.4.3 source

source: The assigned system acts as a source for the process variable.

EXAMPLE A sensor can be a source for a process variable.

4.2.263.4.4 target

target: The assigned system acts as a target for the process variable.

EXAMPLE A screen that visualizes a message can be a target for a process variable.

4.2.263.4.5 transmitter

transmitter: The process variable is transferred within the assigned system.

4.2.264 Product_class

A Product_class is the identification of a set of similar products to be offered to the market.

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NOTE `Product_class` is the application object to which the definitions required for configuration control pertain.

The data associated with a `Product_class` are the following:

- `description`;
- `id`;
- `level_type`;
- `name`;
- `version_id`.

4.2.264.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Product_class`.

The description need not be specified for a particular `Product_class`.

4.2.264.2 id

The id specifies the identifier of the `Product_class`.

4.2.264.3 level_type

The `level_type` specifies the level or category of this `Product_class` in a hierarchical structure of `Product_class` objects.

EXAMPLE A high-level `Product_class` (`level_type` = 'enterprise') may be used to define all `Specification_category` (see 4.2.324) and `Specification` (see 4.2.323) objects for all `Product_class` objects of an enterprise with several brands and companies.

A second-level `Product_class` (`level_type` = 'platform') may be used to group all products that are based on the same technical concept (platform); these products may belong to different brands.

A third level `Product_class` (`level_type` = 'product family') may be used to group all products that have a common base and a fixed set of characteristics (specification categories).

A fourth-level `Product_class` (`level_type` = 'switch type') may represent products that are offered to the market; this level of `Product_class` may be defined by the marketing department. A set of specifications sufficient to produce the car is associated with its `Product_class`. Within this association, a distinction is made between standard characteristics (e.g., housing) and options that have to be chosen (e.g., colour) or that may be chosen by the customer (e.g., number of contacts).

4.2.264.4 name

The name specifies a speaking designation of the `Product_class`.

The name need not be specified for a particular Product_class.

4.2.264.5 version_id

The version_id specifies versioning information for the Product_class.

The version_id need not be specified for a particular Product_class.

4.2.265 Product_class_relationship

A Product_class_relationship is the relation between two Product_class (see 4.2.263) objects.

The data associated with a Product_class_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.265.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Product_class_relationship.

The description need not be specified for a particular Product_class_relationship.

4.2.265.2 related

The related specifies the second of the two Product_class (see 4.2.263) objects related by the Product_class_relationship.

See 4.3.1826 for the application assertion.

4.2.265.3 relating

The relating specifies the first of the two Product_class (see 4.2.263) objects related by the Product_class_relationship.

See 4.3.1827 for the application assertion.

4.2.265.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- decomposition;
- derivation;
- hierarchy;
- substitution;
- version sequence.

NOTE 1 See 4.2.265.4.1 - 4.2.265.4.5 for the definition of each predefined value for `relation_type`.

4.2.265.4.1 decomposition

decomposition: The `Product_class_relationship` defines a relationship where the related `Product_class` (see 4.2.263) is one of the possible variations of the relating `Product_class` (see 4.2.263).

4.2.265.4.2 derivation

derivation: The `Product_class_relationship` defines a deriving relationship where the related `Product_class` (see 4.2.263) is based on the relating `Product_class` (see 4.2.263).

4.2.265.4.3 hierarchy

hierarchy: The `Product_class_relationship` defines a relationship where the relating `Product_class` (see 4.2.263) is on a higher level in the hierarchy of `Product_class` (see 4.2.263) objects than the related `Product_class` (see 4.2.263).

4.2.265.4.4 substitution

substitution: The `Product_class_relationship` defines a relationship where the related `Product_class` (see 4.2.263) replaces the relating `Product_class` (see 4.2.263).

4.2.265.4.5 version sequence

version sequence: The `Product_class_relationship` defines a relationship where the relating `Product_class` (see 4.2.263) is the preceding version and the related `Product_class` (see 4.2.263) is the following version.

NOTE 2 The relationship does not imply inheritance of any kind between the application objects that are related.

4.2.266 Product_component

A `Product_component` is a type of `Complex_product` (see 4.2.51) that is an element in the product decomposition structure. A `Product_component` may be represented by a set of `Alternative_solution` (see 4.2.12) objects with common functional requirements. The top-level `Product_component` of the decomposition tree shall be associated to a `Product_class` (see 4.2.263) as root entry. The

corresponding decomposition structure is identical for all variations of all products of that Product_class (see 4.2.263).

The data associated with a Product_component are the following:

- description;
- extended_designation;
- instance_required;
- is_influenced_by;
- is_relevant_for;
- name.

4.2.266.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Product_component.

The description need not be specified for a particular Product_component.

4.2.266.2 extended_designation

The extended_designation specifies a structured label for the Product_component.

NOTE 1 The label assigned through extended_designation shall be identical to the label assigned by the 'name' attribute.

The extended_designation need not be specified for a particular Product_component.

See 4.3.1830 for the application assertion.

4.2.266.3 instance_required

The instance_required specifies whether or not the existence of a corresponding functional or physical item is required for the various Alternative_solution (see 4.2.12) objects that provide implementations of the Product_component.

NOTE 2 Product_component objects that are not realized by parts may exist. In such cases, no instance of an item is required.

EXAMPLE Holes for wire harnesses are examples of Product_component objects that do not require instances.

4.2.266.4 is_influenced_by

The is_influenced_by specifies the Specification_category (see 4.2.324) objects that impact the design of a solution for the Product_component in the context of the Product_class (see 4.2.263) objects that are referred to by the Class_category_association (see 4.2.40). These Product_class (see

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4.2.263) objects shall belong to the set of Product_class (see 4.2.263) objects the Product_component is valid for or shall be subclasses of these Product_class (see 4.2.263) objects.

NOTE 3 All solutions for the Product_component (i.e. the design of these solutions) are influenced by the referenced Specification_category (see 4.2.324).

See 4.3.1829 for the application assertion.

4.2.266.5 is_relevant_for

The is_relevant_for specifies the Application_context (see 4.2.22) in which the Product_component must be considered.

See 4.3.1828 for the application assertion.

4.2.266.6 name

The name specifies a designation of the Product_component.

The name need not be specified for a particular Product_component.

4.2.267 Product_constituent

A Product_constituent is an object that may participate in the functional, logical, or physical breakdown or be an alternate realization of a Complex_product (see 4.2.51).

Each Product_constituent is either a Device (see 4.2.88), a Function_unit (see 4.2.148), a Physical_instance (see 4.2.243), or a Product_component (see 4.2.265).

4.2.268 Product_design

A Product_design is the mechanism to associate an Item_version (see 4.2.182) with its corresponding Product_identification (see 4.2.268), where the specification is met by the design item.

The data associated with a Product_design are the following:

- design;
- product.

4.2.268.1 design

The design specifies the Item_version (see 4.2.182) that meets the requirements.

See 4.3.1831 for the application assertion.

4.2.268.2 product

The product specifies the Product_identification (see 4.2.268) that represents the requirements.

See 4.3.1832 for the application assertion.

4.2.269 Product_identification

A Product_identification identifies an item that is manufacturable or expected as being manufacturable. A Product_identification is defined with respect to the Product_class (see 4.2.263) of which it is a member.

NOTE 1 The type of product that is to be manufactured from the data of the Product_identification is the type of product which is identified through the 'associated_product_class' attribute.

NOTE 2 The intent of Product_identification is the identification of a manufacturable item whereas the intent of Product_class (see 4.2.263) is the gathering of products with similar characteristics.

EXAMPLE A Product_identification associated with a Product_class (see 4.2.263) identifying a family of asynchronous motors is intended to lead to the manufacture of a specific type of asynchronous motor.

NOTE 3 Let 'actual_specification' be the set of instances obtained as the union of the Specification (see 4.2.323) objects related to the 'associated_product_class' through a Class_specification_association (see 4.2.44) or a Class_condition_association (see 4.2.41) with association type 'identification'.

The specification of a Product_identification may be incomplete: there may not be in 'actual_specification' any instance of Specification (see 4.2.323) for some Specification_category (see 4.2.324) declared as mandatory for the 'associated_product_class'. For these Specification_category (see 4.2.324) objects any Specification (see 4.2.323) available in the context of the 'associated product class' is considered as valid for the manufacturing of the product characterized by the considered Product_identification.

The data associated with a Product_identification are the following:

- associated_product_class;
- description;
- id;
- name;
- version_id.

4.2.269.1 associated_product_class

The associated_product_class specifies the Product_class (see 4.2.263) that a product belongs to.

See 4.3.1833 for the application assertion.

4.2.269.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Product_identification.

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The description need not be specified for a particular Product_identification.

4.2.269.3 id

The id specifies the identifier of the Product_identification.

4.2.269.4 name

The name specifies a speaking designation of the Product_identification.

The name need not be specified for a particular Product_identification.

4.2.269.5 version_id

The version_id specifies the identification of a particular version of a Product_identification.

The version_id need not be specified for a particular Product_identification.

4.2.270 Product_specification

A Product_specification is a type of Product_identification (see 4.2.268) that is the characterization of a manufacturable product for which one or more additional Specification (see 4.2.323) objects enhance the characterization provided for the associated Product_class (see 4.2.263).

NOTE Let 'actual_specification' be the set of instances of Specification (see 4.2.323) obtained as the union of 'defining_specifications' and of the Specification (see 4.2.323) objects related to the 'associated_product_class' through a Class_specification_association (see 4.2.44) or a Class_condition_association (see 4.2.41) with association type 'identification'.

The specification of a Product_specification may be incomplete: there may not be in 'actual_specification' any instance of Specification (see 4.2.323) for some Specification_category (see 4.2.324) declared as mandatory for the 'associated_product_class'. For these Specification_category (see 4.2.324) objects any Specification (see 4.2.323) available in the context of the 'associated_product_class' is considered to be valid for the manufacturing of the product characterized by the considered Product_specification.

EXAMPLE If the colour is not specified for a given family of switches, the equipment resulting from the realization of a Product_specification associated to the Product_class (see 4.2.263) representing the family of switches may be without paint or painted in any available colour.

The data associated with a Product_specification are the following:

— defining_specification.

4.2.270.1 defining_specification

The defining_specification specifies the set of Specification (see 4.2.323) objects necessary to discriminate the Product_specification within its Product_class (see 4.2.263).

See 4.3.1834 for the application assertion.

4.2.271 Product_structure_relationship

A Product_structure_relationship is an association between a Complex_product (see 4.2.51) and a Product_constituent (see 4.2.266), in which the Product_constituent (see 4.2.266) is a functional, logical, or physical component or a realization of the Complex_product (see 4.2.51).

The data associated with an Product_structure_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.271.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Product_structure_relationship.

The description need not be specified for a particular Product_structure_relationship.

4.2.271.2 related

The related specifies the Product_constituent (see 4.2.266) that is a functional, logical, or physical component or a realization of the relating Complex_product (see 4.2.51).

NOTE - The semantics of this attribute are defined by the attribute relation_type.

See 4.3.1836 for the application assertion.

4.2.271.3 relating

The relating specifies the Complex_product (see 4.2.51) that is decomposed functionally, logically, or physically into or realized by the related Product_constituent (see 4.2.266).

NOTE - The semantics of this attribute are defined by the attribute relation_type.

See 4.3.1835 for the application assertion.

4.2.271.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- decomposition;
- realization;
- specialization.

NOTE See 4.2.271.4.1 - 4.2.271.4.3 for the definition of each predefined value for `relation_type`.

4.2.271.4.1 decomposition

decomposition: The related `Product_constituent` (see 4.2.266) is one of potentially more components of the relating `Complex_product` (see 4.2.51). This relation type shall only be used for `Complex_product` (see 4.2.51) and `Product_constituent` (see 4.2.266) of the same type.

4.2.271.4.2 realization

realization: The related `Product_constituent` (see 4.2.266) is a means for fulfilling, either partially or fully, the requirements identified with the relating `Complex_product` (see 4.2.51). This relation type shall be used only when the `Complex_product` (see 4.2.51) and the `Product_constituent` (see 4.2.266) are of different types.

4.2.271.4.3 specialization

specialization: The related `Product_constituent` (see 4.2.266) fulfils the requirements of the relating `Complex_product` (see 4.2.51) in a more specific way than defined for the relating `Complex_product` (see 4.2.51). This relation type shall only be used for `Product_constituent` (see 4.2.266) and `Complex_product` (see 4.2.51) of the same type.

4.2.272 Project

A Project is a unique process with a time limit, a defined goal, a defined budget, and defined resources.

EXAMPLE For the development of a new product, a project is set up that is responsible for the development decisions as well as for the accounting of the costs.

The data associated with a Project are the following:

- actual_end_date;
- actual_start_date;
- affected_product_class;
- description;
- id;
- name;
- planned_end_date;
- planned_start_date;
- work_program.

4.2.272.1 actual_end_date

The actual_end_date specifies the date when the Project was actually finished.

The actual_end_date need not be specified for a particular Project.

See 4.3.1838 for the application assertion.

4.2.272.2 actual_start_date

The actual_start_date specifies the date when the Project was actually started.

The actual_start_date need not be specified for a particular Project.

See 4.3.1839 for the application assertion.

4.2.272.3 affected_product_class

The affected_product_class specifies the Product_class (see 4.2.263) that is affected by the work carried out within the Project.

See 4.3.1845 for the application assertion.

4.2.272.4 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Project.

The description need not be specified for a particular Project.

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4.2.272.5 id

The id specifies the identifier of the Project.

4.2.272.6 name

The name specifies a speaking designation of the Project.

4.2.272.7 planned_end_date

The planned_end_date specifies the date when the Project is or was supposed to be finished.

The planned_end_date need not be specified for a particular Project.

Each planned_end_date may be one of the following: Date_time (see 4.2.79), Duration (see 4.2.126), or Event_reference (see 4.2.130).

See 4.3.1840, 4.3.1842, and 4.3.1843 for the application assertions.

4.2.272.8 planned_start_date

The planned_start_date specifies the date when the Project is or was supposed to be started.

The planned_start_date need not be specified for a particular Project.

Each planned_start_date may be one of the following: Date_time (see 4.2.79) or Event_reference (see 4.2.130).

See 4.3.1841 and 4.3.1844 for the application assertions.

4.2.272.9 work_program

The work program specifies the Activity (see 4.2.1) objects that are carried out within the Project.

See 4.3.1837 for the application assertion.

4.2.273 Project_relationship

A Project_relationship is the relation between two Project (see 4.2.271) objects.

EXAMPLE A team belongs to a department, which itself belongs to a company. This organizational structure can be built using the Organization_relationship (see 4.2.225) mechanism.

The data associated with a Project_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.273.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Project_relationship.

The description need not be specified for a particular Project_relationship.

4.2.273.1 related

The related specifies the second of the two Project (see 4.2.271) objects related by a Project_relationship.

NOTE The semantic of this attribute is defined by the relation_type attribute.

See 4.3.1846 for the application assertion.

4.2.273.2 relating

The related specifies the first of the two Project (see 4.2.271) objects related by a Project_relationship.

NOTE The semantic of this attribute is defined by the relation_type attribute.

See 4.3.1847 for the application assertion.

4.2.273.3 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- decomposition;
- dependency;
- sequence;
- succession.

NOTE See 4.2.273.3.1 - 4.2.273.3.4 for the definition of each predefined value for `relation_type`.

4.2.273.3.1 decomposition

decomposition: The `Project_relationship` defines a relationship where the related Project (see 4.2.271) is one of the components into which the relating Project (see 4.2.271) is broken down.

4.2.273.3.2 dependency

dependency: The `Project_relationship` defines a relationship where the related Project (see 4.2.271) is dependent of the relating Project (see 4.2.271).

4.2.273.3.3 sequence

sequence: The `Project_relationship` defines a relationship where the relating Project (see 4.2.271) shall be completed before the related Project (see 4.2.271) starts.

4.2.273.3.4 succession

succession: The `Project_relationship` defines a relationship where the related Project (see 4.2.271) is the successor of the relating Project (see 4.2.271).

4.2.274 Projection_line

A `Projection_line` is a type of `Directed_curve` (see 4.2.99) that represents the extension of a point, line, surface, or theoretical point of intersection to a location outside the part outline.

The data associated with a `Projection_line` are the following:

- `projected_element`.

4.2.274.1 projected_element

The `projected_element` specifies the geometric or annotation element that is projected by the projection line.

The `projected_element` need not be specified for a particular `Projection_line`.

See 4.3.1848 for the application assertion.

4.2.275 Promissory_usage

A Promissory_usage is a type of Assembly_component_relationship (see 4.2.26) that is the relation between a constituent of an assembly and the assembly itself. The relationship describes the intention to use the constituent in an assembly. No geometric information is required for the constituent or the assembly that is associated by a Promissory_usage.

EXAMPLE In early design stages the Promissory_usage can be used to create preliminary bills of material for prototyping purpose.

4.2.276 Property_reference

The Property_reference specifies the information that is required to retrieve a Data_element_definition (see 4.2.72) object from a library compliant to ISO 13584-42.

NOTE 1 The library is not necessarily available in computer interpretable form.

The data associated with a Property_reference are the following:

- code;
- name_scope;
- version.

4.2.276.1 code

The code specifies a computer-interpretable identifier for the General_classification (see 4.2.156) object within the repository. The format of this code is defined in ISO 13584-42.

NOTE 2 The type of repository referred within the associated Class_reference (see 4.2.43) may impose further restrictions on the content of this attribute.

4.2.276.1 name_scope

The name_scope specifies the Class_reference (see 4.2.43) in which the property is visible.

See 4.3.1849 for the application assertion.

4.2.276.1 version

The version specifies the variant of the entry in the repository. The format of this version is defined in ISO 13584-42.

NOTE 3 The type of repository referred within the associated Class_reference (see 4.2.43) may impose further restrictions on the content of this attribute.

4.2.277 Quantified_device

A Quantified_device is a type of Device (see 4.2.88) that allows the aggregation of equipment.

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EXAMPLE Rivets are not normally addressed individually but as a quantified device.

The data associated with a Quantified_device are the following:

- quantity.

4.2.277.1 quantity

The quantity specifies the value and the unit that stipulate the amount of occurrences.

See 4.3.1850 for the application assertion.

4.2.278 Radius_dimension

A Radius_dimension is a type of Dimension (see 4.2.93) that is the graphical presentation of the value of the radial distance from the centre of a circular element to a point on the element.

The data associated with a Radius_dimension are the following:

- component;
- extent.

4.2.278.1 component

The component specifies the projection lines that shows the extension of the points, lines, or surfaces that bound the measurement.

The component need not be specified for a particular Radius_dimension.

See 4.3.1852 for the application assertion.

4.2.278.2 extent

The extent specifies the dimension line that graphically presents where the dimension value applies.

See 4.3.1851 for the application assertion.

4.2.279 Rated_current

A Rated_current is the magnitude of the electrical current establishing a basis for the design of a piece of equipment.

The data associated with a Rated_current are the following:

- type_of_rated_current;
- value_of_rated_current.

4.2.279.1 type_of_rated_current

The type_of_rated_current specifies the kind of electrical current specified by Rated_current.

The value of `type_of Rated_current` is one of the following:

- ac 3 phase;
- ac 5 phases;
- ac single phase;
- dc.

NOTE See 4.2.279.1.1 - 4.2.279.1.4 for the definition of each permissible value for `type_of Rated_current`.

4.2.279.1.1 ac 3 phase

ac 3 phase: The `Rated_current` is a three-phase alternating current.

4.2.279.1.2 ac 5 phases

ac 5 phases: The `Rated_current` is a five-phase alternating current.

4.2.279.1.3 ac single phase

ac single phase: The `Rated_current` is a single-phase alternating current.

4.2.279.1.4 dc

dc: The `Rated_current` is a direct current.

4.2.279.2 value_of Rated_current

The `value_of Rated_current` specifies the magnitude of the electrical current.

See 4.3.1853 for the application assertion.

4.2.280 Rated_power

A `Rated_power` is the magnitude of the electrical power establishing a basis for the design of a piece of electrotechnical equipment.

The data associated with a `Rated_power` are the following:

- `type_of Rated_power`;
- `value_of Rated_power`.

4.2.280.1 type_of Rated_power

The `type_of Rated_power` specifies the kind of electrical power specified by `Rated_power`.

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The value of `type_of Rated_power` is one of the following:

- `apparent power`;
- `reactive power`;
- `true power`.

NOTE See 4.2.280.1.1 - 4.2.280.1.3 for the definition of each permissible value for `type_of Rated_power`.

4.2.280.1.1 `apparent power`

`apparent power`: The `Rated_power` is the electrical power that is the product of the r.m.s values of voltage and current.

4.2.280.1.2 `reactive power`

`reactive power`: The `Rated_power` is the imaginary part of the complex power.

4.2.280.1.3 `true power`

`true power`: The `Rated_power` is the mean value, taken over one period, of the instantaneous power.

4.2.280.2 `value_of Rated_power`

The `value_of Rated_power` specifies the magnitude of the electrical power.

See 4.3.1854 for the application assertion.

4.2.281 `Rated_voltage`

A `Rated_voltage` is the magnitude of the electrical voltage establishing a basis for the design of an electrical device.

The data associated with a `Rated_voltage` are the following:

- `type_of Rated_voltage`;
- `value_of Rated_voltage`.

4.2.281.1 `type_of Rated_voltage`

The `type_of Rated_voltage` specifies the kind of electrical voltage specified by `Rated_voltage`.

The value of `type_of Rated_voltage` is one of the following:

- ac 3 phase;
- ac 5 phase;
- ac single phase;
- dc.

NOTE See 4.2.281.1.1 - 4.2.281.1.5 for the definition of each permissible value for `type_of Rated_voltage`.

4.2.281.1.1 ac 3 phase

ac 3 phase: The `Rated_voltage` is a three-phase alternating voltage.

4.2.281.1.2 ac 5 phase

ac 5 phase: The `Rated_voltage` is a five-phase alternating voltage.

4.2.281.1.3 ac single phase

ac single phase: The `Rated_voltage` is a single-phase alternating voltage.

4.2.281.1.4 dc

dc: The `Rated_voltage` is a direct voltage.

4.2.281.2 value_of Rated_voltage

The `value_of Rated_voltage` specifies the magnitude of the electrical voltage.

See 4.3.1855 for the application assertion.

4.2.282 Rectangular_area

A `Rectangular_area` is a plane area with four straight sides and four right angles, especially one with unequal adjacent sides.

The data associated with a `Rectangular_area` are the following:

- height;
- position;
- width.

4.2.282.1 height

The height specifies the tallness of the area.

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4.2.282.2 position

The position specifies the placement of the Rectangular_area.

4.2.282.3 width

The width specifies the broadness of the area.

4.2.283 Rectangular_size

A Rectangular_size is the extent of a rectangular area.

The data associated with a Rectangular_size are the following:

- density;
- height;
- width.

4.2.283.1 density

The density specifies the resolution of the object if it is a raster picture.

The density need not be specified for a particular Rectangular_size.

4.2.283.2 height

The height specifies the size of the object in vertical direction.

4.2.283.3 width

The width specifies the size of the object in horizontal direction.

4.2.284 Reference_grid

A Reference_grid is rectangular pattern of lines that provides a grid reference system in accordance with IEC 61082-1. The grid reference system allows one to identify a location on a diagram.

The data associated with a Reference_grid are the following:

- column_id;
- grid_origin;
- row_id.

4.2.284.1 column_id

The column_id specifies the identifier for each column of the reference grid. The identifiers are contained in a list representing the order of columns from left to right of the sheet.

There shall be one or more `column_id` for a `Reference_grid`.

4.2.284.2 `grid_origin`

The `grid_origin` specifies a fixed point from which coordinates representing the `Reference_grid` are measured.

4.2.284.3 `row_id`

The `row_id` specifies the identifier for each row of the reference grid. The identifiers are contained in a list representing the order of rows from bottom to the top of the sheet.

There shall be one or more `row_id` for a `Reference_grid`.

4.2.285 `Reference_grid_layout`

A `Reference_grid_layout` is a type of `User_defined_symbol_definition` (see 4.2.355) that depicts the arrangement and design of annotation elements that visualize the `Reference_grid` (see 4.2.283) on a diagram.

The data associated with a `Reference_grid_layout` are the following:

- `assigned_reference_grid`.

4.2.285.1 `assigned_reference_grid`

The `assigned_reference_grid` specifies the `Reference_grid` (see 4.2.283) object of which the `reference_grid_layout` is the pictorial representation.

See 4.3.1856 for the application assertion.

4.2.286 `Requirement`

A `Requirement` is human-interpretable product data that describes constraints that the electrotechnical system or some elements of the system may satisfy.

NOTE By making use of `Requirement` objects the design rationale of a system as a whole or of portions thereof can be laid down.

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EXAMPLE An error handling system shall provide for a buffer capable to handle 2000 error messages per second for a period of 48 hours.

The data associated with a Requirement are the following:

- description;
- id;
- name;
- version_id.

4.2.286.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Requirement.

The description need not be specified for a particular Requirement.

4.2.286.2 id

The id specifies the identifier of the Requirement.

4.2.286.3 name

The name specifies a speaking designation of the Requirement.

The name need not be specified for a particular Requirement.

4.2.286.4 version_id

The version_id specifies versioning information for the Requirement.

The version_id need not be specified for a particular Requirement.

4.2.287 Requirement_assignment

A Requirement_assignment is a relation that associates a Requirement (see 4.2.285) with an physical or abstract item.

The data associated with a Requirement_assignment are the following:

- associated_requirement;
- constrained_element;
- description;
- relation_type.

4.2.287.1 associated_requirement

The associated_requirement specifies the Requirement (see 4.2.285).

See 4.3.1902 for the application assertion.

4.2.287.2 constrained_element

The constrained_element specifies the element to which the Requirement (see 4.2.285) applies.

Each constrained_element may be one of the following: Assembly_component_relationship (see 4.2.26), Complex_product (see 4.2.51), Complex_product_relationship (see 4.2.52), Composition_relationship (see 4.2.55), Connectivity_definition (see 4.2.61), Connectivity_definition_relationship (see 4.2.62), Data_element (see 4.2.70), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Device_relationship (see 4.2.89), Document (see 4.2.101), Document_version (see 4.2.114), Drawing_sheet (see 4.2.122), Drawing_view (see 4.2.125), Function_definition (see 4.2.145), Function_definition_relationship (see 4.2.146), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_unit_relationship (see 4.2.149), Function_version (see 4.2.150), Functional_connectivity_definition (see 4.2.152), Functional_connectivity_definition_relationship (see 4.2.153), Functionality (see 4.2.155), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see 4.2.178), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Location (see 4.2.192), Location_relationship (see 4.2.194), Marking (see 4.2.199), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Path (see 4.2.232), Path_node (see 4.2.233), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Process_variable (see 4.2.260), Product_class (see 4.2.263), Product_specification (see 4.2.269), Product_structure_relationship (see 4.2.270), Route (see 4.2.290), Route_relationship (see 4.2.291), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Signal (see 4.2.309), Signal_value (see 4.2.313), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), or Terminal (see 4.2.338).

See 4.3.1857, 4.3.1858, 4.3.1859, 4.3.1860, 4.3.1861, 4.3.1862, 4.3.1863, 4.3.1864, 4.3.1865, 4.3.1866, 4.3.1867, 4.3.1868, 4.3.1869, 4.3.1870, 4.3.1871, 4.3.1872, 4.3.1873, 4.3.1874, 4.3.1875, 4.3.1876, 4.3.1877, 4.3.1878, 4.3.1879, 4.3.1880, 4.3.1881, 4.3.1882, 4.3.1883, 4.3.1884, 4.3.1885, 4.3.1886, 4.3.1887, 4.3.1888, 4.3.1889, 4.3.1890, 4.3.1891, 4.3.1892, 4.3.1893, 4.3.1894, 4.3.1895, 4.3.1896, 4.3.1897, 4.3.1898, 4.3.1899, 4.3.1900, 4.3.1901, 4.3.1903, 4.3.1904, 4.3.1905, 4.3.1906, 4.3.1907, 4.3.1908, 4.3.1909, 4.3.1910, 4.3.1911, 4.3.1912, 4.3.1913, and 4.3.1914 for the application assertions.

4.2.287.3 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Requirement_assignment.

The description need not be specified for a particular Requirement_assignment.

4.2.287.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- compelled element;
- solution.

NOTE See 4.2.287.4.1 - 4.2.287.4.2 for the definition of each predefined value for `relation_type`.

4.2.287.4.1 compelled element

compelled element: The `Requirement_assignment` defines a relationship where the associated Requirement (see 4.2.285) levies a constraint against the associated item.

4.2.287.4.2 solution

solution: The `Requirement_assignment` defines a relationship where the `constrained_element` serves as a means to solve the associated Requirement (see 4.2.285).

4.2.288 Requirement_document_assignment

A `Requirement_document_assignment` is a relation that associates a Requirement (see 4.2.285) with a document.

The data associated with a `Requirement_document_assignment` are the following:

- description;
- documentation;
- documented_requirement;
- role_of_document.

4.2.288.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Requirement_document_assignment`.

The description need not be specified for a particular `Requirement_document_assignment`.

4.2.288.2 documentation

The documentation specifies the record that deals with the Requirement (see 4.2.285).

Each documentation may be one of the following: Document (see 4.2.101), Document_file (see 4.2.106), Document_representation (see 4.2.110), Document_version (see 4.2.114), or Drawing (see 4.2.119).

See 4.3.1915, 4.3.1916, 4.3.1917, 4.3.1918, and 4.3.1919 for the application assertions.

4.2.288.3 documented_requirement

The `documented_requirement` specifies the Requirement (see 4.2.285) object the document deals with.

See 4.3.1920 for the application assertion.

4.2.288.4 role_of_document

The `role_of_document` specifies the function of the document in respect of the Requirement (see 4.2.285). The value is either user defined or predefined.

The `role_of_document` need not be specified for a particular `Requirement_document_assignment`. The `role_of_document` need not be specified for a particular `Requirement_document_assignment`.

The predefined value of `role_of_document` is one of the following:

- additional information;
- specification;
- verification.

NOTE See 4.2.288.4.1 - 4.2.288.4.3 for the definition of each predefined value for `role_of_document`.

4.2.288.4.1 additional information

`additional information`: The document provides further information on the Requirement (see 4.2.285).

4.2.288.4.2 specification

`specification`: The document raises the Requirement (see 4.2.285).

4.2.288.4.3 verification

`verification`: The document contains information that proves the fulfilment of the Requirement (see 4.2.285).

4.2.289 Requirement_relationship

A `Requirement_relationship` is the relation between two Requirement (see 4.2.285) objects.

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The data associated with an Requirement_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.289.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Requirement_relationship.

The description need not be specified for a particular Requirement_relationship.

4.2.289.2 related

The related specifies the second of the two Requirement (see 4.2.285) objects related by the Requirement_relationship.

See 4.3.1921 for the application assertion.

4.2.289.3 relating

The relating specifies the first of the two Requirement (see 4.2.285) objects related by the Requirement_relationship.

See 4.3.1922 for the application assertion.

4.2.289.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution;
- version hierarchy;
- version sequence.

NOTE 1 See 4.2.289.4.1 - 4.2.289.4.6 for the definition of each predefined value for relation_type.

4.2.289.4.1 alternate

alternate: The Requirement_relationship defines a relationship where the related Requirement (see 4.2.285) is a possible substitute to the relating Requirement (see 4.2.285).

NOTE 2 This concept refers to the possibility to replace the Requirement (see 4.2.285). The actual replacement is addressed by 'substitution'.

4.2.289.4.2 decomposition

decomposition: The Requirement_relationship defines a relationship where the related Requirement (see 4.2.285) is one of the components into which the relating Requirement (see 4.2.285) is divided.

4.2.289.4.3 derivation

derivation: The Requirement_relationship defines a deriving relationship where the related Requirement (see 4.2.285) is based on the relating Requirement (see 4.2.285).

4.2.289.4.4 substitution

substitution: The Requirement_relationship defines a relationship where the related Requirement (see 4.2.285) replaces the relating Requirement (see 4.2.285).

4.2.289.4.5 version hierarchy

version hierarchy: The Requirement_relationship defines a hierarchical relationship where the related Requirement (see 4.2.285) is a subversion of the relating Requirement (see 4.2.285).

EXAMPLE Revision 1.1 and 1.2 of a requirement.

4.2.289.4.6 version sequence

version sequence: The Requirement_relationship defines a succession of versions where the relating Requirement (see 4.2.285) is the preceding version and the related Requirement (see 4.2.285) is the following version. For a Requirement (see 4.2.285), there shall be, at the most, one Requirement_relationship of this relation type as relating and, at most, one Requirement_relationship of this relation type as related.

4.2.290 Retention_period

A Retention_period is the definition of the period of time that product data needs to be maintained due to organizational policy or legal requirements.

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The data associated with a `Retention_period` are the following:

- `earliest_end_definition`;
- `is_applied_to`;
- `latest_end_definition`;
- `retention_purpose`;
- `start_definition`.

4.2.290.1 `earliest_end_definition`

The `earliest_end_definition` specifies the earliest point in time from which on all items, the `Retention_period` is applied to, may be deleted. In this context deletion applies to all subordinate items that are not referenced by other items.

Each `earliest_end_definition` may be one of the following: `Date_time` (see 4.2.79), `Duration` (see 4.2.126), or `Event_reference` (see 4.2.130).

See 4.3.1954, 4.3.1970, and 4.3.1972 for the application assertions.

4.2.290.2 `is_applied_to`

The `is_applied_to` specifies the items that are controlled by the `Retention_period`.

NOTE The master document is the one for which earliest end definition and latest end definition are the same.

Each `is_applied_to` may be one of the following: `Activity` (see 4.2.1), `Activity_element` (see 4.2.2), `Activity_method_assignment` (see 4.2.4), `Activity_relationship` (see 4.2.5), `Alternate_item_relationship` (see 4.2.11), `Approval_status` (see 4.2.25), `Assembly_component_relationship` (see 4.2.26), `Assembly_substitute_relationship` (see 4.2.28), `Cable_pull_information` (see 4.2.33), `Certification` (see 4.2.38), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Class_structure_relationship` (see 4.2.45), `Classification_association` (see 4.2.46), `Classification_attribute` (see 4.2.47), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Configuration` (see 4.2.56), `Connectivity_allocation` (see 4.2.60), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Contract` (see 4.2.63), `Data_element` (see 4.2.70), `Data_element_association` (see 4.2.71), `Data_element_definition` (see 4.2.72), `Data_element_relationship` (see 4.2.74), `Data_element_specification` (see 4.2.75), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Device_relationship` (see 4.2.89), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_file_relationship` (see 4.2.107), `Document_representation` (see 4.2.110), `Document_version` (see 4.2.114), `Document_version_relationship` (see 4.2.115), `Drawing` (see 4.2.119), `Drawing_sequence` (see 4.2.121), `Drawing_sheet` (see 4.2.122), `Drawing_sheet_relationship` (see 4.2.124), `Free_segment` (see 4.2.144), `Function_definition` (see 4.2.145), `Function_definition_relationship` (see 4.2.146), `Function_interface` (see 4.2.147), `Function_unit` (see 4.2.148), `Function_unit_relationship` (see 4.2.149), `Function_version` (see 4.2.150), `Function_version_relationship` (see 4.2.151), `Functional_connectivity_definition` (see 4.2.152), `Functional_connectivity_definition_relationship` (see 4.2.153), `Functional_unit_allocation` (see 4.2.154), `Functionality` (see 4.2.155),

General_classification (see 4.2.156), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item (see 4.2.178), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Item_version_relationship (see 4.2.183), Location (see 4.2.192), Location_relationship (see 4.2.194), Marking (see 4.2.199), Material (see 4.2.201), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Organization_relationship (see 4.2.225), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Person_in_organization (see 4.2.238), Person_in_organization_relationship (see 4.2.239), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Port_association (see 4.2.249), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Requirement_document_assignment (see 4.2.287), Route (see 4.2.290), Route_relationship (see 4.2.291), Routed_segment (see 4.2.293), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Security_classification (see 4.2.301), Security_level (see 4.2.302), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Specification_expression (see 4.2.326), Specification_inclusion (see 4.2.327), Technical_system (see 4.2.336), Technical_system_relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.1923, 4.3.1924, 4.3.1925, 4.3.1926, 4.3.1927, 4.3.1928, 4.3.1929, 4.3.1930, 4.3.1931, 4.3.1932, 4.3.1933, 4.3.1934, 4.3.1935, 4.3.1936, 4.3.1937, 4.3.1938, 4.3.1939, 4.3.1940, 4.3.1941, 4.3.1942, 4.3.1943, 4.3.1944, 4.3.1945, 4.3.1946, 4.3.1947, 4.3.1948, 4.3.1949, 4.3.1950, 4.3.1951, 4.3.1952, 4.3.1953, 4.3.1957, 4.3.1958, 4.3.1959, 4.3.1960, 4.3.1961, 4.3.1962, 4.3.1963, 4.3.1964, 4.3.1965, 4.3.1966, 4.3.1967, 4.3.1968, 4.3.1969, 4.3.1975, 4.3.1976, 4.3.1977, 4.3.1978, 4.3.1979, 4.3.1980, 4.3.1981, 4.3.1982, 4.3.1983, 4.3.1984, 4.3.1985, 4.3.1986, 4.3.1987, 4.3.1988, 4.3.1989, 4.3.1990, 4.3.1991, 4.3.1992, 4.3.1993, 4.3.1994, 4.3.1995, 4.3.1996, 4.3.1997, 4.3.1998, 4.3.1999, 4.3.2000, 4.3.2001, 4.3.2002, 4.3.2003, 4.3.2004, 4.3.2005, 4.3.2006, 4.3.2007, 4.3.2008, 4.3.2009, 4.3.2010, 4.3.2011, 4.3.2012, 4.3.2013, 4.3.2014, 4.3.2015, 4.3.2016, 4.3.2017, 4.3.2018, 4.3.2019, 4.3.2020, 4.3.2021, 4.3.2022, 4.3.2023, 4.3.2024, 4.3.2025, 4.3.2026, 4.3.2027, 4.3.2028, 4.3.2029, 4.3.2030, 4.3.2031, 4.3.2032, 4.3.2033, 4.3.2034, 4.3.2035, 4.3.2036, 4.3.2037, 4.3.2038, 4.3.2039, 4.3.2040, 4.3.2041, 4.3.2042, 4.3.2043, 4.3.2044, 4.3.2045, 4.3.2046, 4.3.2047, and 4.3.2048 for the application assertions.

4.2.290.3 latest_end_definition

The latest_end_definition specifies the latest point in time at which all items, to which the Retention_period applies, are deleted. In this context deletion applies to all subordinate items that are not used by other items.

Each latest_end_definition may be one of the following: Date_time (see 4.2.79), Duration (see 4.2.126), or Event_reference (see 4.2.130).

See 4.3.1955, 4.3.1971, and 4.3.1973 for the application assertions.

4.2.290.4 retention_purpose

The retention_purpose specifies the rationale behind the Retention_period.

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The retention_purpose need not be specified for a particular Retention_period.

4.2.290.5 start_definition

The start_definition specifies the point in time at which the Retention_period starts.

Each start_definition may be one of the following: Date_time (see 4.2.79) or Event_reference (see 4.2.130).

See 4.3.1956 and 4.3.1974 for the application assertions.

4.2.291 Route

A Route is a named course taken to get from a starting point to a destination.

NOTE 1 A Route is understood as a sequence of vertices and edges, where the edges are Section (see 4.2.296) objects and the vertices are Node (see 4.2.208) objects. Routed_object (see 4.2.292) objects allow for the specification of the items that make use of the Route.

EXAMPLE 1 A cable rack provides routes for cables. Some its routes are occupied, i.e. a cable is laid on that route, others may remain empty for future use. To specify that a cable is routed partially or as a whole it is assigned to Routed_object (see 4.2.292) objects which in turn are associated to the Route.

NOTE 2 A Route can be used to specify a path travelled by a person for delivering, selling, or collecting goods or services.

EXAMPLE 2 A path travelled by a person throughout the commissioning of a power plant, e.g. for inspection purposes.

The data associated with a Route are the following:

- course;
- description;
- encountered_object;
- id;
- version_id.

4.2.291.1 course

The course specifies the direction taken.

Each course may be one of the following: Node (see 4.2.208), Section (see 4.2.296), or Section_interface (see 4.2.298).

See 4.3.2054, 4.3.2057, and 4.3.2058 for the application assertions.

4.2.291.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Route.

The description need not be specified for a particular Route.

4.2.291.3 encountered_object

The encountered_object specifies an ordered list of physical ore abstract items the route comes in touch.

Each encountered_object may be one of the following: Connectivity_definition (see 4.2.61), Device (see 4.2.88), Function_unit (see 4.2.148), Functional_connectivity_definition (see 4.2.152), Location (see 4.2.192), Physical_instance (see 4.2.243), Product_component (see 4.2.265), or Signal (see 4.2.309).

See 4.3.2049, 4.3.2050, 4.3.2051, 4.3.2052, 4.3.2053, 4.3.2055, 4.3.2056, and 4.3.2059 for the application assertions.

4.2.291.4 id

The id specifies the identifier of the Route.

4.2.291.5 version_id

The version_id specifies versioning information for the Route.

The version_id need not be specified for a particular Route.

4.2.292 Route_relationship

A Route_relationship is the relation between two Route (see 4.2.290) objects.

The data associated with a Route_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.292.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Route_relationship.

The description need not be specified for a particular Route_relationship.

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4.2.292.2 related

The related specifies the second of the two Route (see 4.2.290) objects related by the Route_ relationship.

See 4.3.2060 for the application assertion.

4.2.292.3 relating

The relating specifies the first of the two Route (see 4.2.290) objects related by the Route_ relationship.

See 4.3.2061 for the application assertion.

4.2.292.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution.

NOTE 1 See 4.2.292.4.1 - 4.2.292.4.4 for the definition of each predefined value for relation_type.

4.2.292.4.1 alternate

alternate: The Route_relationship defines a relationship where the related Route (see 4.2.290) is an alternative to the relating Route (see 4.2.290).

NOTE 2 This concept refers to the possibility to replace the Route (see 4.2.290). The actual replacement is addressed by 'substitution'.

4.2.292.4.2 decomposition

decomposition: The Route_relationship defines a relationship where the related Route (see 4.2.290) is one of the components into which the relating Route (see 4.2.290) is divided.

4.2.292.4.3 derivation

derivation: The Route_relationship defines a deriving relationship where the related Route (see 4.2.290) is based on the relating Route (see 4.2.290).

4.2.292.4.4 substitution

substitution: The `Route_relationship` defines a relationship where the related `Route` (see 4.2.290) replaces the relating `Route` (see 4.2.290).

4.2.293 Routed_object

The `Routed_object` is an physical or abstract item to which routing information is assigned.

The data associated with a `Routed_object` are the following:

- `arrangement`;
- `associated_object`.

4.2.293.1 arrangement

The `arrangement` specifies an ordered list of sections that specifies the route of the `Routed_object`.

Each `arrangement` may be one of the following: `Free_segment` (see 4.2.144) or `Routed_segment` (see 4.2.293).

See 4.3.2064 and 4.3.2069 for the application assertions.

4.2.293.2 associated_object

The `associated_object` specifies the item to which the routing information applies.

Each `associated_object` may be one of the following: `Connectivity_definition` (see 4.2.61), `Device` (see 4.2.88), `Function_unit` (see 4.2.148), `Functional_connectivity_definition` (see 4.2.152), `Physical_instance` (see 4.2.243), or `Product_component` (see 4.2.265).

See 4.3.2062, 4.3.2063, 4.3.2065, 4.3.2066, 4.3.2067, and 4.3.2068 for the application assertions.

4.2.294 Routed_segment

A `Routed_segment` is a portion of a `Routed_object` (see 4.2.292) that has a well-defined course.

The data associated with a `Routed_segment` are the following:

- `course`;
- `description`;
- `id`.

4.2.294.1 course

The `course` specifies the way that is followed by the `Routed_segment`.

Each `course` may be one of the following: `Node` (see 4.2.208), `Route` (see 4.2.290), `Section` (see 4.2.296), or `Section_interface` (see 4.2.298).

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See 4.3.2070, 4.3.2071, 4.3.2072, and 4.3.2073 for the application assertions.

4.2.294.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Routed_segment.

The description need not be specified for a particular Routed_segment.

4.2.294.3 id

The id specifies the identifier of the Routed_segment.

4.2.295 Schematic_node

A Schematic_node is a type of Annotation_element (see 4.2.15) that describes that part of a pictorial presentation to which connecting lines or terminals of other symbols may be connected.

The data associated with a Schematic_node are the following:

- assigned_to;
- definition;
- position;
- rotation;
- scale.

4.2.295.1 assigned_to

The assigned_to specifies the User_defined_symbol (see 4.2.354) to which the Schematic_node is associated.

The assigned_to need not be specified for a particular Schematic_node.

See 4.3.2076 for the application assertion.

4.2.295.2 definition

The definition specifies the Typical_schematic_node (see 4.2.347) object that served as a template for the Schematic_node.

See 4.3.2075 for the application assertion.

4.2.295.3 position

The position specifies the location of the Schematic_node relative to the coordinate system of the associated User_defined_symbol (see 4.2.354).

See 4.3.2074 for the application assertion.

4.2.295.4 rotation

The rotation specifies the angle, measured counter-clockwise, between the horizontal axis of the coordinate system in which the Schematic_node is defined and the horizontal axis of the coordinate system into which the Schematic_node is being placed.

4.2.295.5 scale

The scale specifies the ratio between the size of the Schematic_node as defined and the size of the Schematic_node as presented.

4.2.296 Schematic_text

A Schematic_text is a type of Text (see 4.2.342) that is written information in schematic diagrams. It is based on predefined templates that define the layout of the text and may contain default text.

The data associated with a Schematic_text are the following:

- assigned_to;
- definition.

4.2.296.1 assigned_to

The assigned_to specifies the User_defined_symbol (see 4.2.354) to which the Schematic_node (see 4.2.294) is associated.

The assigned_to need not be specified for a particular Schematic_text.

Each assigned_to may be one of the following: Schematic_node (see 4.2.294) or User_defined_symbol (see 4.2.354).

See 4.3.2077 and 4.3.2079 for the application assertions.

4.2.296.2 definition

The definition specifies the template from which the Schematic_text is derived.

See 4.3.2078 for the application assertion.

4.2.297 Section

A Section describes a segment of a Route (see 4.2.290). A Section may be curved.

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NOTE 1 A Route (see 4.2.290) is understood as a sequence of vertices and edges, in which the edges are Section objects.

NOTE 2 Sections and Node (see 4.2.208) objects can be used to describe the three-dimensional route of a cable.

The data associated with a Section are the following:

- bending_radius;
- course;
- cross_section;
- description;
- id;
- implemented_by;
- length_of_section;
- space_factor;
- version_id;

4.2.297.1 bending_radius

The bending_radius specifies a quantity that characterizes the radius of the curves a piece of equipment laid in the Section needs to follow.

NOTE 1 If more than one Single_value (see 4.2.316) object is assigned different aspects of the bending radius are specified.

NOTE 2 The value of the 'bending_radius' attribute can be used to determine the required flexibility of a cable that is to be laid into the Section.

EXAMPLE To define a particular cabletray the typical and the minimum value of the bending radius are specified.

See 4.3.2083 for the application assertion.

4.2.297.2 course

The course specifies the path of the Section.

The course need not be specified for a particular Section.

See 4.3.2082 for the application assertion.

4.2.297.3 cross_sectional_area

The `cross_sectional_area` describes the transverse section of a Section in which the cabling can be placed.

NOTE If more than one `Cross_section` (see 4.2.65) object is assigned different aspects of the transverse section are specified.

EXAMPLE To define a particular cabletray the typical and the minimum value of the cross section are specified.

See 4.3.2080 for the application assertion.

4.2.297.4 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Section.

The description need not be specified for a particular Section.

4.2.297.5 id

The `id` specifies the identifier of the Section.

4.2.297.6 implemented_by

The `implemented_by` specifies the equipment that is used to realize the Section.

See 4.3.2081 for the application assertion.

4.2.297.7 length_of_section

The `length_of_section` specifies a measure of the longitudinal extent of the Section.

NOTE If more than one `Single_value` (see 4.2.316) object is assigned different aspects of the section's length are specified.

EXAMPLE To define a particular cabletray the typical, maximum, and minimum value of the `length_of_section` are specified.

See 4.3.2084 for the application assertion.

4.2.297.8 space_factor

The `space_factor` specifies the ratio between the usable cross section to the geometrical cross section of the Section.

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NOTE If more than one `Single_value` (see 4.2.316) object is assigned different aspects of the section's space factor are specified.

EXAMPLE To define a particular cabletray the typical and minimum value of the `space_factor` are specified.

See 4.3.2085 for the application assertion.

4.2.297.9 `version_id`

The `version_id` specifies versioning information for the Section.

The `version_id` need not be specified for a particular Section.

4.2.298 `Section_end`

The `Section_end` specifies one extremity of the associated Section (see 4.2.296).

The data associated with a `Section_end` are the following:

- `id`;
- `kind`;
- `located_at`;
- `of_section`.

4.2.298.1 `id`

The `id` specifies the identifier of the `Section_end`.

4.2.298.2 `kind`

The `kind` specifies the type of the `Section_end`. The value is either user defined or predefined.

The predefined value of `kind` is one of the following:

- `flat oval`;
- `round`;
- `u shape`.

NOTE See 4.2.298.2.1 - 4.2.298.2.3 for the definition of each predefined value for `kind`.

4.2.298.2.1 `flat oval`

`flat oval`: The cross section of the `Section_end` is as outlined in Figure 17.

4.2.298.2.2 round

round: The cross section of the Section_end is as outlined in Figure 17.

4.2.298.2.3 u shape

u shape: The cross section of the Section_end is as outlined in Figure 17.

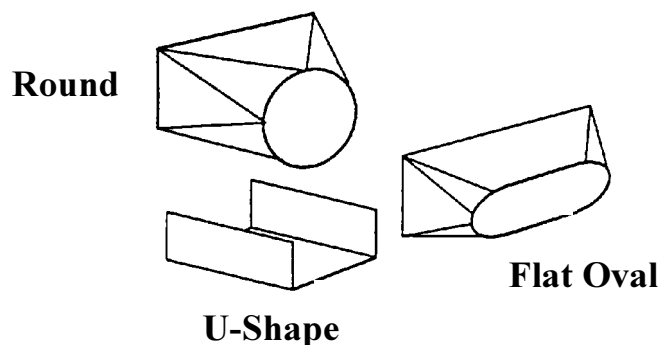


Figure 17 - Predefined section end shapes

The kind need not be specified for a particular Section_end.

4.2.298.3 located_at

The located_at specifies the position of the Section_end.

The located_at need not be specified for a particular Section_end.

See 4.3.2086 for the application assertion.

4.2.298.4 of_section

The of_section specifies the Section (see 4.2.296) to which the Section_end belongs.

See 4.3.2087 for the application assertion.

4.2.299 Section_interface

A Section_interface is a means to join Section (see 4.2.296) objects to each other.

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The data associated with a Section_interface are the following:

- cross_sectional_area;
- description;
- id;
- implemented_by;
- joins;
- located_at;
- space_factor;
- version_id.

4.2.299.1 cross_sectional_area

The cross_sectional_area specifies the transverse section of a Section_interface in which the cabling can be placed.

See 4.3.2088 for the application assertion.

4.2.299.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Section_interface.

The description need not be specified for a particular Section_interface.

4.2.299.3 id

The id specifies the identifier of the Section_interface.

4.2.299.4 implemented_by

The implemented_by specifies the equipment that realizes the Section_interface.

See 4.3.2089 for the application assertion.

4.2.299.5 joins

The joins specifies the Section_end (see 4.2.297) objects that are linked through the Section_interface.

See 4.3.2091 for the application assertion.

4.2.299.6 located_at

The located_at specifies the position of the Section_interface.

The `located_at` need not be specified for a particular `Section_interface`.

See 4.3.2090 for the application assertion.

4.2.299.7 space_factor

The `space_factor` specifies the ratio between the actually useable cross section to the geometrical cross section.

See 4.3.2092 for the application assertion.

4.2.299.8 version_id

The `version_id` specifies versioning information for the `Section_interface`.

The `version_id` need not be specified for a particular `Section_interface`.

4.2.300 Section_interface_relationship

A `Section_interface_relationship` is the relation between two `Section_interface` (see 4.2.298) objects.

The data associated with a `Section_interface_relationship` are the following:

- `description`;
- `related`;
- `relating`;
- `relation_type`.

4.2.300.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Section_interface_relationship`.

The `description` need not be specified for a particular `Section_interface_relationship`.

4.2.300.2 related

The `related` specifies the second of the two `Section_interface` (see 4.2.298) objects related by the `Section_interface_relationship`.

See 4.3.2093 for the application assertion.

4.2.300.3 relating

The `relating` specifies the first of the two `Section_interface` (see 4.2.298) objects related by the `Section_interface_relationship`.

See 4.3.2094 for the application assertion.

4.2.300.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution;
- version hierarchy;
- version sequence.

NOTE 1 See 4.2.300.4.1 - 4.2.300.4.6 for the definition of each predefined value for relation_type.

4.2.300.4.1 alternate

alternate: The Section_interface_relationship defines a relationship where the related Section_interface (see 4.2.298) is a possible substitute to the relating Section_interface (see 4.2.298).

NOTE 2 This concept refers to the possibility to replace the Section_interface (see 4.2.298). The actual replacement is addressed by 'substitution'.

4.2.300.4.2 decomposition

decomposition: The Section_interface_relationship defines a relationship where the related Section_interface (see 4.2.298) is one of the components into which the relating Section_interface (see 4.2.298) is divided.

4.2.300.4.3 derivation

derivation: The Section_interface_relationship defines a deriving relationship where the related Section_interface (see 4.2.298) is based on the relating Section_interface (see 4.2.298).

4.2.300.4.4 substitution

substitution: The Section_interface_relationship defines a relationship where the related Section_interface (see 4.2.298) replaces the relating Section_interface (see 4.2.298).

4.2.300.4.5 version hierarchy

version hierarchy: The Section_interface_relationship defines a hierarchical relationship where the related Section_interface (see 4.2.298) is a subversion of the relating Section_interface (see 4.2.298).

EXAMPLE 1 Revisions 1.1 and 1.2 of a Section_interface (see 4.2.298).

4.2.300.4.6 version sequence

version sequence: The `Section_interface_relationship` defines a relationship where the relating `Section_interface` (see 4.2.298) is the preceding version and the related `Section_interface` (see 4.2.298) is the following version.

NOTE 3 The relationship does not imply inheritance of any kind between the application objects that are related.

EXAMPLE 2 'version sequence' is used, whenever a new version is prepared, e.g., 'version 1.0' is the preceding version for the following 'version 2.0'.

4.2.301 Section_relationship

A `Section_relationship` is a relation between two `Section` (see 4.2.296) objects.

The data associated with an `Section_relationship` are the following:

- description;
- related;
- relating;
- relation_type.

4.2.301.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Section_relationship`.

The description need not be specified for a particular `Section_relationship`.

4.2.301.2 related

The related specifies the second of the two `Section` (see 4.2.296) objects related by the `Section_relationship`.

See 4.3.2095 for the application assertion.

4.2.301.3 relating

The relating specifies the first of the two `Section` (see 4.2.296) objects related by the `Section_relationship`.

See 4.3.2096 for the application assertion.

4.2.301.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

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The predefined value of `relation_type` is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution;
- version hierarchy;
- version sequence.

NOTE 1 See 4.2.301.4.1 - 4.2.301.4.6 for the definition of each predefined value for `relation_type`.

4.2.301.4.1 alternate

alternate: The `Section_relationship` defines a relationship where the related Section (see 4.2.296) is a possible substitute to the relating Section (see 4.2.296).

NOTE 2 This concept refers to the possibility to replace the Section (see 4.2.296). The actual replacement is addressed by 'substitution'.

4.2.301.4.2 decomposition

decomposition: The `Section_relationship` defines a relationship where the related Section (see 4.2.296) is one of the components into which the relating Section (see 4.2.296) is divided.

4.2.301.4.3 derivation

derivation: The `Section_relationship` defines a deriving relationship where the related Section (see 4.2.296) is based on the relating Section (see 4.2.296).

4.2.301.4.4 substitution

substitution: The `Section_relationship` defines a relationship where the related Section (see 4.2.296) replaces the relating Section (see 4.2.296).

4.2.301.4.5 version hierarchy

version hierarchy: The `Section_relationship` defines a hierarchical relationship where the related Section (see 4.2.296) is a subversion of the relating Section (see 4.2.296).

EXAMPLE Revisions 1.1 and 1.2 of a Section (see 4.2.296).

4.2.301.4.6 version sequence

version sequence: The `Section_relationship` defines a succession of versions where the relating Section (see 4.2.296) is the preceding version, and the related Section (see 4.2.296) is the following version.

4.2.302 Security_classification

A Security_classification is a means to specify a security level for an physical or abstract item.

The data associated with a Security_classification are the following:

- is_applied_to;
- name;
- purpose;
- security_classification_level.

4.2.302.1 is_applied_to

The is_applied_to specifies the item to which the Security_classification is assigned.

Each is_applied_to may be one of the following: Activity (see 4.2.1), Activity (see 4.2.1), Activity_element (see 4.2.2), Activity_method_assignment (see 4.2.4), Activity_relationship (see 4.2.5), Alternate_item_relationship (see 4.2.11), Assembly_component_relationship (see 4.2.26), Assembly_substitute_relationship (see 4.2.28), Cable_pull_information (see 4.2.33), Class_structure_relationship (see 4.2.45), Classification_system (see 4.2.48), Complex_product (see 4.2.51), Complex_product_relationship (see 4.2.52), Composition_relationship (see 4.2.55), Configuration (see 4.2.56), Connectivity_allocation (see 4.2.60), Connectivity_definition (see 4.2.61), Connectivity_definition_relationship (see 4.2.62), Contract (see 4.2.63), Data_element (see 4.2.70), Data_element_association (see 4.2.71), Data_element_definition (see 4.2.72), Data_element_relationship (see 4.2.74), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Device_relationship (see 4.2.89), Document (see 4.2.101), Document_file (see 4.2.106), Document_file_relationship (see 4.2.107), Document_representation (see 4.2.110), Document_version (see 4.2.114), Document_version_relationship (see 4.2.115), Drawing (see 4.2.119), Drawing_sequence (see 4.2.121), Drawing_sheet (see 4.2.122), Drawing_sheet_relationship (see 4.2.124), Function_definition (see 4.2.145), Function_definition_relationship (see 4.2.146), Function_interface (see 4.2.147), Function_unit (see 4.2.148), Function_unit_relationship (see 4.2.149), Function_version (see 4.2.150), Function_version_relationship (see 4.2.151), Functional_connectivity_definition (see 4.2.152), Functional_connectivity_definition_relationship (see 4.2.153), Functional_unit_allocation (see 4.2.154), Generic_note (see 4.2.159), Interface (see 4.2.170), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Item_definition_relationship (see 4.2.179), Item_version (see 4.2.182), Item_version_relationship (see 4.2.183), Location (see 4.2.192), Location_relationship (see 4.2.194), Manufacturing_configuration (see 4.2.198), Marking (see 4.2.199), Node (see 4.2.208), Node_relationship (see 4.2.209), Notification (see 4.2.213), Notification_relationship (see 4.2.214), Offered_function_allocation (see 4.2.220), Path (see 4.2.232), Path_node (see 4.2.233), Path_node_relationship (see 4.2.234), Path_relationship (see 4.2.235), Physical_assembly_relationship (see 4.2.241), Physical_instance (see 4.2.243), Port (see 4.2.247), Port_allocation (see 4.2.248), Preferred_item_allocation (see 4.2.258), Preferred_item_terminal_allocation (see 4.2.259), Process_variable (see 4.2.260), Process_variable_relationship (see 4.2.261), Product_class (see 4.2.263), Product_identification (see 4.2.268), Product_structure_relationship (see 4.2.270), Project (see 4.2.271), Requirement (see 4.2.285), Route (see 4.2.290), Route_relationship (see 4.2.291), Section (see 4.2.296), Section_end (see 4.2.297), Section_interface (see 4.2.298), Section_interface_relationship (see 4.2.299), Section_relationship (see 4.2.300), Signal (see 4.2.309), Signal_relationship (see 4.2.311), Signal_value (see 4.2.313), Specification (see 4.2.323), Specification_category (see 4.2.324), Technical_system (see 4.2.336), Technical_system_

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relationship (see 4.2.337), Terminal (see 4.2.338), Work_order (see 4.2.364), or Work_request (see 4.2.365).

See 4.3.2097, 4.3.2098, 4.3.2099, 4.3.2100, 4.3.2101, 4.3.2102, 4.3.2103, 4.3.2104, 4.3.2105, 4.3.2106, 4.3.2107, 4.3.2108, 4.3.2109, 4.3.2110, 4.3.2111, 4.3.2112, 4.3.2113, 4.3.2114, 4.3.2115, 4.3.2116, 4.3.2117, 4.3.2118, 4.3.2119, 4.3.2120, 4.3.2121, 4.3.2122, 4.3.2123, 4.3.2124, 4.3.2125, 4.3.2126, 4.3.2127, 4.3.2128, 4.3.2129, 4.3.2130, 4.3.2131, 4.3.2132, 4.3.2133, 4.3.2134, 4.3.2135, 4.3.2136, 4.3.2137, 4.3.2138, 4.3.2139, 4.3.2140, 4.3.2141, 4.3.2142, 4.3.2143, 4.3.2144, 4.3.2145, 4.3.2146, 4.3.2147, 4.3.2148, 4.3.2149, 4.3.2150, 4.3.2151, 4.3.2152, 4.3.2153, 4.3.2154, 4.3.2155, 4.3.2156, 4.3.2157, 4.3.2158, 4.3.2159, 4.3.2160, 4.3.2161, 4.3.2162, 4.3.2163, 4.3.2164, 4.3.2165, 4.3.2166, 4.3.2167, 4.3.2168, 4.3.2169, 4.3.2170, 4.3.2171, 4.3.2172, 4.3.2173, 4.3.2174, 4.3.2175, 4.3.2176, 4.3.2177, 4.3.2178, 4.3.2179, 4.3.2180, 4.3.2181, 4.3.2182, 4.3.2184, 4.3.2185, 4.3.2186, 4.3.2187, 4.3.2188, 4.3.2189, 4.3.2190, 4.3.2191, 4.3.2192, and 4.3.2193 for the application assertions.

4.2.302.2 name

The name specifies the identifier of the Security_classification.

4.2.302.3 purpose

The purpose specifies the rationale behind the Security_classification.

4.2.302.4 security_classification_level

The security_classification_level specifies the Security_level (see 4.2.302) associated with the item.

See 4.3.2183 for the application assertion.

4.2.303 Security_level

A Security_level is the specification of a level of security within some Security_classification (see 4.2.301).

NOTE The values of Security_level are company specific.

The data associated with a Security_level are the following:

- level_name;
- used_classification_system.

4.2.303.1 level_name

The level_name specifies the word or abbreviation used to refer to the Security_level.

4.2.303.2 used_classification_system

The used_classification_system specifies the Classification_system (see 4.2.48) that contains the information about how to interpret the name of the Security_level.

The used_classification_system need not be specified for a particular Security_level.

See 4.3.2194 for the application assertion.

4.2.304 Selected_device

A Selected_device is a type of Device (see 4.2.88) that is the occurrence of a Design_discipline_item_definition (see 4.2.86) which depends on certain constraints.

EXAMPLE To minimize the concentricity error of a wheel, weights are attached to the rim; this set of weights is a Selected_device. The quantity, as well as the position of these weights, depends on the concentricity behaviour of each particular wheel as manufactured and tested.

The data associated with a Selected_device are the following:

- selected_quantity;
- selection_control.

4.2.304.1 selected_quantity

The selected_quantity specifies the number of occurrences foreseen as Selected_device.

NOTE If the quantity is to be specified as a minimum or a maximum, then the Value_limit (see 4.2.358) object may be used.

See 4.3.2195 for the application assertion.

4.2.304.2 selection_control

The selection_control specifies the constraint that has to be evaluated for the Selected_device.

EXAMPLE The information 'balancing the wheel' is an example for a selection_control.

4.2.305 Serial_configuration

A Serial_configuration is a type of Manufacturing_configuration (see 4.2.198) that is planned to apply from a given serial number of the product for whose characteristic the Serial_configuration identifies a solution.

The data associated with a Serial_configuration are the following:

- serial_end_number;
- serial_start_number.

4.2.305.1 serial_end_number

The serial_end_number specifies the serial number of that instance of the product that is the last instance for which the Serial_configuration applies.

The serial_end_number need not be specified for a particular Serial_configuration.

4.2.305.2 serial_start_number

The serial_start_number specifies the serial number of that instance of the product that is the first instance for which the Serial_configuration applies.

4.2.306 Set_of_notes

A Set_of_notes is a type of Generic_note (see 4.2.159) that is a collection of Note (see 4.2.210) objects.

The data associated with a Set_of_notes are the following:

- grouped_notes.

4.2.306.1 grouped_notes

The grouped_notes specifies the Generic_note (see 4.2.159) objects that are collected by a Set_of_notes.

See 4.3.2196 for the application assertion.

4.2.307 Shape

A Shape is the reference to the specification of the external form of a piece of equipment.

The data associated with a Shape are the following:

- id.

4.2.307.1 id

The id specifies the identifier of the Shape.

4.2.308 Shape_assignment

A Shape_assignment is a relation that associates a Shape (see 4.2.306) with an item.

NOTE If a shape is assigned to a functional item, the shape specifies the volume of space required to provide this service.

The data associated with a Shape_assignment are the following:

- assigned_shape;
- associated_item;
- description;
- role.

4.2.308.1 assigned_shape

The assigned_shape specifies the Shape (see 4.2.306) object assigned to the item.

See 4.3.2211 for the application assertion.

4.2.308.2 associated_item

The associated_item specifies the item with which the Shape (see 4.2.306) is associated.

Each associated_item may be one of the following: Connectivity_definition (see 4.2.61), Design_discipline_item_definition (see 4.2.86), Device (see 4.2.88), Function_definition (see 4.2.145), Function_unit (see 4.2.148), Functional_connectivity_definition (see 4.2.152), Interface_port (see 4.2.171), Interface_terminal (see 4.2.174), Location (see 4.2.192), Physical_instance (see 4.2.243), Port (see 4.2.247), Product_component (see 4.2.265), Section (see 4.2.296), Section_interface (see 4.2.298), Technical_system (see 4.2.336), or Terminal (see 4.2.338).

See 4.3.2197, 4.3.2198, 4.3.2199, 4.3.2200, 4.3.2201, 4.3.2202, 4.3.2203, 4.3.2204, 4.3.2205, 4.3.2206, 4.3.2207, 4.3.2208, 4.3.2209, 4.3.2210, 4.3.2212, and 4.3.2213 for the application assertions.

4.2.308.3 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Shape_assignment.

The description need not be specified for a particular Shape_assignment.

4.2.308.4 role

The role specifies the relationship between the item and the assigned shape. The value is either user defined or predefined.

The predefined value of role is one of the following:

- body shape;
- mounting space;
- safety space.

NOTE See 4.2.308.4.1 - 4.2.308.4.3 for the definition of each predefined value for relation_type.

4.2.308.4.1 body shape

body shape: The Shape (see 4.2.306) specifies the form of the associated item.

4.2.308.4.2 mounting space

mounting space: The Shape (see 4.2.306) specifies the space required to put the item into position.

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4.2.308.4.3 safety space

safety space: The Shape (see 4.2.306) specifies the form of the safety zone required for the associated item.

4.2.309 Sheet_placed_annotation

A Sheet_placed_annotation is a type of Draughting_annotation (see 4.2.116) that is located in the coordinate system of the drawing sheet.

The data associated with a Sheet_placed_annotation are the following:

- annotation_layers;
- annotation_visibility.

4.2.309.1 annotation_layers

The annotation_layers specifies the layers that contain the annotation.

See 4.3.2214 for the application assertion.

4.2.309.2 annotation_visibility

The annotation_visibility specifies whether or not each piece of annotation placed within the drawing sheet is visible.

See 4.3.2215 for the application assertion.

4.2.310 Signal

A Signal is the physical representation of a message or an information flow being generated, processed, or conveyed within an electrotechnical system.

NOTE 1 To be processed by an electrotechnical system a Process_variable (see 4.2.260) needs to be converted into a Signal.

EXAMPLE 1 A temperature sensor converts the temperature of a fluid into an electrical current that is represented by a Signal. The Signal thus informs about the height of the temperature.

NOTE 2 By associating Signal_value (see 4.2.313) objects to the Signal specific values of a Process_variable (see 4.2.260) can be assigned to characteristic values of the Signal.

EXAMPLE 2 A temperature of 100⁰ C is represented by a Signal_value (see 4.2.313) of 5 V.

NOTE 3 By associating General_classification (see 4.2.156) objects to Signal the type of the Signal can be specified.

EXAMPLE 3 A Signal is categorized to be a 32 bit wide and to be of type 'input'.

The data associated with a Signal are the following:

- associated_parameter;
- description;
- extended_designation;
- id;
- signal_level_indicator;
- version_id.

4.2.310.1 associated_parameter

The associated_parameter specifies the process variable about which the Signal informs.

See 4.3.2216 for the application assertion.

4.2.310.2 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Signal.

The description need not be specified for a particular Signal.

4.2.310.3 extended_designation

The extended_designation specifies a structured label for the Signal.

NOTE The label assigned through extended_designation shall be identical to the label assigned by the 'id' attribute.

EXAMPLE IEC 61175 specifies designations for signals and connections.

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The extended_designation need not be specified for a particular Signal.

See 4.3.2217 for the application assertion.

4.2.310.4 id

The id specifies the identifier of the Signal.

4.2.310.5 signal_level_indicator

The signal_level_indicator specifies the logical state of the signal that carries the information.

The signal_level_indicator need not be specified for a particular Signal.

4.2.310.6 version_id

The version_id specifies versioning information for the Signal.

The version_id need not be specified for a particular Signal.

4.2.311 Signal_designation

A Signal_designation is a type of Object_designation (see 4.2.217) that is a reference designation which uniquely identifies a signal within its scope.

4.2.312 Signal_relationship

A Signal_relationship is the relation between two Signal (see 4.2.309) objects.

The data associated with a Signal_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.312.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Signal_relationship.

The description need not be specified for a particular Signal_relationship.

4.2.312.2 related

The related specifies the second of the two Signal (see 4.2.309) objects related by the Signal_relationship.

See 4.3.2218 for the application assertion.

4.2.312.3 relating

The relating specifies the first of the two Signal (see 4.2.309) objects related by the Signal_ relationship.

See 4.3.2219 for the application assertion.

4.2.312.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- alternate;
- decomposition;
- derivation;
- substitution;
- redundancy;
- version hierarchy.

NOTE 1 See 4.2.312.4.1 - 4.2.312.4.6 for the definition of each predefined value for relation_type.

4.2.312.4.1 alternate

alternate: The Signal_relationship defines a relationship where the related Signal (see 4.2.309) is a possible substitute to the relating Signal (see 4.2.309).

NOTE 2 This concept refers to the possibility to replace the Signal (see 4.2.309). The actual replacement is addressed by 'substitution'.

4.2.312.4.2 decomposition

decomposition: The Signal_relationship defines a relationship where the related Signal (see 4.2.309) is one of the components into which the relating Signal (see 4.2.309) is divided.

NOTE In the case in which a signal acts as a carrier for other signals, it can be decomposed into these signals.

4.2.312.4.3 derivation

derivation: The Signal_relationship defines a deriving relationship where the related Signal (see 4.2.309) is based on the relating Signal (see 4.2.309).

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NOTE 1 A `Signal_relationship` with `relation_type` 'derivation' can be used to indicate the transfer function of a module. In such a case the input and output signal are associated through an instance of `Signal_relationship`. The 'description' attribute of that instance may contain the specification of the transfer function as a mathematical function.

NOTE 2 To avoid a shower of signals a summary signal can be derived from the cascade of signals that occur when a piece of equipment fails.

EXAMPLE A system used to keep a drive cool consists of a water pump, a radiator, and several sensors to monitor the system. An event that causes all of the water to leak out of the cooling system causes a number of signals. The temperature of the engine raises, the water pressure drops, and the emergency shutdown of the drive takes place. These three individual `Signal` (see 4.2.309) objects may be combined into a single `Signal` (see 4.2.309) object, which simply states that the drive has stopped, by relating the three `Signal` (see 4.2.309) objects to the summary `Signal` (see 4.2.309) through three `Signal_relationship` objects with `relation_type` 'derivation'.

4.2.312.4.4 substitution

substitution: The `Signal_relationship` defines a relationship where the related `Signal` (see 4.2.309) replaces the relating `Signal` (see 4.2.309).

4.2.312.4.5 redundancy

redundancy: The `Signal_relationship` defines a relationship where the related `Signal` (see 4.2.309) is replicated by the relating `Signal` (see 4.2.309).

EXAMPLE To provide for a fail-safe service a `Signal` (see 4.2.309) is replicated. If one `Signal` (see 4.2.309) is disturbed, the other is still readable.

4.2.312.4.6 version hierarchy

version hierarchy: The `Signal_relationship` defines a hierarchical relationship where the related `Signal` (see 4.2.309) is a subversion of the relating `Signal` (see 4.2.309).

EXAMPLE Revision 1.1 and 1.2 of a signal.

4.2.313 `Signal_system_assignment`

A `Signal_system_assignment` is a relation that associates a `Signal` (see 4.2.309) with a physical or abstract item that processes or transmits the `Signal` (see 4.2.309).

The data associated with a `Signal_system_assignment` are the following:

- `associated_signal`;
- `associated_system`;
- `description`;
- `role`.

4.2.313.1 associated_signal

The `associated_signal` specifies the `Signal` (see 4.2.309).

See 4.3.2228 for the application assertion.

4.2.313.2 associated_system

The `associated_system` specifies the item that processes or transmits the `Signal` (see 4.2.309).

Each `associated_system` may be one of the following: `Connectivity_definition` (see 4.2.61), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Function_definition` (see 4.2.145), `Function_unit` (see 4.2.148), `Functional_connectivity_definition` (see 4.2.152), `Physical_instance` (see 4.2.243), `Port` (see 4.2.247), `Technical_system` (see 4.2.336), or `Terminal` (see 4.2.338).

See 4.3.2220, 4.3.2221, 4.3.2222, 4.3.2223, 4.3.2224, 4.3.2225, 4.3.2226, 4.3.2227, 4.3.2229, and 4.3.2230 for the application assertions.

4.2.313.3 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Signal_system_assignment`.

The `description` need not be specified for a particular `Signal_system_assignment`.

4.2.313.4 role

The `role` specifies the relationship between the signal and the associated system. The value is either user defined or predefined.

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The predefined value of role is one of the following:

- amplifier;
- monitor;
- source;
- target;
- transmitter.

NOTE See 4.2.313.4.1 - 4.2.313.4.5 for the definition of each predefined value for role.

4.2.313.4.1 amplifier

amplifier: The signal is boosted within the assigned system.

4.2.313.4.2 monitor

monitor: The signal is observed within the assigned system.

4.2.313.4.3 source

source: The assigned system acts as a source for the signal.

EXAMPLE A sensor can be a source for a signal.

4.2.313.4.4 target

target: The assigned system acts as a target for the signal.

EXAMPLE A screen that visualizes a message can be a target for a signal.

4.2.313.4.5 transmitter

transmitter: The signal is transferred within the assigned system.

4.2.314 Signal_value

A Signal_value is the measure of a signal.

NOTE 1 By association Signal_value objects the characteristics of a Signal (see 4.2.309) can be laid down.

EXAMPLE 1 A Signal (see 4.2.309) can go from 0 to 10 mA with a linear characteristic.

NOTE 2 By associating Signal_value objects to the Signal (see 4.2.309) specific values of a Process_variable (see 4.2.260) can be assigned to characteristic values of the Signal (see 4.2.309).

EXAMPLE 2 A temperature of 100⁰ C is represented by a Signal_value of 5 V.

The data associated with a `Signal_value` are the following:

- `associated_signal`;
- `characteristic`;
- `description`;
- `id`;
- `value_of_signal`;
- `valued_parameter`.

4.2.314.1 associated_signal

The `associated_signal` specifies the `Signal` (see 4.2.309) to which the `Signal_value` applies.

See 4.3.2233 for the application assertion.

4.2.314.2 characteristic

The `characteristic` specifies how the `Signal_value` depends on the `Process_variable` (see 4.2.260) that is assigned through the `associated_parameter`. The value is either user defined or predefined.

The predefined value of `characteristic` is one of the following:

- `linear`.

NOTE 3 See 4.2.314.2.1 for the definition of each predefined value for `characteristic`.

4.2.314.2.1 linear

`linear`: The equation between the value of the `Process_variable` (see 4.2.260) and the `Signal_value` gives a straight line when plotted on a graph.

EXAMPLE 3 A temperature sensor with a linear transfer function will cause a linear dependency between the value of the associated `Process_variable` (see 4.2.260) characterizing the temperature and the associated `Signal_value`.

The `characteristic` need not be specified for a particular `Signal_value`.

4.2.314.3 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Signal_value`.

The `description` need not be specified for a particular `Signal_value`.

4.2.314.4 id

The `id` specifies the identifier of the `Signal_value`.

4.2.314.5 value_of_signal

The `value_of_signal` specifies the numerical measure of the associated `Signal` (see 4.2.309).

See 4.3.2231 for the application assertion.

4.2.314.6 valued_parameter

The `valued_parameter` specifies a `Process_variable` (see 4.2.260) object that corresponds to the `Signal_value`.

The `valued_parameter` need not be specified for a particular `Signal_value`.

See 4.3.2232 for the application assertion.

4.2.315 Single_device

A `Single_device` is a type of `Device` (see 4.2.88) that is an individual piece of equipment.

4.2.316 Single_function_unit

A `Single_function_unit` is a type of `Function_unit` (see 4.2.148) that is an individual functional module.

4.2.317 Single_value

A `Single_value` is a type of `Data_element_value` (see 4.2.76) that specifies a distinct value.

The data associated with a `Single_value` are the following:

— `value_of_single_value`.

4.2.317.1 value_of_single_value

The `value_of_single_value` specifies the actual measure of the `Single_value`.

Each `value_of_single_value` may be one of the following: `Binary_value` (see 4.2.29), `Logical_value` (see 4.2.195), `String_value` (see 4.2.331), or `Value_with_unit` (see 4.2.360).

See 4.3.2234, 4.3.2235, 4.3.2236, and 4.3.2237 for the application assertions.

4.2.318 Solid_fill_area

A `Solid_fill_area` is a type of `Fill_area_appearance` (see 4.2.140) that uniformly fills the fill area to which the appearance is applied.

The data associated with a `Solid_fill_area` are the following:

— `fill_colour`.

4.2.318.1 fill_colour

The `fill_colour` specifies the colour definition that is uniformly applied to the fill area.

See 4.3.2238 for the application assertion.

4.2.319 `Solution_instance_assignment`

A `Solution_instance_assignment` is a relation that associates an `Alternative_solution` (see 4.2.12) with the items that implement the solution.

The data associated with a `Solution_instance_assignment` are the following:

- `instance`;
- `solution`.

4.2.319.1 `instance`

The instance specifies the item that implements the `Alternative_solution` (see 4.2.12).

Each instance may be one of the following: `Node` (see 4.2.208), `Notification` (see 4.2.213), `Path` (see 4.2.232), `Path_node` (see 4.2.233), `Route` (see 4.2.290), `Section` (see 4.2.296), `Section_end` (see 4.2.297), `Section_interface` (see 4.2.298), `Signal` (see 4.2.309), or `Technical_system` (see 4.2.336).

See 4.3.2240, 4.3.2241, 4.3.2242, 4.3.2243, 4.3.2244, 4.3.2245, 4.3.2246, 4.3.2247, 4.3.2248, and 4.3.2249 for the application assertions.

4.2.319.2 `solution`

The solution specifies the `Alternative_solution` (see 4.2.12) object.

See 4.3.2239 for the application assertion.

4.2.320 `Specific_document_classification`

A `Specific_document_classification` is a classification of a `Document` (see 4.2.101) with respect to specific criteria. The specific criteria are covered in the '`classification_name`' attribute.

The data associated with a `Specific_document_classification` are the following:

- `associated_document`;
- `classification_name`;
- `description`.

4.2.320.1 `associated_document`

The `associated_document` the `associated_document` specifies the `Document` (see 4.2.101) with which a particular `Specific_document_classification` is associated.

See 4.3.2250 for the application assertion.

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4.2.320.2 classification_name

The classification_name provides classification information.

NOTE The overall classification information is obtained by traversing the hierarchical tree established by Specific_item_classification_hierarchy (see 4.2.322).

The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

- catalogue;
- manual;
- specification.

NOTE See 4.2.320.2.1 - 4.2.320.2.3 for the definition of each predefined value for relation_type.

4.2.320.2.1 catalogue

catalogue: The assigned document is the catalogue in which the associated object is listed.

EXAMPLE The document can be the catalogue of the manufacturer.

4.2.320.2.2 manual

manual: The assigned document is the handbook that is supplied for the associated object.

4.2.320.2.3 specification

specification: The assigned document specifies the considerations that lead to the actual design of the associated object.

4.2.320.3 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Specific_document_classification.

The description need not be specified for a particular Specific_document_classification.

4.2.321 Specific_document_classification_hierarchy

A Specific_document_classification_hierarchy is used to build up hierarchical structures of Specific_document_classification_hierarchy objects.

The data associated with a `Specific_document_classification` (see 4.2.319) are the following:

- `sub_classification`;
- `super_classification`.

4.2.321.1 `sub_classification`

The `sub_classification` specifies the lower level of `Specific_document_classification` (see 4.2.319) in `Specific_document_classification_hierarchy` that is included in the super class.

See 4.3.2251 for the application assertion.

4.2.321.2 `super_classification`

The `super_classification` specifies the higher level of `Specific_document_classification` (see 4.2.319) in `Specific_document_classification_hierarchy` that is included in the sub class.

See 4.3.2252 for the application assertion.

4.2.322 `Specific_item_classification`

A `Specific_item_classification` is a classification of an `Item` (see 4.2.178) with respect to specific criteria. The specific criteria are covered in the '`classification_name`' attribute.

NOTE 1 If an `Item` (see 4.2.178) requires classification by more than one criterion, several `Specific_item_classification` objects are associated to the same `Item` (see 4.2.178).

NOTE 2 For the attribute '`classification_name`' a set of predefined values is specified hereafter. If values other than the proposed ones are used, they should be of general classifying nature. This kind of classification ought not to be used to classify names or identifiers of objects, e.g., in order to classify part families; for this purpose `General_classification` (see 4.2.156) ought to be used.

The data associated with a `Specific_item_classification` are the following:

- `associated_item`;
- `classification_name`;
- `description`.

4.2.322.1 `associated_item`

The `associated_item` specifies the `Item` (see 4.2.178) with which a particular `Specific_item_classification` is associated.

See 4.3.2253 for the application assertion.

4.2.322.2 `classification_name`

The `classification_name` provides classification information.

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The following values shall be used:

- accessory;
- application control;
- assembly;
- collection;
- completely knocked down;
- detail;
- in process;
- part;
- prototype;
- raw material;
- regulated;
- safety;
- service;
- software;
- tool.

NOTE See 4.2.322.2.1 - 4.2.322.2.14 for the definition of each predefined value for classification_name.

4.2.322.2.1 accessory

accessory: This type of classification is used to indicate that an Item (see 4.2.178) shall be considered to be a supplementary portion of an electrotechnical system with the obligation to help the system to perform its function.

4.2.322.2.2 application control

application control: This type of classification is used to indicate that an Item (see 4.2.178) shall be considered under certification aspects; these aspects may be specified further by the 'description' attribute.

EXAMPLE 1 Prior to the release of a new car to the market, both function and quality of certain parts have to be certified by an authority, e.g., the department of transportation. For such Item (see 4.2.178) objects, certification requirements have to be considered during the design phase.

4.2.322.2.3 assembly

assembly: This type of classification shall be used for any Item (see 4.2.178) that has an Assembly_ - definition (see 4.2.27) provided for at least one of its versions, i.e., it is decomposed further.

4.2.322.2.4 completely knocked down

completely knocked down: This type of classification is used to indicate that an Item (see 4.2.178) is used in a production site that has assembling facilities only.

EXAMPLE 2 The 'completely knocked down' may indicate that the components are shipped to and assembled in a different country.

4.2.322.2.5 detail

detail: This type of classification shall be used for any Item (see 4.2.178) that has no Assembly_ - definition (see 4.2.27) provided for any of its versions, i.e., it is not further decomposed.

4.2.322.2.6 in process

in process: This type of classification is used to indicate that the Item (see 4.2.178) identifies an intermediate object in a manufacturing process.

4.2.322.2.7 part

part: The Item (see 4.2.178) plays the role of a component of relevance within the system.

4.2.322.2.8 prototype

prototype: This type of classification is used to indicate that the Item (see 4.2.178) identifies a prototype and is not intended for serial production.

4.2.322.2.9 raw material

raw material: The Item (see 4.2.178) plays the role of raw material.

4.2.322.2.10 regulated

regulated: This type of classification is used to indicate that for an Item (see 4.2.178) certain regulations have to be considered.

4.2.322.2.11 safety

safety: This type of classification is used to indicate that an Item (see 4.2.178) is relevant for safety purposes.

4.2.322.2.12 service

service: This type of classification is used to indicate that an Item (see 4.2.178) is relevant for service purposes.

4.2.322.2.13 software

software: This type of classification is used to indicate that an Item (see 4.2.178) is a program that can be executed on a particular kind of computer.

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4.2.322.2.14 tool

tool: The Item (see 4.2.178) plays the role of a tool.

4.2.322.3 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Specific_item_classification.

The description need not be specified for a particular Specific_item_classification.

4.2.323 Specific_item_classification_hierarchy

A Specific_item_classification_hierarchy is used to build up hierarchical structures of Specific_item_classification (see 4.2.321). The top level in the hierarchy shall be a 'part' or 'software'.

The data associated with a Specific_item_classification_hierarchy are the following:

- sub_classification;
- super_classification.

4.2.323.1 sub_classification

The sub_classification specifies the lower level of Specific_item_classification (see 4.2.321) in a Specific_item_classification_hierarchy that is included in the super class.

See 4.3.2254 for the application assertion.

4.2.323.2 super_classification

The super_classification specifies the higher level of Specific_item_classification (see 4.2.321) in a Specific_item_classification_hierarchy that includes the sub class.

See 4.3.2255 for the application assertion.

4.2.324 Specification

A Specification is a characteristic of a product. It discriminates one product from other constituents of the same Product_class (see 4.2.263). A Specification refers to a Specification_category (see 4.2.324) that completes the semantic of the Specification.

NOTE 1 A Specification may be a characteristic of the members of more than one Product_class (see 4.2.263) using Class_specification_association (see 4.2.44) objects.

NOTE 2 A Specification, in combination with a Configuration (see 4.2.56), can be used to define the conditions under which an Item (see 4.2.178) is used for a product of a Product_class (see 4.2.263).

The data associated with a Specification are the following:

- category;
- description;
- id;
- name;
- package;
- version_id.

4.2.324.1 category

The category specifies the Specification_category (see 4.2.324) that completes the semantic of the Specification.

See 4.3.2256 for the application assertion.

4.2.324.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Specification.

The description need not be specified for a particular Specification.

4.2.324.3 id

The id specifies the identifier of the Specification.

4.2.324.4 name

The name specifies a speaking designation of the Specification.

The name need not be specified for a particular Specification.

4.2.324.5 package

The package specifies whether or not this Specification represents a package of Specification objects. A package is a set of Specification objects that can be defined by the marketing department. A package combines those Specification objects that shall be offered to the market as a set. In the case where package is 'true', exactly one Specification_inclusion (see 4.2.327) shall refer to this Specification as an if condition.

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NOTE Usually the members of a package belong to distinct Specification_category (see 4.2.324) objects.

4.2.324.6 version_id

The version_id specifies versioning information for the Specification.

The version_id need not be specified for a particular Specification.

4.2.325 Specification_category

A Specification_category is the definition of a set of Specification (see 4.2.323) objects for the same purpose.

The data associated with a Specification_category are the following:

- description;
- id;
- implicit_exclusive_condition.

4.2.325.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Specification_category.

4.2.325.2 id

The id specifies the identifier of the Specification_category.

4.2.325.3 implicit_exclusive_condition

The implicit_exclusive_condition specifies whether or not the Specification (see 4.2.323) objects within the Specification_category are mutually exclusive for the production of one particular product.

NOTE More complex conditions can be handled using Specification_expression (see 4.2.326) objects.

4.2.326 Specification_category_hierarchy

A Specification_category_hierarchy is used to build up hierarchical structures of Specification_category (see 4.2.324) objects.

The data associated with a Specification_category_hierarchy are the following:

- sub_category;
- super_category.

4.2.326.1 sub_category

The `sub_category` is the lower level of `Specification_category` (see 4.2.324) in `Specification_category_hierarchy`.

See 4.3.2257 for the application assertion.

4.2.326.2 super_category

The `super_category` is the higher level of `Specification_category` (see 4.2.324) in `Specification_category_hierarchy`.

See 4.3.2258 for the application assertion.

4.2.327 Specification_expression

A `Specification_expression` is a combination of `Specification` (see 4.2.323) objects formed by Boolean operations.

The data associated with a `Specification_expression` are the following:

- description;
- id;
- operand;
- operation.

4.2.327.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the `Specification_expression`.

The description need not be specified for a particular `Specification_expression`.

4.2.327.2 id

The id specifies the identifier of the `Specification_expression`.

The id need not be specified for a particular `Specification_expression`.

4.2.327.3 operand

The operand specifies the operands of the Boolean operation that are either `Specification` (see 4.2.323) objects or other `Specification_expression` objects.

Each operand may be one of the following: `Specification` (see 4.2.323) or `Specification_expression`.

See 4.3.2259 and 4.3.2260 for the application assertions.

4.2.327.4 operation

The operation specifies the kind of Boolean operation.

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The value of operation is one of the following:

- and;
- not;
- oneof;
- or.

NOTE See 4.2.327.4.1 - 4.2.327.4.4 for the definition of each permissible value for operation.

4.2.327.4.1 and

and: All of the identified Specification (see 4.2.323) objects shall be used.

4.2.327.4.2 not

not: The identified Specification (see 4.2.323) shall not be used.

4.2.327.4.3 oneof

oneof: Exactly one of the identified Specification (see 4.2.323) objects shall be used.

4.2.327.4.4 or

or: A subset or all of the identified Specification (see 4.2.323) objects shall be used.

4.2.328 Specification_inclusion

A Specification_inclusion is the representation of the statement that the application of a Specification (see 4.2.323) or a Specification_expression (see 4.2.326) implies the inclusion of an additional Specification (see 4.2.323) or Specification_expression (see 4.2.326).

NOTE The Specification_inclusion is intended to complete the set of Specification (see 4.2.323) objects for a Product_specification (see 4.2.269) in order to enable the manufacturing of the product on the basis of an initial set of Specification (see 4.2.323) objects defined, e.g., by a customer order.

The data associated with a Specification_inclusion are the following:

- description;
- id;
- if_condition;
- included_specification.

4.2.328.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Specification_inclusion.

The description need not be specified for a particular `Specification_inclusion`.

4.2.328.2 `id`

The `id` specifies the identifier of the `Specification_inclusion`.

The `id` need not be specified for a particular `Specification_inclusion`.

4.2.328.3 `if_condition`

The `if_condition` specifies the `Specification` (see 4.2.323) or the `Specification_expression` (see 4.2.323) that serves as the condition for the inclusion.

Each `if_condition` may be one of the following: `Specification` (see 4.2.323) or `Specification_expression` (see 4.2.326).

See 4.3.2261 and 4.3.2263 for the application assertions.

4.2.328.4 `included_specification`

The `included_specification` specifies the `Specification` (see 4.2.323) or the `Specification_expression` (see 4.2.326) objects that are to be included.

NOTE In the case where the `included_specification` is a `Specification_expression` (see 4.2.326), i.e., an OR expression, several alternatives for `Specification` (see 4.2.323) may be included. In the case where more than one `Specification` (see 4.2.323) objects are to be included, a `Specification_expression` (see 4.2.326) of type AND shall be used.

Each `included_specification` may be one of the following: `Specification` (see 4.2.323) or `Specification_expression` (see 4.2.326).

See 4.3.2262 and 4.3.2264 for the application assertions.

4.2.329 `Specified_device`

A `Specified_device` is a type of `Device` (see 4.2.88) that is the mechanism to identify a certain `Device` (see 4.2.88) in a multi-level assembly structure that utilizes structural reuse of partial decompositions.

EXAMPLE A belt conveyor consists among others of the components front drive and rear drive. Both components contain a motor and some other components. In order to identify the motor of the front drive, the `Specified_device` object references motor as related instance, front drive as `upper_usage`, and belt conveyor as `assembly_context`.

The object, which is referred by the 'definition' attribute of a `Specified_device` and the object which is referenced through the 'related_function_unit' attribute as 'definition', shall be the same.

The data associated with a `Specified_device` are the following:

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- `assembly_context`;
- `related_device`;
- `upper_usage`.

4.2.329.1 `assembly_context`

The `assembly_context` specifies an `Assembly_definition` (see 4.2.27) object in which the instance is used that is identified by this mechanism.

The `assembly_context` need not be specified for a particular `Specified_device`.

See 4.3.2265 for the application assertion.

4.2.329.2 `related_device`

The `related_device` specifies the `Device` (see 4.2.88) that is to be identified. The `related_device` shall not be of type `Specified_device`.

See 4.3.2266 for the application assertion.

4.2.329.3 `upper_usage`

The `upper_usage` specifies the `Device` (see 4.2.88) in which the item referred by `related_instance` occurs.

See 4.3.2267 for the application assertion.

4.2.330 `Specified_function_unit`

A `Specified_function_unit` is a type of `Function_unit` (see 4.2.148) that is the mechanism to identify a certain `Function_unit` (see 4.2.148) in a multi-level decomposition structure that utilizes structural reuse of partial decompositions.

EXAMPLE An audio-amplifier consists among others of the modules left-channel amplifier and right-channel amplifier. Both modules contain pre-amplifier and output amplifier. In order to identify the pre-amplifier of the left-channel amplifier, the `Specified_function_unit` object references pre-amplifier as related instance, left-channel amplifier as `upper_usage`, and audio-amplifier as `functional_context`.

The object, which is referred by the 'definition' attribute of a `Specified_function_unit` and the object which is referenced through the 'related_function_unit' attribute as 'definition', shall be the same.

The data associated with a `Specified_function_unit` are the following:

- functional_context;
- related_function_unit;
- upper_usage.

4.2.330.1 functional_context

The functional_context specifies a Function_unit (see 4.2.148) object in which the instance identified by this mechanism is used.

The functional_context need not be specified for a particular Specified_function_unit.

See 4.3.2268 for the application assertion.

4.2.330.2 related_function_unit

The related_function_unit specifies the Function_unit (see 4.2.148) that is to be identified. The related_function_unit shall not be of type Specified_function_unit.

See 4.3.2269 for the application assertion.

4.2.330.3 upper_usage

The upper_usage specifies the Function_unit (see 4.2.148) in which the item referred by related_function_unit occurs.

See 4.3.2270 for the application assertion.

4.2.331 Storage_temperature

A Storage_temperature is the allowed ambient temperature of a component while the device is in storage.

NOTE Minimum and maximum of Storage_temperature may be specified by assigning a Value_range (see 4.2.359) object.

EXAMPLE The Storage_temperature of a notebook computer ranges from -20°C to 60°C, whereas the Operating_temperature (see 4.2.221) ranges from 5°C to 35°C.

The data associated with a Storage_temperature are the following:

- temperature.

4.2.331.1 temperature

The temperature specifies the value of the Storage_temperature.

See 4.3.2271 for the application assertion.

4.2.332 String_value

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A `String_value` represents a sequence of one or more alphanumeric characters.

The data associated with a `String_value` are the following:

- `value_of_string_value`.

4.2.332.1 value_of_string_value

The `value_of_string_value` specifies the content of the `String_value`.

4.2.333 Structured_dimension_callout

A `Structured_dimension_callout` is a type of `Dimension_callout` (see 4.2.94) that is a callout wherein each component is identified as having the semantics of prefix information, suffix information, a dimension symbol, a dimension unit, a dimension value, or tolerance information.

The data associated with a `Structured_dimension_callout` are the following:

- `dimension_value`;
- `prefix_callout`;
- `suffix_callout`;
- `symbol`;
- `tolerance_value`;
- `unit_text`.

4.2.333.1 dimension_value

The `dimension_value` specifies the text strings that present the actual value of the measurement.

See 4.3.2275 for the application assertion.

4.2.333.2 prefix_callout

The `prefix_callout` specifies information used in interpreting the dimension or its applicability and is physically located before the dimension value as the dimension is read.

The `prefix_callout` need not be specified for a particular `Structured_dimension_callout`.

See 4.3.2273 for the application assertion.

4.2.333.3 suffix_callout

The `suffix_callout` specifies information, physically located after the dimension value as the dimension is read, either used in interpreting the dimension or its applicability or used as additional information in conjunction with the dimension.

The `suffix_callout` need not be specified for a particular `Structured_dimension_callout`.

See 4.3.2274 for the application assertion.

4.2.333.4 symbol

The symbol specifies an Annotation_symbol (see 4.2.20) that is used in conjunction with the dimension value to clarify the meaning of the measurement.

The symbol need not be specified for a particular Structured_dimension_callout.

See 4.3.2272 for the application assertion.

4.2.333.5 tolerance_value

The tolerance_value specifies the text strings that present the tolerance information for the measurement.

See 4.3.2276 for the application assertion.

4.2.333.6 unit_text

The unit_text specifies the text strings that present the unit of measurement.

See 4.3.2277 for the application assertion.

4.2.334 Sub_group

A Sub_group is a type of Group_element (see 4.2.165) that is a collection of elements previously defined as a group.

The data associated with a Sub_group are the following:

- basis_group.

4.2.334.1 basis_group

The basis_group specifies the group that is used as a Sub_group.

See 4.3.2278 for the application assertion.

4.2.335 Supplier_solution

A Supplier_solution is a type of Alternative_solution (see 4.2.12) that is a solution where the supplier differs from other solutions for the same Product_component (see 4.2.265).

The data associated with a Supplier_solution are the following:

- probability_rate;

- supplier.

4.2.335.1 probability_rate

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The `probability_rate` specifies the share that is assigned to a supplier in the context of the base element.

The `probability_rate` need not be specified for a particular `Supplier_solution`.

4.2.335.2 supplier

The `supplier` specifies the supplier for a `Supplier_solution`.

See 4.3.2279 for the application assertion.

4.2.336 Technical_solution

A `Technical_solution` is a type of `Alternative_solution` (see 4.2.12) that is a solution where the functional requirements are fulfilled in a certain technical way.

The data associated with a `Technical_solution` are the following:

- `description`.

4.2.336.1 description

The `description` specifies an alphanumerical string containing human-interpretable text that gives further details about the `Technical_solution`.

4.2.337 Technical_system

A `Technical_system` is the overall system that is to be planned, designed, or commissioned and that contains electrotechnical aspects. The `Technical_system` groups the physical and abstract items that, as a whole, make up the overall system.

EXAMPLE The power distribution system of a ship may be a `Technical_system`.

The data associated with a `Technical_system` are the following:

- `contains`;
- `description`;
- `extended_designation`;
- `id`;
- `version_id`.

4.2.337.1 contains

The `contains` specifies the items that comprise the `Technical_system`.

Each `contains` may be one of the following: `Classification_system` (see 4.2.48), `Device` (see 4.2.88), `Document_representation` (see 4.2.110), `Function_unit` (see 4.2.148), `Notification` (see 4.2.213),

Physical_instance (see 4.2.243), Process_variable (see 4.2.260), Requirement (see 4.2.285), Route (see 4.2.290), or Signal (see 4.2.309).

See 4.3.2280, 4.3.2281, 4.3.2282, 4.3.2283, 4.3.2284, 4.3.2286, 4.3.2287, 4.3.2288, 4.3.2289, and 4.3.2290 for the application assertions.

4.2.337.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Technical_system.

The description need not be specified for a particular Technical_system.

4.2.337.3 extended_designation

The extended_designation specifies a structured label for the Technical_system.

NOTE The label assigned through extended_designation shall be identical to the label assigned by the 'id' attribute.

The extended_designation need not be specified for a particular Technical_system.

See 4.3.2285 for the application assertion.

4.2.337.4 id

The id specifies the identifier of the Technical_system.

4.2.337.5 version_id

The version_id specifies versioning information for the Technical_system.

The version_id need not be specified for a particular Technical_system.

4.2.338 Technical_system_relationship

A Technical_system_relationship is the relation between two Technical_system (see 4.2.336) objects.

The data associated with a Technical_system_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.338.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Technical_system_relationship.

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The description need not be specified for a particular `Technical_system_relationship`.

4.2.338.2 related

The `related` specifies the second of the two `Technical_system` (see 4.2.336) objects related by the `Technical_system_relationship`.

See 4.3.2291 for the application assertion.

4.2.338.3 relating

The `relating` specifies the first of the two `Technical_system` (see 4.2.336) objects related by the `Technical_system_relationship`.

See 4.3.2292 for the application assertion.

4.2.338.4 relation_type

The `relation_type` specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of `relation_type` is one of the following:

- `alternate`;
- `decomposition`;
- `derivation`;
- `substitution`;
- `redundancy`.

NOTE 1 See 4.2.338.4.1 - 4.2.338.4.5 for the definition of each predefined value for `relation_type`.

4.2.338.4.1 alternate

`alternate`: The `Technical_system_relationship` defines a relationship where the related `Technical_system` (see 4.2.336) is a possible substitute to the relating `Technical_system` (see 4.2.336).

NOTE 2 This concept refers to the possibility to replace the `Technical_system` (see 4.2.336). The actual replacement is addressed by 'substitution'.

4.2.338.4.2 decomposition

`decomposition`: The `Technical_system_relationship` defines a relationship where the related `Technical_system` (see 4.2.336) is one of the components into which the relating `Technical_system` (see 4.2.336) is divided.

4.2.338.4.3 derivation

derivation: The `Technical_system_relationship` defines a deriving relationship where the related `Technical_system` (see 4.2.336) is based on the relating `Technical_system` (see 4.2.336).

4.2.338.4.4 substitution

substitution: The `Technical_system_relationship` defines a relationship where the related `Technical_system` (see 4.2.336) replaces the relating `Technical_system` (see 4.2.336).

4.2.338.4.5 redundancy

redundancy: The `Technical_system_relationship` defines a relationship where the related `Technical_system` (see 4.2.336) is replicated by the relating `Technical_system` (see 4.2.336).

EXAMPLE To provide for a fail-safe service a `Technical_system` (see 4.2.336) is replicated. If one `Technical_system` (see 4.2.336) fails, the other is still in service.

4.2.339 Terminal

A Terminal is the occurrence of an `Interface_terminal` (see 4.2.174) used to access a piece of equipment.

The data associated with a Terminal are the following:

- `associated_interface_terminal`;
- `description`;
- `extended_designation`;
- `id`;
- `implemented_by`;
- `terminal_of`.

4.2.339.1 associated_interface_terminal

The `associated_interface_terminal` specifies the `Interface_terminal` (see 4.2.174) that defines the access to the piece of equipment.

See 4.3.2294 for the application assertion.

4.2.339.2 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Terminal.

The description need not be specified for a particular Terminal.

4.2.339.3 extended_designation

The extended_designation specifies a structured label for the Terminal.

NOTE The label assigned through extended_designation shall be identical to the label assigned by the 'id' attribute.

The extended_designation need not be specified for a particular Terminal.

See 4.3.2297 for the application assertion.

4.2.339.4 id

The id specifies the identifier of the Terminal.

4.2.339.5 implemented_by

The implemented_by specifies the Device (see 4.2.88) objects that are used to implement the Terminal.

Each implemented_by may be one of the following: Device (see 4.2.88) or Physical_instance (see 4.2.243).

See 4.3.2293 and 4.3.2295 for the application assertions.

4.2.339.6 terminal_of

The terminal_of specifies the Single_device (see 4.2.314) to which the Terminal belongs.

See 4.3.2296 for the application assertion.

4.2.340 Terminal_relationship

A Terminal_relationship is the relation between two Terminal (see 4.2.338) objects.

The data associated with an Terminal_relationship are the following:

- description;
- related;
- relating;
- relation_type.

4.2.340.1 description

The description specifies an alphanumerical string containing human-interpretable text that gives further details about the Terminal_relationship.

The description need not be specified for a particular Terminal_relationship.

4.2.340.2 related

The related specifies the second of the two Terminal (see 4.2.338) objects related by the Terminal_ - relationship.

See 4.3.2298 for the application assertion.

4.2.340.3 relating

The relating specifies the first of the two Terminal (see 4.2.338) objects related by the Terminal_ - relationship.

See 4.3.2299 for the application assertion.

4.2.340.4 relation_type

The relation_type specifies the meaning of the relationship. The value is either user defined or predefined.

The predefined value of relation_type is one of the following:

— decomposition;

— redundancy.

NOTE See 4.2.340.4.1 and 4.2.340.4.2 for the definition of each predefined value for relation_type.

4.2.340.4.1 decomposition

decomposition: The Terminal_relationship defines a relationship where the related Terminal (see 4.2.338) is one of the components into which the relating Terminal (see 4.2.338) is broken down.

4.2.340.4.2 redundancy

redundancy: The Terminal_relationship defines a relationship where the related Terminal (see 4.2.338)(see 4.2.156) is replicated by the relating Terminal (see 4.2.338).

EXAMPLE To provide for a fail-safe service a Terminal (see 4.2.338) is replicated. If one Terminal (see 4.2.338) fails, the other is still in service.

4.2.341 Terminal_designation

A Terminal_designation is a type of Object_designation (see 4.2.217) that is a reference designation to identify an access node with respect to the function or product to which it belongs.

4.2.342 Terminator_symbol

A Terminator_symbol is a type of Predefined_symbol (see 4.2.255) that is applied to an annotation curve and used to identify the endpoint or Point of application of any annotation directed by that curve.

The predefined terminator symbols that shall be supported by all implementations of this part of ISO 10303 are shown in Figure 18. The orientation of the individual symbol, as positioned on a horizontal dimension line, is shown in Figure 18.

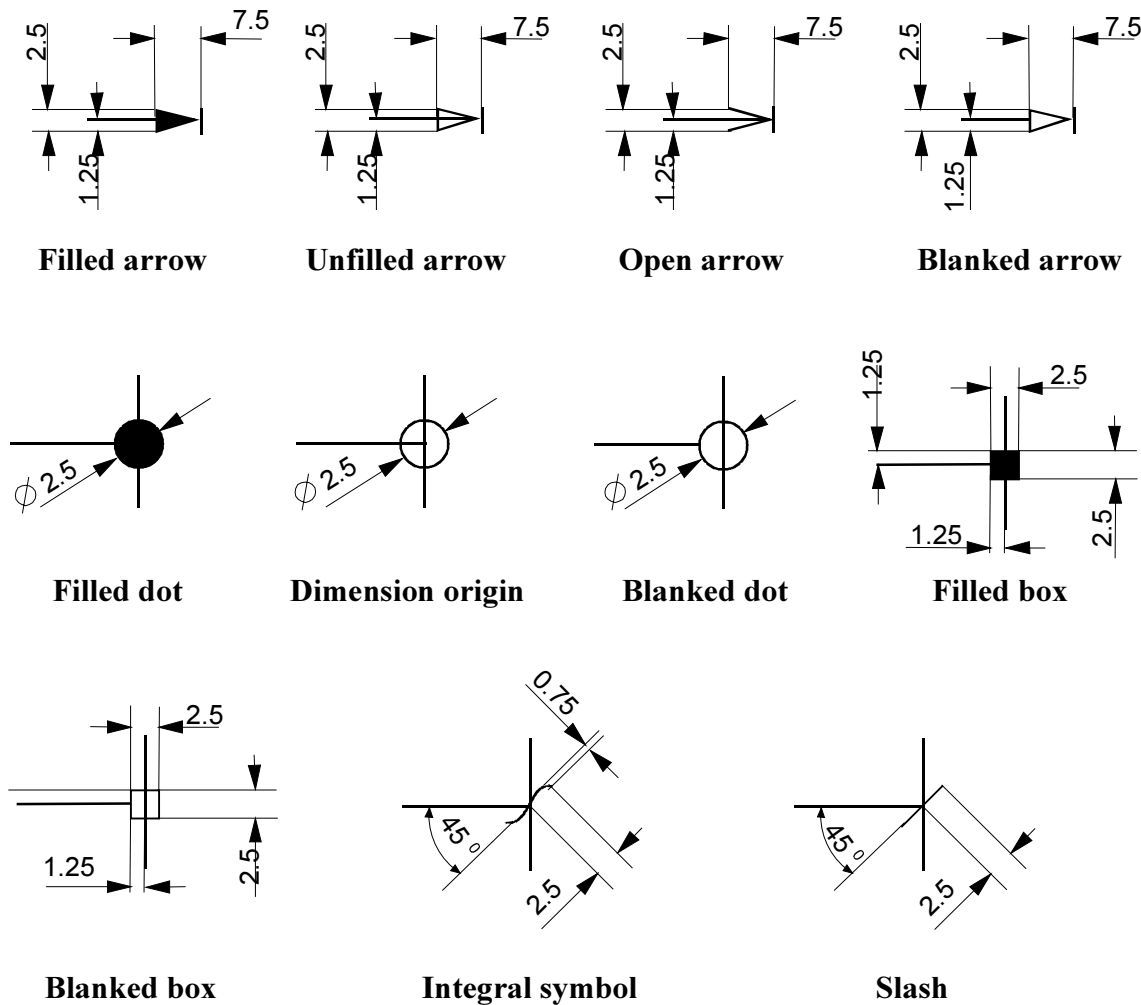


Figure 18 - Predefined terminator symbols

The data associated with a Terminator_symbol are the following:

— symbol_type.

4.2.342.1 symbol_type

The symbol_type specifies an alphanumerical string identifying the Terminator_symbol in accordance with the definitions given below.

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The value of `symbol_type` is one of the following:

- blanked arrow;
- blanked box;
- blanked dot;
- dimension origin;
- filled arrow;
- filled box;
- filled dot;
- integral symbol;
- open arrow;
- slash;
- unfilled arrow;
- unfilled dot.

NOTE See 4.2.342.1.1 - 4.2.342.1.12 for the definition of each permissible value for `symbol_type`.

4.2.342.1.1 blanked arrow

blanked arrow: The `Terminator_symbol` is depicted as three line segments that form an isosceles triangle. The origin of the symbol corresponds to the intersection point of the two equal sides. The annotation curve to which the symbol is applied acts as a bisector to the angle created by the two equal sides. The area within the symbol is blanked. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.2 blanked box

blanked box: The `Terminator_symbol` is depicted as four line segments that form a rectangle. The origin of the symbol is the geometric centre of the rectangle. The area within the symbol is blanked. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.3 blanked dot

blanked dot: The `Terminator_symbol` is depicted as a circle. The origin of the symbol is the centre of the circle. The area within the symbol is blanked. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.4 dimension origin

dimension origin: The `Terminator_symbol` is depicted as a circle. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.5 filled arrow

filled arrow: The Terminator_symbol is depicted as three line segments that form an isosceles triangle. The origin of the symbol corresponds to the intersection point of the two equal sides. The annotation curve to which the symbol is applied, acts as a bisector to the angle created by the two equal sides. The area within the symbol is shaded. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.6 filled box

filled box: The Terminator_symbol is depicted as four line segments that form a rectangle. The origin of the symbol is the geometric centre of the rectangle. The area within the symbol is shaded. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.7 filled dot

filled dot: The Terminator_symbol is depicted as a circle. The origin of the symbol is the centre of the circle. The area within the symbol is shaded. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.8 integral symbol

integral symbol: The Terminator_symbol is depicted as one line segment forming two adjacent arcs. The origin of the symbol is the midpoint between the two arcs. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.9 open arrow

open arrow: The Terminator_symbol is depicted as three line segments that form an isosceles triangle where the third side of the triangle is blanked. The origin of the symbol corresponds to the intersection point of the two equal sides. The annotation curve to which the symbol is applied, acts as a bisector to the angle created by the two equal sides. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.10 slash

slash: The Terminator_symbol is depicted as a line segment with the midpoint of the segment being the origin and lying on the annotation curve to which it is applied. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.11 unfilled arrow

unfilled arrow: The Terminator_symbol is depicted as three line segments that form an isosceles triangle. The origin of the symbol corresponds to the intersection point of the two equal sides. The annotation curve to which the symbol is applied, acts as a bisector to the angle created by the two equal sides. The size and graphical representation of the symbol are shown in Figure 18.

4.2.342.1.12 unfilled dot

unfilled dot: The Terminator_symbol is depicted as a circle. The origin of the symbol is the centre of the circle. The size and graphical representation of the symbol are shown in Figure 18.

4.2.343 Text

A Text is a type of Annotation_element (see 4.2.15) that is a collection of characters that convey some human-interpretable information.

The data associated with a Text are the following:

- alignment;
- blanking_box;
- boundary_of_displayed_box;
- default_appearance;
- language_code;
- mirror_angle;
- surrounding_box.

NOTE See Figure 19 for an illustration of the blanking box of text, the location and rotation of a text string, the alignment of text, and the surrounding box of text.

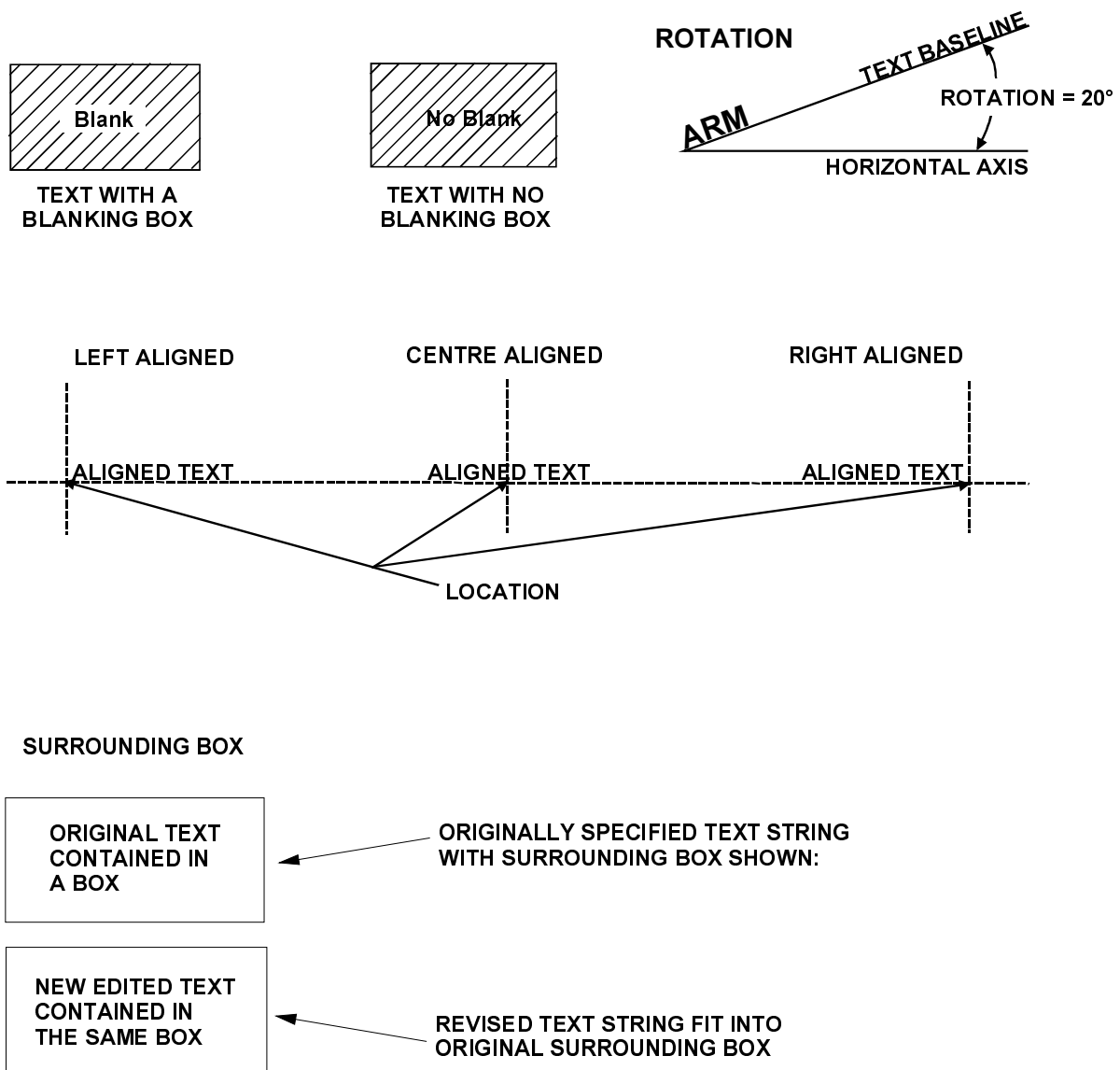


Figure 19 - Text characteristics

4.2.343.1 alignment

The alignment specifies the adjustment of the Text_string (see 4.2.345) objects contained in the Text with respect to their locations.

The alignment shall contain one of the following text strings:

4.2.343.1.1 centered

centered: The presentation of the Text_string (see 4.2.345) object is aligned to the middle.

4.2.343.1.2 left

left: The presentation of the Text_string (see 4.2.345) object is aligned to the left side.

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4.2.343.1.3 right

right: The presentation of the Text_string (see 4.2.345) object is aligned to the right side.

4.2.343.2 blanking_box

The blanking_box specifies an area that the text occupies and is used to suppress the visual presentation of all other elements that are within this area.

The blanking_box need not be specified for a particular Text.

See 4.3.2301 for the application assertion.

4.2.343.3 boundary_of_displayed_box

The boundary_of_displayed_box specifies the border of a rectangular box, composed of annotation curves, that encloses text where one side of the box is parallel to the text baseline.

See 4.3.2300 for the application assertion.

4.2.343.4 default_appearance

The default_appearance specifies the preselected appearance of the text when no alternative is specified by the user.

See 4.3.2303 for the application assertion.

4.2.343.5 language_code

The language_code specifies a language spoken by human beings to communicate with each other verbally or in written form. The language symbol given in ISO 639 shall be used.

The language_code need not be specified for a particular Text.

4.2.343.6 mirror_angle

The mirror_angle specifies the angle, measured in a counter-clockwise direction from the text baseline, to an axis about which the text is mirrored. The mirror axis and text baseline intersect at the location of the Text.

NOTE See Figure 20 for an illustration of the mirror angle characteristic of text.

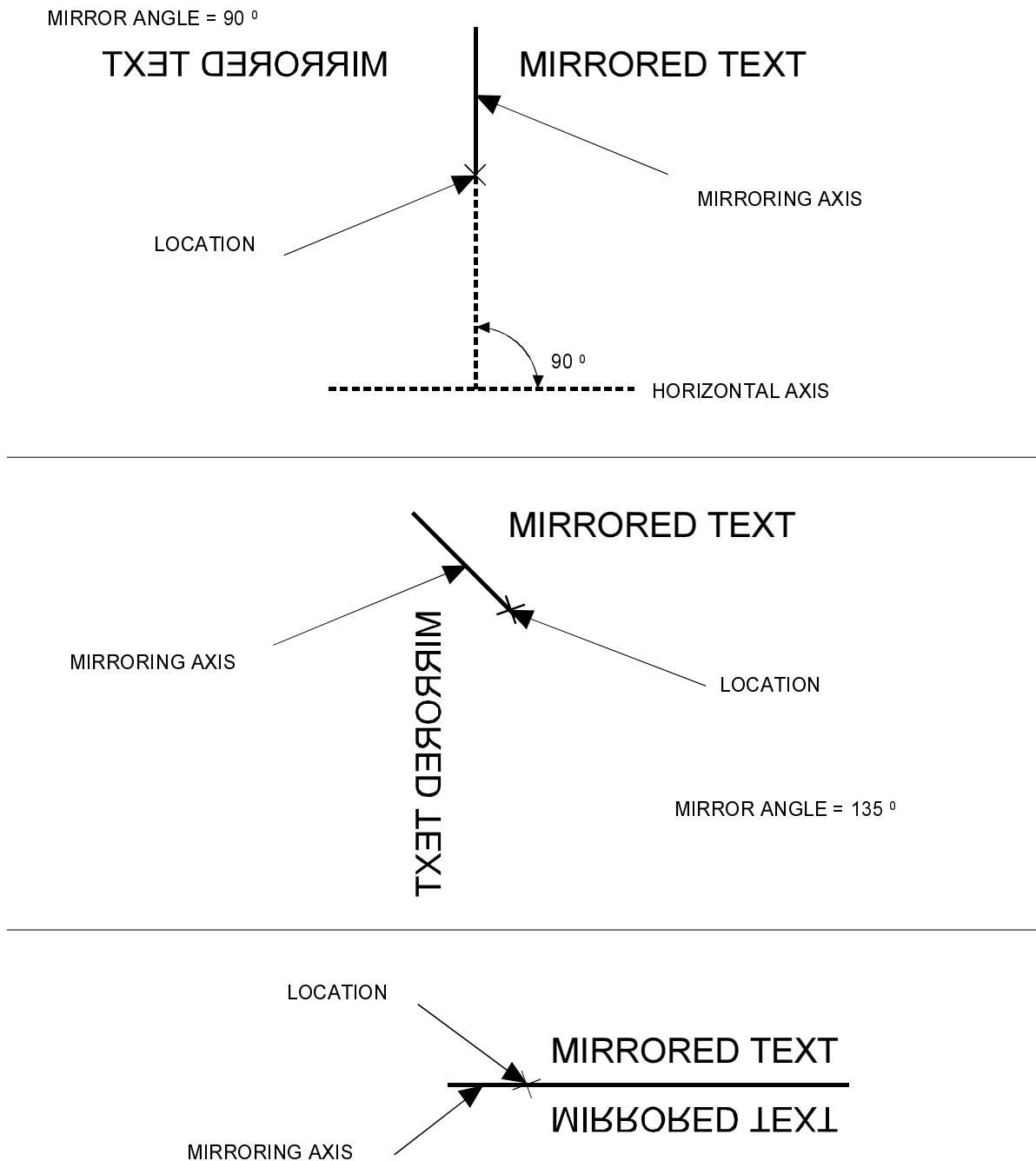


Figure 20 - Mirror angle

The mirror_angle need not be specified for a particular Text.

4.2.343.7 surrounding_box

The surrounding_box specifies the physical space that the text occupies and is defined by width, the distance of the left-most point of the left-most character to the right-most point of the right-most

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character measured parallel to the text baseline, and height, the distance of the lowest point of the lowest reaching character to the highest point of the highest reaching character measured perpendicular to the text baseline.

The `surrounding_box` need not be specified for a particular Text.

See 4.3.2302 for the application assertion.

4.2.344 Text_appearance

A `Text_appearance` is a type of `Appearance` (see 4.2.21) that governs the visual presentation of text.

The data associated with `Text_appearance` are the following:

- `character_aspect_ratio`;
- `character_rotation_angle`;
- `character_scale`;
- `character_slant_angle`;
- `font`;
- `text_colour`.

NOTE See Figure 21 for an illustration of the characteristics of text appearance.

4.2.344.1 character_aspect_ratio

The `character_aspect_ratio` specifies the ratio of the width of the character to the height of the character.

4.2.344.2 character_rotation_angle

The `character_rotation_angle` specifies the angular counter-clockwise rotation of each character within the text string in which it appears. The point of rotation is the left-most point of each character at its baseline.

4.2.344.3 character_scale

The `character_scale` specifies the ratio of the size of the text character as defined to the size of the text character as presented.

4.2.344.4 character_slant_angle

The `character_slant_angle` specifies the angular distance between vertical aspects of the individual character and an axis perpendicular to the baseline of the character, measured clockwise.

4.2.344.5 font

The font specifies the actual font that is used for the presentation of the text.

See 4.3.2305 for the application assertion.

4.2.344.6 text_colour

The text_colour specifies the actual colour that is used for the presentation of the text.

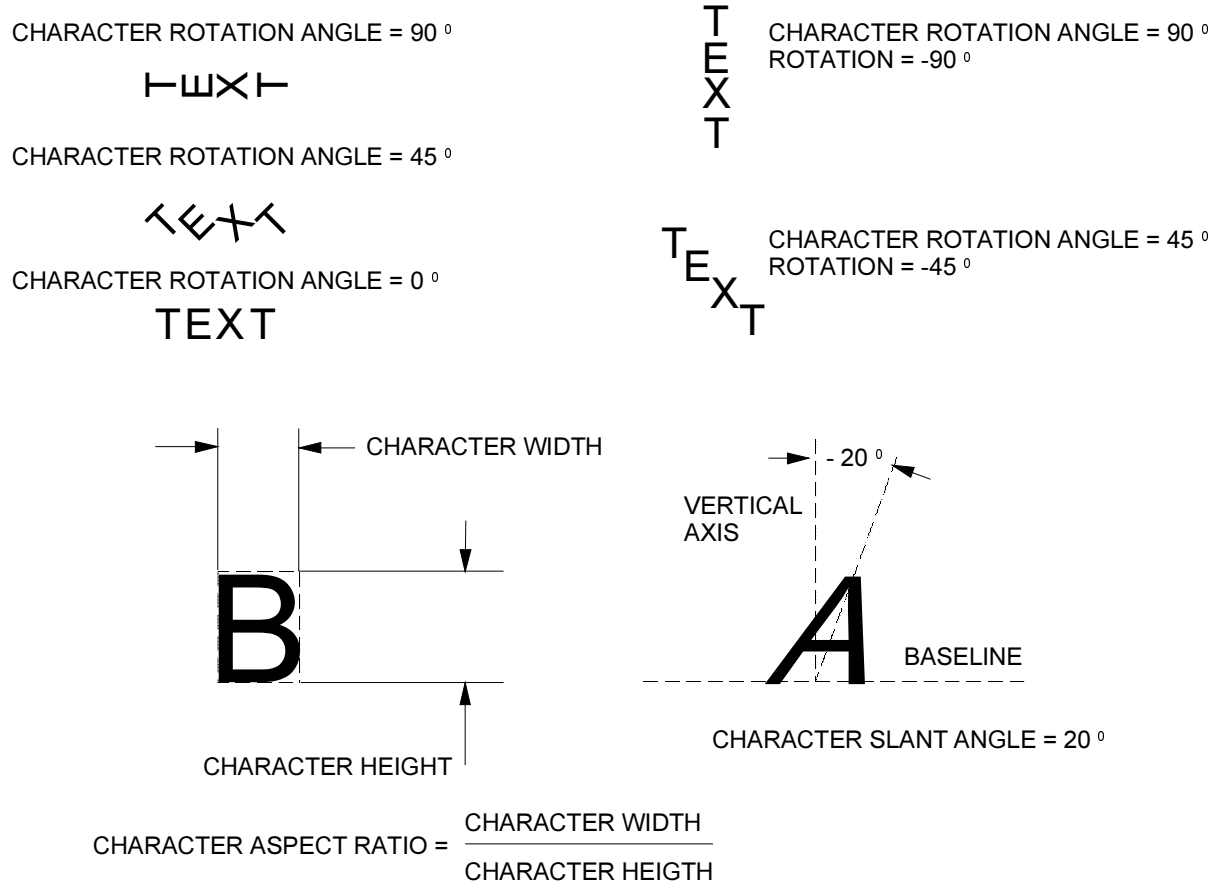


Figure 21 - Text appearance and rotation of text

See 4.3.2304 for the application assertion.

4.2.345 Text_font

A Text_font is the explicit physical description of each individual character of a character set, including its form and spatial characteristics.

Each Text_font is either an Externally_defined_text_font (see 4.2.136) or a Predefined_text_font (see 4.2.256).

4.2.346 Text_string

A Text_string is the smallest unit of text and is a collection of one or more characters that convey some human-interpretable information.

The data associated with a Text_string are the following:

- assigned_appearance;
- character_alignment;
- character_string;
- containing_text;
- overline_underline;
- position;
- rotation;
- surrounding_box.

4.2.346.1 assigned_appearance

The assigned_appearance specifies the outlook of the Text_string object.

The assigned_appearance need not be specified for a particular Text_string.

See 4.3.2309 for the application assertion.

4.2.346.2 character_alignment

The character_alignment specifies the relative position of successive characters in a string of text.

The value of character_alignment is one of the following:

- down;
- left;
- right;
- up.

NOTE See 4.2.346.2.1 - 4.2.346.2.4 for the definition of each permissible value for character_alignment.

4.2.346.2.1 down

down: The presentation of the character is aligned to the bottom line of character body.

4.2.346.2.2 left

left: The presentation of the character is aligned to the left side of the character body.

4.2.346.2.3 right

right: The presentation of the character is aligned to the right side of the character body.

4.2.346.2.4 up

up: The presentation of the character is aligned to the top of the character body.

4.2.346.3 character_string

The `character_string` specifies the list of characters that compose the `Text_string`.

4.2.346.4 containing_text

The `containing_text` specifies the `Text` (see 4.2.342) object containing the `Text_string`.

See 4.3.2308 for the application assertion.

4.2.346.5 overline_underline

The `overline_underline` specifies that there is a line placed either above or beneath the `Text_string`.

The value of `overline_underline` is one of the following:

- `overline`;
- `underline`.

NOTE See 4.2.346.5.1 - 4.2.346.5.2 for the definition of each permissible value for `overline_` - `underline`.

4.2.346.5.1 overline

`overline`: The line is placed above the `Text_string`.

4.2.346.5.2 underline

`underline`: The line is placed beneath the `Text_string`.

The `overline_underline` need not be specified for a particular `Text_string`.

4.2.346.6 position

The `position` specifies the location of the `Text_string` in the placement coordinate system.

See 4.3.2306 for the application assertion.

4.2.346.7 rotation

The rotation specifies the angle, measured counter-clockwise, between the baseline of the text and the horizontal axis of the coordinate system into which it is being placed.

4.2.346.8 surrounding_box

The `surrounding_box` specifies the physical space that the text string occupies and is defined by width, the distance of the left-most point of the left-most character to the right-most point of the right-most character measured parallel to the text baseline, and height, the distance of the lowest point of the lowest reaching character to the highest point of the highest reaching character measured perpendicular to the text baseline.

See 4.3.2307 for the application assertion.

4.2.347 Tile

A Tile is a graphical symbol defined within a containment border and used as the content of a tiling pattern. The containment border defines the edges of the tile. All elements contained within the border are duplicated for each tile. Tiles are placed within a fill area adjacently and do not overlap. The containment border may be blanked.

Each Tile is either an `Externally_defined_tile` (see 4.2.137) or a `User_defined_tile` (see 4.2.356).

The data associated with a Tile are the following:

— `overriding_colour`.

4.2.347.1 overriding_colour

The `overriding_colour` specifies the colour definition that overrides the appearance characteristics already assigned to the elements of the tile.

The `overriding_colour` need not be specified for a particular Tile.

See 4.3.2310 for the application assertion.

4.2.348 Typical_schematic_node

A `Typical_schematic_node` is a template for all information that is common to all `Schematic_node` (see 4.2.294) objects that use the `Typical_schematic_node` as definition.

The data associated with a `Typical_schematic_node` are the following:

- `consists_of`;
- `coordinate_space`;
- `id`;
- `node_area`.

4.2.348.1 `consists_of`

The `consists_of` specifies the constituents of a `Typical_schematic_node` object.

Each `consists_of` may be one of the following: `Annotation_curve` (see 4.2.14), `Fill_area` (see 4.2.139), or `Text` (see 4.2.342).

See 4.3.2311, 4.3.2314, and 4.3.2315 for the application assertions.

4.2.348.2 `coordinate_space`

The `coordinate_space` specifies the coordinate system that describes the two-dimensional space in which the content of the `Typical_schematic_node` is located.

See 4.3.2312 for the application assertion.

4.2.348.3 `id`

The `id` specifies the identifier of the `Typical_schematic_node`.

4.2.348.4 `node_area`

The `node_area` specifies the zone where the schematic terminal is allowed to be connected with other terminals or connecting lines.

EXAMPLE The zone addressed as 'hot spot' of a connect node.

See 4.3.2313 for the application assertion.

4.2.349 `Typical_schematic_text`

A `Typical_schematic_text` is a template for `Schematic_text` (see 4.2.295).

The data associated with a `Typical_schematic_text` are the following:

- `consists_of`;
- `id`.

4.2.349.1 `consists_of`

The `consists_of` specifies the constituents of a `Typical_schematic_text` object.

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See 4.3.2316 for the application assertion.

4.2.349.2 id

The id specifies the identifier of the Typical_schematic_text.

4.2.350 Unstructured_dimension_callout

An Unstructured_dimension_callout is a type of Dimension_callout (see 4.2.94) that is a callout wherein a single draughting callout is used and the components of the dimension callout are not semantically identified.

The data associated with an Unstructured_dimension_callout are the following:

— basis_callout.

4.2.350.1 basis_callout

The basis_callout specifies the callout that is identified as being unstructured.

See 4.3.2317 for the application assertion.

4.2.351 User_defined_colour

A User_defined_colour is a type of Colour (see 4.2.50) that is defined by an explicit listing of the proportions of blue, green, and red.

The data associated with a User_defined_colour are the following:

— blue_proportion;

— colour_id;

— green_proportion;

— red_proportion.

4.2.351.1 blue_proportion

The blue_proportion specifies the level of intensity of the colour blue to be displayed.

4.2.351.2 colour_id

The colour_id specifies the identification of a particular user defined colour.

The colour_id need not be specified for a particular User_defined_colour.

4.2.351.3 green_proportion

The green_proportion specifies the level of intensity of the colour green to be displayed.

4.2.351.4 red_proportion

The red_proportion specifies the level of intensity of the colour red to be displayed.

4.2.352 User_defined_data_element

The User_defined_data_element is a type of Data_element (see 4.2.70) that is defined in a user specific standard.

NOTE 1 In many cases User_defined_data_element objects are subject of bilateral arrangements among the exchanging enterprises.

NOTE 2 User_defined_data_element objects may be composed from other Data_element (see 4.2.70) objects by using Data_element_relationship (see 4.2.74) objects with relation_type 'decomposition'.

EXAMPLE 1 A User_defined_data_element object 'Electrical data' comprises all aspects of a drive that are related to the electrical properties of the motor, such as rated voltage, peak voltage, etc.

EXAMPLE 2 A User_defined_data_element object 'Required computer equipment' comprises the data that characterise the hardware and software items needed to run a motor, including the control program, the operating system, type of processor, required capacity of the disk, etc.

The data associated with an User_defined_data_element are the following:

- definition;
- value_of_data_element.

4.2.352.1 definition

The definition specifies a Data_element_definition (see 4.2.72) object that specifies the meaning of the associated values.

See 4.3.2318 for the application assertion.

4.2.352.2 value_of_data_element

The value_of_data_element assigns the Data_element_value (see 4.2.76) to the User_defined_data_element.

The value_of_data_element need not be specified for a particular User_defined_data_element.

See 4.3.2319 for the application assertion.

4.2.353 User_defined_hatching

A User_defined_hatching is a type of Fill_area_appearance (see 4.2.140) that is defined by an explicit listing of hatch patterns.

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The data associated with an `User_defined_hatching` are the following:

- `defining_pattern`.

4.2.353.1 `defining_pattern`

The `defining_pattern` specifies the pattern that serves as the template from which the `User_defined_hatching` is derived.

See 4.3.2320 for the application assertion.

4.2.354 `User_defined_line_font`

A `User_defined_line_font` is a type of `Line_font` (see 4.2.189) that is defined by an explicit listing of the visible and invisible segments that make up the pattern of the font.

The data associated with a `User_defined_line_font` are the following:

- `font_id`;
- `pattern`.

4.2.354.1 `font_id`

The `font_id` specifies the identification of a particular line font.

4.2.354.2 `pattern`

The `pattern` specifies a list of length values of visible and invisible segments.

There shall be two or more `pattern` for a `User_defined_line_font`.

4.2.355 `User_defined_symbol`

A `User_defined_symbol` is a type of `Annotation_symbol` (see 4.2.20) that is a symbol that is defined by an explicit listing of annotation elements that make up the symbol along with their positions within the coordinate system in which the symbol is defined.

The data associated with a `User_defined_symbol` are the following:

- `definition`.

4.2.355.1 `definition`

The `definition` specifies the `User_defined_symbol_definition` (see 4.2.355) object that serves as a template for the `User_defined_symbol`.

See 4.3.2321 for the application assertion.

4.2.356 User_defined_symbol_definition

A `User_defined_symbol_definition` is a collection of annotation elements, along with their placements in a coordinate space, that, taken as a whole, represent a distinct concept.

Each `User_defined_symbol_definition` is either a `Drawing_sheet_layout` (see 4.2.123) or a `Reference_grid_layout` (see 4.2.284).

The data associated with an `User_defined_symbol_definition` are the following:

- `blanking_box`;
- `components`;
- `coordinate_space`;
- `symbol_definition_id`.

4.2.356.1 blanking_box

The `blanking_box` specifies an area that the symbol occupies and is used to suppress the visual presentation of all other elements that are within this area.

The `blanking_box` need not be specified for a particular `User_defined_symbol_definition`.

See 4.3.2324 for the application assertion.

4.2.356.2 components

The `components` specifies the constituents of a `User_defined_symbol_definition`.

See 4.3.2322 for the application assertion.

4.2.356.3 coordinate_space

The `coordinate_space` specifies the coordinate system that describes the two-dimensional space in which the constituents of the `User_defined_symbol_definition` are located. The origin of the associated coordinate system is the reference point of the `User_defined_symbol_definition`.

See 4.3.2323 for the application assertion.

4.2.356.4 symbol_definition_id

The `symbol_definition_id` specifies the identification of a particular symbol.

4.2.357 User_defined_tile

A `User_defined_tile` is a type of `Tile` (see 4.2.346) that is defined by an explicit listing of components that make up the tile.

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The data associated with an `User_defined_tile` are the following:

- `definition`.

4.2.357.1 definition

The `definition` specifies the `User_defined_symbol_definition` (see 4.2.355) object that serves as a template from which the `User_defined_tile` is derived.

See 4.3.2325 for the application assertion.

4.2.358 User_defined_tiling

A `User_defined_tiling` is a type of `Fill_area_appearance` (see 4.2.140) that is defined by an explicit listing of tiles.

The data associated with a `User_defined_tiling` are the following:

- `angle`;
- `defining_tile`;
- `repeat_vector_1`;
- `repeat_vector_2`;
- `scale`.

4.2.358.1 angle

The `angle` specifies the rotation of the tile, measured counter-clockwise, relative to the x-axis of the coordinate system in which the boundary of the fill area is defined.

4.2.358.2 defining_tile

The `defining_tile` specifies the tile that serves as a template from which the `User_defined_tiling` is derived.

See 4.3.2326 for the application assertion.

4.2.358.3 repeat_vector_1

The `repeat_vector_1` specifies the direction and the distance in that direction at which to place the tile relative to the placement of a previous tile.

4.2.358.4 repeat_vector_2

The `repeat_vector_2` specifies the secondary direction and the distance in that direction at which to place the tile relative to the placement of a previous tile.

4.2.358.5 scale

The scale specifies the ratio between the size of the tile as defined and the size of the tile as presented.

4.2.359 Value_limit

A Value_limit is a type of Value_with_unit (see 4.2.360) that is a qualified numerical value representing either the lower limit or the upper limit of a particular physical characteristic.

EXAMPLE '30.5 max' and '5 min' are examples for a Value_limit.

The data associated with a Value_limit are the following:

- limit;
- limit_qualifier.

4.2.359.1 limit

The limit specifies the value of the limit.

4.2.359.2 limit_qualifier

The limit_qualifier specifies the kind of limit.

The following values shall be used:

- maximum;
- minimum.

NOTE See 4.2.359.2.1 - 4.2.359.2.2 for the definition of each predefined value for limit_qualifier.

4.2.359.2.1 maximum

maximum: The specified limit is an upper limit.

4.2.359.2.2 minimum

minimum: The specified limit is a lower limit.

4.2.360 Value_range

A Value_range is a type of Value_with_unit (see 4.2.360) that is a pair of numerical values representing the range in which the value shall lie.

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The data associated with a `Value_range` are the following:

- `lower_limit`;
- `upper_limit`.

4.2.360.1 lower_limit

The `lower_limit` specifies the minimum acceptable value that is constrained by the `Value_range`.

4.2.360.2 upper_limit

The `upper_limit` specifies the maximum acceptable value that is constrained by the `Value_range`.

4.2.361 Value_with_unit

A `Value_with_unit` is a single numerical measure, or a range of numerical measures with upper, lower, or upper and lower bounds.

Each `Value_with_unit` is either a `Numerical_value` (see 4.2.216), a `Value_limit` (see 4.2.358), or a `Value_range` (see 4.2.359).

The data associated with a `Value_with_unit` are the following:

- `significant_digits`;
- `unit_component`.

4.2.361.1 significant_digits

The `significant_digits` specifies the number of decimal digits that are relevant for the use of the `Value_with_unit`. If present, the numerical measure or range may be specified using more digits than the significant digits but shall not be specified using less digits.

The `significant_digits` need not be specified for a particular `Value_with_unit`.

4.2.361.2 unit_component

The `unit_component` specifies the unit in which the `Value_with_unit` is expressed.

The `unit_component` need not be specified for a particular `Value_with_unit`.

4.2.362 View_displayed_model

A `View_displayed_model` is the identification and assignment of appearance characteristics to a `Draughting_model` (see 4.2.118) when it is presented in a `Drawing_view` (see 4.2.125).

The data associated with a `View_displayed_model` are the following:

- `clipping`;
- `displayed_model`;
- `overriding_appearance`;
- `presented_in`;
- `scale`;
- `transformation`.

4.2.362.1 clipping

The `clipping` specifies the mathematical information necessary to define a two-dimensional boundary that encloses all viewable geometric and annotation elements of a `Draughting_model` (see 4.2.118). Only those elements, or portions of any elements, that fall within this boundary will be displayed.

See 4.3.2330 for the application assertion.

4.2.362.2 displayed_model

The `displayed_model` specifies the `Draughting_model` (see 4.2.118) that is presented in the `Drawing_view` (see 4.2.125).

See 4.3.2328 for the application assertion.

4.2.362.3 overriding_appearance

The `overriding_appearance` specifies the appearance characteristics that are applied to the `Draughting_model` (see 4.2.118) when presented in the `Drawing_view` (see 4.2.125).

The `overriding_appearance` need not be specified for a particular `View_displayed_model`.

See 4.3.2327 for the application assertion.

4.2.362.4 presented_in

The `presented_in` specifies the `Drawing_view` (see 4.2.125) in which the model will be presented.

See 4.3.2329 for the application assertion.

4.2.362.5 scale

The `scale` specifies the ratio between the size of the elements as defined in the `Draughting_model` (see 4.2.118) and the size of the elements as presented in the `Drawing_view` (see 4.2.125).

4.2.362.6 transformation

The transformation specifies the mathematical values that define the relationship between elements located in the coordinate system of the Draughting_model (see 4.2.118) and their location in the coordinate system of the Drawing_view (see 4.2.125).

4.2.363 View_placed_annotation

A View_placed_annotation is a type of Draughting_annotation (see 4.2.116) that is an annotation that is located in the coordinate system of the drawing view.

The data associated with a View_placed_annotation are the following:

- annotation_layers;
- annotation_visibility;
- containing_view.

4.2.363.1 annotation_layers

The annotation_layers specifies the layers that contain the annotation.

See 4.3.2332 for the application assertion.

4.2.363.2 annotation_visibility

The annotation_visibility specifies whether or not each piece of annotation placed within the drawing sheet is visible.

See 4.3.2333 for the application assertion.

4.2.363.3 containing_view

The containing_sheet specifies the drawing_view in which the View_placed_annotation is placed.

See 4.3.2331 for the application assertion.

4.2.364 Visibility

A Visibility is an indication of whether or not an individual element or collection of elements are displayed in the visual presentation of the drawing. Visibility takes precedence over all other appearance characteristics assigned to the element.

EXAMPLE A construction line is an element not meant for display on a drawing; therefore, visibility would indicate this.

4.2.365 Work_order

A Work_order is the authorization for an Activity (see 4.2.1) to be performed.

The data associated with Work_order are the following:

- description;
- id;
- is_controlling
- version_id;
- work_order_type.

4.2.365.1 description

The description specifies an alphanumeric string containing human-interpretable text that gives further details about the Work_order.

The description need not be specified for a particular Work_order.

4.2.365.2 id

The id specifies the identifier of the Work_order.

4.2.365.3 is_controlling

The is_controlling specifies the Activity (see 4.2.1) that is controlled by this particular Work_order.

See 4.3.2334 for the application assertion.

4.2.365.4 version_id

The version_id specifies versioning information for the Work_order.

The version_id need not be specified for a particular Work_order.

4.2.365.5 work_order_type

The work_order_type specifies the kind of the Work_order. The value is either user defined or predefined.

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The predefined value of `work_order_type` is one of the following:

- design deviation permit;
- design release;
- management resolution;
- manufacturing release;
- production deviation permit.

NOTE See 4.2.365.5.1 - 4.2.365.5.5 for the definition of each predefined value for `work_order_type`.

4.2.365.5.1 design deviation permit

design deviation permit: An authorization for a deviation from the approved design data.

4.2.365.5.2 design release

design release: An authorization for the design of a physical or abstract item and for the creation of a bill of material.

4.2.365.5.3 management resolution

management resolution: An authorization by a committee, such as the board of directors, to design or change a product, a product component, or some items.

4.2.365.5.4 manufacturing release

manufacturing release: An authorization for the manufacturing process of a product or an item.

4.2.365.5.5 production deviation permit

production deviation permit: An authorization for a deviation from the approved manufacturing process.

4.2.366 Work_request

A `Work_request` is the solicitation for some type of work to be done.

The data associated with `Work_request` are the following:

- `description`;
- `id`;
- `notified_person_or_organization`;
- `request_type`;
- `requestor`;
- `scope`;
- `status`;
- `version_id`.

4.2.366.1 description

The `description` specifies an alphanumeric string containing human-interpretable text that gives further details about the `Work_request`.

The `description` need not be specified for a particular `Work_request`.

4.2.366.2 id

The `id` specifies the identifier of the `Work_request`.

4.2.366.3 notified_person_or_organization

The `notified_person_or_organization` specifies the party who shall be informed about the `Work_request` and the date when the notification occurred.

See 4.3.2357 for the application assertion.

4.2.366.4 request_type

The `request_type` specifies the intention of the `Work_request`. The value is either user defined or predefined.

ISO 10303-212:2001(E)

The predefined value of request_type is one of the following:

- change of standard;
- cost reduction;
- customer rejection;
- customer request;
- durability improvement;
- government regulation;
- procurement alignment;
- production alignment;
- production relief;
- production requirement;
- quality improvement;
- security reason;
- standardization;
- supplier request;
- technical improvement;
- tool improvement.

NOTE See 4.2.366.4.1 - 4.2.366.4.16 for the definition of each predefined value for request_type.

4.2.366.4.1 change of standard

change of standard: A request to translate a standard change into action.

4.2.366.4.2 cost reduction

cost reduction: A request aiming at the reduction of engineering and manufacturing costs of an item.

4.2.366.4.3 customer rejection

customer rejection: A request resulting from a rejection by a customer.

4.2.366.4.4 customer request

customer request: A request resulting from requests by a customer.

4.2.366.4.5 durability improvement

durability improvement: A request aiming at a longer life time of a part.

4.2.366.4.6 government regulation

government regulation: A request resulting from legal requirements.

4.2.366.4.7 procurement alignment

procurement alignment: A request to adjust the purchasing process of different items.

4.2.366.4.8 production alignment

production alignment: A request to adjust the manufacturing process of different items.

4.2.366.4.9 production relief

production relief: A request aiming at a simpler assembly and production process.

4.2.366.4.10 production requirement

production requirement: A request for an activity necessary from a production point of view.

4.2.366.4.11 quality improvement

quality improvement: A request aiming at an increased quality of an item.

4.2.366.4.12 security reason

security reason: A request for an activity necessary from a security point of view.

4.2.366.4.13 standardization

standardization: A request to unify variants of an item.

4.2.366.4.14 supplier request

supplier request: A request resulting from requests by a supplier.

4.2.366.4.15 technical improvement

technical improvement: A request aiming at the technical improvement of an item.

4.2.366.4.16 tool improvement

tool improvement: A request aiming at a reduction of the wear of tools.

4.2.366.5 requestor

The requestor specifies the Person (see 4.2.237) or Organization (see 4.2.223) who issued the Work_ - request and the date when the Work_request was issued.

The requestor need not be specified for a particular Work_request.

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See 4.3.2358 for the application assertion.

4.2.366.6 scope

The scope specifies the items that are affected by the `Work_request`.

Each scope may be one of the following: `Activity_method` (see 4.2.3), `Activity_relationship` (see 4.2.5), `Alternate_item_relationship` (see 4.2.11), `Alternate_item_relationship` (see 4.2.11), `Assembly_component_relationship` (see 4.2.26), `Cable_pull_information` (see 4.2.33), `Class_category_association` (see 4.2.40), `Class_condition_association` (see 4.2.41), `Class_inclusion_association` (see 4.2.42), `Class_specification_association` (see 4.2.44), `Class_structure_relationship` (see 4.2.45), `Classification_system` (see 4.2.48), `Complex_product` (see 4.2.51), `Complex_product_relationship` (see 4.2.52), `Composition_relationship` (see 4.2.55), `Configuration` (see 4.2.56), `Connectivity_definition` (see 4.2.61), `Connectivity_definition_relationship` (see 4.2.62), `Data_element` (see 4.2.70), `Data_element_association` (see 4.2.71), `Data_element_definition` (see 4.2.72), `Data_element_relationship` (see 4.2.74), `Design_discipline_item_definition` (see 4.2.86), `Device` (see 4.2.88), `Device_relationship` (see 4.2.89), `Document` (see 4.2.101), `Document_file` (see 4.2.106), `Document_file_relationship` (see 4.2.107), `Document_representation` (see 4.2.110), `Document_version` (see 4.2.114), `Document_version_relationship` (see 4.2.115), `Drawing` (see 4.2.119), `Drawing_sequence` (see 4.2.121), `Drawing_sheet` (see 4.2.122), `Drawing_sheet_relationship` (see 4.2.124), `Function_definition` (see 4.2.145), `Function_definition_relationship` (see 4.2.146), `Function_interface` (see 4.2.147), `Function_unit` (see 4.2.148), `Function_unit_relationship` (see 4.2.149), `Function_version` (see 4.2.150), `Function_version_relationship` (see 4.2.151), `Functional_connectivity_definition` (see 4.2.152), `Functional_connectivity_definition_relationship` (see 4.2.153), `Generic_note` (see 4.2.159), `Interface` (see 4.2.170), `Interface_port` (see 4.2.171), `Interface_terminal` (see 4.2.174), `Item` (see 4.2.178), `Item_definition_relationship` (see 4.2.179), `Item_version` (see 4.2.182), `Item_version_relationship` (see 4.2.183), `Location` (see 4.2.192), `Location_relationship` (see 4.2.194), `Manufacturing_configuration` (see 4.2.198), `Marking` (see 4.2.199), `Node` (see 4.2.208), `Node_relationship` (see 4.2.209), `Notification` (see 4.2.213), `Notification_relationship` (see 4.2.214), `Path` (see 4.2.232), `Path_node` (see 4.2.233), `Path_node_relationship` (see 4.2.234), `Path_relationship` (see 4.2.235), `Physical_assembly_relationship` (see 4.2.241), `Physical_instance` (see 4.2.243), `Port` (see 4.2.247), `Process_variable` (see 4.2.260), `Process_variable_relationship` (see 4.2.261), `Product_class` (see 4.2.263), `Product_identification` (see 4.2.268), `Product_structure_relationship` (see 4.2.270), `Requirement` (see 4.2.285), `Route` (see 4.2.290), `Route_relationship` (see 4.2.291), `Section` (see 4.2.296), `Section_end` (see 4.2.297), `Section_interface` (see 4.2.298), `Section_interface_relationship` (see 4.2.299), `Section_relationship` (see 4.2.300), `Signal` (see 4.2.309), `Signal_relationship` (see 4.2.311), `Signal_value` (see 4.2.313), `Specification` (see 4.2.323), `Specification_category` (see 4.2.324), `Specification_expression` (see 4.2.326), `Specification_inclusion` (see 4.2.327), `Technical_system` (see 4.2.336), `Technical_system_relationship` (see 4.2.337), or `Terminal` (see 4.2.338).

See 4.3.2335, 4.3.2336, 4.3.2337, 4.3.2338, 4.3.2339, 4.3.2340, 4.3.2341, 4.3.2342, 4.3.2343, 4.3.2344, 4.3.2345, 4.3.2346, 4.3.2347, 4.3.2348, 4.3.2349, 4.3.2350, 4.3.2351, 4.3.2352, 4.3.2353, 4.3.2354, 4.3.2355, 4.3.2356, 4.3.2359, 4.3.2360, 4.3.2361, 4.3.2362, 4.3.2363, 4.3.2364, 4.3.2365, 4.3.2366, 4.3.2367, 4.3.2368, 4.3.2369, 4.3.2370, 4.3.2371, 4.3.2372, 4.3.2373, 4.3.2374, 4.3.2375, 4.3.2376, 4.3.2377, 4.3.2378, 4.3.2379, 4.3.2380, 4.3.2381, 4.3.2382, 4.3.2383, 4.3.2384, 4.3.2385, 4.3.2386, 4.3.2387, 4.3.2388, 4.3.2389, 4.3.2390, 4.3.2391, 4.3.2392, 4.3.2393, 4.3.2394, 4.3.2395, 4.3.2396, 4.3.2397, 4.3.2398, 4.3.2399, 4.3.2400, 4.3.2401, 4.3.2402, 4.3.2403, 4.3.2404, 4.3.2405, 4.3.2406, 4.3.2407, 4.3.2408, 4.3.2409, 4.3.2410, 4.3.2411, 4.3.2412, 4.3.2413, 4.3.2414, 4.3.2415,

4.3.2416, 4.3.2417, 4.3.2418, 4.3.2419, 4.3.2420, 4.3.2421, 4.3.2422, 4.3.2423, 4.3.2424, 4.3.2425, and 4.3.2426 for the application assertions.

4.2.366.7 status

The status specifies the position of affairs for the Work_request.

EXAMPLE The status information 'ongoing' would be an example of status.

NOTE The values and sequence of status are company specific.

4.2.366.8 version_id

The version_id specifies versioning information for the Work_request.

The version_id need not be specified for a particular Work_request.

4.3 Application assertions

This subclause specifies the application assertions for the Core Data for electrical design and installation application protocol. Application assertions specify the relationships between application objects, the cardinality of the relationships, and the rules required for the integrity and validity of the application objects and UoFs. The application assertions and their definitions are given below.

4.3.1 Activity to Activity_method

Each Activity refers to zero or one Activity_method in the role of chosen_method. Each Activity_method acts as chosen_method for zero, one, or more Activity objects.

4.3.2 Activity to Date_and_person_or_organization

Each Activity refers to zero or one Date_and_person_or_organization in the role of requestor. Each Date_and_person_or_organization acts as requestor for zero, one, or more Activity objects.

4.3.3 Activity to Date_time

Each Activity refers to zero or one Date_time in the role of actual_end_date. Each Date_time acts as actual_end_date for zero, one, or more Activity objects.

4.3.4 Activity to Date_time

Each Activity refers to zero or one Date_time in the role of actual_start_date. Each Date_time acts as actual_start_date for zero, one, or more Activity objects.

4.3.1 Activity to Date_time

Each Activity refers to zero or one Date_time in the role of planned_end_date. Each Date_time acts as planned_end_date for zero, one, or more Activity objects.

4.3.2 Activity to Date_time

Each Activity refers to zero or one Date_time in the role of planned_start_date. Each Date_time acts as planned_start_date for zero, one, or more Activity objects.

4.3.3 Activity to Duration

Each Activity refers to zero or one Duration in the role of planned_end_date. Each Duration acts as planned_end_date for zero, one, or more Activity objects.

4.3.4 Activity to Event_reference

Each Activity refers to zero or one Event_reference in the role of planned_end_date. Each Event_reference acts as planned_end_date for zero, one, or more Activity objects.

4.3.5 Activity to Event_reference

Each Activity refers to zero or one Event_reference in the role of planned_start_date. Each Event_reference acts as planned_start_date for zero, one, or more Activity objects.

4.3.6 Activity to Organization

Each Activity refers to zero, one, or more Organization objects in the role of concerned_organization. Each Organization acts as concerned_organization for zero, one, or more Activity objects.

4.3.7 Activity to Organization

Each Activity refers to zero, one, or more Organization objects in the role of supplying_organization. Each Organization acts as supplying_organization for zero, one, or more Activity objects.

4.3.8 Activity to Work_request

Each Activity refers to zero, one, or more Work_request objects in the role of resolved_request. Each Work_request acts as resolved_request for zero, one, or more Activity objects.

4.3.9 Activity_element to Activity

Each Activity_element refers to exactly one Activity in the role of associated_activity. Each Activity acts as associated_activity for zero, one, or more Activity_element objects.

4.3.10 Activity_element to Activity_method

Each Activity_element refers to exactly one Activity_method in the role of element. Each Activity_method acts as element for zero, one, or more Activity_element objects.

4.3.11 Activity_element to Activity_relationship

Each Activity_element refers to exactly one Activity_relationship in the role of element. Each Activity_relationship acts as element for zero, one, or more Activity_element objects.

4.3.12 Activity_element to Alternate_item_relationship

Each Activity_element refers to exactly one Alternate_item_relationship in the role of element. Each Alternate_item_relationship acts as element for zero, one, or more Activity_element objects.

4.3.13 Activity_element to Alternate_item_relationship

Each Activity_element refers to exactly one Alternate_item_relationship in the role of element. Each Alternate_item_relationship acts as element for zero, one, or more Activity_element objects.

4.3.14 Activity_element to Assembly_component_relationship

Each Activity_element refers to exactly one Assembly_component_relationship in the role of element. Each Assembly_component_relationship acts as element for zero, one, or more Activity_element objects.

4.3.15 Activity_element to Cable_pull_information

Each Activity_element refers to exactly one Cable_pull_information in the role of element. Each Cable_pull_information acts as element for zero, one, or more Activity_element objects.

4.3.16 Activity_element to Class_category_association

Each Activity_element refers to exactly one Class_category_association in the role of element. Each Class_category_association acts as element for zero, one, or more Activity_element objects.

4.3.17 Activity_element to Class_condition_association

Each Activity_element refers to exactly one Class_condition_association in the role of element. Each Class_condition_association acts as element for zero, one, or more Activity_element objects.

4.3.18 Activity_element to Class_inclusion_association

Each Activity_element refers to exactly one Class_inclusion_association in the role of element. Each Class_inclusion_association acts as element for zero, one, or more Activity_element objects.

4.3.19 Activity_element to Class_specification_association

Each Activity_element refers to exactly one Class_specification_association in the role of element. Each Class_specification_association acts as element for zero, one, or more Activity_element objects.

4.3.20 Activity_element to Class_structure_relationship

Each Activity_element refers to exactly one Class_structure_relationship in the role of element. Each Class_structure_relationship acts as element for zero, one, or more Activity_element objects.

4.3.21 Activity_element to Classification_system

Each Activity_element refers to exactly one Classification_system in the role of element. Each Classification_system acts as element for zero, one, or more Activity_element objects.

4.3.22 Activity_element to Complex_product

Each Activity_element refers to exactly one Complex_product in the role of element. Each Complex_product acts as element for zero, one, or more Activity_element objects.

4.3.23 Activity_element to Complex_product_relationship

Each Activity_element refers to exactly one Complex_product_relationship in the role of element. Each Complex_product_relationship acts as element for zero, one, or more Activity_element objects.

4.3.24 Activity_element to Composition_relationship

Each Activity_element refers to exactly one Composition_relationship in the role of element. Each Composition_relationship acts as element for zero, one, or more Activity_element objects.

4.3.25 Activity_element to Configuration

Each Activity_element refers to exactly one Configuration in the role of element. Each Configuration acts as element for zero, one, or more Activity_element objects.

4.3.26 Activity_element to Connectivity_definition

Each Activity_element refers to exactly one Connectivity_definition in the role of element. Each Connectivity_definition acts as element for zero, one, or more Activity_element objects.

4.3.27 Activity_element to Connectivity_definition_relationship

Each Activity_element refers to exactly one Connectivity_definition_relationship in the role of element. Each Connectivity_definition_relationship acts as element for zero, one, or more Activity_element objects.

4.3.28 Activity_element to Data_element

Each Activity_element refers to exactly one Data_element in the role of element. Each Data_element acts as element for zero, one, or more Activity_element objects.

4.3.29 Activity_element to Data_element_association

Each Activity_element refers to exactly one Data_element_association in the role of element. Each Data_element_association acts as element for zero, one, or more Activity_element objects.

4.3.30 Activity_element to Data_element_definition

Each Activity_element refers to exactly one Data_element_definition in the role of element. Each Data_element_definition acts as element for zero, one, or more Activity_element objects.

4.3.31 Activity_element to Data_element_relationship

Each Activity_element refers to exactly one Data_element_relationship in the role of element. Each Data_element_relationship acts as element for zero, one, or more Activity_element objects.

4.3.32 Activity_element to Design_discipline_item_definition

Each Activity_element refers to exactly one Design_discipline_item_definition in the role of element. Each Design_discipline_item_definition acts as element for zero, one, or more Activity_element objects.

4.3.33 Activity_element to Device

Each Activity_element refers to exactly one Device in the role of element. Each Device acts as element for zero, one, or more Activity_element objects.

4.3.34 Activity_element to Device_relationship

Each Activity_element refers to exactly one Device_relationship in the role of element. Each Device_relationship acts as element for zero, one, or more Activity_element objects.

4.3.35 Activity_element to Document

Each Activity_element refers to exactly one Document in the role of element. Each Document acts as element for zero, one, or more Activity_element objects.

4.3.36 Activity_element to Document_file

Each Activity_element refers to exactly one Document_file in the role of element. Each Document_file acts as element for zero, one, or more Activity_element objects.

4.3.37 Activity_element to Document_file_relationship

Each Activity_element refers to exactly one Document_file_relationship in the role of element. Each Document_file_relationship acts as element for zero, one, or more Activity_element objects.

4.3.38 Activity_element to Document_representation

Each Activity_element refers to exactly one Document_representation in the role of element. Each Document_representation acts as element for zero, one, or more Activity_element objects.

4.3.39 Activity_element to Document_version

Each Activity_element refers to exactly one Document_version in the role of element. Each Document_version acts as element for zero, one, or more Activity_element objects.

4.3.40 Activity_element to Document_version_relationship

Each Activity_element refers to exactly one Document_version_relationship in the role of element. Each Document_version_relationship acts as element for zero, one, or more Activity_element objects.

4.3.41 Activity_element to Drawing

Each Activity_element refers to exactly one Drawing in the role of element. Each Drawing acts as element for zero, one, or more Activity_element objects.

4.3.42 Activity_element to Drawing_sequence

Each Activity_element refers to exactly one Drawing_sequence in the role of element. Each Drawing_sequence acts as element for zero, one, or more Activity_element objects.

4.3.43 Activity_element to Drawing_sheet

Each Activity_element refers to exactly one Drawing_sheet in the role of element. Each Drawing_sheet acts as element for zero, one, or more Activity_element objects.

4.3.44 Activity_element to Drawing_sheet_relationship

Each Activity_element refers to exactly one Drawing_sheet_relationship in the role of element. Each Drawing_sheet_relationship acts as element for zero, one, or more Activity_element objects.

4.3.45 Activity_element to Function_definition

Each Activity_element refers to exactly one Function_definition in the role of element. Each Function_definition acts as element for zero, one, or more Activity_element objects.

4.3.46 Activity_element to Function_definition_relationship

Each Activity_element refers to exactly one Function_definition_relationship in the role of element. Each Function_definition_relationship acts as element for zero, one, or more Activity_element objects.

4.3.47 Activity_element to Function_interface

Each Activity_element refers to exactly one Function_interface in the role of element. Each Function_interface acts as element for zero, one, or more Activity_element objects.

4.3.48 Activity_element to Function_unit

Each Activity_element refers to exactly one Function_unit in the role of element. Each Function_unit acts as element for zero, one, or more Activity_element objects.

4.3.49 Activity_element to Function_unit_relationship

Each Activity_element refers to exactly one Function_unit_relationship in the role of element. Each Function_unit_relationship acts as element for zero, one, or more Activity_element objects.

4.3.50 Activity_element to Function_version

Each Activity_element refers to exactly one Function_version in the role of element. Each Function_version acts as element for zero, one, or more Activity_element objects.

4.3.51 Activity_element to Function_version_relationship

Each Activity_element refers to exactly one Function_version_relationship in the role of element. Each Function_version_relationship acts as element for zero, one, or more Activity_element objects.

4.3.52 Activity_element to Functional_connectivity_definition

Each Activity_element refers to exactly one Functional_connectivity_definition in the role of element. Each Functional_connectivity_definition acts as element for zero, one, or more Activity_element objects.

4.3.53 Activity_element to Functional_connectivity_definition_relationship

Each Activity_element refers to exactly one Functional_connectivity_definition_relationship in the role of element. Each Functional_connectivity_definition_relationship acts as element for zero, one, or more Activity_element objects.

4.3.54 Activity_element to Generic_note

Each Activity_element refers to exactly one Generic_note in the role of element. Each Generic_note acts as element for zero, one, or more Activity_element objects.

4.3.55 Activity_element to Interface

Each Activity_element refers to exactly one Interface in the role of element. Each Interface acts as element for zero, one, or more Activity_element objects.

4.3.56 Activity_element to Interface_port

Each Activity_element refers to exactly one Interface_port in the role of element. Each Interface_port acts as element for zero, one, or more Activity_element objects.

4.3.57 Activity_element to Interface_terminal

Each Activity_element refers to exactly one Interface_terminal in the role of element. Each Interface_terminal acts as element for zero, one, or more Activity_element objects.

4.3.58 Activity_element to Item

Each Activity_element refers to exactly one Item in the role of element. Each Item acts as element for zero, one, or more Activity_element objects.

4.3.59 Activity_element to Item_definition_relationship

Each Activity_element refers to exactly one Item_definition_relationship in the role of element. Each Item_definition_relationship acts as element for zero, one, or more Activity_element objects.

4.3.60 Activity_element to Item_version

Each Activity_element refers to exactly one Item_version in the role of element. Each Item_version acts as element for zero, one, or more Activity_element objects.

4.3.61 Activity_element to Item_version_relationship

Each Activity_element refers to exactly one Item_version_relationship in the role of element. Each Item_version_relationship acts as element for zero, one, or more Activity_element objects.

4.3.62 Activity_element to Location

Each Activity_element refers to exactly one Location in the role of element. Each Location acts as element for zero, one, or more Activity_element objects.

4.3.63 Activity_element to Location_relationship

Each Activity_element refers to exactly one Location_relationship in the role of element. Each Location_relationship acts as element for zero, one, or more Activity_element objects.

4.3.64 Activity_element to Manufacturing_configuration

Each Activity_element refers to exactly one Manufacturing_configuration in the role of element. Each Manufacturing_configuration acts as element for zero, one, or more Activity_element objects.

4.3.65 Activity_element to Marking

Each Activity_element refers to exactly one Marking in the role of element. Each Marking acts as element for zero, one, or more Activity_element objects.

4.3.66 Activity_element to Node

Each Activity_element refers to exactly one Node in the role of element. Each Node acts as element for zero, one, or more Activity_element objects.

4.3.67 Activity_element to Node_relationship

Each Activity_element refers to exactly one Node_relationship in the role of element. Each Node_relationship acts as element for zero, one, or more Activity_element objects.

4.3.68 Activity_element to Notification

Each Activity_element refers to exactly one Notification in the role of element. Each Notification acts as element for zero, one, or more Activity_element objects.

4.3.69 Activity_element to Notification_relationship

Each Activity_element refers to exactly one Notification_relationship in the role of element. Each Notification_relationship acts as element for zero, one, or more Activity_element objects.

4.3.70 Activity_element to Path

Each Activity_element refers to exactly one Path in the role of element. Each Path acts as element for zero, one, or more Activity_element objects.

4.3.71 Activity_element to Path_node

Each Activity_element refers to exactly one Path_node in the role of element. Each Path_node acts as element for zero, one, or more Activity_element objects.

4.3.72 Activity_element to Path_node_relationship

Each Activity_element refers to exactly one Path_node_relationship in the role of element. Each Path_node_relationship acts as element for zero, one, or more Activity_element objects.

4.3.73 Activity_element to Path_relationship

Each Activity_element refers to exactly one Path_relationship in the role of element. Each Path_relationship acts as element for zero, one, or more Activity_element objects.

4.3.74 Activity_element to Physical_assembly_relationship

Each Activity_element refers to exactly one Physical_assembly_relationship in the role of element. Each Physical_assembly_relationship acts as element for zero, one, or more Activity_element objects.

4.3.75 Activity_element to Physical_instance

Each Activity_element refers to exactly one Physical_instance in the role of element. Each Physical_instance acts as element for zero, one, or more Activity_element objects.

4.3.76 Activity_element to Port

Each Activity_element refers to exactly one Port in the role of element. Each Port acts as element for zero, one, or more Activity_element objects.

4.3.77 Activity_element to Process_variable

Each Activity_element refers to exactly one Process_variable in the role of element. Each Process_variable acts as element for zero, one, or more Activity_element objects.

4.3.78 Activity_element to Process_variable_relationship

Each Activity_element refers to exactly one Process_variable_relationship in the role of element. Each Process_variable_relationship acts as element for zero, one, or more Activity_element objects.

4.3.79 Activity_element to Product_class

Each Activity_element refers to exactly one Product_class in the role of element. Each Product_class acts as element for zero, one, or more Activity_element objects.

4.3.80 Activity_element to Product_identification

Each Activity_element refers to exactly one Product_identification in the role of element. Each Product_identification acts as element for zero, one, or more Activity_element objects.

4.3.81 Activity_element to Product_structure_relationship

Each Activity_element refers to exactly one Product_structure_relationship in the role of element. Each Product_structure_relationship acts as element for zero, one, or more Activity_element objects.

4.3.82 Activity_element to Requirement

Each Activity_element refers to exactly one Requirement in the role of element. Each Requirement acts as element for zero, one, or more Activity_element objects.

4.3.83 Activity_element to Route

Each Activity_element refers to exactly one Route in the role of element. Each Route acts as element for zero, one, or more Activity_element objects.

4.3.84 Activity_element to Route_relationship

Each Activity_element refers to exactly one Route_relationship in the role of element. Each Route_relationship acts as element for zero, one, or more Activity_element objects.

4.3.85 Activity_element to Section

Each Activity_element refers to exactly one Section in the role of element. Each Section acts as element for zero, one, or more Activity_element objects.

4.3.86 Activity_element to Section_end

Each Activity_element refers to exactly one Section_end in the role of element. Each Section_end acts as element for zero, one, or more Activity_element objects.

4.3.87 Activity_element to Section_interface

Each Activity_element refers to exactly one Section_interface in the role of element. Each Section_interface acts as element for zero, one, or more Activity_element objects.

4.3.88 Activity_element to Section_interface_relationship

Each Activity_element refers to exactly one Section_interface_relationship in the role of element. Each Section_interface_relationship acts as element for zero, one, or more Activity_element objects.

4.3.89 Activity_element to Section_relationship

Each Activity_element refers to exactly one Section_relationship in the role of element. Each Section_relationship acts as element for zero, one, or more Activity_element objects.

4.3.90 Activity_element to Signal

Each Activity_element refers to exactly one Signal in the role of element. Each Signal acts as element for zero, one, or more Activity_element objects.

4.3.91 Activity_element to Signal_relationship

Each Activity_element refers to exactly one Signal_relationship in the role of element. Each Signal_relationship acts as element for zero, one, or more Activity_element objects.

4.3.92 Activity_element to Signal_value

Each Activity_element refers to exactly one Signal_value in the role of element. Each Signal_value acts as element for zero, one, or more Activity_element objects.

4.3.93 Activity_element to Specification

Each Activity_element refers to exactly one Specification in the role of element. Each Specification acts as element for zero, one, or more Activity_element objects.

4.3.94 Activity_element to Specification_category

Each Activity_element refers to exactly one Specification_category in the role of element. Each Specification_category acts as element for zero, one, or more Activity_element objects.

4.3.95 Activity_element to Specification_expression

Each Activity_element refers to exactly one Specification_expression in the role of element. Each Specification_expression acts as element for zero, one, or more Activity_element objects.

4.3.96 Activity_element to Specification_inclusion

Each Activity_element refers to exactly one Specification_inclusion in the role of element. Each Specification_inclusion acts as element for zero, one, or more Activity_element objects.

4.3.97 Activity_element to Technical_system

Each Activity_element refers to exactly one Technical_system in the role of element. Each Technical_system acts as element for zero, one, or more Activity_element objects.

4.3.98 Activity_element to Technical_system_relationship

Each Activity_element refers to exactly one Technical_system_relationship in the role of element. Each Technical_system_relationship acts as element for zero, one, or more Activity_element objects.

4.3.99 Activity_element to Terminal

Each Activity_element refers to exactly one Terminal in the role of element. Each Terminal acts as element for zero, one, or more Activity_element objects.

4.3.100 Activity_method_assignment to Activity_method

Each Activity_method_assignment refers to exactly one Activity_method in the role of assigned_method. Each Activity_method acts as assigned_method for zero, one, or more Activity_method_assignment objects.

4.3.101 Activity_method_assignment to Work_request

Each Activity_method_assignment refers to exactly one Work_request in the role of assigned_work_request. Each Work_request acts as assigned_work_request for zero, one, or more Activity_method_assignment objects.

4.3.102 Activity_relationship to Activity

Each Activity_relationship refers to exactly one Activity in the role of related. Each Activity acts as related for zero, one, or more Activity_relationship objects.

4.3.103 Activity_relationship to Activity

Each Activity_relationship refers to exactly one Activity in the role of relating. Each Activity acts as relating for zero, one, or more Activity_relationship objects.

4.3.104 Aggregated_value to Data_element_value

Each Aggregated_value refers to one or more Data_element_value objects in the role of member_definition. Each Data_element_value acts as member_definition for zero, one, or more Aggregated_value objects.

4.3.105 Alias_designation to Device

Each Alias_designation is_applied_to exactly one Device. Each Device is related to zero, one, or more Alias_designation objects.

4.3.106 Alias_designation to Document_representation

Each Alias_designation is_applied_to exactly one Document_representation. Each Document_representation is related to zero, one, or more Alias_designation objects.

4.3.107 Alias_designation to Drawing

Each Alias_designation is_applied_to exactly one Drawing. Each Drawing is related to zero, one, or more Alias_designation objects.

4.3.108 Alias_designation to Drawing_sheet

Each Alias_designation is_applied_to exactly one Drawing_sheet. Each Drawing_sheet is related to zero, one, or more Alias_designation objects.

4.3.109 Alias_designation to Function_unit

Each Alias_designation is_applied_to exactly one Function_unit. Each Function_unit is related to zero, one, or more Alias_designation objects.

4.3.110 Alias_designation to Location

Each Alias_designation is_applied_to exactly one Location. Each Location is related to zero, one, or more Alias_designation objects.

4.3.111 Alias_designation to Object_designation

Each Alias_designation refers to exactly one Object_designation in the role of alias_extended_designation. Each Object_designation acts as alias_extended_designation for zero, one, or more Alias_designation objects.

4.3.112 Alias_designation to Organization

Each Alias_designation refers to zero or one Organization in the role of alias_scope. Each Organization acts as alias_scope for zero, one, or more Alias_designation objects.

4.3.113 Alias_designation to Port

Each Alias_designation is_applied_to exactly one Port. Each Port is related to zero, one, or more Alias_designation objects.

4.3.114 Alias_designation to Product_component

Each Alias_designation is_applied_to exactly one Product_component. Each Product_component is related to zero, one, or more Alias_designation objects.

4.3.115 Alias_designation to Signal

Each Alias_designation is_applied_to exactly one Signal. Each Signal is related to zero, one, or more Alias_designation objects.

4.3.116 Alias_designation to Technical_system

Each Alias_designation is_applied_to exactly one Technical_system. Each Technical_system is related to zero, one, or more Alias_designation objects.

4.3.117 Alias_designation to Terminal

Each Alias_designation is_applied_to exactly one Terminal. Each Terminal is related to zero, one, or more Alias_designation objects.

4.3.118 Alias_identification to Approval_status

Each Alias_identification is_applied_to exactly one Approval_status. Each Approval_status is related to zero, one, or more Alias_identification objects.

4.3.119 Alias_identification to Classification_attribute

Each Alias_identification is_applied_to exactly one Classification_attribute. Each Classification_attribute is related to zero, one, or more Alias_identification objects.

4.3.120 Alias_identification to Classification_system

Each Alias_identification is_applied_to exactly one Classification_system. Each Classification_system is related to zero, one, or more Alias_identification objects.

4.3.121 Alias_identification to Complex_product

Each Alias_identification is_applied_to exactly one Complex_product. Each Complex_product is related to zero, one, or more Alias_identification objects.

4.3.122 Alias_identification to Component_colour

Each Alias_identification is_applied_to exactly one Component_colour. Each Component_colour is related to zero, one, or more Alias_identification objects.

4.3.123 Alias_identification to Connectivity_definition

Each Alias_identification is_applied_to exactly one Connectivity_definition. Each Connectivity_definition is related to zero, one, or more Alias_identification objects.

4.3.124 Alias_identification to Data_element_definition

Each Alias_identification is_applied_to exactly one Data_element_definition. Each Data_element_definition is related to zero, one, or more Alias_identification objects.

4.3.125 Alias_identification to Design_discipline_item_definition

Each Alias_identification is_applied_to exactly one Design_discipline_item_definition. Each Design_discipline_item_definition is related to zero, one, or more Alias_identification objects.

4.3.126 Alias_identification to Device

Each Alias_identification is_applied_to exactly one Device. Each Device is related to zero, one, or more Alias_identification objects.

4.3.127 Alias_identification to Document

Each Alias_identification is_applied_to exactly one Document. Each Document is related to zero, one, or more Alias_identification objects.

4.3.128 Alias_identification to Document_representation

Each Alias_identification is_applied_to exactly one Document_representation. Each Document_representation is related to zero, one, or more Alias_identification objects.

4.3.129 Alias_identification to Document_type_property

Each Alias_identification is_applied_to exactly one Document_type_property. Each Document_type_property is related to zero, one, or more Alias_identification objects.

4.3.130 Alias_identification to Document_version

Each Alias_identification is_applied_to exactly one Document_version. Each Document_version is related to zero, one, or more Alias_identification objects.

4.3.131 Alias_identification to Drawing

Each Alias_identification is_applied_to exactly one Drawing. Each Drawing is related to zero, one, or more Alias_identification objects.

4.3.132 Alias_identification to Drawing_sheet

Each Alias_identification is_applied_to exactly one Drawing_sheet. Each Drawing_sheet is related to zero, one, or more Alias_identification objects.

4.3.133 Alias_identification to Function_definition

Each Alias_identification is_applied_to exactly one Function_definition. Each Function_definition is related to zero, one, or more Alias_identification objects.

4.3.134 Alias_identification to Function_unit

Each Alias_identification is_applied_to exactly one Function_unit. Each Function_unit is related to zero, one, or more Alias_identification objects.

4.3.135 Alias_identification to Functional_connectivity_definition

Each Alias_identification is_applied_to exactly one Functional_connectivity_definition. Each Functional_connectivity_definition is related to zero, one, or more Alias_identification objects.

4.3.136 Alias_identification to Functionality

Each Alias_identification is_applied_to exactly one Functionality. Each Functionality is related to zero, one, or more Alias_identification objects.

4.3.137 Alias_identification to General_classification

Each Alias_identification is_applied_to exactly one General_classification. Each General_classification is related to zero, one, or more Alias_identification objects.

4.3.138 Alias_identification to Interface_port

Each Alias_identification is_applied_to exactly one Interface_port. Each Interface_port is related to zero, one, or more Alias_identification objects.

4.3.139 Alias_identification to Interface_terminal

Each Alias_identification is_applied_to exactly one Interface_terminal. Each Interface_terminal is related to zero, one, or more Alias_identification objects.

4.3.140 Alias_identification to Item

Each Alias_identification is_applied_to exactly one Item. Each Item is related to zero, one, or more Alias_identification objects.

4.3.141 Alias_identification to Item_version

Each Alias_identification is_applied_to exactly one Item_version. Each Item_version is related to zero, one, or more Alias_identification objects.

4.3.142 Alias_identification to Location

Each Alias_identification is_applied_to exactly one Location. Each Location is related to zero, one, or more Alias_identification objects.

4.3.143 Alias_identification to Node

Each Alias_identification is_applied_to exactly one Node. Each Node is related to zero, one, or more Alias_identification objects.

4.3.144 Alias_identification to Notification

Each Alias_identification is_applied_to exactly one Notification. Each Notification is related to zero, one, or more Alias_identification objects.

4.3.145 Alias_identification to Organization

Each Alias_identification refers to zero or one Organization in the role of alias_scope. Each Organization acts as alias_scope for zero, one, or more Alias_identification objects.

4.3.146 Alias_identification to Organization

Each Alias_identification is_applied_to exactly one Organization. Each Organization is related to zero, one, or more Alias_identification objects.

4.3.147 Alias_identification to Path

Each Alias_identification is_applied_to exactly one Path. Each Path is related to zero, one, or more Alias_identification objects.

4.3.148 Alias_identification to Path_node

Each Alias_identification is_applied_to exactly one Path_node. Each Path_node is related to zero, one, or more Alias_identification objects.

4.3.149 Alias_identification to Physical_instance

Each Alias_identification is_applied_to exactly one Physical_instance. Each Physical_instance is related to zero, one, or more Alias_identification objects.

4.3.150 Alias_identification to Port

Each Alias_identification is_applied_to exactly one Port. Each Port is related to zero, one, or more Alias_identification objects.

4.3.151 Alias_identification to Process_variable

Each Alias_identification is_applied_to exactly one Process_variable. Each Process_variable is related to zero, one, or more Alias_identification objects.

4.3.152 Alias_identification to Product_class

Each Alias_identification is_applied_to exactly one Product_class. Each Product_class is related to zero, one, or more Alias_identification objects.

4.3.153 Alias_identification to Product_identification

Each Alias_identification is_applied_to exactly one Product_identification. Each Product_identification is related to zero, one, or more Alias_identification objects.

4.3.154 Alias_identification to Requirement

Each Alias_identification is_applied_to exactly one Requirement. Each Requirement is related to zero, one, or more Alias_identification objects.

4.3.155 Alias_identification to Route

Each Alias_identification is_applied_to exactly one Route. Each Route is related to zero, one, or more Alias_identification objects.

4.3.156 Alias_identification to Section

Each Alias_identification is_applied_to exactly one Section. Each Section is related to zero, one, or more Alias_identification objects.

4.3.157 Alias_identification to Section_interface

Each Alias_identification is_applied_to exactly one Section_interface. Each Section_interface is related to zero, one, or more Alias_identification objects.

4.3.158 Alias_identification to Security_level

Each Alias_identification is_applied_to exactly one Security_level. Each Security_level is related to zero, one, or more Alias_identification objects.

4.3.159 Alias_identification to Signal

Each Alias_identification is_applied_to exactly one Signal. Each Signal is related to zero, one, or more Alias_identification objects.

4.3.160 Alias_identification to Specification

Each Alias_identification is_applied_to exactly one Specification. Each Specification is related to zero, one, or more Alias_identification objects.

4.3.161 Alias_identification to Specification_category

Each Alias_identification is_applied_to exactly one Specification_category. Each Specification_category is related to zero, one, or more Alias_identification objects.

4.3.162 Alias_identification to Technical_system

Each Alias_identification is_applied_to exactly one Technical_system. Each Technical_system is related to zero, one, or more Alias_identification objects.

4.3.163 Alias_identification to Terminal

Each Alias_identification is_applied_to exactly one Terminal. Each Terminal is related to zero, one, or more Alias_identification objects.

4.3.164 Alias_version to Alias_designation

Each Alias_version refers to exactly one Alias_designation in the role of associated_alias_id. Each Alias_designation acts as associated_alias_id for zero, one, or more Alias_version objects.

4.3.165 Alias_version to Alias_identification

Each Alias_version refers to exactly one Alias_identification in the role of associated_alias_id. Each Alias_identification acts as associated_alias_id for zero, one, or more Alias_version objects.

4.3.166 Alternate_item_relationship to Item

Each Alternate_item_relationship refers to exactly one Item in the role of alternate. Each Item acts as alternate for zero, one, or more Alternate_item_relationship objects.

4.3.167 Alternate_item_relationship to Item

Each Alternate_item_relationship refers to exactly one Item in the role of base. Each Item acts as base for zero, one, or more Alternate_item_relationship objects.

4.3.168 Alternative_solution to Alternative_solution

Each Alternative_solution refers to exactly one Alternative_solution in the role of base_element. Each Alternative_solution acts as base_element for zero, one, or more Alternative_solution objects.

4.3.169 Alternative_solution to Function_definition

Each Alternative_solution refers to exactly one Function_definition in the role of base_element. Each Function_definition acts as base_element for zero, one, or more Alternative_solution objects.

4.3.170 Alternative_solution to Product_component

Each Alternative_solution refers to exactly one Product_component in the role of base_element. Each Product_component acts as base_element for zero, one, or more Alternative_solution objects.

4.3.171 Alternative_solution to Single_function_unit

Each Alternative_solution refers to exactly one Single_function_unit in the role of base_element. Each Single_function_unit acts as base_element for zero, one, or more Alternative_solution objects.

4.3.172 Angular_dimension to Dimension_line

Each Angular_dimension refers to exactly one Dimension_line in the role of extent. Each Dimension_line acts as extent for zero, one, or more Angular_dimension objects.

4.3.173 Angular_dimension to Projection_line

Each Angular_dimension refers to zero, one, or two Projection_line objects in the role of component. Each Projection_line acts as component for zero, one, or more Angular_dimension objects.

4.3.174 Annotation_curve to Curve_appearance

Each Annotation_curve refers to exactly one Curve_appearance in the role of assigned_appearance. Each Curve_appearance acts as assigned_appearance for zero, one, or more Annotation_curve objects.

4.3.175 Annotation_subfigure to Annotation_subfigure_definition

Each Annotation_subfigure refers to exactly one Annotation_subfigure_definition in the role of definition. Each Annotation_subfigure_definition acts as definition for zero, one, or more Annotation_subfigure objects.

4.3.176 Annotation_subfigure to Point_2d

Each Annotation_subfigure refers to exactly one Point_2d in the role of position. Each Point_2d acts as position for zero, one, or more Annotation_subfigure objects.

4.3.177 Annotation_subfigure_definition to Cartesian_coordinate_space_2d

Each Annotation_subfigure_definition refers to exactly one Cartesian_coordinate_space_2d in the role of coordinate_space. Each Cartesian_coordinate_space_2d acts as coordinate_space for zero, one, or more Annotation_subfigure_definition objects.

4.3.178 Annotation_subfigure_definition to Rectangular_area

Each Annotation_subfigure_definition refers to zero or one Rectangular_area in the role of blanking_box. Each Rectangular_area acts as blanking_box for zero, one, or more Annotation_subfigure_definition objects.

4.3.179 Annotation_subfigure_definition_element to Annotation_placed_annotation

Each Annotation_subfigure_definition_element refers to exactly one Annotation_placed_annotation in the role of used_annotation. Each Annotation_placed_annotation acts as used_annotation for zero, one, or more Annotation_subfigure_definition_element objects.

4.3.180 Annotation_subfigure_definition_element to Annotation_subfigure_definition

Each Annotation_subfigure_definition_element refers to exactly one Annotation_subfigure_definition in the role of containing_definition. Each Annotation_subfigure_definition acts as containing_definition for zero, one, or more Annotation_subfigure_definition_element objects.

4.3.181 Annotation_subfigure_definition_element to Layer

Each Annotation_subfigure_definition_element refers to one or more Layer objects in the role of annotation_layers. Each Layer acts as annotation_layers for zero, one, or more Annotation_subfigure_definition_element objects.

4.3.182 Annotation_subfigure_definition_element to Visibility

Each Annotation_subfigure_definition_element refers to exactly one Visibility in the role of annotation_visibility. Each Visibility acts as annotation_visibility for zero, one, or more Annotation_subfigure_definition_element objects.

4.3.183 Annotation_symbol to Colour

Each Annotation_symbol refers to zero or one Colour in the role of overriding_colour. Each Colour acts as overriding_colour for zero, one, or more Annotation_symbol objects.

4.3.184 Annotation_symbol to Point_2d

Each Annotation_symbol refers to exactly one Point_2d in the role of position. Each Point_2d acts as position for zero, one, or more Annotation_symbol objects.

4.3.185 Annotation_symbol to Rectangular_area

Each Annotation_symbol refers to zero or one Rectangular_area in the role of blanking_box. Each Rectangular_area acts as blanking_box for zero, one, or more Annotation_symbol objects.

4.3.186 Approval to Activity

Each Approval is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Approval objects.

4.3.187 Approval to Activity_element

Each Approval is_applied_to one or more Activity_element objects. Each Activity_element is related to zero, one, or more Approval objects.

4.3.188 Approval to Activity_method_assignment

Each Approval is_applied_to one or more Activity_method_assignment objects. Each Activity_method_assignment is related to zero, one, or more Approval objects.

4.3.189 Approval to Activity_relationship

Each Approval is_applied_to one or more Activity_relationship objects. Each Activity_relationship is related to zero, one, or more Approval objects.

4.3.190 Approval to Alternate_item_relationship

Each Approval is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Approval objects.

4.3.191 Approval to Alternate_item_relationship

Each Approval is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Approval objects.

4.3.192 Approval to Approval_status

Each Approval refers to exactly one Approval_status in the role of status. Each Approval_status acts as status for zero, one, or more Approval objects.

4.3.193 Approval to Assembly_component_relationship

Each Approval is_applied_to one or more Assembly_component_relationship objects. Each Assembly_component_relationship is related to zero, one, or more Approval objects.

4.3.194 Approval to Cable_pull_information

Each Approval is_applied_to one or more Cable_pull_information objects. Each Cable_pull_information is related to zero, one, or more Approval objects.

4.3.195 Approval to Certification

Each Approval is_applied_to one or more Certification objects. Each Certification is related to zero, one, or more Approval objects.

4.3.196 Approval to Class_category_association

Each Approval is_applied_to one or more Class_category_association objects. Each Class_category_association is related to zero, one, or more Approval objects.

4.3.197 Approval to Class_condition_association

Each Approval is_applied_to one or more Class_condition_association objects. Each Class_condition_association is related to zero, one, or more Approval objects.

4.3.198 Approval to Class_inclusion_association

Each Approval is_applied_to one or more Class_inclusion_association objects. Each Class_inclusion_association is related to zero, one, or more Approval objects.

4.3.199 Approval to Class_specification_association

Each Approval is_applied_to one or more Class_specification_association objects. Each Class_specification_association is related to zero, one, or more Approval objects.

4.3.200 Approval to Class_structure_relationship

Each Approval is_applied_to one or more Class_structure_relationship objects. Each Class_structure_relationship is related to zero, one, or more Approval objects.

4.3.201 Approval to Classification_association

Each Approval is_applied_to one or more Classification_association objects. Each Classification_association is related to zero, one, or more Approval objects.

4.3.202 Approval to Classification_system

Each Approval is_applied_to one or more Classification_system objects. Each Classification_system is related to zero, one, or more Approval objects.

4.3.203 Approval to Complex_product

Each Approval is_applied_to one or more Complex_product objects. Each Complex_product is related to zero, one, or more Approval objects.

4.3.204 Approval to Complex_product_relationship

Each Approval is_applied_to one or more Complex_product_relationship objects. Each Complex_product_relationship is related to zero, one, or more Approval objects.

4.3.205 Approval to Composition_relationship

Each Approval is_applied_to one or more Composition_relationship objects. Each Composition_relationship is related to zero, one, or more Approval objects.

4.3.206 Approval to Configuration

Each Approval is_applied_to one or more Configuration objects. Each Configuration is related to zero, one, or more Approval objects.

4.3.207 Approval to Connectivity_allocation

Each Approval is_applied_to one or more Connectivity_allocation objects. Each Connectivity_allocation is related to zero, one, or more Approval objects.

4.3.208 Approval to Connectivity_definition

Each Approval is_applied_to one or more Connectivity_definition objects. Each Connectivity_definition is related to zero, one, or more Approval objects.

4.3.209 Approval to Connectivity_definition_relationship

Each Approval is_applied_to one or more Connectivity_definition_relationship objects. Each Connectivity_definition_relationship is related to zero, one, or more Approval objects.

4.3.210 Approval to Contract

Each Approval is_applied_to one or more Contract objects. Each Contract is related to zero, one, or more Approval objects.

4.3.211 Approval to Data_element

Each Approval is_applied_to one or more Data_element objects. Each Data_element is related to zero, one, or more Approval objects.

4.3.212 Approval to Data_element_association

Each Approval is_applied_to one or more Data_element_association objects. Each Data_element_association is related to zero, one, or more Approval objects.

4.3.213 Approval to Data_element_definition

Each Approval is_applied_to one or more Data_element_definition objects. Each Data_element_definition is related to zero, one, or more Approval objects.

4.3.214 Approval to Data_element_relationship

Each Approval is_applied_to one or more Data_element_relationship objects. Each Data_element_relationship is related to zero, one, or more Approval objects.

4.3.215 Approval to Date_and_person_or_organization

Each Approval is_approved_by zero, one, or more Date_and_person_or_organization objects. Each Date_and_person_or_organization is related to zero, one, or more Approval objects.

4.3.216 Approval to Date_time

Each Approval refers to zero or one Date_time in the role of actual_date. Each Date_time acts as actual_date for zero, one, or more Approval objects.

4.3.217 Approval to Date_time

Each Approval refers to zero or one Date_time in the role of planned_date. Each Date_time acts as planned_date for zero, one, or more Approval objects.

4.3.218 Approval to Design_discipline_item_definition

Each Approval is_applied_to one or more Design_discipline_item_definition objects. Each Design_discipline_item_definition is related to zero, one, or more Approval objects.

4.3.219 Approval to Device

Each Approval is_applied_to one or more Device objects. Each Device is related to zero, one, or more Approval objects.

4.3.220 Approval to Device_relationship

Each Approval is_applied_to one or more Device_relationship objects. Each Device_relationship is related to zero, one, or more Approval objects.

4.3.221 Approval to Document

Each Approval is_applied_to one or more Document objects. Each Document is related to zero, one, or more Approval objects.

4.3.222 Approval to Document_file

Each Approval is_applied_to one or more Document_file objects. Each Document_file is related to zero, one, or more Approval objects.

4.3.223 Approval to Document_file_relationship

Each Approval is_applied_to one or more Document_file_relationship objects. Each Document_file_relationship is related to zero, one, or more Approval objects.

4.3.224 Approval to Document_representation

Each Approval is_applied_to one or more Document_representation objects. Each Document_representation is related to zero, one, or more Approval objects.

4.3.225 Approval to Document_version

Each Approval is_applied_to one or more Document_version objects. Each Document_version is related to zero, one, or more Approval objects.

4.3.226 Approval to Document_version_relationship

Each Approval is_applied_to one or more Document_version_relationship objects. Each Document_version_relationship is related to zero, one, or more Approval objects.

4.3.227 Approval to Drawing

Each Approval is_applied_to one or more Drawing objects. Each Drawing is related to zero, one, or more Approval objects.

4.3.228 Approval to Drawing_sequence

Each Approval is_applied_to one or more Drawing_sequence objects. Each Drawing_sequence is related to zero, one, or more Approval objects.

4.3.229 Approval to Drawing_sheet

Each Approval is_applied_to one or more Drawing_sheet objects. Each Drawing_sheet is related to zero, one, or more Approval objects.

4.3.230 Approval to Drawing_sheet_relationship

Each Approval is_applied_to one or more Drawing_sheet_relationship objects. Each Drawing_sheet_relationship is related to zero, one, or more Approval objects.

4.3.231 Approval to Function_definition

Each Approval is_applied_to one or more Function_definition objects. Each Function_definition is related to zero, one, or more Approval objects.

4.3.232 Approval to Function_definition_relationship

Each Approval is_applied_to one or more Function_definition_relationship objects. Each Function_definition_relationship is related to zero, one, or more Approval objects.

4.3.233 Approval to Function_interface

Each Approval is_applied_to one or more Function_interface objects. Each Function_interface is related to zero, one, or more Approval objects.

4.3.234 Approval to Function_unit

Each Approval is_applied_to one or more Function_unit objects. Each Function_unit is related to zero, one, or more Approval objects.

4.3.235 Approval to Function_unit_relationship

Each Approval is_applied_to one or more Function_unit_relationship objects. Each Function_unit_relationship is related to zero, one, or more Approval objects.

4.3.236 Approval to Function_version

Each Approval is_applied_to one or more Function_version objects. Each Function_version is related to zero, one, or more Approval objects.

4.3.237 Approval to Function_version_relationship

Each Approval is_applied_to one or more Function_version_relationship objects. Each Function_version_relationship is related to zero, one, or more Approval objects.

4.3.238 Approval to Functional_connectivity_definition

Each Approval is_applied_to one or more Functional_connectivity_definition objects. Each Functional_connectivity_definition is related to zero, one, or more Approval objects.

4.3.239 Approval to Functional_connectivity_definition_relationship

Each Approval is_applied_to one or more Functional_connectivity_definition_relationship objects. Each Functional_connectivity_definition_relationship is related to zero, one, or more Approval objects.

4.3.240 Approval to Functional_unit_allocation

Each Approval is_applied_to one or more Functional_unit_allocation objects. Each Functional_unit_allocation is related to zero, one, or more Approval objects.

4.3.241 Approval to General_classification

Each Approval is_applied_to one or more General_classification objects. Each General_classification is related to zero, one, or more Approval objects.

4.3.242 Approval to Generic_note

Each Approval is_applied_to one or more Generic_note objects. Each Generic_note is related to zero, one, or more Approval objects.

4.3.243 Approval to Interface

Each Approval is_applied_to one or more Interface objects. Each Interface is related to zero, one, or more Approval objects.

4.3.244 Approval to Interface_port

Each Approval is_applied_to one or more Interface_port objects. Each Interface_port is related to zero, one, or more Approval objects.

4.3.245 Approval to Interface_terminal

Each Approval is_applied_to one or more Interface_terminal objects. Each Interface_terminal is related to zero, one, or more Approval objects.

4.3.246 Approval to Item_definition_relationship

Each Approval is_applied_to one or more Item_definition_relationship objects. Each Item_definition_relationship is related to zero, one, or more Approval objects.

4.3.247 Approval to Item_version

Each Approval is_applied_to one or more Item_version objects. Each Item_version is related to zero, one, or more Approval objects.

4.3.248 Approval to Item_version_relationship

Each Approval is_applied_to one or more Item_version_relationship objects. Each Item_version_relationship is related to zero, one, or more Approval objects.

4.3.249 Approval to Location

Each Approval is_applied_to one or more Location objects. Each Location is related to zero, one, or more Approval objects.

4.3.250 Approval to Location_relationship

Each Approval is_applied_to one or more Location_relationship objects. Each Location_relationship is related to zero, one, or more Approval objects.

4.3.251 Approval to Manufacturing_configuration

Each Approval is_applied_to one or more Manufacturing_configuration objects. Each Manufacturing_configuration is related to zero, one, or more Approval objects.

4.3.252 Approval to Marking

Each Approval is_applied_to one or more Marking objects. Each Marking is related to zero, one, or more Approval objects.

4.3.253 Approval to Material

Each Approval is_applied_to one or more Material objects. Each Material is related to zero, one, or more Approval objects.

4.3.254 Approval to Node

Each Approval is_applied_to one or more Node objects. Each Node is related to zero, one, or more Approval objects.

4.3.255 Approval to Node_relationship

Each Approval is_applied_to one or more Node_relationship objects. Each Node_relationship is related to zero, one, or more Approval objects.

4.3.256 Approval to Notification

Each Approval is_applied_to one or more Notification objects. Each Notification is related to zero, one, or more Approval objects.

4.3.257 Approval to Notification_relationship

Each Approval is_applied_to one or more Notification_relationship objects. Each Notification_relationship is related to zero, one, or more Approval objects.

4.3.258 Approval to Offered_function_allocation

Each Approval is_applied_to one or more Offered_function_allocation objects. Each Offered_function_allocation is related to zero, one, or more Approval objects.

4.3.259 Approval to Organization

Each Approval refers to zero, one, or more Organization objects in the role of scope. Each Organization acts as scope for zero, one, or more Approval objects.

4.3.260 Approval to Path

Each Approval is_applied_to one or more Path objects. Each Path is related to zero, one, or more Approval objects.

4.3.261 Approval to Path_node

Each Approval is_applied_to one or more Path_node objects. Each Path_node is related to zero, one, or more Approval objects.

4.3.262 Approval to Path_node_relationship

Each Approval is_applied_to one or more Path_node_relationship objects. Each Path_node_relationship is related to zero, one, or more Approval objects.

4.3.263 Approval to Path_relationship

Each Approval is_applied_to one or more Path_relationship objects. Each Path_relationship is related to zero, one, or more Approval objects.

4.3.264 Approval to Physical_assembly_relationship

Each Approval is_applied_to one or more Physical_assembly_relationship objects. Each Physical_assembly_relationship is related to zero, one, or more Approval objects.

4.3.265 Approval to Physical_instance

Each Approval is_applied_to one or more Physical_instance objects. Each Physical_instance is related to zero, one, or more Approval objects.

4.3.266 Approval to Port

Each Approval is_applied_to one or more Port objects. Each Port is related to zero, one, or more Approval objects.

4.3.267 Approval to Port_allocation

Each Approval is_applied_to one or more Port_allocation objects. Each Port_allocation is related to zero, one, or more Approval objects.

4.3.268 Approval to Preferred_item_allocation

Each Approval is_applied_to one or more Preferred_item_allocation objects. Each Preferred_item_allocation is related to zero, one, or more Approval objects.

4.3.269 Approval to Preferred_item_terminal_allocation

Each Approval is_applied_to one or more Preferred_item_terminal_allocation objects. Each Preferred_item_terminal_allocation is related to zero, one, or more Approval objects.

4.3.270 Approval to Process_variable

Each Approval is_applied_to one or more Process_variable objects. Each Process_variable is related to zero, one, or more Approval objects.

4.3.271 Approval to Process_variable_relationship

Each Approval is_applied_to one or more Process_variable_relationship objects. Each Process_variable_relationship is related to zero, one, or more Approval objects.

4.3.272 Approval to Product_class

Each Approval is_applied_to one or more Product_class objects. Each Product_class is related to zero, one, or more Approval objects.

4.3.273 Approval to Product_identification

Each Approval is_applied_to one or more Product_identification objects. Each Product_identification is related to zero, one, or more Approval objects.

4.3.274 Approval to Product_structure_relationship

Each Approval is_applied_to one or more Product_structure_relationship objects. Each Product_structure_relationship is related to zero, one, or more Approval objects.

4.3.275 Approval to Project

Each Approval is_applied_to one or more Project objects. Each Project is related to zero, one, or more Approval objects.

4.3.276 Approval to Requirement

Each Approval is_applied_to one or more Requirement objects. Each Requirement is related to zero, one, or more Approval objects.

4.3.277 Approval to Route

Each Approval is_applied_to one or more Route objects. Each Route is related to zero, one, or more Approval objects.

4.3.278 Approval to Route_relationship

Each Approval is_applied_to one or more Route_relationship objects. Each Route_relationship is related to zero, one, or more Approval objects.

4.3.279 Approval to Section

Each Approval is_applied_to one or more Section objects. Each Section is related to zero, one, or more Approval objects.

4.3.280 Approval to Section_end

Each Approval is_applied_to one or more Section_end objects. Each Section_end is related to zero, one, or more Approval objects.

4.3.281 Approval to Section_interface

Each Approval is_applied_to one or more Section_interface objects. Each Section_interface is related to zero, one, or more Approval objects.

4.3.282 Approval to Section_interface_relationship

Each Approval is_applied_to one or more Section_interface_relationship objects. Each Section_interface_relationship is related to zero, one, or more Approval objects.

4.3.283 Approval to Section_relationship

Each Approval is_applied_to one or more Section_relationship objects. Each Section_relationship is related to zero, one, or more Approval objects.

4.3.284 Approval to Security_classification

Each Approval is_applied_to one or more Security_classification objects. Each Security_classification is related to zero, one, or more Approval objects.

4.3.285 Approval to Signal

Each Approval is_applied_to one or more Signal objects. Each Signal is related to zero, one, or more Approval objects.

4.3.286 Approval to Signal_relationship

Each Approval is_applied_to one or more Signal_relationship objects. Each Signal_relationship is related to zero, one, or more Approval objects.

4.3.287 Approval to Signal_value

Each Approval is_applied_to one or more Signal_value objects. Each Signal_value is related to zero, one, or more Approval objects.

4.3.288 Approval to Specification

Each Approval is_applied_to one or more Specification objects. Each Specification is related to zero, one, or more Approval objects.

4.3.289 Approval to Specification_category

Each Approval is_applied_to one or more Specification_category objects. Each Specification_category is related to zero, one, or more Approval objects.

4.3.290 Approval to Specification_expression

Each Approval is_applied_to one or more Specification_expression objects. Each Specification_expression is related to zero, one, or more Approval objects.

4.3.291 Approval to Specification_inclusion

Each Approval is_applied_to one or more Specification_inclusion objects. Each Specification_inclusion is related to zero, one, or more Approval objects.

4.3.292 Approval to Technical_system

Each Approval is_applied_to one or more Technical_system objects. Each Technical_system is related to zero, one, or more Approval objects.

4.3.293 Approval to Technical_system_relationship

Each Approval is_applied_to one or more Technical_system_relationship objects. Each Technical_system_relationship is related to zero, one, or more Approval objects.

4.3.294 Approval to Terminal

Each Approval is_applied_to one or more Terminal objects. Each Terminal is related to zero, one, or more Approval objects.

4.3.295 Approval to Work_order

Each Approval is_applied_to one or more Work_order objects. Each Work_order is related to zero, one, or more Approval objects.

4.3.296 Approval to Work_request

Each Approval is_applied_to one or more Work_request objects. Each Work_request is related to zero, one, or more Approval objects.

4.3.297 Approval_relationship to Approval

Each Approval_relationship refers to exactly one Approval in the role of related. Each Approval acts as related for zero, one, or more Approval_relationship objects.

4.3.298 Approval_relationship to Approval

Each Approval_relationship refers to exactly one Approval in the role of relating. Each Approval acts as relating for zero, one, or more Approval_relationship objects.

4.3.299 Approval_status to Classification_system

Each Approval_status refers to zero or one Classification_system in the role of used_classification_system. Each Classification_system acts as used_classification_system for zero, one, or more Approval_status objects.

4.3.300 Assembly_component_relationship to Assembly_definition

Each Assembly_component_relationship refers to exactly one Assembly_definition in the role of relating. Each Assembly_definition acts as relating for zero, one, or more Assembly_component_relationship objects.

4.3.301 Assembly_component_relationship to Device

Each Assembly_component_relationship refers to exactly one Device in the role of related. Each Device acts as related for zero, one, or more Assembly_component_relationship objects.

4.3.302 Assembly_substitute_relationship to Assembly_component_relationship

Each Assembly_substitute_relationship refers to exactly one Assembly_component_relationship in the role of base. Each Assembly_component_relationship acts as base for zero, one, or more Assembly_substitute_relationship objects.

4.3.303 Assembly_substitute_relationship to Assembly_component_-relationship

Each Assembly_substitute_relationship refers to exactly one Assembly_component_relationship in the role of substitute. Each Assembly_component_relationship acts as substitute for zero, one, or more Assembly_substitute_relationship objects.

4.3.304 Body_breadth to Value_with_unit

Each Body_breadth refers to exactly one Value_with_unit in the role of value_of_body_breadth. Each Value_with_unit acts as value_of_body_breadth for zero, one, or more Body_breadth objects.

4.3.305 Body_height to Value_with_unit

Each Body_height refers to exactly one Value_with_unit in the role of value_of_body_height. Each Value_with_unit acts as value_of_body_height for zero, one, or more Body_height objects.

4.3.306 Body_length to Value_with_unit

Each Body_length refers to exactly one Value_with_unit in the role of value_of_body_length. Each Value_with_unit acts as value_of_body_length for zero, one, or more Body_length objects.

4.3.307 Cable_pull_information to Routed_object

Each Cable_pull_information refers to one or more Routed_object objects in the role of associated_object. Each Routed_object acts as associated_object for zero, one, or more Cable_pull_information objects.

4.3.308 Cartesian_coordinate_space_2d to Numerical_precision

Each Cartesian_coordinate_space_2d refers to exactly one Numerical_precision in the role of precision. Each Numerical_precision acts as precision for zero, one, or more Cartesian_coordinate_space_2d objects.

4.3.309 Cartesian_coordinate_space_3d to Numerical_precision

Each Cartesian_coordinate_space_3d refers to exactly one Numerical_precision in the role of precision. Each Numerical_precision acts as precision for zero, one, or more Cartesian_coordinate_space_3d objects.

4.3.310 Certification to Device

Each Certification is_applied_to one or more Device objects. Each Device is related to zero, one, or more Certification objects.

4.3.311 Certification to Item_version

Each Certification is_applied_to one or more Item_version objects. Each Item_version is related to zero, one, or more Certification objects.

4.3.312 Certification to Item_version_relationship

Each Certification is_applied_to one or more Item_version_relationship objects. Each Item_version_relationship is related to zero, one, or more Certification objects.

4.3.313 Certification to Supplier_solution

Each Certification is_applied_to one or more Supplier_solution objects. Each Supplier_solution is related to zero, one, or more Certification objects.

4.3.314 Class_category_association to Product_class

Each Class_category_association refers to exactly one Product_class in the role of associated_product_class. Each Product_class acts as associated_product_class for zero, one, or more Class_category_association objects.

4.3.315 Class_category_association to Specification_category

Each Class_category_association refers to exactly one Specification_category in the role of associated_category. Each Specification_category acts as associated_category for zero, one, or more Class_category_association objects.

4.3.316 Class_condition_association to Product_class

Each Class_condition_association refers to exactly one Product_class in the role of associated_product_class. Each Product_class acts as associated_product_class for zero, one, or more Class_condition_association objects.

4.3.317 Class_condition_association to Specification_expression

Each Class_condition_association refers to exactly one Specification_expression in the role of associated_condition. Each Specification_expression acts as associated_condition for zero, one, or more Class_condition_association objects.

4.3.318 Class_inclusion_association to Product_class

Each Class_inclusion_association refers to exactly one Product_class in the role of associated_product_class. Each Product_class acts as associated_product_class for zero, one, or more Class_inclusion_association objects.

4.3.319 Class_inclusion_association to Specification_inclusion

Each Class_inclusion_association refers to exactly one Specification_inclusion in the role of associated_inclusion. Each Specification_inclusion acts as associated_inclusion for zero, one, or more Class_inclusion_association objects.

4.3.320 Class_specification_association to Product_class

Each Class_specification_association refers to exactly one Product_class in the role of associated_product_class. Each Product_class acts as associated_product_class for zero, one, or more Class_specification_association objects.

4.3.321 Class_specification_association to Specification

Each Class_specification_association refers to exactly one Specification in the role of associated_specification. Each Specification acts as associated_specification for zero, one, or more Class_specification_association objects.

4.3.322 Class_structure_relationship to Function_definition

Each Class_structure_relationship refers to exactly one Function_definition in the role of related. Each Function_definition acts as related for zero, one, or more Class_structure_relationship objects.

4.3.323 Class_structure_relationship to Product_class

Each Class_structure_relationship refers to exactly one Product_class in the role of relating. Each Product_class acts as relating for zero, one, or more Class_structure_relationship objects.

4.3.324 Class_structure_relationship to Product_component

Each Class_structure_relationship refers to exactly one Product_component in the role of related. Each Product_component acts as related for zero, one, or more Class_structure_relationship objects.

4.3.325 Classification_association to Activity

Each Classification_association refers to exactly one Activity in the role of classified_element. Each Activity acts as classified_element for zero, one, or more Classification_association objects.

4.3.326 Classification_association to Activity_method

Each Classification_association refers to exactly one Activity_method in the role of classified_element. Each Activity_method acts as classified_element for zero, one, or more Classification_association objects.

4.3.327 Classification_association to Annotation_subfigure_definition

Each Classification_association refers to exactly one Annotation_subfigure_definition in the role of classified_element. Each Annotation_subfigure_definition acts as classified_element for zero, one, or more Classification_association objects.

4.3.328 Classification_association to Approval

Each Classification_association refers to exactly one Approval in the role of classified_element. Each Approval acts as classified_element for zero, one, or more Classification_association objects.

4.3.329 Classification_association to Approval_status

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Each Classification_association refers to exactly one Approval_status in the role of classified_element. Each Approval_status acts as classified_element for zero, one, or more Classification_association objects.

4.3.330 Classification_association to Complex_product

Each Classification_association refers to exactly one Complex_product in the role of classified_element. Each Complex_product acts as classified_element for zero, one, or more Classification_association objects.

4.3.331 Classification_association to Connectivity_definition

Each Classification_association refers to exactly one Connectivity_definition in the role of classified_element. Each Connectivity_definition acts as classified_element for zero, one, or more Classification_association objects.

4.3.332 Classification_association to Contract

Each Classification_association refers to exactly one Contract in the role of classified_element. Each Contract acts as classified_element for zero, one, or more Classification_association objects.

4.3.333 Classification_association to Data_element

Each Classification_association refers to exactly one Data_element in the role of classified_element. Each Data_element acts as classified_element for zero, one, or more Classification_association objects.

4.3.334 Classification_association to Data_element_association

Each Classification_association refers to exactly one Data_element_association in the role of classified_element. Each Data_element_association acts as classified_element for zero, one, or more Classification_association objects.

4.3.335 Classification_association to Data_element_definition

Each Classification_association refers to exactly one Data_element_definition in the role of classified_element. Each Data_element_definition acts as classified_element for zero, one, or more Classification_association objects.

4.3.336 Classification_association to Design_discipline_item_definition

Each Classification_association refers to exactly one Design_discipline_item_definition in the role of classified_element. Each Design_discipline_item_definition acts as classified_element for zero, one, or more Classification_association objects.

4.3.337 Classification_association to Device

Each Classification_association refers to exactly one Device in the role of classified_element. Each Device acts as classified_element for zero, one, or more Classification_association objects.

4.3.338 Classification_association to Document

Each Classification_association refers to exactly one Document in the role of classified_element. Each Document acts as classified_element for zero, one, or more Classification_association objects.

4.3.339 Classification_association to Document_file

Each Classification_association refers to exactly one Document_file in the role of classified_element. Each Document_file acts as classified_element for zero, one, or more Classification_association objects.

4.3.340 Classification_association to Document_version

Each Classification_association refers to exactly one Document_version in the role of classified_element. Each Document_version acts as classified_element for zero, one, or more Classification_association objects.

4.3.341 Classification_association to Drawing

Each Classification_association refers to exactly one Drawing in the role of classified_element. Each Drawing acts as classified_element for zero, one, or more Classification_association objects.

4.3.342 Classification_association to Drawing_sheet

Each Classification_association refers to exactly one Drawing_sheet in the role of classified_element. Each Drawing_sheet acts as classified_element for zero, one, or more Classification_association objects.

4.3.343 Classification_association to Function_definition

Each Classification_association refers to exactly one Function_definition in the role of classified_element. Each Function_definition acts as classified_element for zero, one, or more Classification_association objects.

4.3.344 Classification_association to Function_unit

Each Classification_association refers to exactly one Function_unit in the role of classified_element. Each Function_unit acts as classified_element for zero, one, or more Classification_association objects.

4.3.345 Classification_association to Function_version

Each Classification_association refers to exactly one Function_version in the role of classified_element. Each Function_version acts as classified_element for zero, one, or more Classification_association objects.

4.3.346 Classification_association to Functional_connectivity_definition

Each Classification_association refers to exactly one Functional_connectivity_definition in the role of classified_element. Each Functional_connectivity_definition acts as classified_element for zero, one, or more Classification_association objects.

4.3.347 Classification_association to Functionality

Each Classification_association refers to exactly one Functionality in the role of classified_element. Each Functionality acts as classified_element for zero, one, or more Classification_association objects.

4.3.348 Classification_association to General_classification

Each Classification_association refers to exactly one General_classification in the role of classification. Each General_classification acts as classification for zero, one, or more Classification_association objects.

4.3.349 Classification_association to Interface_port

Each Classification_association refers to exactly one Interface_port in the role of classified_element. Each Interface_port acts as classified_element for zero, one, or more Classification_association objects.

4.3.350 Classification_association to Interface_terminal

Each Classification_association refers to exactly one Interface_terminal in the role of classified_element. Each Interface_terminal acts as classified_element for zero, one, or more Classification_association objects.

4.3.351 Classification_association to Item

Each Classification_association refers to exactly one Item in the role of classified_element. Each Item acts as classified_element for zero, one, or more Classification_association objects.

4.3.352 Classification_association to Item_version

Each Classification_association refers to exactly one Item_version in the role of classified_element. Each Item_version acts as classified_element for zero, one, or more Classification_association objects.

4.3.353 Classification_association to Location

Each Classification_association refers to exactly one Location in the role of classified_element. Each Location acts as classified_element for zero, one, or more Classification_association objects.

4.3.354 Classification_association to Path

Each Classification_association refers to exactly one Path in the role of classified_element. Each Path acts as classified_element for zero, one, or more Classification_association objects.

4.3.355 Classification_association to Path_node

Each Classification_association refers to exactly one Path_node in the role of classified_element. Each Path_node acts as classified_element for zero, one, or more Classification_association objects.

4.3.356 Classification_association to Port

Each Classification_association refers to exactly one Port in the role of classified_element. Each Port acts as classified_element for zero, one, or more Classification_association objects.

4.3.357 Classification_association to Product_class

Each Classification_association refers to exactly one Product_class in the role of classified_element. Each Product_class acts as classified_element for zero, one, or more Classification_association objects.

4.3.358 Classification_association to Product_identification

Each Classification_association refers to exactly one Product_identification in the role of classified_element. Each Product_identification acts as classified_element for zero, one, or more Classification_association objects.

4.3.359 Classification_association to Project

Each Classification_association refers to exactly one Project in the role of classified_element. Each Project acts as classified_element for zero, one, or more Classification_association objects.

4.3.360 Classification_association to Requirement

Each Classification_association refers to exactly one Requirement in the role of classified_element. Each Requirement acts as classified_element for zero, one, or more Classification_association objects.

4.3.361 Classification_association to Route

Each Classification_association refers to exactly one Route in the role of classified_element. Each Route acts as classified_element for zero, one, or more Classification_association objects.

4.3.362 Classification_association to Section

Each Classification_association refers to exactly one Section in the role of classified_element. Each Section acts as classified_element for zero, one, or more Classification_association objects.

4.3.363 Classification_association to Section_interface

Each Classification_association refers to exactly one Section_interface in the role of classified_element. Each Section_interface acts as classified_element for zero, one, or more Classification_association objects.

4.3.364 Classification_association to Security_level

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Each Classification_association refers to exactly one Security_level in the role of classified_element. Each Security_level acts as classified_element for zero, one, or more Classification_association objects.

4.3.365 Classification_association to Signal

Each Classification_association refers to exactly one Signal in the role of classified_element. Each Signal acts as classified_element for zero, one, or more Classification_association objects.

4.3.366 Classification_association to Specification_category

Each Classification_association refers to exactly one Specification_category in the role of classified_element. Each Specification_category acts as classified_element for zero, one, or more Classification_association objects.

4.3.367 Classification_association to Terminal

Each Classification_association refers to exactly one Terminal in the role of classified_element. Each Terminal acts as classified_element for zero, one, or more Classification_association objects.

4.3.368 Classification_association to Typical_schematic_node

Each Classification_association refers to exactly one Typical_schematic_node in the role of classified_element. Each Typical_schematic_node acts as classified_element for zero, one, or more Classification_association objects.

4.3.369 Classification_association to User_defined_symbol_definition

Each Classification_association refers to exactly one User_defined_symbol_definition in the role of classified_element. Each User_defined_symbol_definition acts as classified_element for zero, one, or more Classification_association objects.

4.3.370 Classification_association to Work_order

Each Classification_association refers to exactly one Work_order in the role of classified_element. Each Work_order acts as classified_element for zero, one, or more Classification_association objects.

4.3.371 Classification_association to Work_request

Each Classification_association refers to exactly one Work_request in the role of classified_element. Each Work_request acts as classified_element for zero, one, or more Classification_association objects.

4.3.372 Classification_attribute to Data_element

Each Classification_attribute refers to zero, one, or more Data_element objects in the role of allowed_value. Each Data_element acts as allowed_value for zero, one, or more Classification_attribute objects.

4.3.373 Classification_attribute to Data_element_definition

Each Classification_attribute refers to exactly one Data_element_definition in the role of attribute_definition. Each Data_element_definition acts as attribute_definition for zero, one, or more Classification_attribute objects.

4.3.374 Classification_attribute to General_classification

Each Classification_attribute refers to exactly one General_classification in the role of associated_classification. Each General_classification acts as associated_classification for zero, one, or more Classification_attribute objects.

4.3.375 Coded_size to Classification_system

Each Coded_size refers to exactly one Classification_system in the role of referenced_standard. Each Classification_system acts as referenced_standard for zero, one, or more Coded_size objects.

4.3.376 Complex_product_relationship to Complex_product

Each Complex_product_relationship refers to exactly one Complex_product in the role of related. Each Complex_product acts as related for zero, one, or more Complex_product_relationship objects.

4.3.377 Complex_product_relationship to Complex_product

Each Complex_product_relationship refers to exactly one Complex_product in the role of relating. Each Complex_product acts as relating for zero, one, or more Complex_product_relationship objects.

4.3.378 Component_colour to Classification_system

Each Component_colour refers to zero or one Classification_system in the role of coding_system. Each Classification_system acts as coding_system for zero, one, or more Component_colour objects.

4.3.379 Component_placement to Product_component

Each Component_placement refers to exactly one Product_component in the role of placed_component. Each Product_component acts as placed_component for zero, one, or more Component_placement objects.

4.3.380 Component_placement to Product_component

Each Component_placement refers to exactly one Product_component in the role of reference_product_component. Each Product_component acts as reference_product_component for zero, one, or more Component_placement objects.

4.3.381 Composition_relationship to Function_definition

Each Composition_relationship refers to exactly one Function_definition in the role of composed_function. Each Function_definition acts as composed_function for zero, one, or more Composition_relationship objects.

4.3.382 Composition_relationship to Function_unit

Each Composition_relationship refers to exactly one Function_unit in the role of functional_component. Each Function_unit acts as functional_component for zero, one, or more Composition_relationship objects.

4.3.383 Configuration to Class_condition_association

Each Configuration is_solution_for exactly one Class_condition_association. Each Class_condition_association is related to zero, one, or more Configuration objects.

4.3.384 Configuration to Class_specification_association

Each Configuration is_solution_for exactly one Class_specification_association. Each Class_specification_association is related to zero, one, or more Configuration objects.

4.3.385 Configuration to Complex_product

Each Configuration refers to exactly one Complex_product in the role of configured_element. Each Complex_product acts as configured_element for zero, one, or more Configuration objects.

4.3.386 Configuration to Connectivity_definition

Each Configuration refers to exactly one Connectivity_definition in the role of configured_element. Each Connectivity_definition acts as configured_element for zero, one, or more Configuration objects.

4.3.387 Configuration to Device

Each Configuration refers to exactly one Device in the role of configured_element. Each Device acts as configured_element for zero, one, or more Configuration objects.

4.3.388 Configuration to Function_unit

Each Configuration refers to exactly one Function_unit in the role of configured_element. Each Function_unit acts as configured_element for zero, one, or more Configuration objects.

4.3.389 Configuration to Functional_connectivity_definition

Each Configuration refers to exactly one Functional_connectivity_definition in the role of configured_element. Each Functional_connectivity_definition acts as configured_element for zero, one, or more Configuration objects.

4.3.390 Configuration to Location

Each Configuration refers to exactly one Location in the role of configured_element. Each Location acts as configured_element for zero, one, or more Configuration objects.

4.3.391 Configuration to Signal

Each Configuration refers to exactly one Signal in the role of configured_element. Each Signal acts as configured_element for zero, one, or more Configuration objects.

4.3.392 Connect_area to Curve_2d

Each Connect_area refers to one or more Curve_2d objects in the role of defined_by. Each Curve_2d acts as defined_by for zero, one, or more Connect_area objects.

4.3.393 Connect_area to Point_2d

Each Connect_area refers to one or more Point_2d objects in the role of defined_by. Each Point_2d acts as defined_by for zero, one, or more Connect_area objects.

4.3.394 Connecting_line to Connectivity_definition

Each Connecting_line refers to exactly one Connectivity_definition in the role of presents. Each Connectivity_definition acts as presents for zero, one, or more Connecting_line objects.

4.3.395 Connecting_line to Functional_connectivity_definition

Each Connecting_line refers to exactly one Functional_connectivity_definition in the role of presents. Each Functional_connectivity_definition acts as presents for zero, one, or more Connecting_line objects.

4.3.396 Connection to Terminal

Each Connection refers to zero, one, or more Terminal objects in the role of connected_terminal. Each Terminal acts as connected_terminal for zero, one, or more Connection objects.

4.3.397 Connectivity_allocation to Connectivity_definition

Each Connectivity_allocation refers to exactly one Connectivity_definition in the role of connectivity_implementation. Each Connectivity_definition acts as connectivity_implementation for zero, one, or more Connectivity_allocation objects.

4.3.398 Connectivity_allocation to Device

Each Connectivity_allocation refers to exactly one Device in the role of connectivity_implementation. Each Device acts as connectivity_implementation for zero, one, or more Connectivity_allocation objects.

4.3.399 Connectivity_allocation to Function_unit

Each Connectivity_allocation refers to exactly one Function_unit in the role of connectivity_implementation. Each Function_unit acts as connectivity_implementation for zero, one, or more Connectivity_allocation objects.

4.3.400 Connectivity_allocation to Functional_connectivity_definition

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Each Connectivity_allocation refers to exactly one Functional_connectivity_definition in the role of allocated_connectivity_definition. Each Functional_connectivity_definition acts as allocated_connectivity_definition for zero, one, or more Connectivity_allocation objects.

4.3.401 Connectivity_allocation to Physical_instance

Each Connectivity_allocation refers to exactly one Physical_instance in the role of connectivity_implementation. Each Physical_instance acts as connectivity_implementation for zero, one, or more Connectivity_allocation objects.

4.3.402 Connectivity_definition to Assembly_definition

Each Connectivity_definition refers to exactly one Assembly_definition in the role of connectivity_of. Each Assembly_definition acts as connectivity_of for zero, one, or more Connectivity_definition objects.

4.3.403 Connectivity_definition to Device

Each Connectivity_definition refers to zero, one, or more Device objects in the role of implemented_by. Each Device acts as implemented_by for zero, one, or more Connectivity_definition objects.

4.3.404 Connectivity_definition to Physical_instance

Each Connectivity_definition refers to zero, one, or more Physical_instance objects in the role of implemented_by. Each Physical_instance acts as implemented_by for zero, one, or more Connectivity_definition objects.

4.3.405 Connectivity_definition_relationship to Connectivity_definition

Each Connectivity_definition_relationship refers to exactly one Connectivity_definition in the role of related. Each Connectivity_definition acts as related for zero, one, or more Connectivity_definition_relationship objects.

4.3.406 Connectivity_definition_relationship to Connectivity_definition

Each Connectivity_definition_relationship refers to exactly one Connectivity_definition in the role of relating. Each Connectivity_definition acts as relating for zero, one, or more Connectivity_definition_relationship objects.

4.3.407 Contract to Activity

Each Contract refers to zero, one, or more Activity objects in the role of contracted_element. Each Activity acts as contracted_element for zero, one, or more Contract objects.

4.3.408 Contract to Data_element

Each Contract refers to zero, one, or more Data_element objects in the role of contracted_element. Each Data_element acts as contracted_element for zero, one, or more Contract objects.

4.3.409 Contract to Design_discipline_item_definition

Each Contract refers to zero, one, or more Design_discipline_item_definition objects in the role of contracted_element. Each Design_discipline_item_definition acts as contracted_element for zero, one, or more Contract objects.

4.3.410 Contract to Device

Each Contract refers to zero, one, or more Device objects in the role of contracted_element. Each Device acts as contracted_element for zero, one, or more Contract objects.

4.3.411 Contract to Function_definition

Each Contract refers to zero, one, or more Function_definition objects in the role of contracted_element. Each Function_definition acts as contracted_element for zero, one, or more Contract objects.

4.3.412 Contract to Function_unit

Each Contract refers to zero, one, or more Function_unit objects in the role of contracted_element. Each Function_unit acts as contracted_element for zero, one, or more Contract objects.

4.3.413 Contract to Function_version

Each Contract refers to zero, one, or more Function_version objects in the role of contracted_element. Each Function_version acts as contracted_element for zero, one, or more Contract objects.

4.3.414 Contract to Item_version

Each Contract refers to zero, one, or more Item_version objects in the role of contracted_element. Each Item_version acts as contracted_element for zero, one, or more Contract objects.

4.3.415 Contract to Location

Each Contract refers to zero, one, or more Location objects in the role of contracted_element. Each Location acts as contracted_element for zero, one, or more Contract objects.

4.3.416 Contract to Node

Each Contract refers to zero, one, or more Node objects in the role of contracted_element. Each Node acts as contracted_element for zero, one, or more Contract objects.

4.3.417 Contract to Notification

Each Contract refers to zero, one, or more Notification objects in the role of contracted_element. Each Notification acts as contracted_element for zero, one, or more Contract objects.

4.3.418 Contract to Path

Each Contract refers to zero, one, or more Path objects in the role of contracted_element. Each Path acts as contracted_element for zero, one, or more Contract objects.

4.3.419 Contract to Path_node

Each Contract refers to zero, one, or more Path_node objects in the role of contracted_element. Each Path_node acts as contracted_element for zero, one, or more Contract objects.

4.3.420 Contract to Physical_instance

Each Contract refers to zero, one, or more Physical_instance objects in the role of contracted_element. Each Physical_instance acts as contracted_element for zero, one, or more Contract objects.

4.3.421 Contract to Process_variable

Each Contract refers to zero, one, or more Process_variable objects in the role of contracted_element. Each Process_variable acts as contracted_element for zero, one, or more Contract objects.

4.3.422 Contract to Project

Each Contract refers to zero, one, or more Project objects in the role of contracted_element. Each Project acts as contracted_element for zero, one, or more Contract objects.

4.3.423 Contract to Route

Each Contract refers to zero, one, or more Route objects in the role of contracted_element. Each Route acts as contracted_element for zero, one, or more Contract objects.

4.3.424 Contract to Section

Each Contract refers to zero, one, or more Section objects in the role of contracted_element. Each Section acts as contracted_element for zero, one, or more Contract objects.

4.3.425 Contract to Section_end

Each Contract refers to zero, one, or more Section_end objects in the role of contracted_element. Each Section_end acts as contracted_element for zero, one, or more Contract objects.

4.3.426 Contract to Section_interface

Each Contract refers to zero, one, or more Section_interface objects in the role of contracted_element. Each Section_interface acts as contracted_element for zero, one, or more Contract objects.

4.3.427 Contract to Signal

Each Contract refers to zero, one, or more Signal objects in the role of contracted_element. Each Signal acts as contracted_element for zero, one, or more Contract objects.

4.3.428 Contract to Signal_value

Each Contract refers to zero, one, or more Signal_value objects in the role of contracted_element. Each Signal_value acts as contracted_element for zero, one, or more Contract objects.

4.3.429 Contract to Technical_system

Each Contract refers to zero, one, or more Technical_system objects in the role of contracted_element. Each Technical_system acts as contracted_element for zero, one, or more Contract objects.

4.3.430 Contract to Work_order

Each Contract refers to zero, one, or more Work_order objects in the role of contracted_element. Each Work_order acts as contracted_element for zero, one, or more Contract objects.

4.3.431 Contract to Work_request

Each Contract refers to zero, one, or more Work_request objects in the role of contracted_element. Each Work_request acts as contracted_element for zero, one, or more Contract objects.

4.3.432 Cross_section to Value_with_unit

Each Cross_section refers to exactly one Value_with_unit in the role of value_of_cross_section. Each Value_with_unit acts as value_of_cross_section for zero, one, or more Cross_section objects.

4.3.433 Curve_appearance to Colour

Each Curve_appearance refers to exactly one Colour in the role of curve_colour. Each Colour acts as curve_colour for zero, one, or more Curve_appearance objects.

4.3.434 Curve_appearance to Line_font

Each Curve_appearance refers to exactly one Line_font in the role of font. Each Line_font acts as font for zero, one, or more Curve_appearance objects.

4.3.435 Curve_dimension to Dimension_line

Each Curve_dimension refers to exactly one Dimension_line in the role of extent. Each Dimension_line acts as extent for zero, one, or more Curve_dimension objects.

4.3.436 Curve_dimension to Projection_line

Each Curve_dimension refers to zero, one, or two Projection_line objects in the role of component. Each Projection_line acts as component for zero, one, or more Curve_dimension objects.

4.3.437 Data_element_association to Activity

Each Data_element_association refers to exactly one Activity in the role of associated_item. Each Activity acts as associated_item for zero, one, or more Data_element_association objects.

4.3.438 Data_element_association to Assembly_component_relationship

Each Data_element_association refers to exactly one Assembly_component_relationship in the role of associated_item. Each Assembly_component_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.439 Data_element_association to Cable_pull_information

Each Data_element_association refers to exactly one Cable_pull_information in the role of associated_item. Each Cable_pull_information acts as associated_item for zero, one, or more Data_element_association objects.

4.3.440 Data_element_association to Complex_product

Each Data_element_association refers to exactly one Complex_product in the role of associated_item. Each Complex_product acts as associated_item for zero, one, or more Data_element_association objects.

4.3.441 Data_element_association to Complex_product_relationship

Each Data_element_association refers to exactly one Complex_product_relationship in the role of associated_item. Each Complex_product_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.442 Data_element_association to Composition_relationship

Each Data_element_association refers to exactly one Composition_relationship in the role of associated_item. Each Composition_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.443 Data_element_association to Connectivity_allocation

Each Data_element_association refers to exactly one Connectivity_allocation in the role of associated_item. Each Connectivity_allocation acts as associated_item for zero, one, or more Data_element_association objects.

4.3.444 Data_element_association to Connectivity_definition

Each Data_element_association refers to exactly one Connectivity_definition in the role of associated_item. Each Connectivity_definition acts as associated_item for zero, one, or more Data_element_association objects.

4.3.445 Data_element_association to Connectivity_definition_relationship

Each Data_element_association refers to exactly one Connectivity_definition_relationship in the role of associated_item. Each Connectivity_definition_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.446 Data_element_association to Data_element

Each Data_element_association refers to exactly one Data_element in the role of associated_data_element. Each Data_element acts as associated_data_element for zero, one, or more Data_element_association objects.

4.3.447 Data_element_association to Design_discipline_item_definition

Each Data_element_association refers to exactly one Design_discipline_item_definition in the role of associated_item. Each Design_discipline_item_definition acts as associated_item for zero, one, or more Data_element_association objects.

4.3.448 Data_element_association to Device

Each Data_element_association refers to exactly one Device in the role of associated_item. Each Device acts as associated_item for zero, one, or more Data_element_association objects.

4.3.449 Data_element_association to Device_relationship

Each Data_element_association refers to exactly one Device_relationship in the role of associated_item. Each Device_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.450 Data_element_association to Document

Each Data_element_association refers to exactly one Document in the role of associated_item. Each Document acts as associated_item for zero, one, or more Data_element_association objects.

4.3.451 Data_element_association to Document_file

Each Data_element_association refers to exactly one Document_file in the role of associated_item. Each Document_file acts as associated_item for zero, one, or more Data_element_association objects.

4.3.452 Data_element_association to Document_representation

Each Data_element_association refers to exactly one Document_representation in the role of associated_item. Each Document_representation acts as associated_item for zero, one, or more Data_element_association objects.

4.3.453 Data_element_association to Document_version

Each Data_element_association refers to exactly one Document_version in the role of associated_item. Each Document_version acts as associated_item for zero, one, or more Data_element_association objects.

4.3.454 Data_element_association to Drawing_sheet

Each Data_element_association refers to exactly one Drawing_sheet in the role of associated_item. Each Drawing_sheet acts as associated_item for zero, one, or more Data_element_association objects.

4.3.455 Data_element_association to Free_segment

Each Data_element_association refers to exactly one Free_segment in the role of associated_item. Each Free_segment acts as associated_item for zero, one, or more Data_element_association objects.

4.3.456 Data_element_association to Function_definition

Each Data_element_association refers to exactly one Function_definition in the role of associated_item. Each Function_definition acts as associated_item for zero, one, or more Data_element_association objects.

4.3.457 Data_element_association to Function_definition_relationship

Each Data_element_association refers to exactly one Function_definition_relationship in the role of associated_item. Each Function_definition_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.458 Data_element_association to Function_interface

Each Data_element_association refers to exactly one Function_interface in the role of associated_item. Each Function_interface acts as associated_item for zero, one, or more Data_element_association objects.

4.3.459 Data_element_association to Function_unit

Each Data_element_association refers to exactly one Function_unit in the role of associated_item. Each Function_unit acts as associated_item for zero, one, or more Data_element_association objects.

4.3.460 Data_element_association to Function_unit_relationship

Each Data_element_association refers to exactly one Function_unit_relationship in the role of associated_item. Each Function_unit_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.461 Data_element_association to Function_version

Each Data_element_association refers to exactly one Function_version in the role of associated_item. Each Function_version acts as associated_item for zero, one, or more Data_element_association objects.

4.3.462 Data_element_association to Functional_connectivity_definition

Each Data_element_association refers to exactly one Functional_connectivity_definition in the role of associated_item. Each Functional_connectivity_definition acts as associated_item for zero, one, or more Data_element_association objects.

4.3.463 Data_element_association to Functional_connectivity_definition_relationship

Each Data_element_association refers to exactly one Functional_connectivity_definition_relationship in the role of associated_item. Each Functional_connectivity_definition_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.464 Data_element_association to Functional_unit_allocation

Each `Data_element_association` refers to exactly one `Functional_unit_allocation` in the role of `associated_item`. Each `Functional_unit_allocation` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.465 `Data_element_association` to `Functionality`

Each `Data_element_association` refers to exactly one `Functionality` in the role of `associated_item`. Each `Functionality` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.466 `Data_element_association` to `Generic_note`

Each `Data_element_association` refers to exactly one `Generic_note` in the role of `associated_item`. Each `Generic_note` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.467 `Data_element_association` to `Interface`

Each `Data_element_association` refers to exactly one `Interface` in the role of `associated_item`. Each `Interface` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.468 `Data_element_association` to `Interface_port`

Each `Data_element_association` refers to exactly one `Interface_port` in the role of `associated_item`. Each `Interface_port` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.469 `Data_element_association` to `Interface_terminal`

Each `Data_element_association` refers to exactly one `Interface_terminal` in the role of `associated_item`. Each `Interface_terminal` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.470 `Data_element_association` to `Item`

Each `Data_element_association` refers to exactly one `Item` in the role of `associated_item`. Each `Item` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.471 `Data_element_association` to `Item_definition_relationship`

Each `Data_element_association` refers to exactly one `Item_definition_relationship` in the role of `associated_item`. Each `Item_definition_relationship` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.472 `Data_element_association` to `Item_version`

Each `Data_element_association` refers to exactly one `Item_version` in the role of `associated_item`. Each `Item_version` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.473 `Data_element_association` to `Location`

Each `Data_element_association` refers to exactly one `Location` in the role of `associated_item`. Each `Location` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.474 Data_element_association to Location_relationship

Each Data_element_association refers to exactly one Location_relationship in the role of associated_item. Each Location_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.475 Data_element_association to Marking

Each Data_element_association refers to exactly one Marking in the role of associated_item. Each Marking acts as associated_item for zero, one, or more Data_element_association objects.

4.3.476 Data_element_association to Node

Each Data_element_association refers to exactly one Node in the role of associated_item. Each Node acts as associated_item for zero, one, or more Data_element_association objects.

4.3.477 Data_element_association to Node_relationship

Each Data_element_association refers to exactly one Node_relationship in the role of associated_item. Each Node_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.478 Data_element_association to Notification

Each Data_element_association refers to exactly one Notification in the role of associated_item. Each Notification acts as associated_item for zero, one, or more Data_element_association objects.

4.3.479 Data_element_association to Offered_function_allocation

Each Data_element_association refers to exactly one Offered_function_allocation in the role of associated_item. Each Offered_function_allocation acts as associated_item for zero, one, or more Data_element_association objects.

4.3.480 Data_element_association to Organization

Each Data_element_association refers to zero or one Organization in the role of data_element_context. Each Organization acts as data_element_context for zero, one, or more Data_element_association objects.

4.3.481 Data_element_association to Path

Each Data_element_association refers to exactly one Path in the role of associated_item. Each Path acts as associated_item for zero, one, or more Data_element_association objects.

4.3.482 Data_element_association to Path_node

Each Data_element_association refers to exactly one Path_node in the role of associated_item. Each Path_node acts as associated_item for zero, one, or more Data_element_association objects.

4.3.483 Data_element_association to Physical_assembly_relationship

Each `Data_element_association` refers to exactly one `Physical_assembly_relationship` in the role of `associated_item`. Each `Physical_assembly_relationship` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.484 `Data_element_association` to `Physical_instance`

Each `Data_element_association` refers to exactly one `Physical_instance` in the role of `associated_item`. Each `Physical_instance` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.485 `Data_element_association` to `Port`

Each `Data_element_association` refers to exactly one `Port` in the role of `associated_item`. Each `Port` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.486 `Data_element_association` to `Port_allocation`

Each `Data_element_association` refers to exactly one `Port_allocation` in the role of `associated_item`. Each `Port_allocation` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.487 `Data_element_association` to `Port_association`

Each `Data_element_association` refers to exactly one `Port_association` in the role of `associated_item`. Each `Port_association` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.488 `Data_element_association` to `Preferred_item_allocation`

Each `Data_element_association` refers to exactly one `Preferred_item_allocation` in the role of `associated_item`. Each `Preferred_item_allocation` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.489 `Data_element_association` to `Preferred_item_terminal_allocation`

Each `Data_element_association` refers to exactly one `Preferred_item_terminal_allocation` in the role of `associated_item`. Each `Preferred_item_terminal_allocation` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.490 `Data_element_association` to `Process_variable`

Each `Data_element_association` refers to exactly one `Process_variable` in the role of `associated_item`. Each `Process_variable` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.491 `Data_element_association` to `Product_class`

Each `Data_element_association` refers to exactly one `Product_class` in the role of `associated_item`. Each `Product_class` acts as `associated_item` for zero, one, or more `Data_element_association` objects.

4.3.492 Data_element_association to Product_class

Each Data_element_association refers to zero or one Product_class in the role of data_element_context. Each Product_class acts as data_element_context for zero, one, or more Data_element_association objects.

4.3.493 Data_element_association to Product_identification

Each Data_element_association refers to exactly one Product_identification in the role of associated_item. Each Product_identification acts as associated_item for zero, one, or more Data_element_association objects.

4.3.494 Data_element_association to Product_structure_relationship

Each Data_element_association refers to exactly one Product_structure_relationship in the role of associated_item. Each Product_structure_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.495 Data_element_association to Requirement

Each Data_element_association refers to exactly one Requirement in the role of associated_item. Each Requirement acts as associated_item for zero, one, or more Data_element_association objects.

4.3.496 Data_element_association to Route

Each Data_element_association refers to exactly one Route in the role of associated_item. Each Route acts as associated_item for zero, one, or more Data_element_association objects.

4.3.497 Data_element_association to Route_relationship

Each Data_element_association refers to exactly one Route_relationship in the role of associated_item. Each Route_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.498 Data_element_association to Routed_segment

Each Data_element_association refers to exactly one Routed_segment in the role of associated_item. Each Routed_segment acts as associated_item for zero, one, or more Data_element_association objects.

4.3.499 Data_element_association to Section

Each Data_element_association refers to exactly one Section in the role of associated_item. Each Section acts as associated_item for zero, one, or more Data_element_association objects.

4.3.500 Data_element_association to Section_end

Each Data_element_association refers to exactly one Section_end in the role of associated_item. Each Section_end acts as associated_item for zero, one, or more Data_element_association objects.

4.3.501 Data_element_association to Section_interface

Each Data_element_association refers to exactly one Section_interface in the role of associated_item. Each Section_interface acts as associated_item for zero, one, or more Data_element_association objects.

4.3.502 Data_element_association to Section_interface_relationship

Each Data_element_association refers to exactly one Section_interface_relationship in the role of associated_item. Each Section_interface_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.503 Data_element_association to Section_relationship

Each Data_element_association refers to exactly one Section_relationship in the role of associated_item. Each Section_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.504 Data_element_association to Signal

Each Data_element_association refers to exactly one Signal in the role of associated_item. Each Signal acts as associated_item for zero, one, or more Data_element_association objects.

4.3.505 Data_element_association to Signal_value

Each Data_element_association refers to exactly one Signal_value in the role of associated_item. Each Signal_value acts as associated_item for zero, one, or more Data_element_association objects.

4.3.506 Data_element_association to Technical_system

Each Data_element_association refers to exactly one Technical_system in the role of associated_item. Each Technical_system acts as associated_item for zero, one, or more Data_element_association objects.

4.3.507 Data_element_association to Technical_system

Each Data_element_association refers to zero or one Technical_system in the role of data_element_context. Each Technical_system acts as data_element_context for zero, one, or more Data_element_association objects.

4.3.508 Data_element_association to Technical_system_relationship

Each Data_element_association refers to exactly one Technical_system_relationship in the role of associated_item. Each Technical_system_relationship acts as associated_item for zero, one, or more Data_element_association objects.

4.3.509 Data_element_association to Terminal

Each Data_element_association refers to exactly one Terminal in the role of associated_item. Each Terminal acts as associated_item for zero, one, or more Data_element_association objects.

4.3.510 Data_element_association to Work_order

Each Data_element_association refers to exactly one Work_order in the role of associated_item. Each Work_order acts as associated_item for zero, one, or more Data_element_association objects.

4.3.511 Data_element_definition to External_library_reference

Each Data_element_definition refers to zero or one External_library_reference in the role of source. Each External_library_reference acts as source for zero, one, or more Data_element_definition objects.

4.3.512 Data_element_definition to Property_reference

Each Data_element_definition refers to zero or one Property_reference in the role of source. Each Property_reference acts as source for zero, one, or more Data_element_definition objects.

4.3.513 Data_element_definition_relationship to Data_element_definition

Each Data_element_definition_relationship refers to exactly one Data_element_definition in the role of related. Each Data_element_definition acts as related for zero, one, or more Data_element_definition_relationship objects.

4.3.514 Data_element_definition_relationship to Data_element_definition

Each Data_element_definition_relationship refers to exactly one Data_element_definition in the role of relating. Each Data_element_definition acts as relating for zero, one, or more Data_element_definition_relationship objects.

4.3.515 Data_element_relationship to Data_element

Each Data_element_relationship refers to exactly one Data_element in the role of related. Each Data_element acts as related for zero, one, or more Data_element_relationship objects.

4.3.516 Data_element_relationship to Data_element

Each Data_element_relationship refers to exactly one Data_element in the role of relating. Each Data_element acts as relating for zero, one, or more Data_element_relationship objects.

4.3.517 Data_element_specification to Data_element_definition

Each Data_element_specification refers to exactly one Data_element_definition in the role of specification_of. Each Data_element_definition acts as specification_of for zero, one, or more Data_element_specification objects.

4.3.518 Data_element_specification to Language

Each Data_element_specification refers to zero or one Language in the role of language_specification. Each Language acts as language_specification for zero, one, or more Data_element_specification objects.

4.3.519 Date_and_person_assignment to Activity

Each Date_and_person_assignment is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Date_and_person_assignment objects.

4.3.520 Date_and_person_assignment to Activity_element

Each Date_and_person_assignment is_applied_to one or more Activity_element objects. Each Activity_element is related to zero, one, or more Date_and_person_assignment objects.

4.3.521 Date_and_person_assignment to Activity_method_assignment

Each Date_and_person_assignment is_applied_to one or more Activity_method_assignment objects. Each Activity_method_assignment is related to zero, one, or more Date_and_person_assignment objects.

4.3.522 Date_and_person_assignment to Activity_relationship

Each Date_and_person_assignment is_applied_to one or more Activity_relationship objects. Each Activity_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.523 Date_and_person_assignment to Alternate_item_relationship

Each Date_and_person_assignment is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.524 Date_and_person_assignment to Approval_status

Each Date_and_person_assignment is_applied_to one or more Approval_status objects. Each Approval_status is related to zero, one, or more Date_and_person_assignment objects.

4.3.525 Date_and_person_assignment to Assembly_component_relationship

Each Date_and_person_assignment is_applied_to one or more Assembly_component_relationship objects. Each Assembly_component_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.526 Date_and_person_assignment to Assembly_substitute_relationship

Each Date_and_person_assignment is_applied_to one or more Assembly_substitute_relationship objects. Each Assembly_substitute_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.527 Date_and_person_assignment to Cable_pull_information

Each Date_and_person_assignment is_applied_to one or more Cable_pull_information objects. Each Cable_pull_information is related to zero, one, or more Date_and_person_assignment objects.

4.3.528 Date_and_person_assignment to Certification

Each Date_and_person_assignment is_applied_to one or more Certification objects. Each Certification is related to zero, one, or more Date_and_person_assignment objects.

4.3.529 Date_and_person_assignment to Class_category_association

Each Date_and_person_assignment is_applied_to one or more Class_category_association objects. Each Class_category_association is related to zero, one, or more Date_and_person_assignment objects.

4.3.530 Date_and_person_assignment to Class_condition_association

Each Date_and_person_assignment is_applied_to one or more Class_condition_association objects. Each Class_condition_association is related to zero, one, or more Date_and_person_assignment objects.

4.3.531 Date_and_person_assignment to Class_inclusion_association

Each Date_and_person_assignment is_applied_to one or more Class_inclusion_association objects. Each Class_inclusion_association is related to zero, one, or more Date_and_person_assignment objects.

4.3.532 Date_and_person_assignment to Class_specification_association

Each Date_and_person_assignment is_applied_to one or more Class_specification_association objects. Each Class_specification_association is related to zero, one, or more Date_and_person_assignment objects.

4.3.533 Date_and_person_assignment to Class_structure_relationship

Each Date_and_person_assignment is_applied_to one or more Class_structure_relationship objects. Each Class_structure_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.534 Date_and_person_assignment to Classification_association

Each Date_and_person_assignment is_applied_to one or more Classification_association objects. Each Classification_association is related to zero, one, or more Date_and_person_assignment objects.

4.3.535 Date_and_person_assignment to Classification_attribute

Each Date_and_person_assignment is_applied_to one or more Classification_attribute objects. Each Classification_attribute is related to zero, one, or more Date_and_person_assignment objects.

4.3.536 Date_and_person_assignment to Classification_system

Each Date_and_person_assignment is_applied_to one or more Classification_system objects. Each Classification_system is related to zero, one, or more Date_and_person_assignment objects.

4.3.537 Date_and_person_assignment to Complex_product

Each Date_and_person_assignment is_applied_to one or more Complex_product objects. Each Complex_product is related to zero, one, or more Date_and_person_assignment objects.

4.3.538 Date_and_person_assignment to Complex_product_relationship

Each Date_and_person_assignment is_applied_to one or more Complex_product_relationship objects. Each Complex_product_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.539 Date_and_person_assignment to Composition_relationship

Each Date_and_person_assignment is_applied_to one or more Composition_relationship objects. Each Composition_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.540 Date_and_person_assignment to Configuration

Each Date_and_person_assignment is_applied_to one or more Configuration objects. Each Configuration is related to zero, one, or more Date_and_person_assignment objects.

4.3.541 Date_and_person_assignment to Connectivity_allocation

Each Date_and_person_assignment is_applied_to one or more Connectivity_allocation objects. Each Connectivity_allocation is related to zero, one, or more Date_and_person_assignment objects.

4.3.542 Date_and_person_assignment to Connectivity_definition

Each Date_and_person_assignment is_applied_to one or more Connectivity_definition objects. Each Connectivity_definition is related to zero, one, or more Date_and_person_assignment objects.

4.3.543 Date_and_person_assignment to Connectivity_definition_relationship

Each Date_and_person_assignment is_applied_to one or more Connectivity_definition_relationship objects. Each Connectivity_definition_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.544 Date_and_person_assignment to Contract

Each Date_and_person_assignment is_applied_to one or more Contract objects. Each Contract is related to zero, one, or more Date_and_person_assignment objects.

4.3.545 Date_and_person_assignment to Data_element

Each Date_and_person_assignment is_applied_to one or more Data_element objects. Each Data_element is related to zero, one, or more Date_and_person_assignment objects.

4.3.546 Date_and_person_assignment to Data_element_association

Each Date_and_person_assignment is_applied_to one or more Data_element_association objects. Each Data_element_association is related to zero, one, or more Date_and_person_assignment objects.

4.3.547 Date_and_person_assignment to Data_element_definition

Each Date_and_person_assignment is_applied_to one or more Data_element_definition objects. Each Data_element_definition is related to zero, one, or more Date_and_person_assignment objects.

4.3.548 Date_and_person_assignment to Data_element_relationship

Each Date_and_person_assignment is_applied_to one or more Data_element_relationship objects. Each Data_element_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.549 Date_and_person_assignment to Data_element_specification

Each Date_and_person_assignment is_applied_to one or more Data_element_specification objects. Each Data_element_specification is related to zero, one, or more Date_and_person_assignment objects.

4.3.550 Date_and_person_assignment to Date_and_person_or_organization

Each Date_and_person_assignment refers to exactly one Date_and_person_or_organization in the role of assigned_date_and_person. Each Date_and_person_or_organization acts as assigned_date_and_person for zero, one, or more Date_and_person_assignment objects.

4.3.551 Date_and_person_assignment to Design_discipline_item_definition

Each Date_and_person_assignment is_applied_to one or more Design_discipline_item_definition objects. Each Design_discipline_item_definition is related to zero, one, or more Date_and_person_assignment objects.

4.3.552 Date_and_person_assignment to Device

Each Date_and_person_assignment is_applied_to one or more Device objects. Each Device is related to zero, one, or more Date_and_person_assignment objects.

4.3.553 Date_and_person_assignment to Device_relationship

Each Date_and_person_assignment is_applied_to one or more Device_relationship objects. Each Device_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.554 Date_and_person_assignment to Document

Each Date_and_person_assignment is_applied_to one or more Document objects. Each Document is related to zero, one, or more Date_and_person_assignment objects.

4.3.555 Date_and_person_assignment to Document_file

Each Date_and_person_assignment is_applied_to one or more Document_file objects. Each Document_file is related to zero, one, or more Date_and_person_assignment objects.

4.3.556 Date_and_person_assignment to Document_file_relationship

Each Date_and_person_assignment is_applied_to one or more Document_file_relationship objects. Each Document_file_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.557 Date_and_person_assignment to Document_representation

Each Date_and_person_assignment is_applied_to one or more Document_representation objects. Each Document_representation is related to zero, one, or more Date_and_person_assignment objects.

4.3.558 Date_and_person_assignment to Document_version

Each Date_and_person_assignment is_applied_to one or more Document_version objects. Each Document_version is related to zero, one, or more Date_and_person_assignment objects.

4.3.559 Date_and_person_assignment to Document_version_relationship

Each Date_and_person_assignment is_applied_to one or more Document_version_relationship objects. Each Document_version_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.560 Date_and_person_assignment to Drawing

Each Date_and_person_assignment is_applied_to one or more Drawing objects. Each Drawing is related to zero, one, or more Date_and_person_assignment objects.

4.3.561 Date_and_person_assignment to Drawing_sequence

Each Date_and_person_assignment is_applied_to one or more Drawing_sequence objects. Each Drawing_sequence is related to zero, one, or more Date_and_person_assignment objects.

4.3.562 Date_and_person_assignment to Drawing_sheet

Each Date_and_person_assignment is_applied_to one or more Drawing_sheet objects. Each Drawing_sheet is related to zero, one, or more Date_and_person_assignment objects.

4.3.563 Date_and_person_assignment to Drawing_sheet_relationship

Each Date_and_person_assignment is_applied_to one or more Drawing_sheet_relationship objects. Each Drawing_sheet_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.564 Date_and_person_assignment to Free_segment

Each Date_and_person_assignment is_applied_to one or more Free_segment objects. Each Free_segment is related to zero, one, or more Date_and_person_assignment objects.

4.3.565 Date_and_person_assignment to Function_definition

Each Date_and_person_assignment is_applied_to one or more Function_definition objects. Each Function_definition is related to zero, one, or more Date_and_person_assignment objects.

4.3.566 Date_and_person_assignment to Function_definition_relationship

Each Date_and_person_assignment is_applied_to one or more Function_definition_relationship objects. Each Function_definition_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.567 Date_and_person_assignment to Function_interface

Each Date_and_person_assignment is_applied_to one or more Function_interface objects. Each Function_interface is related to zero, one, or more Date_and_person_assignment objects.

4.3.568 Date_and_person_assignment to Function_unit

Each Date_and_person_assignment is_applied_to one or more Function_unit objects. Each Function_unit is related to zero, one, or more Date_and_person_assignment objects.

4.3.569 Date_and_person_assignment to Function_unit_relationship

Each Date_and_person_assignment is_applied_to one or more Function_unit_relationship objects. Each Function_unit_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.570 Date_and_person_assignment to Function_version

Each Date_and_person_assignment is_applied_to one or more Function_version objects. Each Function_version is related to zero, one, or more Date_and_person_assignment objects.

4.3.571 Date_and_person_assignment to Function_version_relationship

Each Date_and_person_assignment is_applied_to one or more Function_version_relationship objects. Each Function_version_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.572 Date_and_person_assignment to Functional_connectivity_definition

Each Date_and_person_assignment is_applied_to one or more Functional_connectivity_definition objects. Each Functional_connectivity_definition is related to zero, one, or more Date_and_person_assignment objects.

4.3.573 Date_and_person_assignment to Functional_connectivity_definition_relationship

Each Date_and_person_assignment is_applied_to one or more Functional_connectivity_definition_relationship objects. Each Functional_connectivity_definition_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.574 Date_and_person_assignment to Functional_unit_allocation

Each Date_and_person_assignment is_applied_to one or more Functional_unit_allocation objects. Each Functional_unit_allocation is related to zero, one, or more Date_and_person_assignment objects.

4.3.575 Date_and_person_assignment to Functionality

Each Date_and_person_assignment is_applied_to one or more Functionality objects. Each Functionality is related to zero, one, or more Date_and_person_assignment objects.

4.3.576 Date_and_person_assignment to General_classification

Each Date_and_person_assignment is_applied_to one or more General_classification objects. Each General_classification is related to zero, one, or more Date_and_person_assignment objects.

4.3.577 Date_and_person_assignment to Generic_note

Each Date_and_person_assignment is_applied_to one or more Generic_note objects. Each Generic_note is related to zero, one, or more Date_and_person_assignment objects.

4.3.578 Date_and_person_assignment to Interface

Each Date_and_person_assignment is_applied_to one or more Interface objects. Each Interface is related to zero, one, or more Date_and_person_assignment objects.

4.3.579 Date_and_person_assignment to Interface_port

Each Date_and_person_assignment is_applied_to one or more Interface_port objects. Each Interface_port is related to zero, one, or more Date_and_person_assignment objects.

4.3.580 Date_and_person_assignment to Interface_terminal

Each Date_and_person_assignment is_applied_to one or more Interface_terminal objects. Each Interface_terminal is related to zero, one, or more Date_and_person_assignment objects.

4.3.581 Date_and_person_assignment to Item

Each Date_and_person_assignment is_applied_to one or more Item objects. Each Item is related to zero, one, or more Date_and_person_assignment objects.

4.3.582 Date_and_person_assignment to Item_definition_relationship

Each Date_and_person_assignment is_applied_to one or more Item_definition_relationship objects. Each Item_definition_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.583 Date_and_person_assignment to Item_version

Each Date_and_person_assignment is_applied_to one or more Item_version objects. Each Item_version is related to zero, one, or more Date_and_person_assignment objects.

4.3.584 Date_and_person_assignment to Item_version_relationship

Each Date_and_person_assignment is_applied_to one or more Item_version_relationship objects. Each Item_version_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.585 Date_and_person_assignment to Location

Each Date_and_person_assignment is_applied_to one or more Location objects. Each Location is related to zero, one, or more Date_and_person_assignment objects.

4.3.586 Date_and_person_assignment to Location_relationship

Each Date_and_person_assignment is_applied_to one or more Location_relationship objects. Each Location_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.587 Date_and_person_assignment to Marking

Each Date_and_person_assignment is_applied_to one or more Marking objects. Each Marking is related to zero, one, or more Date_and_person_assignment objects.

4.3.588 Date_and_person_assignment to Material

Each Date_and_person_assignment is_applied_to one or more Material objects. Each Material is related to zero, one, or more Date_and_person_assignment objects.

4.3.589 Date_and_person_assignment to Node

Each Date_and_person_assignment is_applied_to one or more Node objects. Each Node is related to zero, one, or more Date_and_person_assignment objects.

4.3.590 Date_and_person_assignment to Node_relationship

Each Date_and_person_assignment is_applied_to one or more Node_relationship objects. Each Node_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.591 Date_and_person_assignment to Notification

Each Date_and_person_assignment is_applied_to one or more Notification objects. Each Notification is related to zero, one, or more Date_and_person_assignment objects.

4.3.592 Date_and_person_assignment to Notification_relationship

Each Date_and_person_assignment is_applied_to one or more Notification_relationship objects. Each Notification_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.593 Date_and_person_assignment to Offered_function_allocation

Each Date_and_person_assignment is_applied_to one or more Offered_function_allocation objects. Each Offered_function_allocation is related to zero, one, or more Date_and_person_assignment objects.

4.3.594 Date_and_person_assignment to Organization_relationship

Each Date_and_person_assignment is_applied_to one or more Organization_relationship objects. Each Organization_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.595 Date_and_person_assignment to Path

Each Date_and_person_assignment is_applied_to one or more Path objects. Each Path is related to zero, one, or more Date_and_person_assignment objects.

4.3.596 Date_and_person_assignment to Path_node

Each Date_and_person_assignment is_applied_to one or more Path_node objects. Each Path_node is related to zero, one, or more Date_and_person_assignment objects.

4.3.597 Date_and_person_assignment to Path_node_relationship

Each Date_and_person_assignment is_applied_to one or more Path_node_relationship objects. Each Path_node_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.598 Date_and_person_assignment to Path_relationship

Each Date_and_person_assignment is_applied_to one or more Path_relationship objects. Each Path_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.599 Date_and_person_assignment to Person_in_organization

Each Date_and_person_assignment is_applied_to one or more Person_in_organization objects. Each Person_in_organization is related to zero, one, or more Date_and_person_assignment objects.

4.3.600 Date_and_person_assignment to Person_in_organization - relationship

Each Date_and_person_assignment is_applied_to one or more Person_in_organization_relationship objects. Each Person_in_organization_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.601 Date_and_person_assignment to Physical_assembly_relationship

Each Date_and_person_assignment is_applied_to one or more Physical_assembly_relationship objects. Each Physical_assembly_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.602 Date_and_person_assignment to Physical_instance

Each Date_and_person_assignment is_applied_to one or more Physical_instance objects. Each Physical_instance is related to zero, one, or more Date_and_person_assignment objects.

4.3.603 Date_and_person_assignment to Port

Each Date_and_person_assignment is_applied_to one or more Port objects. Each Port is related to zero, one, or more Date_and_person_assignment objects.

4.3.604 Date_and_person_assignment to Port_allocation

Each Date_and_person_assignment is_applied_to one or more Port_allocation objects. Each Port_allocation is related to zero, one, or more Date_and_person_assignment objects.

4.3.605 Date_and_person_assignment to Port_association

Each Date_and_person_assignment is_applied_to one or more Port_association objects. Each Port_association is related to zero, one, or more Date_and_person_assignment objects.

4.3.606 Date_and_person_assignment to Preferred_item_allocation

Each Date_and_person_assignment is_applied_to one or more Preferred_item_allocation objects. Each Preferred_item_allocation is related to zero, one, or more Date_and_person_assignment objects.

4.3.607 Date_and_person_assignment to Preferred_item_terminal_allocation

Each Date_and_person_assignment is_applied_to one or more Preferred_item_terminal_allocation objects. Each Preferred_item_terminal_allocation is related to zero, one, or more Date_and_person_assignment objects.

4.3.608 Date_and_person_assignment to Process_variable

Each Date_and_person_assignment is_applied_to one or more Process_variable objects. Each Process_variable is related to zero, one, or more Date_and_person_assignment objects.

4.3.609 Date_and_person_assignment to Process_variable_relationship

Each Date_and_person_assignment is_applied_to one or more Process_variable_relationship objects. Each Process_variable_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.610 Date_and_person_assignment to Product_class

Each Date_and_person_assignment is_applied_to one or more Product_class objects. Each Product_class is related to zero, one, or more Date_and_person_assignment objects.

4.3.611 Date_and_person_assignment to Product_identification

Each Date_and_person_assignment is_applied_to one or more Product_identification objects. Each Product_identification is related to zero, one, or more Date_and_person_assignment objects.

4.3.612 Date_and_person_assignment to Product_structure_relationship

Each Date_and_person_assignment is_applied_to one or more Product_structure_relationship objects. Each Product_structure_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.613 Date_and_person_assignment to Project

Each Date_and_person_assignment is_applied_to one or more Project objects. Each Project is related to zero, one, or more Date_and_person_assignment objects.

4.3.614 Date_and_person_assignment to Requirement

Each Date_and_person_assignment is_applied_to one or more Requirement objects. Each Requirement is related to zero, one, or more Date_and_person_assignment objects.

4.3.615 Date_and_person_assignment to Requirement_document_assignment

Each Date_and_person_assignment is_applied_to one or more Requirement_document_assignment objects. Each Requirement_document_assignment is related to zero, one, or more Date_and_person_assignment objects.

4.3.616 Date_and_person_assignment to Route

Each Date_and_person_assignment is_applied_to one or more Route objects. Each Route is related to zero, one, or more Date_and_person_assignment objects.

4.3.617 Date_and_person_assignment to Route_relationship

Each Date_and_person_assignment is_applied_to one or more Route_relationship objects. Each Route_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.618 Date_and_person_assignment to Routed_segment

Each Date_and_person_assignment is_applied_to one or more Routed_segment objects. Each Routed_segment is related to zero, one, or more Date_and_person_assignment objects.

4.3.619 Date_and_person_assignment to Section

Each Date_and_person_assignment is_applied_to one or more Section objects. Each Section is related to zero, one, or more Date_and_person_assignment objects.

4.3.620 Date_and_person_assignment to Section_end

Each Date_and_person_assignment is_applied_to one or more Section_end objects. Each Section_end is related to zero, one, or more Date_and_person_assignment objects.

4.3.621 Date_and_person_assignment to Section_interface

Each Date_and_person_assignment is_applied_to one or more Section_interface objects. Each Section_interface is related to zero, one, or more Date_and_person_assignment objects.

4.3.622 Date_and_person_assignment to Section_interface_relationship

Each Date_and_person_assignment is_applied_to one or more Section_interface_relationship objects. Each Section_interface_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.623 Date_and_person_assignment to Section_relationship

Each Date_and_person_assignment is_applied_to one or more Section_relationship objects. Each Section_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.624 Date_and_person_assignment to Security_classification

Each Date_and_person_assignment is_applied_to one or more Security_classification objects. Each Security_classification is related to zero, one, or more Date_and_person_assignment objects.

4.3.625 Date_and_person_assignment to Security_level

Each Date_and_person_assignment is_applied_to one or more Security_level objects. Each Security_level is related to zero, one, or more Date_and_person_assignment objects.

4.3.626 Date_and_person_assignment to Signal

Each Date_and_person_assignment is_applied_to one or more Signal objects. Each Signal is related to zero, one, or more Date_and_person_assignment objects.

4.3.627 Date_and_person_assignment to Signal_relationship

Each Date_and_person_assignment is_applied_to one or more Signal_relationship objects. Each Signal_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.628 Date_and_person_assignment to Signal_value

Each Date_and_person_assignment is_applied_to one or more Signal_value objects. Each Signal_value is related to zero, one, or more Date_and_person_assignment objects.

4.3.629 Date_and_person_assignment to Specification

Each Date_and_person_assignment is_applied_to one or more Specification objects. Each Specification is related to zero, one, or more Date_and_person_assignment objects.

4.3.630 Date_and_person_assignment to Specification_category

Each Date_and_person_assignment is_applied_to one or more Specification_category objects. Each Specification_category is related to zero, one, or more Date_and_person_assignment objects.

4.3.631 Date_and_person_assignment to Specification_expression

Each Date_and_person_assignment is_applied_to one or more Specification_expression objects. Each Specification_expression is related to zero, one, or more Date_and_person_assignment objects.

4.3.632 Date_and_person_assignment to Specification_inclusion

Each Date_and_person_assignment is_applied_to one or more Specification_inclusion objects. Each Specification_inclusion is related to zero, one, or more Date_and_person_assignment objects.

4.3.633 Date_and_person_assignment to Technical_system

Each Date_and_person_assignment is_applied_to one or more Technical_system objects. Each Technical_system is related to zero, one, or more Date_and_person_assignment objects.

4.3.634 Date_and_person_assignment to Technical_system_relationship

Each Date_and_person_assignment is_applied_to one or more Technical_system_relationship objects. Each Technical_system_relationship is related to zero, one, or more Date_and_person_assignment objects.

4.3.635 Date_and_person_assignment to Terminal

Each Date_and_person_assignment is_applied_to one or more Terminal objects. Each Terminal is related to zero, one, or more Date_and_person_assignment objects.

4.3.636 Date_and_person_assignment to Work_order

Each Date_and_person_assignment is_applied_to one or more Work_order objects. Each Work_order is related to zero, one, or more Date_and_person_assignment objects.

4.3.637 Date_and_person_assignment to Work_request

Each Date_and_person_assignment is_applied_to one or more Work_request objects. Each Work_request is related to zero, one, or more Date_and_person_assignment objects.

4.3.638 Date_and_person_or_organization to Date_time

Each Date_and_person_or_organization refers to exactly one Date_time in the role of associated_date. Each Date_time acts as associated_date for zero, one, or more Date_and_person_or_organization objects.

4.3.639 Date_and_person_or_organization to Organization

Each Date_and_person_or_organization refers to exactly one Organization in the role of person_or_organization. Each Organization acts as person_or_organization for zero, one, or more Date_and_person_or_organization objects.

4.3.640 Date_and_person_or_organization to Person_in_organization

Each Date_and_person_or_organization refers to exactly one Person_in_organization in the role of person_or_organization. Each Person_in_organization acts as person_or_organization for zero, one, or more Date_and_person_or_organization objects.

4.3.641 Date_time_assignment to Activity

Each Date_time_assignment is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Date_time_assignment objects.

4.3.642 Date_time_assignment to Activity_element

Each Date_time_assignment is_applied_to one or more Activity_element objects. Each Activity_element is related to zero, one, or more Date_time_assignment objects.

4.3.643 Date_time_assignment to Activity_method_assignment

Each Date_time_assignment is_applied_to one or more Activity_method_assignment objects. Each Activity_method_assignment is related to zero, one, or more Date_time_assignment objects.

4.3.644 Date_time_assignment to Activity_relationship

Each Date_time_assignment is_applied_to one or more Activity_relationship objects. Each Activity_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.645 Date_time_assignment to Alternate_item_relationship

Each Date_time_assignment is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.646 Date_time_assignment to Approval_status

Each Date_time_assignment is_applied_to one or more Approval_status objects. Each Approval_status is related to zero, one, or more Date_time_assignment objects.

4.3.647 Date_time_assignment to Assembly_component_relationship

Each Date_time_assignment is_applied_to one or more Assembly_component_relationship objects. Each Assembly_component_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.648 Date_time_assignment to Assembly_substitute_relationship

Each Date_time_assignment is_applied_to one or more Assembly_substitute_relationship objects. Each Assembly_substitute_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.649 Date_time_assignment to Cable_pull_information

Each Date_time_assignment is_applied_to one or more Cable_pull_information objects. Each Cable_pull_information is related to zero, one, or more Date_time_assignment objects.

4.3.650 Date_time_assignment to Certification

Each Date_time_assignment is_applied_to one or more Certification objects. Each Certification is related to zero, one, or more Date_time_assignment objects.

4.3.651 Date_time_assignment to Class_category_association

Each Date_time_assignment is_applied_to one or more Class_category_association objects. Each Class_category_association is related to zero, one, or more Date_time_assignment objects.

4.3.652 Date_time_assignment to Class_condition_association

Each Date_time_assignment is_applied_to one or more Class_condition_association objects. Each Class_condition_association is related to zero, one, or more Date_time_assignment objects.

4.3.653 Date_time_assignment to Class_inclusion_association

Each Date_time_assignment is_applied_to one or more Class_inclusion_association objects. Each Class_inclusion_association is related to zero, one, or more Date_time_assignment objects.

4.3.654 Date_time_assignment to Class_specification_association

Each Date_time_assignment is_applied_to one or more Class_specification_association objects. Each Class_specification_association is related to zero, one, or more Date_time_assignment objects.

4.3.655 Date_time_assignment to Class_structure_relationship

Each Date_time_assignment is_applied_to one or more Class_structure_relationship objects. Each Class_structure_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.656 Date_time_assignment to Classification_association

Each Date_time_assignment is_applied_to one or more Classification_association objects. Each Classification_association is related to zero, one, or more Date_time_assignment objects.

4.3.657 Date_time_assignment to Classification_attribute

Each Date_time_assignment is_applied_to one or more Classification_attribute objects. Each Classification_attribute is related to zero, one, or more Date_time_assignment objects.

4.3.658 Date_time_assignment to Classification_system

Each Date_time_assignment is_applied_to one or more Classification_system objects. Each Classification_system is related to zero, one, or more Date_time_assignment objects.

4.3.659 Date_time_assignment to Complex_product

Each Date_time_assignment is_applied_to one or more Complex_product objects. Each Complex_product is related to zero, one, or more Date_time_assignment objects.

4.3.660 Date_time_assignment to Complex_product_relationship

Each Date_time_assignment is_applied_to one or more Complex_product_relationship objects. Each Complex_product_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.661 Date_time_assignment to Composition_relationship

Each Date_time_assignment is_applied_to one or more Composition_relationship objects. Each Composition_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.662 Date_time_assignment to Configuration

Each Date_time_assignment is_applied_to one or more Configuration objects. Each Configuration is related to zero, one, or more Date_time_assignment objects.

4.3.663 Date_time_assignment to Connectivity_allocation

Each Date_time_assignment is_applied_to one or more Connectivity_allocation objects. Each Connectivity_allocation is related to zero, one, or more Date_time_assignment objects.

4.3.664 Date_time_assignment to Connectivity_definition

Each Date_time_assignment is_applied_to one or more Connectivity_definition objects. Each Connectivity_definition is related to zero, one, or more Date_time_assignment objects.

4.3.665 Date_time_assignment to Connectivity_definition_relationship

Each Date_time_assignment is_applied_to one or more Connectivity_definition_relationship objects. Each Connectivity_definition_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.666 Date_time_assignment to Contract

Each Date_time_assignment is_applied_to one or more Contract objects. Each Contract is related to zero, one, or more Date_time_assignment objects.

4.3.667 Date_time_assignment to Data_element

Each Date_time_assignment is_applied_to one or more Data_element objects. Each Data_element is related to zero, one, or more Date_time_assignment objects.

4.3.668 Date_time_assignment to Data_element_association

Each Date_time_assignment is_applied_to one or more Data_element_association objects. Each Data_element_association is related to zero, one, or more Date_time_assignment objects.

4.3.669 Date_time_assignment to Data_element_definition

Each Date_time_assignment is_applied_to one or more Data_element_definition objects. Each Data_element_definition is related to zero, one, or more Date_time_assignment objects.

4.3.670 Date_time_assignment to Data_element_relationship

Each Date_time_assignment is_applied_to one or more Data_element_relationship objects. Each Data_element_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.671 Date_time_assignment to Data_element_specification

Each Date_time_assignment is_applied_to one or more Data_element_specification objects. Each Data_element_specification is related to zero, one, or more Date_time_assignment objects.

4.3.672 Date_time_assignment to Date_time

Each Date_time_assignment refers to exactly one Date_time in the role of assigned_date_time. Each Date_time acts as assigned_date_time for zero, one, or more Date_time_assignment objects.

4.3.673 Date_time_assignment to Design_discipline_item_definition

Each Date_time_assignment is_applied_to one or more Design_discipline_item_definition objects. Each Design_discipline_item_definition is related to zero, one, or more Date_time_assignment objects.

4.3.674 Date_time_assignment to Device

Each Date_time_assignment is_applied_to one or more Device objects. Each Device is related to zero, one, or more Date_time_assignment objects.

4.3.675 Date_time_assignment to Device_relationship

Each Date_time_assignment is_applied_to one or more Device_relationship objects. Each Device_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.676 Date_time_assignment to Document

Each Date_time_assignment is_applied_to one or more Document objects. Each Document is related to zero, one, or more Date_time_assignment objects.

4.3.677 Date_time_assignment to Document_file

Each Date_time_assignment is_applied_to one or more Document_file objects. Each Document_file is related to zero, one, or more Date_time_assignment objects.

4.3.678 Date_time_assignment to Document_file_relationship

Each Date_time_assignment is_applied_to one or more Document_file_relationship objects. Each Document_file_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.679 Date_time_assignment to Document_representation

Each Date_time_assignment is_applied_to one or more Document_representation objects. Each Document_representation is related to zero, one, or more Date_time_assignment objects.

4.3.680 Date_time_assignment to Document_version

Each Date_time_assignment is_applied_to one or more Document_version objects. Each Document_version is related to zero, one, or more Date_time_assignment objects.

4.3.681 Date_time_assignment to Document_version_relationship

Each Date_time_assignment is_applied_to one or more Document_version_relationship objects. Each Document_version_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.682 Date_time_assignment to Drawing

Each Date_time_assignment is_applied_to one or more Drawing objects. Each Drawing is related to zero, one, or more Date_time_assignment objects.

4.3.683 Date_time_assignment to Drawing_sequence

Each Date_time_assignment is_applied_to one or more Drawing_sequence objects. Each Drawing_sequence is related to zero, one, or more Date_time_assignment objects.

4.3.684 Date_time_assignment to Drawing_sheet

Each Date_time_assignment is_applied_to one or more Drawing_sheet objects. Each Drawing_sheet is related to zero, one, or more Date_time_assignment objects.

4.3.685 Date_time_assignment to Drawing_sheet_relationship

Each Date_time_assignment is_applied_to one or more Drawing_sheet_relationship objects. Each Drawing_sheet_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.686 Date_time_assignment to Free_segment

Each Date_time_assignment is_applied_to one or more Free_segment objects. Each Free_segment is related to zero, one, or more Date_time_assignment objects.

4.3.687 Date_time_assignment to Function_definition

Each Date_time_assignment is_applied_to one or more Function_definition objects. Each Function_definition is related to zero, one, or more Date_time_assignment objects.

4.3.688 Date_time_assignment to Function_definition_relationship

Each Date_time_assignment is_applied_to one or more Function_definition_relationship objects. Each Function_definition_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.689 Date_time_assignment to Function_interface

Each Date_time_assignment is_applied_to one or more Function_interface objects. Each Function_interface is related to zero, one, or more Date_time_assignment objects.

4.3.690 Date_time_assignment to Function_unit

Each Date_time_assignment is_applied_to one or more Function_unit objects. Each Function_unit is related to zero, one, or more Date_time_assignment objects.

4.3.691 Date_time_assignment to Function_unit_relationship

Each Date_time_assignment is_applied_to one or more Function_unit_relationship objects. Each Function_unit_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.692 Date_time_assignment to Function_version

Each Date_time_assignment is_applied_to one or more Function_version objects. Each Function_version is related to zero, one, or more Date_time_assignment objects.

4.3.693 Date_time_assignment to Function_version_relationship

Each Date_time_assignment is_applied_to one or more Function_version_relationship objects. Each Function_version_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.694 Date_time_assignment to Functional_connectivity_definition

Each Date_time_assignment is_applied_to one or more Functional_connectivity_definition objects. Each Functional_connectivity_definition is related to zero, one, or more Date_time_assignment objects.

4.3.695 Date_time_assignment to Functional_connectivity_definition - relationship

Each Date_time_assignment is_applied_to one or more Functional_connectivity_definition - relationship objects. Each Functional_connectivity_definition_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.696 Date_time_assignment to Functional_unit_allocation

Each Date_time_assignment is_applied_to one or more Functional_unit_allocation objects. Each Functional_unit_allocation is related to zero, one, or more Date_time_assignment objects.

4.3.697 Date_time_assignment to Functionality

Each Date_time_assignment is_applied_to one or more Functionality objects. Each Functionality is related to zero, one, or more Date_time_assignment objects.

4.3.698 Date_time_assignment to General_classification

Each Date_time_assignment is_applied_to one or more General_classification objects. Each General_classification is related to zero, one, or more Date_time_assignment objects.

4.3.699 Date_time_assignment to Generic_note

Each Date_time_assignment is_applied_to one or more Generic_note objects. Each Generic_note is related to zero, one, or more Date_time_assignment objects.

4.3.700 Date_time_assignment to Interface

Each Date_time_assignment is_applied_to one or more Interface objects. Each Interface is related to zero, one, or more Date_time_assignment objects.

4.3.701 Date_time_assignment to Interface_port

Each Date_time_assignment is_applied_to one or more Interface_port objects. Each Interface_port is related to zero, one, or more Date_time_assignment objects.

4.3.702 Date_time_assignment to Interface_terminal

Each Date_time_assignment is_applied_to one or more Interface_terminal objects. Each Interface_terminal is related to zero, one, or more Date_time_assignment objects.

4.3.703 Date_time_assignment to Item

Each Date_time_assignment is_applied_to one or more Item objects. Each Item is related to zero, one, or more Date_time_assignment objects.

4.3.704 Date_time_assignment to Item_definition_relationship

Each Date_time_assignment is_applied_to one or more Item_definition_relationship objects. Each Item_definition_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.705 Date_time_assignment to Item_version

Each Date_time_assignment is_applied_to one or more Item_version objects. Each Item_version is related to zero, one, or more Date_time_assignment objects.

4.3.706 Date_time_assignment to Item_version_relationship

Each Date_time_assignment is_applied_to one or more Item_version_relationship objects. Each Item_version_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.707 Date_time_assignment to Location

Each Date_time_assignment is_applied_to one or more Location objects. Each Location is related to zero, one, or more Date_time_assignment objects.

4.3.708 Date_time_assignment to Location_relationship

Each Date_time_assignment is_applied_to one or more Location_relationship objects. Each Location_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.709 Date_time_assignment to Marking

Each Date_time_assignment is_applied_to one or more Marking objects. Each Marking is related to zero, one, or more Date_time_assignment objects.

4.3.710 Date_time_assignment to Material

Each Date_time_assignment is_applied_to one or more Material objects. Each Material is related to zero, one, or more Date_time_assignment objects.

4.3.711 Date_time_assignment to Node

Each Date_time_assignment is_applied_to one or more Node objects. Each Node is related to zero, one, or more Date_time_assignment objects.

4.3.712 Date_time_assignment to Node_relationship

Each Date_time_assignment is_applied_to one or more Node_relationship objects. Each Node_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.713 Date_time_assignment to Notification

Each Date_time_assignment is_applied_to one or more Notification objects. Each Notification is related to zero, one, or more Date_time_assignment objects.

4.3.714 Date_time_assignment to Notification_relationship

Each Date_time_assignment is_applied_to one or more Notification_relationship objects. Each Notification_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.715 Date_time_assignment to Offered_function_allocation

Each Date_time_assignment is_applied_to one or more Offered_function_allocation objects. Each Offered_function_allocation is related to zero, one, or more Date_time_assignment objects.

4.3.716 Date_time_assignment to Organization_relationship

Each Date_time_assignment is_applied_to one or more Organization_relationship objects. Each Organization_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.717 Date_time_assignment to Path

Each Date_time_assignment is_applied_to one or more Path objects. Each Path is related to zero, one, or more Date_time_assignment objects.

4.3.718 Date_time_assignment to Path_node

Each Date_time_assignment is_applied_to one or more Path_node objects. Each Path_node is related to zero, one, or more Date_time_assignment objects.

4.3.719 Date_time_assignment to Path_node_relationship

Each Date_time_assignment is_applied_to one or more Path_node_relationship objects. Each Path_node_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.720 Date_time_assignment to Path_relationship

Each Date_time_assignment is_applied_to one or more Path_relationship objects. Each Path_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.721 Date_time_assignment to Person_in_organization

Each Date_time_assignment is_applied_to one or more Person_in_organization objects. Each Person_in_organization is related to zero, one, or more Date_time_assignment objects.

4.3.722 Date_time_assignment to Person_in_organization_relationship

Each Date_time_assignment is_applied_to one or more Person_in_organization_relationship objects. Each Person_in_organization_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.723 Date_time_assignment to Physical_assembly_relationship

Each Date_time_assignment is_applied_to one or more Physical_assembly_relationship objects. Each Physical_assembly_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.724 Date_time_assignment to Physical_instance

Each Date_time_assignment is_applied_to one or more Physical_instance objects. Each Physical_instance is related to zero, one, or more Date_time_assignment objects.

4.3.725 Date_time_assignment to Port

Each Date_time_assignment is_applied_to one or more Port objects. Each Port is related to zero, one, or more Date_time_assignment objects.

4.3.726 Date_time_assignment to Port_allocation

Each Date_time_assignment is_applied_to one or more Port_allocation objects. Each Port_allocation is related to zero, one, or more Date_time_assignment objects.

4.3.727 Date_time_assignment to Port_association

Each Date_time_assignment is_applied_to one or more Port_association objects. Each Port_association is related to zero, one, or more Date_time_assignment objects.

4.3.728 Date_time_assignment to Preferred_item_allocation

Each Date_time_assignment is_applied_to one or more Preferred_item_allocation objects. Each Preferred_item_allocation is related to zero, one, or more Date_time_assignment objects.

4.3.729 Date_time_assignment to Preferred_item_terminal_allocation

Each Date_time_assignment is_applied_to one or more Preferred_item_terminal_allocation objects. Each Preferred_item_terminal_allocation is related to zero, one, or more Date_time_assignment objects.

4.3.730 Date_time_assignment to Process_variable

Each Date_time_assignment is_applied_to one or more Process_variable objects. Each Process_variable is related to zero, one, or more Date_time_assignment objects.

4.3.731 Date_time_assignment to Process_variable_relationship

Each Date_time_assignment is_applied_to one or more Process_variable_relationship objects. Each Process_variable_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.732 Date_time_assignment to Product_class

Each Date_time_assignment is_applied_to one or more Product_class objects. Each Product_class is related to zero, one, or more Date_time_assignment objects.

4.3.733 Date_time_assignment to Product_identification

Each Date_time_assignment is_applied_to one or more Product_identification objects. Each Product_identification is related to zero, one, or more Date_time_assignment objects.

4.3.734 Date_time_assignment to Product_structure_relationship

Each Date_time_assignment is_applied_to one or more Product_structure_relationship objects. Each Product_structure_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.735 Date_time_assignment to Project

Each Date_time_assignment is_applied_to one or more Project objects. Each Project is related to zero, one, or more Date_time_assignment objects.

4.3.736 Date_time_assignment to Requirement

Each Date_time_assignment is_applied_to one or more Requirement objects. Each Requirement is related to zero, one, or more Date_time_assignment objects.

4.3.737 Date_time_assignment to Requirement_document_assignment

Each Date_time_assignment is_applied_to one or more Requirement_document_assignment objects. Each Requirement_document_assignment is related to zero, one, or more Date_time_assignment objects.

4.3.738 Date_time_assignment to Route

Each Date_time_assignment is_applied_to one or more Route objects. Each Route is related to zero, one, or more Date_time_assignment objects.

4.3.739 Date_time_assignment to Route_relationship

Each Date_time_assignment is_applied_to one or more Route_relationship objects. Each Route_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.740 Date_time_assignment to Routed_segment

Each Date_time_assignment is_applied_to one or more Routed_segment objects. Each Routed_segment is related to zero, one, or more Date_time_assignment objects.

4.3.741 Date_time_assignment to Section

Each Date_time_assignment is_applied_to one or more Section objects. Each Section is related to zero, one, or more Date_time_assignment objects.

4.3.742 Date_time_assignment to Section_end

Each Date_time_assignment is_applied_to one or more Section_end objects. Each Section_end is related to zero, one, or more Date_time_assignment objects.

4.3.743 Date_time_assignment to Section_interface

Each Date_time_assignment is_applied_to one or more Section_interface objects. Each Section_interface is related to zero, one, or more Date_time_assignment objects.

4.3.744 Date_time_assignment to Section_interface_relationship

Each Date_time_assignment is_applied_to one or more Section_interface_relationship objects. Each Section_interface_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.745 Date_time_assignment to Section_relationship

Each Date_time_assignment is_applied_to one or more Section_relationship objects. Each Section_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.746 Date_time_assignment to Security_classification

Each Date_time_assignment is_applied_to one or more Security_classification objects. Each Security_classification is related to zero, one, or more Date_time_assignment objects.

4.3.747 Date_time_assignment to Security_level

Each Date_time_assignment is_applied_to one or more Security_level objects. Each Security_level is related to zero, one, or more Date_time_assignment objects.

4.3.748 Date_time_assignment to Signal

Each Date_time_assignment is_applied_to one or more Signal objects. Each Signal is related to zero, one, or more Date_time_assignment objects.

4.3.749 Date_time_assignment to Signal_relationship

Each Date_time_assignment is_applied_to one or more Signal_relationship objects. Each Signal_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.750 Date_time_assignment to Signal_value

Each Date_time_assignment is_applied_to one or more Signal_value objects. Each Signal_value is related to zero, one, or more Date_time_assignment objects.

4.3.751 Date_time_assignment to Specification

Each Date_time_assignment is_applied_to one or more Specification objects. Each Specification is related to zero, one, or more Date_time_assignment objects.

4.3.752 Date_time_assignment to Specification_category

Each Date_time_assignment is_applied_to one or more Specification_category objects. Each Specification_category is related to zero, one, or more Date_time_assignment objects.

4.3.753 Date_time_assignment to Specification_expression

Each Date_time_assignment is_applied_to one or more Specification_expression objects. Each Specification_expression is related to zero, one, or more Date_time_assignment objects.

4.3.754 Date_time_assignment to Specification_inclusion

Each Date_time_assignment is_applied_to one or more Specification_inclusion objects. Each Specification_inclusion is related to zero, one, or more Date_time_assignment objects.

4.3.755 Date_time_assignment to Technical_system

Each Date_time_assignment is_applied_to one or more Technical_system objects. Each Technical_system is related to zero, one, or more Date_time_assignment objects.

4.3.756 Date_time_assignment to Technical_system_relationship

Each Date_time_assignment is_applied_to one or more Technical_system_relationship objects. Each Technical_system_relationship is related to zero, one, or more Date_time_assignment objects.

4.3.757 Date_time_assignment to Terminal

Each Date_time_assignment is_applied_to one or more Terminal objects. Each Terminal is related to zero, one, or more Date_time_assignment objects.

4.3.758 Date_time_assignment to Work_order

Each Date_time_assignment is_applied_to one or more Work_order objects. Each Work_order is related to zero, one, or more Date_time_assignment objects.

4.3.759 Date_time_assignment to Work_request

Each Date_time_assignment is_applied_to one or more Work_request objects. Each Work_request is related to zero, one, or more Date_time_assignment objects.

4.3.760 Date_time_interval_assignment to Activity

Each Date_time_interval_assignment is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Date_time_interval_assignment objects.

4.3.761 Date_time_interval_assignment to Activity_element

Each Date_time_interval_assignment is_applied_to one or more Activity_element objects. Each Activity_element is related to zero, one, or more Date_time_interval_assignment objects.

4.3.762 Date_time_interval_assignment to Activity_method_assignment

Each Date_time_interval_assignment is_applied_to one or more Activity_method_assignment objects. Each Activity_method_assignment is related to zero, one, or more Date_time_interval_assignment objects.

4.3.763 Date_time_interval_assignment to Activity_relationship

Each Date_time_interval_assignment is_applied_to one or more Activity_relationship objects. Each Activity_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.764 Date_time_interval_assignment to Alternate_item_relationship

Each Date_time_interval_assignment is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.765 Date_time_interval_assignment to Approval_status

Each Date_time_interval_assignment is_applied_to one or more Approval_status objects. Each Approval_status is related to zero, one, or more Date_time_interval_assignment objects.

4.3.766 Date_time_interval_assignment to Assembly_component_relationship

Each Date_time_interval_assignment is_applied_to one or more Assembly_component_relationship objects. Each Assembly_component_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.767 Date_time_interval_assignment to Assembly_substitute_relationship

Each Date_time_interval_assignment is_applied_to one or more Assembly_substitute_relationship objects. Each Assembly_substitute_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.768 Date_time_interval_assignment to Cable_pull_information

Each Date_time_interval_assignment is_applied_to one or more Cable_pull_information objects. Each Cable_pull_information is related to zero, one, or more Date_time_interval_assignment objects.

4.3.769 Date_time_interval_assignment to Certification

Each Date_time_interval_assignment is_applied_to one or more Certification objects. Each Certification is related to zero, one, or more Date_time_interval_assignment objects.

4.3.770 Date_time_interval_assignment to Class_category_association

Each Date_time_interval_assignment is_applied_to one or more Class_category_association objects. Each Class_category_association is related to zero, one, or more Date_time_interval_assignment objects.

4.3.771 Date_time_interval_assignment to Class_condition_association

Each Date_time_interval_assignment is_applied_to one or more Class_condition_association objects. Each Class_condition_association is related to zero, one, or more Date_time_interval_assignment objects.

4.3.772 Date_time_interval_assignment to Class_inclusion_association

Each Date_time_interval_assignment is_applied_to one or more Class_inclusion_association objects. Each Class_inclusion_association is related to zero, one, or more Date_time_interval_assignment objects.

4.3.773 Date_time_interval_assignment to Class_specification_association

Each Date_time_interval_assignment is_applied_to one or more Class_specification_association objects. Each Class_specification_association is related to zero, one, or more Date_time_interval_assignment objects.

4.3.774 Date_time_interval_assignment to Class_structure_relationship

Each Date_time_interval_assignment is_applied_to one or more Class_structure_relationship objects. Each Class_structure_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.775 Date_time_interval_assignment to Classification_association

Each Date_time_interval_assignment is_applied_to one or more Classification_association objects. Each Classification_association is related to zero, one, or more Date_time_interval_assignment objects.

4.3.776 Date_time_interval_assignment to Classification_attribute

Each Date_time_interval_assignment is_applied_to one or more Classification_attribute objects. Each Classification_attribute is related to zero, one, or more Date_time_interval_assignment objects.

4.3.777 Date_time_interval_assignment to Classification_system

Each Date_time_interval_assignment is_applied_to one or more Classification_system objects. Each Classification_system is related to zero, one, or more Date_time_interval_assignment objects.

4.3.778 Date_time_interval_assignment to Complex_product

Each Date_time_interval_assignment is_applied_to one or more Complex_product objects. Each Complex_product is related to zero, one, or more Date_time_interval_assignment objects.

4.3.779 Date_time_interval_assignment to Complex_product_relationship

Each Date_time_interval_assignment is_applied_to one or more Complex_product_relationship objects. Each Complex_product_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.780 Date_time_interval_assignment to Composition_relationship

Each Date_time_interval_assignment is_applied_to one or more Composition_relationship objects. Each Composition_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.781 Date_time_interval_assignment to Configuration

Each Date_time_interval_assignment is_applied_to one or more Configuration objects. Each Configuration is related to zero, one, or more Date_time_interval_assignment objects.

4.3.782 Date_time_interval_assignment to Connectivity_allocation

Each Date_time_interval_assignment is_applied_to one or more Connectivity_allocation objects. Each Connectivity_allocation is related to zero, one, or more Date_time_interval_assignment objects.

4.3.783 Date_time_interval_assignment to Connectivity_definition

Each Date_time_interval_assignment is_applied_to one or more Connectivity_definition objects. Each Connectivity_definition is related to zero, one, or more Date_time_interval_assignment objects.

4.3.784 Date_time_interval_assignment to Connectivity_definition_relationship

Each Date_time_interval_assignment is_applied_to one or more Connectivity_definition_relationship objects. Each Connectivity_definition_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.785 Date_time_interval_assignment to Contract

Each Date_time_interval_assignment is_applied_to one or more Contract objects. Each Contract is related to zero, one, or more Date_time_interval_assignment objects.

4.3.786 Date_time_interval_assignment to Data_element

Each Date_time_interval_assignment is_applied_to one or more Data_element objects. Each Data_element is related to zero, one, or more Date_time_interval_assignment objects.

4.3.787 Date_time_interval_assignment to Data_element_association

Each Date_time_interval_assignment is_applied_to one or more Data_element_association objects. Each Data_element_association is related to zero, one, or more Date_time_interval_assignment objects.

4.3.788 Date_time_interval_assignment to Data_element_definition

Each Date_time_interval_assignment is_applied_to one or more Data_element_definition objects. Each Data_element_definition is related to zero, one, or more Date_time_interval_assignment objects.

4.3.789 Date_time_interval_assignment to Data_element_relationship

Each Date_time_interval_assignment is_applied_to one or more Data_element_relationship objects. Each Data_element_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.790 Date_time_interval_assignment to Data_element_specification

Each Date_time_interval_assignment is_applied_to one or more Data_element_specification objects. Each Data_element_specification is related to zero, one, or more Date_time_interval_assignment objects.

4.3.791 Date_time_interval_assignment to Design_discipline_item_definition

Each Date_time_interval_assignment is_applied_to one or more Design_discipline_item_definition objects. Each Design_discipline_item_definition is related to zero, one, or more Date_time_interval_assignment objects.

4.3.792 Date_time_interval_assignment to Device

Each Date_time_interval_assignment is_applied_to one or more Device objects. Each Device is related to zero, one, or more Date_time_interval_assignment objects.

4.3.793 Date_time_interval_assignment to Device_relationship

Each Date_time_interval_assignment is_applied_to one or more Device_relationship objects. Each Device_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.794 Date_time_interval_assignment to Document

Each Date_time_interval_assignment is_applied_to one or more Document objects. Each Document is related to zero, one, or more Date_time_interval_assignment objects.

4.3.795 Date_time_interval_assignment to Document_file

Each Date_time_interval_assignment is_applied_to one or more Document_file objects. Each Document_file is related to zero, one, or more Date_time_interval_assignment objects.

4.3.796 Date_time_interval_assignment to Document_file_relationship

Each Date_time_interval_assignment is_applied_to one or more Document_file_relationship objects. Each Document_file_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.797 Date_time_interval_assignment to Document_representation

Each Date_time_interval_assignment is_applied_to one or more Document_representation objects. Each Document_representation is related to zero, one, or more Date_time_interval_assignment objects.

4.3.798 Date_time_interval_assignment to Document_version

Each Date_time_interval_assignment is_applied_to one or more Document_version objects. Each Document_version is related to zero, one, or more Date_time_interval_assignment objects.

4.3.799 Date_time_interval_assignment to Document_version - relationship

Each Date_time_interval_assignment is_applied_to one or more Document_version_relationship objects. Each Document_version_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.800 Date_time_interval_assignment to Drawing

Each Date_time_interval_assignment is_applied_to one or more Drawing objects. Each Drawing is related to zero, one, or more Date_time_interval_assignment objects.

4.3.801 Date_time_interval_assignment to Drawing_sequence

Each Date_time_interval_assignment is_applied_to one or more Drawing_sequence objects. Each Drawing_sequence is related to zero, one, or more Date_time_interval_assignment objects.

4.3.802 Date_time_interval_assignment to Drawing_sheet

Each Date_time_interval_assignment is_applied_to one or more Drawing_sheet objects. Each Drawing_sheet is related to zero, one, or more Date_time_interval_assignment objects.

4.3.803 Date_time_interval_assignment to Drawing_sheet_relationship

Each Date_time_interval_assignment is_applied_to one or more Drawing_sheet_relationship objects. Each Drawing_sheet_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.804 Date_time_interval_assignment to Free_segment

Each Date_time_interval_assignment is_applied_to one or more Free_segment objects. Each Free_segment is related to zero, one, or more Date_time_interval_assignment objects.

4.3.805 Date_time_interval_assignment to Function_definition

Each Date_time_interval_assignment is_applied_to one or more Function_definition objects. Each Function_definition is related to zero, one, or more Date_time_interval_assignment objects.

4.3.806 Date_time_interval_assignment to Function_definition - relationship

Each Date_time_interval_assignment is_applied_to one or more Function_definition_relationship objects. Each Function_definition_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.807 Date_time_interval_assignment to Function_interface

Each Date_time_interval_assignment is_applied_to one or more Function_interface objects. Each Function_interface is related to zero, one, or more Date_time_interval_assignment objects.

4.3.808 Date_time_interval_assignment to Function_unit

Each Date_time_interval_assignment is_applied_to one or more Function_unit objects. Each Function_unit is related to zero, one, or more Date_time_interval_assignment objects.

4.3.809 Date_time_interval_assignment to Function_unit_relationship

Each Date_time_interval_assignment is_applied_to one or more Function_unit_relationship objects. Each Function_unit_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.810 Date_time_interval_assignment to Function_version

Each Date_time_interval_assignment is_applied_to one or more Function_version objects. Each Function_version is related to zero, one, or more Date_time_interval_assignment objects.

4.3.811 Date_time_interval_assignment to Function_version_relationship

Each Date_time_interval_assignment is_applied_to one or more Function_version_relationship objects. Each Function_version_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.812 Date_time_interval_assignment to Functional_connectivity_definition

Each Date_time_interval_assignment is_applied_to one or more Functional_connectivity_definition objects. Each Functional_connectivity_definition is related to zero, one, or more Date_time_interval_assignment objects.

4.3.813 Date_time_interval_assignment to Functional_connectivity_definition_relationship

Each Date_time_interval_assignment is_applied_to one or more Functional_connectivity_definition_relationship objects. Each Functional_connectivity_definition_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.814 Date_time_interval_assignment to Functional_unit_allocation

Each Date_time_interval_assignment is_applied_to one or more Functional_unit_allocation objects. Each Functional_unit_allocation is related to zero, one, or more Date_time_interval_assignment objects.

4.3.815 Date_time_interval_assignment to Functionality

Each Date_time_interval_assignment is_applied_to one or more Functionality objects. Each Functionality is related to zero, one, or more Date_time_interval_assignment objects.

4.3.816 Date_time_interval_assignment to General_classification

Each Date_time_interval_assignment is_applied_to one or more General_classification objects. Each General_classification is related to zero, one, or more Date_time_interval_assignment objects.

4.3.817 Date_time_interval_assignment to Generic_note

Each Date_time_interval_assignment is_applied_to one or more Generic_note objects. Each Generic_note is related to zero, one, or more Date_time_interval_assignment objects.

4.3.818 Date_time_interval_assignment to Interface

Each Date_time_interval_assignment is_applied_to one or more Interface objects. Each Interface is related to zero, one, or more Date_time_interval_assignment objects.

4.3.819 Date_time_interval_assignment to Interface_port

Each Date_time_interval_assignment is_applied_to one or more Interface_port objects. Each Interface_port is related to zero, one, or more Date_time_interval_assignment objects.

4.3.820 Date_time_interval_assignment to Interface_terminal

Each Date_time_interval_assignment is_applied_to one or more Interface_terminal objects. Each Interface_terminal is related to zero, one, or more Date_time_interval_assignment objects.

4.3.821 Date_time_interval_assignment to Interval_of_time

Each Date_time_interval_assignment refers to exactly one Interval_of_time in the role of assigned_time_interval. Each Interval_of_time acts as assigned_time_interval for zero, one, or more Date_time_interval_assignment objects.

4.3.822 Date_time_interval_assignment to Item

Each Date_time_interval_assignment is_applied_to one or more Item objects. Each Item is related to zero, one, or more Date_time_interval_assignment objects.

4.3.823 Date_time_interval_assignment to Item_definition_relationship

Each Date_time_interval_assignment is_applied_to one or more Item_definition_relationship objects. Each Item_definition_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.824 Date_time_interval_assignment to Item_version

Each Date_time_interval_assignment is_applied_to one or more Item_version objects. Each Item_version is related to zero, one, or more Date_time_interval_assignment objects.

4.3.825 Date_time_interval_assignment to Item_version_relationship

Each Date_time_interval_assignment is_applied_to one or more Item_version_relationship objects. Each Item_version_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.826 Date_time_interval_assignment to Location

Each Date_time_interval_assignment is_applied_to one or more Location objects. Each Location is related to zero, one, or more Date_time_interval_assignment objects.

4.3.827 Date_time_interval_assignment to Location_relationship

Each Date_time_interval_assignment is_applied_to one or more Location_relationship objects. Each Location_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.828 Date_time_interval_assignment to Marking

Each Date_time_interval_assignment is_applied_to one or more Marking objects. Each Marking is related to zero, one, or more Date_time_interval_assignment objects.

4.3.829 Date_time_interval_assignment to Material

Each Date_time_interval_assignment is_applied_to one or more Material objects. Each Material is related to zero, one, or more Date_time_interval_assignment objects.

4.3.830 Date_time_interval_assignment to Node

Each Date_time_interval_assignment is_applied_to one or more Node objects. Each Node is related to zero, one, or more Date_time_interval_assignment objects.

4.3.831 Date_time_interval_assignment to Node_relationship

Each Date_time_interval_assignment is_applied_to one or more Node_relationship objects. Each Node_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.832 Date_time_interval_assignment to Notification

Each Date_time_interval_assignment is_applied_to one or more Notification objects. Each Notification is related to zero, one, or more Date_time_interval_assignment objects.

4.3.833 Date_time_interval_assignment to Notification_relationship

Each Date_time_interval_assignment is_applied_to one or more Notification_relationship objects. Each Notification_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.834 Date_time_interval_assignment to Offered_function_allocation

Each Date_time_interval_assignment is_applied_to one or more Offered_function_allocation objects. Each Offered_function_allocation is related to zero, one, or more Date_time_interval_assignment objects.

4.3.835 Date_time_interval_assignment to Organization_relationship

Each Date_time_interval_assignment is_applied_to one or more Organization_relationship objects. Each Organization_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.836 Date_time_interval_assignment to Path

Each Date_time_interval_assignment is_applied_to one or more Path objects. Each Path is related to zero, one, or more Date_time_interval_assignment objects.

4.3.837 Date_time_interval_assignment to Path_node

Each Date_time_interval_assignment is_applied_to one or more Path_node objects. Each Path_node is related to zero, one, or more Date_time_interval_assignment objects.

4.3.838 Date_time_interval_assignment to Path_node_relationship

Each Date_time_interval_assignment is_applied_to one or more Path_node_relationship objects. Each Path_node_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.839 Date_time_interval_assignment to Path_relationship

Each Date_time_interval_assignment is_applied_to one or more Path_relationship objects. Each Path_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.840 Date_time_interval_assignment to Person_in_organization

Each Date_time_interval_assignment is_applied_to one or more Person_in_organization objects. Each Person_in_organization is related to zero, one, or more Date_time_interval_assignment objects.

4.3.841 Date_time_interval_assignment to Person_in_organization - relationship

Each Date_time_interval_assignment is_applied_to one or more Person_in_organization_relationship objects. Each Person_in_organization_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.842 Date_time_interval_assignment to Physical_assembly_- relationship

Each Date_time_interval_assignment is_applied_to one or more Physical_assembly_relationship objects. Each Physical_assembly_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.843 Date_time_interval_assignment to Physical_instance

Each Date_time_interval_assignment is_applied_to one or more Physical_instance objects. Each Physical_instance is related to zero, one, or more Date_time_interval_assignment objects.

4.3.844 Date_time_interval_assignment to Port

Each Date_time_interval_assignment is_applied_to one or more Port objects. Each Port is related to zero, one, or more Date_time_interval_assignment objects.

4.3.845 Date_time_interval_assignment to Port_allocation

Each Date_time_interval_assignment is_applied_to one or more Port_allocation objects. Each Port_allocation is related to zero, one, or more Date_time_interval_assignment objects.

4.3.846 Date_time_interval_assignment to Port_association

Each Date_time_interval_assignment is_applied_to one or more Port_association objects. Each Port_association is related to zero, one, or more Date_time_interval_assignment objects.

4.3.847 Date_time_interval_assignment to Preferred_item_allocation

Each Date_time_interval_assignment is_applied_to one or more Preferred_item_allocation objects. Each Preferred_item_allocation is related to zero, one, or more Date_time_interval_assignment objects.

4.3.848 Date_time_interval_assignment to Preferred_item_terminal_- allocation

Each Date_time_interval_assignment is_applied_to one or more Preferred_item_terminal_allocation objects. Each Preferred_item_terminal_allocation is related to zero, one, or more Date_time_interval_assignment objects.

4.3.849 Date_time_interval_assignment to Process_variable

Each Date_time_interval_assignment is_applied_to one or more Process_variable objects. Each Process_variable is related to zero, one, or more Date_time_interval_assignment objects.

4.3.850 Date_time_interval_assignment to Process_variable_relationship

Each Date_time_interval_assignment is applied to one or more Process_variable_relationship objects. Each Process_variable_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.851 Date_time_interval_assignment to Product_class

Each Date_time_interval_assignment is applied to one or more Product_class objects. Each Product_class is related to zero, one, or more Date_time_interval_assignment objects.

4.3.852 Date_time_interval_assignment to Product_identification

Each Date_time_interval_assignment is applied to one or more Product_identification objects. Each Product_identification is related to zero, one, or more Date_time_interval_assignment objects.

4.3.853 Date_time_interval_assignment to Product_structure_relationship

Each Date_time_interval_assignment is applied to one or more Product_structure_relationship objects. Each Product_structure_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.854 Date_time_interval_assignment to Project

Each Date_time_interval_assignment is applied to one or more Project objects. Each Project is related to zero, one, or more Date_time_interval_assignment objects.

4.3.855 Date_time_interval_assignment to Requirement

Each Date_time_interval_assignment is applied to one or more Requirement objects. Each Requirement is related to zero, one, or more Date_time_interval_assignment objects.

4.3.856 Date_time_interval_assignment to Requirement_document_assignment

Each Date_time_interval_assignment is applied to one or more Requirement_document_assignment objects. Each Requirement_document_assignment is related to zero, one, or more Date_time_interval_assignment objects.

4.3.857 Date_time_interval_assignment to Route

Each Date_time_interval_assignment is applied to one or more Route objects. Each Route is related to zero, one, or more Date_time_interval_assignment objects.

4.3.858 Date_time_interval_assignment to Route_relationship

Each Date_time_interval_assignment is applied to one or more Route_relationship objects. Each Route_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.859 Date_time_interval_assignment to Routed_segment

Each Date_time_interval_assignment is_applied_to one or more Routed_segment objects. Each Routed_segment is related to zero, one, or more Date_time_interval_assignment objects.

4.3.860 Date_time_interval_assignment to Section

Each Date_time_interval_assignment is_applied_to one or more Section objects. Each Section is related to zero, one, or more Date_time_interval_assignment objects.

4.3.861 Date_time_interval_assignment to Section_end

Each Date_time_interval_assignment is_applied_to one or more Section_end objects. Each Section_end is related to zero, one, or more Date_time_interval_assignment objects.

4.3.862 Date_time_interval_assignment to Section_interface

Each Date_time_interval_assignment is_applied_to one or more Section_interface objects. Each Section_interface is related to zero, one, or more Date_time_interval_assignment objects.

4.3.863 Date_time_interval_assignment to Section_interface_relationship

Each Date_time_interval_assignment is_applied_to one or more Section_interface_relationship objects. Each Section_interface_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.864 Date_time_interval_assignment to Section_relationship

Each Date_time_interval_assignment is_applied_to one or more Section_relationship objects. Each Section_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.865 Date_time_interval_assignment to Security_classification

Each Date_time_interval_assignment is_applied_to one or more Security_classification objects. Each Security_classification is related to zero, one, or more Date_time_interval_assignment objects.

4.3.866 Date_time_interval_assignment to Security_level

Each Date_time_interval_assignment is_applied_to one or more Security_level objects. Each Security_level is related to zero, one, or more Date_time_interval_assignment objects.

4.3.867 Date_time_interval_assignment to Signal

Each Date_time_interval_assignment is_applied_to one or more Signal objects. Each Signal is related to zero, one, or more Date_time_interval_assignment objects.

4.3.868 Date_time_interval_assignment to Signal_relationship

Each Date_time_interval_assignment is_applied_to one or more Signal_relationship objects. Each Signal_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.869 Date_time_interval_assignment to Signal_value

Each Date_time_interval_assignment is_applied_to one or more Signal_value objects. Each Signal_value is related to zero, one, or more Date_time_interval_assignment objects.

4.3.870 Date_time_interval_assignment to Specification

Each Date_time_interval_assignment is_applied_to one or more Specification objects. Each Specification is related to zero, one, or more Date_time_interval_assignment objects.

4.3.871 Date_time_interval_assignment to Specification_category

Each Date_time_interval_assignment is_applied_to one or more Specification_category objects. Each Specification_category is related to zero, one, or more Date_time_interval_assignment objects.

4.3.872 Date_time_interval_assignment to Specification_expression

Each Date_time_interval_assignment is_applied_to one or more Specification_expression objects. Each Specification_expression is related to zero, one, or more Date_time_interval_assignment objects.

4.3.873 Date_time_interval_assignment to Specification_inclusion

Each Date_time_interval_assignment is_applied_to one or more Specification_inclusion objects. Each Specification_inclusion is related to zero, one, or more Date_time_interval_assignment objects.

4.3.874 Date_time_interval_assignment to Technical_system

Each Date_time_interval_assignment is_applied_to one or more Technical_system objects. Each Technical_system is related to zero, one, or more Date_time_interval_assignment objects.

4.3.875 Date_time_interval_assignment to Technical_system_relationship

Each Date_time_interval_assignment is_applied_to one or more Technical_system_relationship objects. Each Technical_system_relationship is related to zero, one, or more Date_time_interval_assignment objects.

4.3.876 Date_time_interval_assignment to Terminal

Each Date_time_interval_assignment is_applied_to one or more Terminal objects. Each Terminal is related to zero, one, or more Date_time_interval_assignment objects.

4.3.877 Date_time_interval_assignment to Work_order

Each Date_time_interval_assignment is_applied_to one or more Work_order objects. Each Work_order is related to zero, one, or more Date_time_interval_assignment objects.

4.3.878 Date_time_interval_assignment to Work_request

Each Date_time_interval_assignment is applied_to one or more Work_request objects. Each Work_request is related to zero, one, or more Date_time_interval_assignment objects.

4.3.879 Design_discipline_item_definition to Application_context

Each Design_discipline_item_definition refers to zero, one, or more Application_context objects in the role of additional_context. Each Application_context acts as additional_context for zero, one, or more Design_discipline_item_definition objects.

4.3.880 Design_discipline_item_definition to Application_context

Each Design_discipline_item_definition refers to exactly one Application_context in the role of initial_context. Each Application_context acts as initial_context for zero, one, or more Design_discipline_item_definition objects.

4.3.881 Design_discipline_item_definition to Item_version

Each Design_discipline_item_definition refers to exactly one Item_version in the role of associated_item_version. Each Item_version acts as associated_item_version for zero, one, or more Design_discipline_item_definition objects.

4.3.882 Detached_representation_reference to Annotation_element

Each Detached_representation_reference refers to exactly one Annotation_element in the role of part_of. Each Annotation_element acts as part_of for zero, one, or more Detached_representation_reference objects.

4.3.883 Detached_representation_reference to Annotation_element

Each Detached_representation_reference refers to exactly one Annotation_element in the role of refers_to. Each Annotation_element acts as refers_to for zero, one, or more Detached_representation_reference objects.

4.3.884 Device to Design_discipline_item_definition

Each Device refers to exactly one Design_discipline_item_definition in the role of definition. Each Design_discipline_item_definition acts as definition for zero, one, or more Device objects.

4.3.885 Device to Object_reference_designation

Each Device refers to zero or one Object_reference_designation in the role of extended_designation. Each Object_reference_designation acts as extended_designation for zero, one, or more Device objects.

4.3.886 Device to Product_identification

Each Device refers to exactly one Product_identification in the role of definition. Each Product_identification acts as definition for zero, one, or more Device objects.

4.3.887 Device_relationship to Device

Each Device_relationship refers to exactly one Device in the role of related. Each Device acts as related for zero, one, or more Device_relationship objects.

4.3.888 Device_relationship to Device

Each Device_relationship refers to exactly one Device in the role of relating. Each Device acts as relating for zero, one, or more Device_relationship objects.

4.3.889 Diameter_dimension to Dimension_line

Each Diameter_dimension refers to exactly one Dimension_line in the role of extent. Each Dimension_line acts as extent for zero, one, or more Diameter_dimension objects.

4.3.890 Diameter_dimension to Projection_line

Each Diameter_dimension refers to zero, one, or two Projection_line objects in the role of component. Each Projection_line acts as component for zero, one, or more Diameter_dimension objects.

4.3.891 Digital_document to Digital_file

Each Digital_document refers to zero, one, or more Digital_file objects in the role of file. Each Digital_file acts as file for zero, one, or more Digital_document objects.

4.3.892 Dimension_callout to Dimension

Each Dimension_callout refers to zero or one Dimension in the role of defined_primary_dimension. Each Dimension acts as defined_primary_dimension for zero, one, or more Dimension_callout objects.

4.3.893 Dimension_callout to Dimension

Each Dimension_callout refers to zero or one Dimension in the role of defined_secondary_dimension. Each Dimension acts as defined_secondary_dimension for zero, one, or more Dimension_callout objects.

4.3.894 Dimension_line_terminator to Annotation_symbol

Each Dimension_line_terminator refers to exactly one Annotation_symbol in the role of symbol. Each Annotation_symbol acts as symbol for zero, one, or more Dimension_line_terminator objects.

4.3.895 Dimension_line_terminator to Dimension_line

Each Dimension_line_terminator refers to exactly one Dimension_line in the role of line. Each Dimension_line acts as line for zero, one, or more Dimension_line_terminator objects.

4.3.896 Dimension_sequence_pair to Dimension

Each Dimension_sequence_pair refers to exactly one Dimension in the role of predecessor. Each Dimension acts as predecessor for zero, one, or more Dimension_sequence_pair objects.

4.3.897 Dimension_sequence_pair to Dimension

Each Dimension_sequence_pair refers to exactly one Dimension in the role of successor. Each Dimension acts as successor for zero, one, or more Dimension_sequence_pair objects.

4.3.898 Directed_curve to Draughting_callout

Each Directed_curve refers to zero or one Draughting_callout in the role of directed_callout. Each Draughting_callout acts as directed_callout for zero, one, or more Directed_curve objects.

4.3.899 Direction_range to Connect_area

Each Direction_range refers to exactly one Connect_area in the role of associated_connect_area. Each Connect_area acts as associated_connect_area for zero, one, or more Direction_range objects.

4.3.900 Document to Document_designation

Each Document refers to zero or one Document_designation in the role of extended_designation. Each Document_designation acts as extended_designation for zero, one, or more Document objects.

4.3.901 Document_assignment to Activity

Each Document_assignment is_assigned_to exactly one Activity. Each Activity is related to zero, one, or more Document_assignment objects.

4.3.902 Document_assignment to Activity_element

Each Document_assignment is_assigned_to exactly one Activity_element. Each Activity_element is related to zero, one, or more Document_assignment objects.

4.3.903 Document_assignment to Activity_method

Each Document_assignment is_assigned_to exactly one Activity_method. Each Activity_method is related to zero, one, or more Document_assignment objects.

4.3.904 Document_assignment to Address

Each Document_assignment is_assigned_to exactly one Address. Each Address is related to zero, one, or more Document_assignment objects.

4.3.905 Document_assignment to Approval

Each Document_assignment is_assigned_to exactly one Approval. Each Approval is related to zero, one, or more Document_assignment objects.

4.3.906 Document_assignment to Approval_status

Each Document_assignment is_assigned_to exactly one Approval_status. Each Approval_status is related to zero, one, or more Document_assignment objects.

4.3.907 Document_assignment to Assembly_component_relationship

Each Document_assignment is_assigned_to exactly one Assembly_component_relationship. Each Assembly_component_relationship is related to zero, one, or more Document_assignment objects.

4.3.908 Document_assignment to Cable_pull_information

Each Document_assignment is_assigned_to exactly one Cable_pull_information. Each Cable_pull_information is related to zero, one, or more Document_assignment objects.

4.3.909 Document_assignment to Certification

Each Document_assignment is_assigned_to exactly one Certification. Each Certification is related to zero, one, or more Document_assignment objects.

4.3.910 Document_assignment to Class_category_association

Each Document_assignment is_assigned_to exactly one Class_category_association. Each Class_category_association is related to zero, one, or more Document_assignment objects.

4.3.911 Document_assignment to Class_condition_association

Each Document_assignment is_assigned_to exactly one Class_condition_association. Each Class_condition_association is related to zero, one, or more Document_assignment objects.

4.3.912 Document_assignment to Class_inclusion_association

Each Document_assignment is_assigned_to exactly one Class_inclusion_association. Each Class_inclusion_association is related to zero, one, or more Document_assignment objects.

4.3.913 Document_assignment to Class_specification_association

Each Document_assignment is_assigned_to exactly one Class_specification_association. Each Class_specification_association is related to zero, one, or more Document_assignment objects.

4.3.914 Document_assignment to Classification_association

Each Document_assignment is_assigned_to exactly one Classification_association. Each Classification_association is related to zero, one, or more Document_assignment objects.

4.3.915 Document_assignment to Classification_attribute

Each Document_assignment is_assigned_to exactly one Classification_attribute. Each Classification_attribute is related to zero, one, or more Document_assignment objects.

4.3.916 Document_assignment to Classification_system

Each Document_assignment is_assigned_to exactly one Classification_system. Each Classification_system is related to zero, one, or more Document_assignment objects.

4.3.917 Document_assignment to Complex_product

Each Document_assignment is_assigned_to exactly one Complex_product. Each Complex_product is related to zero, one, or more Document_assignment objects.

4.3.918 Document_assignment to Connectivity_definition

Each Document_assignment is_assigned_to exactly one Connectivity_definition. Each Connectivity_definition is related to zero, one, or more Document_assignment objects.

4.3.919 Document_assignment to Contract

Each Document_assignment is_assigned_to exactly one Contract. Each Contract is related to zero, one, or more Document_assignment objects.

4.3.920 Document_assignment to Data_element

Each Document_assignment is_assigned_to exactly one Data_element. Each Data_element is related to zero, one, or more Document_assignment objects.

4.3.921 Document_assignment to Data_element_definition

Each Document_assignment is_assigned_to exactly one Data_element_definition. Each Data_element_definition is related to zero, one, or more Document_assignment objects.

4.3.922 Document_assignment to Data_element_specification

Each Document_assignment is_assigned_to exactly one Data_element_specification. Each Data_element_specification is related to zero, one, or more Document_assignment objects.

4.3.923 Document_assignment to Descriptive_specification

Each Document_assignment is_assigned_to exactly one Descriptive_specification. Each Descriptive_specification is related to zero, one, or more Document_assignment objects.

4.3.924 Document_assignment to Design_discipline_item_definition

Each Document_assignment is_assigned_to exactly one Design_discipline_item_definition. Each Design_discipline_item_definition is related to zero, one, or more Document_assignment objects.

4.3.925 Document_assignment to Device

Each Document_assignment is_assigned_to exactly one Device. Each Device is related to zero, one, or more Document_assignment objects.

4.3.926 Document_assignment to Document

Each Document_assignment refers to exactly one Document in the role of assigned_document. Each Document acts as assigned_document for zero, one, or more Document_assignment objects.

4.3.927 Document_assignment to Document_file

Each Document_assignment refers to exactly one Document_file in the role of assigned_document. Each Document_file acts as assigned_document for zero, one, or more Document_assignment objects.

4.3.928 Document_assignment to Document_representation

Each Document_assignment refers to exactly one Document_representation in the role of assigned_document. Each Document_representation acts as assigned_document for zero, one, or more Document_assignment objects.

4.3.929 Document_assignment to Document_version

Each Document_assignment refers to exactly one Document_version in the role of assigned_document. Each Document_version acts as assigned_document for zero, one, or more Document_assignment objects.

4.3.930 Document_assignment to Drawing

Each Document_assignment is_assigned_to exactly one Drawing. Each Drawing is related to zero, one, or more Document_assignment objects.

4.3.931 Document_assignment to Drawing_sheet

Each Document_assignment is_assigned_to exactly one Drawing_sheet. Each Drawing_sheet is related to zero, one, or more Document_assignment objects.

4.3.932 Document_assignment to Drawing_view

Each Document_assignment is_assigned_to exactly one Drawing_view. Each Drawing_view is related to zero, one, or more Document_assignment objects.

4.3.933 Document_assignment to Function_definition

Each Document_assignment is_assigned_to exactly one Function_definition. Each Function_definition is related to zero, one, or more Document_assignment objects.

4.3.934 Document_assignment to Function_interface

Each Document_assignment is_assigned_to exactly one Function_interface. Each Function_interface is related to zero, one, or more Document_assignment objects.

4.3.935 Document_assignment to Function_unit

Each Document_assignment is_assigned_to exactly one Function_unit. Each Function_unit is related to zero, one, or more Document_assignment objects.

4.3.936 Document_assignment to Function_version

Each Document_assignment is_assigned_to exactly one Function_version. Each Function_version is related to zero, one, or more Document_assignment objects.

4.3.937 Document_assignment to Functional_connectivity_definition

Each Document_assignment is_assigned_to exactly one Functional_connectivity_definition. Each Functional_connectivity_definition is related to zero, one, or more Document_assignment objects.

4.3.938 Document_assignment to Functionality

Each Document_assignment is_assigned_to exactly one Functionality. Each Functionality is related to zero, one, or more Document_assignment objects.

4.3.939 Document_assignment to General_classification

Each Document_assignment is_assigned_to exactly one General_classification. Each General_classification is related to zero, one, or more Document_assignment objects.

4.3.940 Document_assignment to General_classification

Each Document_assignment is_assigned_to exactly one General_classification. Each General_classification is related to zero, one, or more Document_assignment objects.

4.3.941 Document_assignment to Generic_note

Each Document_assignment is_assigned_to exactly one Generic_note. Each Generic_note is related to zero, one, or more Document_assignment objects.

4.3.942 Document_assignment to Interface

Each Document_assignment is_assigned_to exactly one Interface. Each Interface is related to zero, one, or more Document_assignment objects.

4.3.943 Document_assignment to Interface_port

Each Document_assignment is_assigned_to exactly one Interface_port. Each Interface_port is related to zero, one, or more Document_assignment objects.

4.3.944 Document_assignment to Interface_terminal

Each Document_assignment is_assigned_to exactly one Interface_terminal. Each Interface_terminal is related to zero, one, or more Document_assignment objects.

4.3.945 Document_assignment to Item

Each Document_assignment is_assigned_to exactly one Item. Each Item is related to zero, one, or more Document_assignment objects.

4.3.946 Document_assignment to Item_definition_relationship

Each Document_assignment is_assigned_to exactly one Item_definition_relationship. Each Item_definition_relationship is related to zero, one, or more Document_assignment objects.

4.3.947 Document_assignment to Item_identification

Each Document_assignment is_assigned_to exactly one Item_identification. Each Item_identification is related to zero, one, or more Document_assignment objects.

4.3.948 Document_assignment to Item_version

Each Document_assignment is_assigned_to exactly one Item_version. Each Item_version is related to zero, one, or more Document_assignment objects.

4.3.949 Document_assignment to Location

Each Document_assignment is_assigned_to exactly one Location. Each Location is related to zero, one, or more Document_assignment objects.

4.3.950 Document_assignment to Marking

Each Document_assignment is_assigned_to exactly one Marking. Each Marking is related to zero, one, or more Document_assignment objects.

4.3.951 Document_assignment to Node

Each Document_assignment is_assigned_to exactly one Node. Each Node is related to zero, one, or more Document_assignment objects.

4.3.952 Document_assignment to Notification

Each Document_assignment is_assigned_to exactly one Notification. Each Notification is related to zero, one, or more Document_assignment objects.

4.3.953 Document_assignment to Object_designation

Each Document_assignment is_assigned_to exactly one Object_designation. Each Object_designation is related to zero, one, or more Document_assignment objects.

4.3.954 Document_assignment to Organization

Each Document_assignment is_assigned_to exactly one Organization. Each Organization is related to zero, one, or more Document_assignment objects.

4.3.955 Document_assignment to Path

Each Document_assignment is_assigned_to exactly one Path. Each Path is related to zero, one, or more Document_assignment objects.

4.3.956 Document_assignment to Path_node

Each Document_assignment is_assigned_to exactly one Path_node. Each Path_node is related to zero, one, or more Document_assignment objects.

4.3.957 Document_assignment to Person

Each Document_assignment is_assigned_to exactly one Person. Each Person is related to zero, one, or more Document_assignment objects.

4.3.958 Document_assignment to Physical_assembly_relationship

Each Document_assignment is_assigned_to exactly one Physical_assembly_relationship. Each Physical_assembly_relationship is related to zero, one, or more Document_assignment objects.

4.3.959 Document_assignment to Physical_instance

Each Document_assignment is_assigned_to exactly one Physical_instance. Each Physical_instance is related to zero, one, or more Document_assignment objects.

4.3.960 Document_assignment to Port

Each Document_assignment is_assigned_to exactly one Port. Each Port is related to zero, one, or more Document_assignment objects.

4.3.961 Document_assignment to Process_variable

Each Document_assignment is_assigned_to exactly one Process_variable. Each Process_variable is related to zero, one, or more Document_assignment objects.

4.3.962 Document_assignment to Product_class

Each Document_assignment is_assigned_to exactly one Product_class. Each Product_class is related to zero, one, or more Document_assignment objects.

4.3.963 Document_assignment to Product_identification

Each Document_assignment is_assigned_to exactly one Product_identification. Each Product_identification is related to zero, one, or more Document_assignment objects.

4.3.964 Document_assignment to Product_structure_relationship

Each Document_assignment is_assigned_to exactly one Product_structure_relationship. Each Product_structure_relationship is related to zero, one, or more Document_assignment objects.

4.3.965 Document_assignment to Project

Each Document_assignment is_assigned_to exactly one Project. Each Project is related to zero, one, or more Document_assignment objects.

4.3.966 Document_assignment to Retention_period

Each Document_assignment is_assigned_to exactly one Retention_period. Each Retention_period is related to zero, one, or more Document_assignment objects.

4.3.967 Document_assignment to Route

Each Document_assignment is_assigned_to exactly one Route. Each Route is related to zero, one, or more Document_assignment objects.

4.3.968 Document_assignment to Section

Each Document_assignment is_assigned_to exactly one Section. Each Section is related to zero, one, or more Document_assignment objects.

4.3.969 Document_assignment to Section_end

Each Document_assignment is_assigned_to exactly one Section_end. Each Section_end is related to zero, one, or more Document_assignment objects.

4.3.970 Document_assignment to Section_interface

Each Document_assignment is_assigned_to exactly one Section_interface. Each Section_interface is related to zero, one, or more Document_assignment objects.

4.3.971 Document_assignment to Security_classification

Each Document_assignment is_assigned_to exactly one Security_classification. Each Security_classification is related to zero, one, or more Document_assignment objects.

4.3.972 Document_assignment to Security_level

Each Document_assignment is_assigned_to exactly one Security_level. Each Security_level is related to zero, one, or more Document_assignment objects.

4.3.973 Document_assignment to Signal

Each Document_assignment is_assigned_to exactly one Signal. Each Signal is related to zero, one, or more Document_assignment objects.

4.3.974 Document_assignment to Signal_value

Each Document_assignment is_assigned_to exactly one Signal_value. Each Signal_value is related to zero, one, or more Document_assignment objects.

4.3.975 Document_assignment to Specification

Each Document_assignment is_assigned_to exactly one Specification. Each Specification is related to zero, one, or more Document_assignment objects.

4.3.976 Document_assignment to Specification_category

Each Document_assignment is_assigned_to exactly one Specification_category. Each Specification_category is related to zero, one, or more Document_assignment objects.

4.3.977 Document_assignment to Specification_expression

Each Document_assignment is_assigned_to exactly one Specification_expression. Each Specification_expression is related to zero, one, or more Document_assignment objects.

4.3.978 Document_assignment to Specification_inclusion

Each Document_assignment is_assigned_to exactly one Specification_inclusion. Each Specification_inclusion is related to zero, one, or more Document_assignment objects.

4.3.979 Document_assignment to Technical_system

Each Document_assignment is_assigned_to exactly one Technical_system. Each Technical_system is related to zero, one, or more Document_assignment objects.

4.3.980 Document_assignment to Terminal

Each Document_assignment is_assigned_to exactly one Terminal. Each Terminal is related to zero, one, or more Document_assignment objects.

4.3.981 Document_assignment to Work_order

Each Document_assignment is_assigned_to exactly one Work_order. Each Work_order is related to zero, one, or more Document_assignment objects.

4.3.982 Document_assignment to Work_request

Each Document_assignment is_assigned_to exactly one Work_request. Each Work_request is related to zero, one, or more Document_assignment objects.

4.3.983 Document_content_property to Language

Each Document_content_property refers to zero, one, or more Language objects in the role of languages. Each Language acts as languages for zero, one, or more Document_content_property objects.

4.3.984 Document_content_property to Numerical_value

Each Document_content_property refers to zero or one Numerical_value in the role of real_world_scale. Each Numerical_value acts as real_world_scale for zero, one, or more Document_content_property objects.

4.3.985 Document_file to Document_content_property

Each Document_file refers to zero or one Document_content_property in the role of content. Each Document_content_property acts as content for zero, one, or more Document_file objects.

4.3.986 Document_file to Document_creation_property

Each Document_file refers to zero or one Document_creation_property in the role of creation. Each Document_creation_property acts as creation for zero, one, or more Document_file objects.

4.3.987 Document_file to Document_format_property

Each Document_file refers to zero or one Document_format_property in the role of file_format. Each Document_format_property acts as file_format for zero, one, or more Document_file objects.

4.3.988 Document_file to Document_size_property

Each Document_file refers to zero or one Document_size_property in the role of size. Each Document_size_property acts as size for zero, one, or more Document_file objects.

4.3.989 Document_file to Document_type_property

Each Document_file refers to zero or one Document_type_property in the role of document_file_type. Each Document_type_property acts as document_file_type for zero, one, or more Document_file objects.

4.3.990 Document_file to External_file_id_and_location

Each Document_file refers to zero, one, or more External_file_id_and_location objects in the role of external_id_and_location. Each External_file_id_and_location acts as external_id_and_location for zero, one, or more Document_file objects.

4.3.991 Document_file_relationship to Document_file

Each Document_file_relationship refers to exactly one Document_file in the role of related. Each Document_file acts as related for zero, one, or more Document_file_relationship objects.

4.3.992 Document_file_relationship to Document_file

Each Document_file_relationship refers to exactly one Document_file in the role of relating. Each Document_file acts as relating for zero, one, or more Document_file_relationship objects.

4.3.993 Document_format_property to Rectangular_size

Each Document_format_property refers to exactly one Rectangular_size in the role of size_format. Each Rectangular_size acts as size_format for zero, one, or more Document_format_property objects.

4.3.994 Document_representation to Document_content_property

Each Document_representation refers to zero or one Document_content_property in the role of content. Each Document_content_property acts as content for zero, one, or more Document_representation objects.

4.3.995 Document_representation to Document_creation_property

Each Document_representation refers to zero or one Document_creation_property in the role of creation. Each Document_creation_property acts as creation for zero, one, or more Document_representation objects.

4.3.996 Document_representation to Document_format_property

Each Document_representation refers to zero or one Document_format_property in the role of representation_format. Each Document_format_property acts as representation_format for zero, one, or more Document_representation objects.

4.3.997 Document_representation to Document_location_property

Each Document_representation refers to zero, one, or more Document_location_property objects in the role of common_location. Each Document_location_property acts as common_location for zero, one, or more Document_representation objects.

4.3.998 Document_representation to Document_size_property

Each Document_representation refers to zero or one Document_size_property in the role of size. Each Document_size_property acts as size for zero, one, or more Document_representation objects.

4.3.999 Document_representation to Document_version

Each Document_representation refers to exactly one Document_version in the role of associated_document_version. Each Document_version acts as associated_document_version for zero, one, or more Document_representation objects.

4.3.1000 Document_size_property to Numerical_value

Each Document_size_property refers to zero or one Numerical_value in the role of file_size. Each Numerical_value acts as file_size for zero, one, or more Document_size_property objects.

4.3.1001 Document_size_property to Numerical_value

Each Document_size_property refers to zero or one Numerical_value in the role of page_count. Each Numerical_value acts as page_count for zero, one, or more Document_size_property objects.

4.3.1002 Document_structure to Document_representation

Each Document_structure refers to exactly one Document_representation in the role of related. Each Document_representation acts as related for zero, one, or more Document_structure objects.

4.3.1003 Document_structure to Document_representation

Each Document_structure refers to exactly one Document_representation in the role of relating. Each Document_representation acts as relating for zero, one, or more Document_structure objects.

4.3.1004 Document_type_property to Classification_system

Each Document_type_property refers to zero or one Classification_system in the role of used_classification_system. Each Classification_system acts as used_classification_system for zero, one, or more Document_type_property objects.

4.3.1005 Document_version to Document

Each Document_version refers to exactly one Document in the role of associated_document. Each Document acts as associated_document for zero, one, or more Document_version objects.

4.3.1006 Document_version_relationship to Document_version

Each Document_version_relationship refers to exactly one Document_version in the role of related. Each Document_version acts as related for zero, one, or more Document_version_relationship objects.

4.3.1007 Document_version_relationship to Document_version

Each Document_version_relationship refers to exactly one Document_version in the role of relating. Each Document_version acts as relating for zero, one, or more Document_version_relationship objects.

4.3.1008 Draughting_callout to Annotation_curve

Each Draughting_callout refers to one or more Annotation_curve objects in the role of components. Each Annotation_curve acts as components for zero, one, or more Draughting_callout objects.

4.3.1009 Draughting_callout to Annotation_symbol

Each Draughting_callout refers to one or more Annotation_symbol objects in the role of components. Each Annotation_symbol acts as components for zero, one, or more Draughting_callout objects.

4.3.1010 Draughting_callout to Text

Each Draughting_callout refers to one or more Text objects in the role of components. Each Text acts as components for zero, one, or more Draughting_callout objects.

4.3.1011 Draughting_model to Cartesian_coordinate_space_2d

Each Draughting_model refers to exactly one Cartesian_coordinate_space_2d in the role of coordinate_space. Each Cartesian_coordinate_space_2d acts as coordinate_space for zero, one, or more Draughting_model objects.

4.3.1012 Draughting_model to Model_placed_annotation

Each Draughting_model refers to one or more Model_placed_annotation objects in the role of element. Each Model_placed_annotation acts as element for zero, one, or more Draughting_model objects.

4.3.1013 Drawing to Document_designation

Each Drawing refers to zero or one Document_designation in the role of extended_designation. Each Document_designation acts as extended_designation for zero, one, or more Drawing objects.

4.3.1014 Drawing_assignment to Activity

Each Drawing_assignment is_assigned_to exactly one Activity. Each Activity is related to zero, one, or more Drawing_assignment objects.

4.3.1015 Drawing_assignment to Address

Each Drawing_assignment is_assigned_to exactly one Address. Each Address is related to zero, one, or more Drawing_assignment objects.

4.3.1016 Drawing_assignment to Approval

Each Drawing_assignment is_assigned_to exactly one Approval. Each Approval is related to zero, one, or more Drawing_assignment objects.

4.3.1017 Drawing_assignment to Approval_status

Each Drawing_assignment is_assigned_to exactly one Approval_status. Each Approval_status is related to zero, one, or more Drawing_assignment objects.

4.3.1018 Drawing_assignment to Cable_pull_information

Each Drawing_assignment is_assigned_to exactly one Cable_pull_information. Each Cable_pull_information is related to zero, one, or more Drawing_assignment objects.

4.3.1019 Drawing_assignment to Class_category_association

Each Drawing_assignment is_assigned_to exactly one Class_category_association. Each Class_category_association is related to zero, one, or more Drawing_assignment objects.

4.3.1020 Drawing_assignment to Class_condition_association

Each Drawing_assignment is_assigned_to exactly one Class_condition_association. Each Class_condition_association is related to zero, one, or more Drawing_assignment objects.

4.3.1021 Drawing_assignment to Class_inclusion_association

Each Drawing_assignment is_assigned_to exactly one Class_inclusion_association. Each Class_inclusion_association is related to zero, one, or more Drawing_assignment objects.

4.3.1022 Drawing_assignment to Class_specification_association

Each Drawing_assignment is_assigned_to exactly one Class_specification_association. Each Class_specification_association is related to zero, one, or more Drawing_assignment objects.

4.3.1023 Drawing_assignment to Classification_attribute

Each Drawing_assignment is_assigned_to exactly one Classification_attribute. Each Classification_attribute is related to zero, one, or more Drawing_assignment objects.

4.3.1024 Drawing_assignment to Classification_system

Each Drawing_assignment is_assigned_to exactly one Classification_system. Each Classification_system is related to zero, one, or more Drawing_assignment objects.

4.3.1025 Drawing_assignment to Complex_product

Each Drawing_assignment is_assigned_to exactly one Complex_product. Each Complex_product is related to zero, one, or more Drawing_assignment objects.

4.3.1026 Drawing_assignment to Connectivity_definition

Each Drawing_assignment is_assigned_to exactly one Connectivity_definition. Each Connectivity_definition is related to zero, one, or more Drawing_assignment objects.

4.3.1027 Drawing_assignment to Contract

Each Drawing_assignment is_assigned_to exactly one Contract. Each Contract is related to zero, one, or more Drawing_assignment objects.

4.3.1028 Drawing_assignment to Data_element

Each Drawing_assignment is_assigned_to exactly one Data_element. Each Data_element is related to zero, one, or more Drawing_assignment objects.

4.3.1029 Drawing_assignment to Data_element_definition

Each Drawing_assignment is_assigned_to exactly one Data_element_definition. Each Data_element_definition is related to zero, one, or more Drawing_assignment objects.

4.3.1030 Drawing_assignment to Data_element_specification

Each Drawing_assignment is_assigned_to exactly one Data_element_specification. Each Data_element_specification is related to zero, one, or more Drawing_assignment objects.

4.3.1031 Drawing_assignment to Design_discipline_item_definition

Each Drawing_assignment is_assigned_to exactly one Design_discipline_item_definition. Each Design_discipline_item_definition is related to zero, one, or more Drawing_assignment objects.

4.3.1032 Drawing_assignment to Device

Each Drawing_assignment is_assigned_to exactly one Device. Each Device is related to zero, one, or more Drawing_assignment objects.

4.3.1033 Drawing_assignment to Drawing

Each Drawing_assignment refers to exactly one Drawing in the role of assigned_drawing. Each Drawing acts as assigned_drawing for zero, one, or more Drawing_assignment objects.

4.3.1034 Drawing_assignment to Function_definition

Each Drawing_assignment is_assigned_to exactly one Function_definition. Each Function_definition is related to zero, one, or more Drawing_assignment objects.

4.3.1035 Drawing_assignment to Function_interface

Each Drawing_assignment is_assigned_to exactly one Function_interface. Each Function_interface is related to zero, one, or more Drawing_assignment objects.

4.3.1036 Drawing_assignment to Function_unit

Each Drawing_assignment is_assigned_to exactly one Function_unit. Each Function_unit is related to zero, one, or more Drawing_assignment objects.

4.3.1037 Drawing_assignment to Function_version

Each Drawing_assignment is_assigned_to exactly one Function_version. Each Function_version is related to zero, one, or more Drawing_assignment objects.

4.3.1038 Drawing_assignment to Functional_connectivity_definition

Each Drawing_assignment is_assigned_to exactly one Functional_connectivity_definition. Each Functional_connectivity_definition is related to zero, one, or more Drawing_assignment objects.

4.3.1039 Drawing_assignment to Functionality

Each Drawing_assignment is_assigned_to exactly one Functionality. Each Functionality is related to zero, one, or more Drawing_assignment objects.

4.3.1040 Drawing_assignment to General_classification

Each Drawing_assignment is_assigned_to exactly one General_classification. Each General_classification is related to zero, one, or more Drawing_assignment objects.

4.3.1041 Drawing_assignment to Generic_note

Each Drawing_assignment is_assigned_to exactly one Generic_note. Each Generic_note is related to zero, one, or more Drawing_assignment objects.

4.3.1042 Drawing_assignment to Interface

Each Drawing_assignment is_assigned_to exactly one Interface. Each Interface is related to zero, one, or more Drawing_assignment objects.

4.3.1043 Drawing_assignment to Interface_port

Each Drawing_assignment is_assigned_to exactly one Interface_port. Each Interface_port is related to zero, one, or more Drawing_assignment objects.

4.3.1044 Drawing_assignment to Interface_terminal

Each Drawing_assignment is_assigned_to exactly one Interface_terminal. Each Interface_terminal is related to zero, one, or more Drawing_assignment objects.

4.3.1045 Drawing_assignment to Item

Each Drawing_assignment is_assigned_to exactly one Item. Each Item is related to zero, one, or more Drawing_assignment objects.

4.3.1046 Drawing_assignment to Item_identification

Each Drawing_assignment is_assigned_to exactly one Item_identification. Each Item_identification is related to zero, one, or more Drawing_assignment objects.

4.3.1047 Drawing_assignment to Item_version

Each Drawing_assignment is_assigned_to exactly one Item_version. Each Item_version is related to zero, one, or more Drawing_assignment objects.

4.3.1048 Drawing_assignment to Location

Each Drawing_assignment is_assigned_to exactly one Location. Each Location is related to zero, one, or more Drawing_assignment objects.

4.3.1049 Drawing_assignment to Marking

Each Drawing_assignment is_assigned_to exactly one Marking. Each Marking is related to zero, one, or more Drawing_assignment objects.

4.3.1050 Drawing_assignment to Node

Each Drawing_assignment is_assigned_to exactly one Node. Each Node is related to zero, one, or more Drawing_assignment objects.

4.3.1051 Drawing_assignment to Notification

Each Drawing_assignment is_assigned_to exactly one Notification. Each Notification is related to zero, one, or more Drawing_assignment objects.

4.3.1052 Drawing_assignment to Object_designation

Each Drawing_assignment is_assigned_to exactly one Object_designation. Each Object_designation is related to zero, one, or more Drawing_assignment objects.

4.3.1053 Drawing_assignment to Organization

Each Drawing_assignment is_assigned_to exactly one Organization. Each Organization is related to zero, one, or more Drawing_assignment objects.

4.3.1054 Drawing_assignment to Path

Each Drawing_assignment is_assigned_to exactly one Path. Each Path is related to zero, one, or more Drawing_assignment objects.

4.3.1055 Drawing_assignment to Path_node

Each Drawing_assignment is_assigned_to exactly one Path_node. Each Path_node is related to zero, one, or more Drawing_assignment objects.

4.3.1056 Drawing_assignment to Person

Each Drawing_assignment is_assigned_to exactly one Person. Each Person is related to zero, one, or more Drawing_assignment objects.

4.3.1057 Drawing_assignment to Physical_assembly_relationship

Each Drawing_assignment is_assigned_to exactly one Physical_assembly_relationship. Each Physical_assembly_relationship is related to zero, one, or more Drawing_assignment objects.

4.3.1058 Drawing_assignment to Physical_instance

Each Drawing_assignment is_assigned_to exactly one Physical_instance. Each Physical_instance is related to zero, one, or more Drawing_assignment objects.

4.3.1059 Drawing_assignment to Port

Each Drawing_assignment is_assigned_to exactly one Port. Each Port is related to zero, one, or more Drawing_assignment objects.

4.3.1060 Drawing_assignment to Process_variable

Each Drawing_assignment is_assigned_to exactly one Process_variable. Each Process_variable is related to zero, one, or more Drawing_assignment objects.

4.3.1061 Drawing_assignment to Product_class

Each Drawing_assignment is_assigned_to exactly one Product_class. Each Product_class is related to zero, one, or more Drawing_assignment objects.

4.3.1062 Drawing_assignment to Product_identification

Each Drawing_assignment is_assigned_to exactly one Product_identification. Each Product_identification is related to zero, one, or more Drawing_assignment objects.

4.3.1063 Drawing_assignment to Project

Each Drawing_assignment is_assigned_to exactly one Project. Each Project is related to zero, one, or more Drawing_assignment objects.

4.3.1064 Drawing_assignment to Retention_period

Each Drawing_assignment is_assigned_to exactly one Retention_period. Each Retention_period is related to zero, one, or more Drawing_assignment objects.

4.3.1065 Drawing_assignment to Route

Each Drawing_assignment is_assigned_to exactly one Route. Each Route is related to zero, one, or more Drawing_assignment objects.

4.3.1066 Drawing_assignment to Section

Each Drawing_assignment is_assigned_to exactly one Section. Each Section is related to zero, one, or more Drawing_assignment objects.

4.3.1067 Drawing_assignment to Section_end

Each Drawing_assignment is_assigned_to exactly one Section_end. Each Section_end is related to zero, one, or more Drawing_assignment objects.

4.3.1068 Drawing_assignment to Section_interface

Each Drawing_assignment is_assigned_to exactly one Section_interface. Each Section_interface is related to zero, one, or more Drawing_assignment objects.

4.3.1069 Drawing_assignment to Security_classification

Each Drawing_assignment is_assigned_to exactly one Security_classification. Each Security_classification is related to zero, one, or more Drawing_assignment objects.

4.3.1070 Drawing_assignment to Security_level

Each Drawing_assignment is_assigned_to exactly one Security_level. Each Security_level is related to zero, one, or more Drawing_assignment objects.

4.3.1071 Drawing_assignment to Signal

Each Drawing_assignment is_assigned_to exactly one Signal. Each Signal is related to zero, one, or more Drawing_assignment objects.

4.3.1072 Drawing_assignment to Signal_value

Each Drawing_assignment is_assigned_to exactly one Signal_value. Each Signal_value is related to zero, one, or more Drawing_assignment objects.

4.3.1073 Drawing_assignment to Specification

Each Drawing_assignment is_assigned_to exactly one Specification. Each Specification is related to zero, one, or more Drawing_assignment objects.

4.3.1074 Drawing_assignment to Specification_category

Each Drawing_assignment is_assigned_to exactly one Specification_category. Each Specification_category is related to zero, one, or more Drawing_assignment objects.

4.3.1075 Drawing_assignment to Specification_expression

Each Drawing_assignment is_assigned_to exactly one Specification_expression. Each Specification_expression is related to zero, one, or more Drawing_assignment objects.

4.3.1076 Drawing_assignment to Specification_inclusion

Each Drawing_assignment is_assigned_to exactly one Specification_inclusion. Each Specification_inclusion is related to zero, one, or more Drawing_assignment objects.

4.3.1077 Drawing_assignment to Technical_system

Each Drawing_assignment is_assigned_to exactly one Technical_system. Each Technical_system is related to zero, one, or more Drawing_assignment objects.

4.3.1078 Drawing_assignment to Terminal

Each Drawing_assignment is_assigned_to exactly one Terminal. Each Terminal is related to zero, one, or more Drawing_assignment objects.

4.3.1079 Drawing_assignment to Work_order

Each Drawing_assignment is_assigned_to exactly one Work_order. Each Work_order is related to zero, one, or more Drawing_assignment objects.

4.3.1080 Drawing_assignment to Work_request

Each Drawing_assignment is_assigned_to exactly one Work_request. Each Work_request is related to zero, one, or more Drawing_assignment objects.

4.3.1081 Drawing_sequence to Drawing

Each Drawing_sequence refers to exactly one Drawing in the role of following_version. Each Drawing acts as following_version for zero, one, or more Drawing_sequence objects.

4.3.1082 Drawing_sequence to Drawing

Each Drawing_sequence refers to exactly one Drawing in the role of preceding_version. Each Drawing acts as preceding_version for zero, one, or more Drawing_sequence objects.

4.3.1083 Drawing_sheet to Cartesian_coordinate_space_2d

Each Drawing_sheet refers to exactly one Cartesian_coordinate_space_2d in the role of coordinate_space. Each Cartesian_coordinate_space_2d acts as coordinate_space for zero, one, or more Drawing_sheet objects.

4.3.1084 Drawing_sheet to Document_designation

Each Drawing_sheet refers to zero or one Document_designation in the role of extended_designation. Each Document_designation acts as extended_designation for zero, one, or more Drawing_sheet objects.

4.3.1085 Drawing_sheet to Drawing

Each Drawing_sheet refers to exactly one Drawing in the role of associated_drawing. Each Drawing acts as associated_drawing for zero, one, or more Drawing_sheet objects.

4.3.1086 Drawing_sheet to Rectangular_area

Each Drawing_sheet refers to exactly one Rectangular_area in the role of size. Each Rectangular_area acts as size for zero, one, or more Drawing_sheet objects.

4.3.1087 Drawing_sheet_relationship to Drawing_sheet

Each Drawing_sheet_relationship refers to exactly one Drawing_sheet in the role of related. Each Drawing_sheet acts as related for zero, one, or more Drawing_sheet_relationship objects.

4.3.1088 Drawing_sheet_relationship to Drawing_sheet

Each Drawing_sheet_relationship refers to exactly one Drawing_sheet in the role of relating. Each Drawing_sheet acts as relating for zero, one, or more Drawing_sheet_relationship objects.

4.3.1089 Drawing_view to Cartesian_coordinate_space_2d

Each Drawing_view refers to exactly one Cartesian_coordinate_space_2d in the role of coordinate_space. Each Cartesian_coordinate_space_2d acts as coordinate_space for zero, one, or more Drawing_view objects.

4.3.1090 Drawing_view to Drawing_sheet

Each Drawing_view refers to exactly one Drawing_sheet in the role of containing_sheet. Each Drawing_sheet acts as containing_sheet for zero, one, or more Drawing_view objects.

4.3.1091 Drawing_view to Point_2d

Each Drawing_view refers to exactly one Point_2d in the role of position. Each Point_2d acts as position for zero, one, or more Drawing_view objects.

4.3.1092 Effectivity to Date_time

Each Effectivity refers to zero or one Date_time in the role of end_definition. Each Date_time acts as end_definition for zero, one, or more Effectivity objects.

4.3.1093 Effectivity to Date_time

Each Effectivity refers to zero or one Date_time in the role of start_definition. Each Date_time acts as start_definition for zero, one, or more Effectivity objects.

4.3.1094 Effectivity to Duration

Each Effectivity refers to zero or one Duration in the role of period. Each Duration acts as period for zero, one, or more Effectivity objects.

4.3.1095 Effectivity to Event_reference

Each Effectivity refers to zero or one Event_reference in the role of end_definition. Each Event_reference acts as end_definition for zero, one, or more Effectivity objects.

4.3.1096 Effectivity to Event_reference

Each Effectivity refers to zero or one Event_reference in the role of start_definition. Each Event_reference acts as start_definition for zero, one, or more Effectivity objects.

4.3.1097 Effectivity to Organization

Each Effectivity refers to zero, one, or more Organization objects in the role of concerned_organization. Each Organization acts as concerned_organization for zero, one, or more Effectivity objects.

4.3.1098 Effectivity_assignment to Activity_relationship

Each Effectivity_assignment is_applied_to exactly one Activity_relationship. Each Activity_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1099 Effectivity_assignment to Alternate_item_relationship

Each Effectivity_assignment is_applied_to exactly one Alternate_item_relationship. Each Alternate_item_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1100 Effectivity_assignment to Assembly_component_relationship

Each Effectivity_assignment is_applied_to exactly one Assembly_component_relationship. Each Assembly_component_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1101 Effectivity_assignment to Assembly_substitute_relationship

Each Effectivity_assignment is_applied_to exactly one Assembly_substitute_relationship. Each Assembly_substitute_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1102 Effectivity_assignment to Cable_pull_information

Each Effectivity_assignment is_applied_to exactly one Cable_pull_information. Each Cable_pull_information is related to zero, one, or more Effectivity_assignment objects.

4.3.1103 Effectivity_assignment to Class_category_association

Each Effectivity_assignment is_applied_to exactly one Class_category_association. Each Class_category_association is related to zero, one, or more Effectivity_assignment objects.

4.3.1104 Effectivity_assignment to Class_condition_association

Each Effectivity_assignment is_applied_to exactly one Class_condition_association. Each Class_condition_association is related to zero, one, or more Effectivity_assignment objects.

4.3.1105 Effectivity_assignment to Class_inclusion_association

Each Effectivity_assignment is_applied_to exactly one Class_inclusion_association. Each Class_inclusion_association is related to zero, one, or more Effectivity_assignment objects.

4.3.1106 Effectivity_assignment to Class_specification_association

Each Effectivity_assignment is_applied_to exactly one Class_specification_association. Each Class_specification_association is related to zero, one, or more Effectivity_assignment objects.

4.3.1107 Effectivity_assignment to Class_structure_relationship

Each Effectivity_assignment is_applied_to exactly one Class_structure_relationship. Each Class_structure_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1108 Effectivity_assignment to Classification_system

Each Effectivity_assignment is_applied_to exactly one Classification_system. Each Classification_system is related to zero, one, or more Effectivity_assignment objects.

4.3.1109 Effectivity_assignment to Complex_product

Each Effectivity_assignment is_applied_to exactly one Complex_product. Each Complex_product is related to zero, one, or more Effectivity_assignment objects.

4.3.1110 Effectivity_assignment to Complex_product_relationship

Each Effectivity_assignment is_applied_to exactly one Complex_product_relationship. Each Complex_product_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1111 Effectivity_assignment to Composition_relationship

Each Effectivity_assignment is_applied_to exactly one Composition_relationship. Each Composition_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1112 Effectivity_assignment to Configuration

Each Effectivity_assignment is_applied_to exactly one Configuration. Each Configuration is related to zero, one, or more Effectivity_assignment objects.

4.3.1113 Effectivity_assignment to Connectivity_definition

Each Effectivity_assignment is_applied_to exactly one Connectivity_definition. Each Connectivity_definition is related to zero, one, or more Effectivity_assignment objects.

4.3.1114 Effectivity_assignment to Connectivity_definition_relationship

Each Effectivity_assignment is_applied_to exactly one Connectivity_definition_relationship. Each Connectivity_definition_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1115 Effectivity_assignment to Data_element

Each Effectivity_assignment is_applied_to exactly one Data_element. Each Data_element is related to zero, one, or more Effectivity_assignment objects.

4.3.1116 Effectivity_assignment to Data_element_association

Each Effectivity_assignment is_applied_to exactly one Data_element_association. Each Data_element_association is related to zero, one, or more Effectivity_assignment objects.

4.3.1117 Effectivity_assignment to Data_element_definition

Each Effectivity_assignment is_applied_to exactly one Data_element_definition. Each Data_element_definition is related to zero, one, or more Effectivity_assignment objects.

4.3.1118 Effectivity_assignment to Data_element_relationship

Each Effectivity_assignment is_applied_to exactly one Data_element_relationship. Each Data_element_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1119 Effectivity_assignment to Design_discipline_item_definition

Each Effectivity_assignment is_applied_to exactly one Design_discipline_item_definition. Each Design_discipline_item_definition is related to zero, one, or more Effectivity_assignment objects.

4.3.1120 Effectivity_assignment to Device

Each Effectivity_assignment is_applied_to exactly one Device. Each Device is related to zero, one, or more Effectivity_assignment objects.

4.3.1121 Effectivity_assignment to Device_relationship

Each Effectivity_assignment is_applied_to exactly one Device_relationship. Each Device_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1122 Effectivity_assignment to Document

Each Effectivity_assignment is_applied_to exactly one Document. Each Document is related to zero, one, or more Effectivity_assignment objects.

4.3.1123 Effectivity_assignment to Document_file

Each Effectivity_assignment is_applied_to exactly one Document_file. Each Document_file is related to zero, one, or more Effectivity_assignment objects.

4.3.1124 Effectivity_assignment to Document_file_relationship

Each Effectivity_assignment is_applied_to exactly one Document_file_relationship. Each Document_file_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1125 Effectivity_assignment to Document_representation

Each Effectivity_assignment is_applied_to exactly one Document_representation. Each Document_representation is related to zero, one, or more Effectivity_assignment objects.

4.3.1126 Effectivity_assignment to Document_version

Each Effectivity_assignment is_applied_to exactly one Document_version. Each Document_version is related to zero, one, or more Effectivity_assignment objects.

4.3.1127 Effectivity_assignment to Document_version_relationship

Each Effectivity_assignment is_applied_to exactly one Document_version_relationship. Each Document_version_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1128 Effectivity_assignment to Drawing

Each Effectivity_assignment is_applied_to exactly one Drawing. Each Drawing is related to zero, one, or more Effectivity_assignment objects.

4.3.1129 Effectivity_assignment to Drawing_sequence

Each Effectivity_assignment is_applied_to exactly one Drawing_sequence. Each Drawing_sequence is related to zero, one, or more Effectivity_assignment objects.

4.3.1130 Effectivity_assignment to Drawing_sheet

Each Effectivity_assignment is_applied_to exactly one Drawing_sheet. Each Drawing_sheet is related to zero, one, or more Effectivity_assignment objects.

4.3.1131 Effectivity_assignment to Drawing_sheet_relationship

Each Effectivity_assignment is_applied_to exactly one Drawing_sheet_relationship. Each Drawing_sheet_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1132 Effectivity_assignment to Effectivity

Each Effectivity_assignment refers to exactly one Effectivity in the role of assigned_effectivity. Each Effectivity acts as assigned_effectivity for zero, one, or more Effectivity_assignment objects.

4.3.1133 Effectivity_assignment to Function_definition

Each Effectivity_assignment is_applied_to exactly one Function_definition. Each Function_definition is related to zero, one, or more Effectivity_assignment objects.

4.3.1134 Effectivity_assignment to Function_definition_relationship

Each Effectivity_assignment is_applied_to exactly one Function_definition_relationship. Each Function_definition_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1135 Effectivity_assignment to Function_interface

Each Effectivity_assignment is_applied_to exactly one Function_interface. Each Function_interface is related to zero, one, or more Effectivity_assignment objects.

4.3.1136 Effectivity_assignment to Function_unit

Each Effectivity_assignment is_applied_to exactly one Function_unit. Each Function_unit is related to zero, one, or more Effectivity_assignment objects.

4.3.1137 Effectivity_assignment to Function_unit_relationship

Each Effectivity_assignment is_applied_to exactly one Function_unit_relationship. Each Function_unit_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1138 Effectivity_assignment to Function_version

Each Effectivity_assignment is_applied_to exactly one Function_version. Each Function_version is related to zero, one, or more Effectivity_assignment objects.

4.3.1139 Effectivity_assignment to Function_version_relationship

Each Effectivity_assignment is_applied_to exactly one Function_version_relationship. Each Function_version_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1140 Effectivity_assignment to Functional_connectivity_definition

Each Effectivity_assignment is_applied_to exactly one Functional_connectivity_definition. Each Functional_connectivity_definition is related to zero, one, or more Effectivity_assignment objects.

4.3.1141 Effectivity_assignment to Functional_connectivity_definition_relationship

Each Effectivity_assignment is_applied_to exactly one Functional_connectivity_definition_relationship. Each Functional_connectivity_definition_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1142 Effectivity_assignment to Generic_note

Each Effectivity_assignment is_applied_to exactly one Generic_note. Each Generic_note is related to zero, one, or more Effectivity_assignment objects.

4.3.1143 Effectivity_assignment to Interface

Each Effectivity_assignment is_applied_to exactly one Interface. Each Interface is related to zero, one, or more Effectivity_assignment objects.

4.3.1144 Effectivity_assignment to Interface_port

Each Effectivity_assignment is_applied_to exactly one Interface_port. Each Interface_port is related to zero, one, or more Effectivity_assignment objects.

4.3.1145 Effectivity_assignment to Interface_terminal

Each Effectivity_assignment is_applied_to exactly one Interface_terminal. Each Interface_terminal is related to zero, one, or more Effectivity_assignment objects.

4.3.1146 Effectivity_assignment to Item

Each Effectivity_assignment is_applied_to exactly one Item. Each Item is related to zero, one, or more Effectivity_assignment objects.

4.3.1147 Effectivity_assignment to Item_definition_relationship

Each Effectivity_assignment is_applied_to exactly one Item_definition_relationship. Each Item_definition_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1148 Effectivity_assignment to Item_version

Each Effectivity_assignment is_applied_to exactly one Item_version. Each Item_version is related to zero, one, or more Effectivity_assignment objects.

4.3.1149 Effectivity_assignment to Item_version_relationship

Each Effectivity_assignment is_applied_to exactly one Item_version_relationship. Each Item_version_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1150 Effectivity_assignment to Location

Each Effectivity_assignment is_applied_to exactly one Location. Each Location is related to zero, one, or more Effectivity_assignment objects.

4.3.1151 Effectivity_assignment to Location_relationship

Each Effectivity_assignment is_applied_to exactly one Location_relationship. Each Location_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1152 Effectivity_assignment to Marking

Each Effectivity_assignment is_applied_to exactly one Marking. Each Marking is related to zero, one, or more Effectivity_assignment objects.

4.3.1153 Effectivity_assignment to Node

Each Effectivity_assignment is_applied_to exactly one Node. Each Node is related to zero, one, or more Effectivity_assignment objects.

4.3.1154 Effectivity_assignment to Node_relationship

Each Effectivity_assignment is_applied_to exactly one Node_relationship. Each Node_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1155 Effectivity_assignment to Notification

Each Effectivity_assignment is_applied_to exactly one Notification. Each Notification is related to zero, one, or more Effectivity_assignment objects.

4.3.1156 Effectivity_assignment to Notification_relationship

Each Effectivity_assignment is_applied_to exactly one Notification_relationship. Each Notification_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1157 Effectivity_assignment to Path

Each Effectivity_assignment is_applied_to exactly one Path. Each Path is related to zero, one, or more Effectivity_assignment objects.

4.3.1158 Effectivity_assignment to Path_node

Each Effectivity_assignment is_applied_to exactly one Path_node. Each Path_node is related to zero, one, or more Effectivity_assignment objects.

4.3.1159 Effectivity_assignment to Path_node_relationship

Each Effectivity_assignment is_applied_to exactly one Path_node_relationship. Each Path_node_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1160 Effectivity_assignment to Path_relationship

Each Effectivity_assignment is_applied_to exactly one Path_relationship. Each Path_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1161 Effectivity_assignment to Physical_assembly_relationship

Each Effectivity_assignment is_applied_to exactly one Physical_assembly_relationship. Each Physical_assembly_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1162 Effectivity_assignment to Physical_instance

Each Effectivity_assignment is_applied_to exactly one Physical_instance. Each Physical_instance is related to zero, one, or more Effectivity_assignment objects.

4.3.1163 Effectivity_assignment to Port

Each Effectivity_assignment is_applied_to exactly one Port. Each Port is related to zero, one, or more Effectivity_assignment objects.

4.3.1164 Effectivity_assignment to Process_variable

Each Effectivity_assignment is_applied_to exactly one Process_variable. Each Process_variable is related to zero, one, or more Effectivity_assignment objects.

4.3.1165 Effectivity_assignment to Process_variable_relationship

Each Effectivity_assignment is_applied_to exactly one Process_variable_relationship. Each Process_variable_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1166 Effectivity_assignment to Product_class

Each Effectivity_assignment is_applied_to exactly one Product_class. Each Product_class is related to zero, one, or more Effectivity_assignment objects.

4.3.1167 Effectivity_assignment to Product_identification

Each Effectivity_assignment is_applied_to exactly one Product_identification. Each Product_identification is related to zero, one, or more Effectivity_assignment objects.

4.3.1168 Effectivity_assignment to Product_structure_relationship

Each Effectivity_assignment is_applied_to exactly one Product_structure_relationship. Each Product_structure_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1169 Effectivity_assignment to Requirement

Each Effectivity_assignment is_applied_to exactly one Requirement. Each Requirement is related to zero, one, or more Effectivity_assignment objects.

4.3.1170 Effectivity_assignment to Route

Each Effectivity_assignment is_applied_to exactly one Route. Each Route is related to zero, one, or more Effectivity_assignment objects.

4.3.1171 Effectivity_assignment to Route_relationship

Each Effectivity_assignment is_applied_to exactly one Route_relationship. Each Route_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1172 Effectivity_assignment to Section

Each Effectivity_assignment is_applied_to exactly one Section. Each Section is related to zero, one, or more Effectivity_assignment objects.

4.3.1173 Effectivity_assignment to Section_end

Each Effectivity_assignment is_applied_to exactly one Section_end. Each Section_end is related to zero, one, or more Effectivity_assignment objects.

4.3.1174 Effectivity_assignment to Section_interface

Each Effectivity_assignment is_applied_to exactly one Section_interface. Each Section_interface is related to zero, one, or more Effectivity_assignment objects.

4.3.1175 Effectivity_assignment to Section_interface_relationship

Each Effectivity_assignment is_applied_to exactly one Section_interface_relationship. Each Section_interface_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1176 Effectivity_assignment to Section_relationship

Each Effectivity_assignment is_applied_to exactly one Section_relationship. Each Section_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1177 Effectivity_assignment to Security_classification

Each Effectivity_assignment is_applied_to exactly one Security_classification. Each Security_classification is related to zero, one, or more Effectivity_assignment objects.

4.3.1178 Effectivity_assignment to Signal

Each Effectivity_assignment is_applied_to exactly one Signal. Each Signal is related to zero, one, or more Effectivity_assignment objects.

4.3.1179 Effectivity_assignment to Signal_relationship

Each Effectivity_assignment is_applied_to exactly one Signal_relationship. Each Signal_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1180 Effectivity_assignment to Signal_value

Each Effectivity_assignment is_applied_to exactly one Signal_value. Each Signal_value is related to zero, one, or more Effectivity_assignment objects.

4.3.1181 Effectivity_assignment to Specification

Each Effectivity_assignment is_applied_to exactly one Specification. Each Specification is related to zero, one, or more Effectivity_assignment objects.

4.3.1182 Effectivity_assignment to Specification_category

Each Effectivity_assignment is_applied_to exactly one Specification_category. Each Specification_category is related to zero, one, or more Effectivity_assignment objects.

4.3.1183 Effectivity_assignment to Specification_expression

Each Effectivity_assignment is_applied_to exactly one Specification_expression. Each Specification_expression is related to zero, one, or more Effectivity_assignment objects.

4.3.1184 Effectivity_assignment to Specification_inclusion

Each Effectivity_assignment is_applied_to exactly one Specification_inclusion. Each Specification_inclusion is related to zero, one, or more Effectivity_assignment objects.

4.3.1185 Effectivity_assignment to Technical_system

Each Effectivity_assignment is_applied_to exactly one Technical_system. Each Technical_system is related to zero, one, or more Effectivity_assignment objects.

4.3.1186 Effectivity_assignment to Technical_system_relationship

Each Effectivity_assignment is_applied_to exactly one Technical_system_relationship. Each Technical_system_relationship is related to zero, one, or more Effectivity_assignment objects.

4.3.1187 Effectivity_assignment to Terminal

Each Effectivity_assignment is_applied_to exactly one Terminal. Each Terminal is related to zero, one, or more Effectivity_assignment objects.

4.3.1188 Effectivity_relationship to Effectivity

Each Effectivity_relationship refers to exactly one Effectivity in the role of related. Each Effectivity acts as related for zero, one, or more Effectivity_relationship objects.

4.3.1189 Effectivity_relationship to Effectivity

Each Effectivity_relationship refers to exactly one Effectivity in the role of relating. Each Effectivity acts as relating for zero, one, or more Effectivity_relationship objects.

4.3.1190 Event_reference to Activity

Each Event_reference refers to zero or one Activity in the role of event_context. Each Activity acts as event_context for zero, one, or more Event_reference objects.

4.3.1191 Event_reference to Activity_element

Each Event_reference refers to zero or one Activity_element in the role of event_context. Each Activity_element acts as event_context for zero, one, or more Event_reference objects.

4.3.1192 Event_reference to Activity_method_assignment

Each Event_reference refers to zero or one Activity_method_assignment in the role of event_context. Each Activity_method_assignment acts as event_context for zero, one, or more Event_reference objects.

4.3.1193 Event_reference to Activity_relationship

Each Event_reference refers to zero or one Activity_relationship in the role of event_context. Each Activity_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1194 Event_reference to Alternate_item_relationship

Each Event_reference refers to zero or one Alternate_item_relationship in the role of event_context. Each Alternate_item_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1195 Event_reference to Approval_status

Each Event_reference refers to zero or one Approval_status in the role of event_context. Each Approval_status acts as event_context for zero, one, or more Event_reference objects.

4.3.1196 Event_reference to Assembly_component_relationship

Each Event_reference refers to zero or one Assembly_component_relationship in the role of event_context. Each Assembly_component_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1197 Event_reference to Assembly_substitute_relationship

Each Event_reference refers to zero or one Assembly_substitute_relationship in the role of event_context. Each Assembly_substitute_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1198 Event_reference to Cable_pull_information

Each Event_reference refers to zero or one Cable_pull_information in the role of event_context. Each Cable_pull_information acts as event_context for zero, one, or more Event_reference objects.

4.3.1199 Event_reference to Certification

Each Event_reference refers to zero or one Certification in the role of event_context. Each Certification acts as event_context for zero, one, or more Event_reference objects.

4.3.1200 Event_reference to Class_category_association

Each Event_reference refers to zero or one Class_category_association in the role of event_context. Each Class_category_association acts as event_context for zero, one, or more Event_reference objects.

4.3.1201 Event_reference to Class_condition_association

Each Event_reference refers to zero or one Class_condition_association in the role of event_context. Each Class_condition_association acts as event_context for zero, one, or more Event_reference objects.

4.3.1202 Event_reference to Class_inclusion_association

Each Event_reference refers to zero or one Class_inclusion_association in the role of event_context. Each Class_inclusion_association acts as event_context for zero, one, or more Event_reference objects.

4.3.1203 Event_reference to Class_specification_association

Each Event_reference refers to zero or one Class_specification_association in the role of event_context. Each Class_specification_association acts as event_context for zero, one, or more Event_reference objects.

4.3.1204 Event_reference to Class_structure_relationship

Each Event_reference refers to zero or one Class_structure_relationship in the role of event_context. Each Class_structure_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1205 Event_reference to Classification_association

Each Event_reference refers to zero or one Classification_association in the role of event_context. Each Classification_association acts as event_context for zero, one, or more Event_reference objects.

4.3.1206 Event_reference to Classification_attribute

Each Event_reference refers to zero or one Classification_attribute in the role of event_context. Each Classification_attribute acts as event_context for zero, one, or more Event_reference objects.

4.3.1207 Event_reference to Classification_system

Each Event_reference refers to zero or one Classification_system in the role of event_context. Each Classification_system acts as event_context for zero, one, or more Event_reference objects.

4.3.1208 Event_reference to Complex_product

Each Event_reference refers to zero or one Complex_product in the role of event_context. Each Complex_product acts as event_context for zero, one, or more Event_reference objects.

4.3.1209 Event_reference to Complex_product_relationship

Each Event_reference refers to zero or one Complex_product_relationship in the role of event_context. Each Complex_product_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1210 Event_reference to Composition_relationship

Each Event_reference refers to zero or one Composition_relationship in the role of event_context. Each Composition_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1211 Event_reference to Configuration

Each Event_reference refers to zero or one Configuration in the role of event_context. Each Configuration acts as event_context for zero, one, or more Event_reference objects.

4.3.1212 Event_reference to Connectivity_allocation

Each Event_reference refers to zero or one Connectivity_allocation in the role of event_context. Each Connectivity_allocation acts as event_context for zero, one, or more Event_reference objects.

4.3.1213 Event_reference to Connectivity_definition

Each Event_reference refers to zero or one Connectivity_definition in the role of event_context. Each Connectivity_definition acts as event_context for zero, one, or more Event_reference objects.

4.3.1214 Event_reference to Connectivity_definition_relationship

Each Event_reference refers to zero or one Connectivity_definition_relationship in the role of event_context. Each Connectivity_definition_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1215 Event_reference to Contract

Each Event_reference refers to zero or one Contract in the role of event_context. Each Contract acts as event_context for zero, one, or more Event_reference objects.

4.3.1216 Event_reference to Data_element

Each Event_reference refers to zero or one Data_element in the role of event_context. Each Data_element acts as event_context for zero, one, or more Event_reference objects.

4.3.1217 Event_reference to Data_element_association

Each Event_reference refers to zero or one Data_element_association in the role of event_context. Each Data_element_association acts as event_context for zero, one, or more Event_reference objects.

4.3.1218 Event_reference to Data_element_definition

Each Event_reference refers to zero or one Data_element_definition in the role of event_context. Each Data_element_definition acts as event_context for zero, one, or more Event_reference objects.

4.3.1219 Event_reference to Data_element_relationship

Each Event_reference refers to zero or one Data_element_relationship in the role of event_context. Each Data_element_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1220 Event_reference to Data_element_specification

Each Event_reference refers to zero or one Data_element_specification in the role of event_context. Each Data_element_specification acts as event_context for zero, one, or more Event_reference objects.

4.3.1221 Event_reference to Design_discipline_item_definition

Each Event_reference refers to zero or one Design_discipline_item_definition in the role of event_context. Each Design_discipline_item_definition acts as event_context for zero, one, or more Event_reference objects.

4.3.1222 Event_reference to Device

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Each Event_reference refers to zero or one Device in the role of event_context. Each Device acts as event_context for zero, one, or more Event_reference objects.

4.3.1223 Event_reference to Device_relationship

Each Event_reference refers to zero or one Device_relationship in the role of event_context. Each Device_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1224 Event_reference to Document

Each Event_reference refers to zero or one Document in the role of event_context. Each Document acts as event_context for zero, one, or more Event_reference objects.

4.3.1225 Event_reference to Document_file

Each Event_reference refers to zero or one Document_file in the role of event_context. Each Document_file acts as event_context for zero, one, or more Event_reference objects.

4.3.1226 Event_reference to Document_file_relationship

Each Event_reference refers to zero or one Document_file_relationship in the role of event_context. Each Document_file_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1227 Event_reference to Document_representation

Each Event_reference refers to zero or one Document_representation in the role of event_context. Each Document_representation acts as event_context for zero, one, or more Event_reference objects.

4.3.1228 Event_reference to Document_version

Each Event_reference refers to zero or one Document_version in the role of event_context. Each Document_version acts as event_context for zero, one, or more Event_reference objects.

4.3.1229 Event_reference to Document_version_relationship

Each Event_reference refers to zero or one Document_version_relationship in the role of event_context. Each Document_version_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1230 Event_reference to Drawing

Each Event_reference refers to zero or one Drawing in the role of event_context. Each Drawing acts as event_context for zero, one, or more Event_reference objects.

4.3.1231 Event_reference to Drawing_sequence

Each Event_reference refers to zero or one Drawing_sequence in the role of event_context. Each Drawing_sequence acts as event_context for zero, one, or more Event_reference objects.

4.3.1232 Event_reference to Drawing_sheet

Each Event_reference refers to zero or one Drawing_sheet in the role of event_context. Each Drawing_sheet acts as event_context for zero, one, or more Event_reference objects.

4.3.1233 Event_reference to Drawing_sheet_relationship

Each Event_reference refers to zero or one Drawing_sheet_relationship in the role of event_context. Each Drawing_sheet_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1234 Event_reference to Duration

Each Event_reference refers to zero or one Duration in the role of offset. Each Duration acts as offset for zero, one, or more Event_reference objects.

4.3.1235 Event_reference to Free_segment

Each Event_reference refers to zero or one Free_segment in the role of event_context. Each Free_segment acts as event_context for zero, one, or more Event_reference objects.

4.3.1236 Event_reference to Function_definition

Each Event_reference refers to zero or one Function_definition in the role of event_context. Each Function_definition acts as event_context for zero, one, or more Event_reference objects.

4.3.1237 Event_reference to Function_definition_relationship

Each Event_reference refers to zero or one Function_definition_relationship in the role of event_context. Each Function_definition_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1238 Event_reference to Function_interface

Each Event_reference refers to zero or one Function_interface in the role of event_context. Each Function_interface acts as event_context for zero, one, or more Event_reference objects.

4.3.1239 Event_reference to Function_unit

Each Event_reference refers to zero or one Function_unit in the role of event_context. Each Function_unit acts as event_context for zero, one, or more Event_reference objects.

4.3.1240 Event_reference to Function_unit_relationship

Each Event_reference refers to zero or one Function_unit_relationship in the role of event_context. Each Function_unit_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1241 Event_reference to Function_version

Each Event_reference refers to zero or one Function_version in the role of event_context. Each Function_version acts as event_context for zero, one, or more Event_reference objects.

4.3.1242 Event_reference to Function_version_relationship

Each Event_reference refers to zero or one Function_version_relationship in the role of event_context. Each Function_version_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1243 Event_reference to Functional_connectivity_definition

Each Event_reference refers to zero or one Functional_connectivity_definition in the role of event_context. Each Functional_connectivity_definition acts as event_context for zero, one, or more Event_reference objects.

4.3.1244 Event_reference to Functional_connectivity_definition - relationship

Each Event_reference refers to zero or one Functional_connectivity_definition_relationship in the role of event_context. Each Functional_connectivity_definition_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1245 Event_reference to Functional_unit_allocation

Each Event_reference refers to zero or one Functional_unit_allocation in the role of event_context. Each Functional_unit_allocation acts as event_context for zero, one, or more Event_reference objects.

4.3.1246 Event_reference to Functionality

Each Event_reference refers to zero or one Functionality in the role of event_context. Each Functionality acts as event_context for zero, one, or more Event_reference objects.

4.3.1247 Event_reference to General_classification

Each Event_reference refers to zero or one General_classification in the role of event_context. Each General_classification acts as event_context for zero, one, or more Event_reference objects.

4.3.1248 Event_reference to Generic_note

Each Event_reference refers to zero or one Generic_note in the role of event_context. Each Generic_note acts as event_context for zero, one, or more Event_reference objects.

4.3.1249 Event_reference to Interface

Each Event_reference refers to zero or one Interface in the role of event_context. Each Interface acts as event_context for zero, one, or more Event_reference objects.

4.3.1250 Event_reference to Interface_port

Each Event_reference refers to zero or one Interface_port in the role of event_context. Each Interface_port acts as event_context for zero, one, or more Event_reference objects.

4.3.1251 Event_reference to Interface_terminal

Each Event_reference refers to zero or one Interface_terminal in the role of event_context. Each Interface_terminal acts as event_context for zero, one, or more Event_reference objects.

4.3.1252 Event_reference to Item

Each Event_reference refers to zero or one Item in the role of event_context. Each Item acts as event_context for zero, one, or more Event_reference objects.

4.3.1253 Event_reference to Item_definition_relationship

Each Event_reference refers to zero or one Item_definition_relationship in the role of event_context. Each Item_definition_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1254 Event_reference to Item_version

Each Event_reference refers to zero or one Item_version in the role of event_context. Each Item_version acts as event_context for zero, one, or more Event_reference objects.

4.3.1255 Event_reference to Item_version_relationship

Each Event_reference refers to zero or one Item_version_relationship in the role of event_context. Each Item_version_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1256 Event_reference to Location

Each Event_reference refers to zero or one Location in the role of event_context. Each Location acts as event_context for zero, one, or more Event_reference objects.

4.3.1257 Event_reference to Location_relationship

Each Event_reference refers to zero or one Location_relationship in the role of event_context. Each Location_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1258 Event_reference to Marking

Each Event_reference refers to zero or one Marking in the role of event_context. Each Marking acts as event_context for zero, one, or more Event_reference objects.

4.3.1259 Event_reference to Material

Each Event_reference refers to zero or one Material in the role of event_context. Each Material acts as event_context for zero, one, or more Event_reference objects.

4.3.1260 Event_reference to Node

Each Event_reference refers to zero or one Node in the role of event_context. Each Node acts as event_context for zero, one, or more Event_reference objects.

4.3.1261 Event_reference to Node_relationship

Each Event_reference refers to zero or one Node_relationship in the role of event_context. Each Node_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1262 Event_reference to Notification

Each Event_reference refers to zero or one Notification in the role of event_context. Each Notification acts as event_context for zero, one, or more Event_reference objects.

4.3.1263 Event_reference to Notification_relationship

Each Event_reference refers to zero or one Notification_relationship in the role of event_context. Each Notification_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1264 Event_reference to Offered_function_allocation

Each Event_reference refers to zero or one Offered_function_allocation in the role of event_context. Each Offered_function_allocation acts as event_context for zero, one, or more Event_reference objects.

4.3.1265 Event_reference to Organization_relationship

Each Event_reference refers to zero or one Organization_relationship in the role of event_context. Each Organization_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1266 Event_reference to Path

Each Event_reference refers to zero or one Path in the role of event_context. Each Path acts as event_context for zero, one, or more Event_reference objects.

4.3.1267 Event_reference to Path_node

Each Event_reference refers to zero or one Path_node in the role of event_context. Each Path_node acts as event_context for zero, one, or more Event_reference objects.

4.3.1268 Event_reference to Path_node_relationship

Each Event_reference refers to zero or one Path_node_relationship in the role of event_context. Each Path_node_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1269 Event_reference to Path_relationship

Each Event_reference refers to zero or one Path_relationship in the role of event_context. Each Path_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1270 Event_reference to Person_in_organization

Each Event_reference refers to zero or one Person_in_organization in the role of event_context. Each Person_in_organization acts as event_context for zero, one, or more Event_reference objects.

4.3.1271 Event_reference to Person_in_organization_relationship

Each Event_reference refers to zero or one Person_in_organization_relationship in the role of event_context. Each Person_in_organization_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1272 Event_reference to Physical_assembly_relationship

Each Event_reference refers to zero or one Physical_assembly_relationship in the role of event_context. Each Physical_assembly_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1273 Event_reference to Physical_instance

Each Event_reference refers to zero or one Physical_instance in the role of event_context. Each Physical_instance acts as event_context for zero, one, or more Event_reference objects.

4.3.1274 Event_reference to Port

Each Event_reference refers to zero or one Port in the role of event_context. Each Port acts as event_context for zero, one, or more Event_reference objects.

4.3.1275 Event_reference to Port_allocation

Each Event_reference refers to zero or one Port_allocation in the role of event_context. Each Port_allocation acts as event_context for zero, one, or more Event_reference objects.

4.3.1276 Event_reference to Port_association

Each Event_reference refers to zero or one Port_association in the role of event_context. Each Port_association acts as event_context for zero, one, or more Event_reference objects.

4.3.1277 Event_reference to Preferred_item_allocation

Each Event_reference refers to zero or one Preferred_item_allocation in the role of event_context. Each Preferred_item_allocation acts as event_context for zero, one, or more Event_reference objects.

4.3.1278 Event_reference to Preferred_item_terminal_allocation

Each Event_reference refers to zero or one Preferred_item_terminal_allocation in the role of event_context. Each Preferred_item_terminal_allocation acts as event_context for zero, one, or more Event_reference objects.

4.3.1279 Event_reference to Process_variable

Each Event_reference refers to zero or one Process_variable in the role of event_context. Each Process_variable acts as event_context for zero, one, or more Event_reference objects.

4.3.1280 Event_reference to Process_variable_relationship

Each Event_reference refers to zero or one Process_variable_relationship in the role of event_context. Each Process_variable_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1281 Event_reference to Product_class

Each Event_reference refers to zero or one Product_class in the role of event_context. Each Product_class acts as event_context for zero, one, or more Event_reference objects.

4.3.1282 Event_reference to Product_identification

Each Event_reference refers to zero or one Product_identification in the role of event_context. Each Product_identification acts as event_context for zero, one, or more Event_reference objects.

4.3.1283 Event_reference to Product_structure_relationship

Each Event_reference refers to zero or one Product_structure_relationship in the role of event_context. Each Product_structure_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1284 Event_reference to Project

Each Event_reference refers to zero or one Project in the role of event_context. Each Project acts as event_context for zero, one, or more Event_reference objects.

4.3.1285 Event_reference to Requirement

Each Event_reference refers to zero or one Requirement in the role of event_context. Each Requirement acts as event_context for zero, one, or more Event_reference objects.

4.3.1286 Event_reference to Requirement_document_assignment

Each Event_reference refers to zero or one Requirement_document_assignment in the role of event_context. Each Requirement_document_assignment acts as event_context for zero, one, or more Event_reference objects.

4.3.1287 Event_reference to Route

Each Event_reference refers to zero or one Route in the role of event_context. Each Route acts as event_context for zero, one, or more Event_reference objects.

4.3.1288 Event_reference to Route_relationship

Each Event_reference refers to zero or one Route_relationship in the role of event_context. Each Route_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1289 Event_reference to Routed_segment

Each Event_reference refers to zero or one Routed_segment in the role of event_context. Each Routed_segment acts as event_context for zero, one, or more Event_reference objects.

4.3.1290 Event_reference to Section

Each Event_reference refers to zero or one Section in the role of event_context. Each Section acts as event_context for zero, one, or more Event_reference objects.

4.3.1291 Event_reference to Section_end

Each Event_reference refers to zero or one Section_end in the role of event_context. Each Section_end acts as event_context for zero, one, or more Event_reference objects.

4.3.1292 Event_reference to Section_interface

Each Event_reference refers to zero or one Section_interface in the role of event_context. Each Section_interface acts as event_context for zero, one, or more Event_reference objects.

4.3.1293 Event_reference to Section_interface_relationship

Each Event_reference refers to zero or one Section_interface_relationship in the role of event_context. Each Section_interface_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1294 Event_reference to Section_relationship

Each Event_reference refers to zero or one Section_relationship in the role of event_context. Each Section_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1295 Event_reference to Security_classification

Each Event_reference refers to zero or one Security_classification in the role of event_context. Each Security_classification acts as event_context for zero, one, or more Event_reference objects.

4.3.1296 Event_reference to Security_level

Each Event_reference refers to zero or one Security_level in the role of event_context. Each Security_level acts as event_context for zero, one, or more Event_reference objects.

4.3.1297 Event_reference to Signal

Each Event_reference refers to zero or one Signal in the role of event_context. Each Signal acts as event_context for zero, one, or more Event_reference objects.

4.3.1298 Event_reference to Signal_relationship

Each Event_reference refers to zero or one Signal_relationship in the role of event_context. Each Signal_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1299 Event_reference to Signal_value

Each Event_reference refers to zero or one Signal_value in the role of event_context. Each Signal_value acts as event_context for zero, one, or more Event_reference objects.

4.3.1300 Event_reference to Specification

Each Event_reference refers to zero or one Specification in the role of event_context. Each Specification acts as event_context for zero, one, or more Event_reference objects.

4.3.1301 Event_reference to Specification_category

Each Event_reference refers to zero or one Specification_category in the role of event_context. Each Specification_category acts as event_context for zero, one, or more Event_reference objects.

4.3.1302 Event_reference to Specification_expression

Each Event_reference refers to zero or one Specification_expression in the role of event_context. Each Specification_expression acts as event_context for zero, one, or more Event_reference objects.

4.3.1303 Event_reference to Specification_inclusion

Each Event_reference refers to zero or one Specification_inclusion in the role of event_context. Each Specification_inclusion acts as event_context for zero, one, or more Event_reference objects.

4.3.1304 Event_reference to Technical_system

Each Event_reference refers to zero or one Technical_system in the role of event_context. Each Technical_system acts as event_context for zero, one, or more Event_reference objects.

4.3.1305 Event_reference to Technical_system_relationship

Each Event_reference refers to zero or one Technical_system_relationship in the role of event_context. Each Technical_system_relationship acts as event_context for zero, one, or more Event_reference objects.

4.3.1306 Event_reference to Terminal

Each Event_reference refers to zero or one Terminal in the role of event_context. Each Terminal acts as event_context for zero, one, or more Event_reference objects.

4.3.1307 Event_reference to Work_order

Each Event_reference refers to zero or one Work_order in the role of event_context. Each Work_order acts as event_context for zero, one, or more Event_reference objects.

4.3.1308 Event_reference to Work_request

Each Event_reference refers to zero or one Work_request in the role of event_context. Each Work_request acts as event_context for zero, one, or more Event_reference objects.

4.3.1309 External_file_id_and_location to Document_location_property

Each External_file_id_and_location refers to exactly one Document_location_property in the role of location. Each Document_location_property acts as location for zero, one, or more External_file_id_and_location objects.

4.3.1310 Fill_area to Fill_area_appearance

Each Fill_area refers to exactly one Fill_area_appearance in the role of assigned_appearance. Each Fill_area_appearance acts as assigned_appearance for zero, one, or more Fill_area objects.

4.3.1311 Fill_area to Fill_area_boundary

Each Fill_area refers to exactly one Fill_area_boundary in the role of boundary. Each Fill_area_boundary acts as boundary for zero, one, or more Fill_area objects.

4.3.1312 Fill_area to Point_2d

Each Fill_area refers to zero or one Point_2d in the role of reference_point. Each Point_2d acts as reference_point for zero, one, or more Fill_area objects.

4.3.1313 Fill_area_boundary to Annotation_curve

Each Fill_area_boundary refers to exactly one Annotation_curve in the role of defining_curve. Each Annotation_curve acts as defining_curve for zero, one, or more Fill_area_boundary objects.

4.3.1314 Final_solution to Descriptive_specification

Each Final_solution refers to one or more Descriptive_specification objects in the role of final_specification. Each Descriptive_specification acts as final_specification for zero, one, or more Final_solution objects.

4.3.1315 Final_solution to Design_discipline_item_definition

Each Final_solution refers to one or more Design_discipline_item_definition objects in the role of final_specification. Each Design_discipline_item_definition acts as final_specification for zero, one, or more Final_solution objects.

4.3.1316 Final_solution to Function_definition

Each Final_solution refers to one or more Function_definition objects in the role of final_specification. Each Function_definition acts as final_specification for zero, one, or more Final_solution objects.

4.3.1317 Final_solution to Physical_instance

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Each Final_solution refers to one or more Physical_instance objects in the role of final_specification. Each Physical_instance acts as final_specification for zero, one, or more Final_solution objects.

4.3.1318 Format_of_value to Data_element_definition

Each Format_of_value refers to exactly one Data_element_definition in the role of associated_definition. Each Data_element_definition acts as associated_definition for zero, one, or more Format_of_value objects.

4.3.1319 Format_of_value to Language

Each Format_of_value refers to zero or one Language in the role of default_language_specification. Each Language acts as default_language_specification for zero, one, or more Format_of_value objects.

4.3.1320 Free_segment to Node

Each Free_segment refers to one or more Node objects in the role of ends_at. Each Node acts as ends_at for zero, one, or more Free_segment objects.

4.3.1321 Function_definition to Application_context

Each Function_definition refers to zero, one, or more Application_context objects in the role of additional_context. Each Application_context acts as additional_context for zero, one, or more Function_definition objects.

4.3.1322 Function_definition to Application_context

Each Function_definition refers to exactly one Application_context in the role of initial_context. Each Application_context acts as initial_context for zero, one, or more Function_definition objects.

4.3.1323 Function_definition to Function_version

Each Function_definition refers to exactly one Function_version in the role of version. Each Function_version acts as version for zero, one, or more Function_definition objects.

4.3.1324 Function_definition_relationship to Function_definition

Each Function_definition_relationship refers to exactly one Function_definition in the role of related. Each Function_definition acts as related for zero, one, or more Function_definition_relationship objects.

4.3.1325 Function_definition_relationship to Function_definition

Each Function_definition_relationship refers to exactly one Function_definition in the role of relating. Each Function_definition acts as relating for zero, one, or more Function_definition_relationship objects.

4.3.1326 Function_interface to Function_definition

Each Function_interface refers to exactly one Function_definition in the role of interface_of. Each Function_definition acts as interface_of for zero, one, or more Function_interface objects.

4.3.1327 Function_interface to Interface_port

Each Function_interface refers to one or more Interface_port objects in the role of external_access. Each Interface_port acts as external_access for zero, one, or more Function_interface objects.

4.3.1328 Function_unit to Function_definition

Each Function_unit refers to exactly one Function_definition in the role of instanciated_function. Each Function_definition acts as instanciated_function for zero, one, or more Function_unit objects.

4.3.1329 Function_unit to Object_reference_designation

Each Function_unit refers to zero or one Object_reference_designation in the role of extended_designation. Each Object_reference_designation acts as extended_designation for zero, one, or more Function_unit objects.

4.3.1330 Function_unit to Product_identification

Each Function_unit refers to exactly one Product_identification in the role of instanciated_function. Each Product_identification acts as instanciated_function for zero, one, or more Function_unit objects.

4.3.1331 Function_unit_relationship to Function_unit

Each Function_unit_relationship refers to exactly one Function_unit in the role of related. Each Function_unit acts as related for zero, one, or more Function_unit_relationship objects.

4.3.1332 Function_unit_relationship to Function_unit

Each Function_unit_relationship refers to exactly one Function_unit in the role of relating. Each Function_unit acts as relating for zero, one, or more Function_unit_relationship objects.

4.3.1333 Function_version to Functionality

Each Function_version refers to exactly one Functionality in the role of base_function. Each Functionality acts as base_function for zero, one, or more Function_version objects.

4.3.1334 Function_version_relationship to Function_version

Each Function_version_relationship refers to exactly one Function_version in the role of related. Each Function_version acts as related for zero, one, or more Function_version_relationship objects.

4.3.1335 Function_version_relationship to Function_version

Each Function_version_relationship refers to exactly one Function_version in the role of relating. Each Function_version acts as relating for zero, one, or more Function_version_relationship objects.

4.3.1336 Functional_connectivity_definition to Function_definition

Each Functional_connectivity_definition refers to exactly one Function_definition in the role of connectivity_of. Each Function_definition acts as connectivity_of for zero, one, or more Functional_connectivity_definition objects.

4.3.1337 Functional_connectivity_definition_relationship to Functional_connectivity_definition

Each Functional_connectivity_definition_relationship refers to exactly one Functional_connectivity_definition in the role of related. Each Functional_connectivity_definition acts as related for zero, one, or more Functional_connectivity_definition_relationship objects.

4.3.1338 Functional_connectivity_definition_relationship to Functional_connectivity_definition

Each Functional_connectivity_definition_relationship refers to exactly one Functional_connectivity_definition in the role of relating. Each Functional_connectivity_definition acts as relating for zero, one, or more Functional_connectivity_definition_relationship objects.

4.3.1339 Functional_unit_allocation to Device

Each Functional_unit_allocation refers to exactly one Device in the role of function_implementation. Each Device acts as function_implementation for zero, one, or more Functional_unit_allocation objects.

4.3.1340 Functional_unit_allocation to Function_unit

Each Functional_unit_allocation refers to exactly one Function_unit in the role of allocated_functional_unit. Each Function_unit acts as allocated_functional_unit for zero, one, or more Functional_unit_allocation objects.

4.3.1341 Functional_unit_allocation to Physical_instance

Each Functional_unit_allocation refers to exactly one Physical_instance in the role of function_implementation. Each Physical_instance acts as function_implementation for zero, one, or more Functional_unit_allocation objects.

4.3.1342 Functional_unit_allocation to Product_component

Each Functional_unit_allocation refers to exactly one Product_component in the role of function_implementation. Each Product_component acts as function_implementation for zero, one, or more Functional_unit_allocation objects.

4.3.1343 General_classification to Class_reference

Each General_classification refers to zero or one Class_reference in the role of classification_source. Each Class_reference acts as classification_source for zero, one, or more General_classification objects.

4.3.1344 General_classification to Classification_system

Each General_classification refers to zero or one Classification_system in the role of used_classification_system. Each Classification_system acts as used_classification_system for zero, one or many General_classification objects.

4.3.1345 General_classification to External_library_reference

Each General_classification refers to zero or one External_library_reference in the role of classification_source. Each External_library_reference acts as classification_source for zero, one, or more General_classification objects.

4.3.1346 General_classification_hierarchy to General_classification

Each General_classification_hierarchy refers to exactly one General_classification in the role of sub_class. Each General_classification acts as sub_class for zero, one, or more General_classification_hierarchy objects.

4.3.1347 General_classification_hierarchy to General_classification

Each General_classification_hierarchy refers to exactly one General_classification in the role of super_class. Each General_classification acts as super_class for zero, one, or more General_classification_hierarchy objects.

4.3.1348 Group to Group_element

Each Group refers to zero, one, or more Group_element objects in the role of members. Each Group_element acts as members for zero, one, or more Group objects.

4.3.1349 Group_annotation_element to Draughting_annotation

Each Group_annotation_element refers to exactly one Draughting_annotation in the role of basis_annotation. Each Draughting_annotation acts as basis_annotation for zero, one, or more Group_annotation_element objects.

4.3.1350 Hatching_pattern to Curve_appearance

Each Hatching_pattern refers to exactly one Curve_appearance in the role of hatch_line_appearance. Each Curve_appearance acts as hatch_line_appearance for zero, one, or more Hatching_pattern objects.

4.3.1351 Instance_placement to Product_component

Each Instance_placement refers to exactly one Product_component in the role of referenced_product_component. Each Product_component acts as referenced_product_component for zero, one, or more Instance_placement objects.

4.3.1352 Instance_placement to Single_device

Each Instance_placement refers to exactly one Single_device in the role of placed_instance. Each Single_device acts as placed_instance for zero, one, or more Instance_placement objects.

4.3.1353 Instance_placement to Single_function_unit

Each Instance_placement refers to exactly one Single_function_unit in the role of placed_instance. Each Single_function_unit acts as placed_instance for zero, one, or more Instance_placement objects.

4.3.1354 Interface to Design_discipline_item_definition

Each Interface refers to exactly one Design_discipline_item_definition in the role of interface_of. Each Design_discipline_item_definition acts as interface_of for zero, one, or more Interface objects.

4.3.1355 Interface to Interface_terminal

Each Interface refers to one or more Interface_terminal objects in the role of external_access. Each Interface_terminal acts as external_access for zero, one, or more Interface objects.

4.3.1356 Interface_port to Function_definition

Each Interface_port refers to exactly one Function_definition in the role of interface_port_of. Each Function_definition acts as interface_port_of for zero, one, or more Interface_port objects.

4.3.1357 Interface_port_connectivity to Interface_port

Each Interface_port_connectivity refers to zero, one, or more Interface_port objects in the role of connected_interface_port. Each Interface_port acts as connected_interface_port for zero, one, or more Interface_port_connectivity objects.

4.3.1358 Interface_port_relationship to Interface_port

Each Interface_port_relationship refers to exactly one Interface_port in the role of related. Each Interface_port acts as related for zero, one, or more Interface_port_relationship objects.

4.3.1359 Interface_port_relationship to Interface_port

Each Interface_port_relationship refers to exactly one Interface_port in the role of relating. Each Interface_port acts as relating for zero, one, or more Interface_port_relationship objects.

4.3.1360 Interface_terminal to Design_discipline_item_definition

Each Interface_terminal refers to exactly one Design_discipline_item_definition in the role of interface_terminal_of. Each Design_discipline_item_definition acts as interface_terminal_of for zero, one, or more Interface_terminal objects.

4.3.1361 Interface_terminal to Terminal

Each Interface_terminal refers to zero or one Terminal in the role of uses. Each Terminal acts as uses for zero, one or many Interface_terminal objects.

4.3.1362 Interface_terminal_connection to Interface_terminal

Each Interface_terminal_connection refers to zero, one, or more Interface_terminal objects in the role of connected_interface_terminal. Each Interface_terminal acts as connected_interface_terminal for zero, one, or more Interface_terminal_connection objects.

4.3.1363 Interface_terminal_relationship to Interface_terminal

Each Interface_terminal_relationship refers to exactly one Interface_terminal in the role of related. Each Interface_terminal acts as related for zero, one, or more Interface_terminal_relationship objects.

4.3.1364 Interface_terminal_relationship to Interface_terminal

Each Interface_terminal_relationship refers to exactly one Interface_terminal in the role of relating. Each Interface_terminal acts as relating for zero, one, or more Interface_terminal_relationship objects.

4.3.1365 Interval_of_time to Date_time

Each Interval_of_time refers to exactly one Date_time in the role of end_definition. Each Date_time acts as end_definition for zero, one, or more Interval_of_time objects.

4.3.1366 Interval_of_time to Date_time

Each Interval_of_time refers to exactly one Date_time in the role of start_definition. Each Date_time acts as start_definition for zero, one, or more Interval_of_time objects.

4.3.1367 Interval_of_time to Duration

Each Interval_of_time refers to exactly one Duration in the role of end_definition. Each Duration acts as end_definition for zero, one, or more Interval_of_time objects.

4.3.1368 Interval_of_time to Event_reference

Each Interval_of_time refers to exactly one Event_reference in the role of end_definition. Each Event_reference acts as end_definition for zero, one, or more Interval_of_time objects.

4.3.1369 Interval_of_time to Event_reference

Each Interval_of_time refers to exactly one Event_reference in the role of start_definition. Each Event_reference acts as start_definition for zero, one, or more Interval_of_time objects.

4.3.1370 Item to Item_identification

Each Item refers to zero or one Item_identification in the role of extended_designation. Each Item_identification acts as extended_designation for zero, one, or more Item objects.

4.3.1371 Item_definition_relationship to Design_discipline_item_definition

Each Item_definition_relationship refers to exactly one Design_discipline_item_definition in the role of related. Each Design_discipline_item_definition acts as related for zero, one, or more Item_definition_relationship objects.

4.3.1372 Item_definition_relationship to Design_discipline_item_definition

Each Item_definition_relationship refers to exactly one Design_discipline_item_definition in the role of relating. Each Design_discipline_item_definition acts as relating for zero, one, or more Item_definition_relationship objects.

4.3.1373 Item_identification to Classification_system

Each Item_identification refers to zero or one Classification_system in the role of coding_type. Each Classification_system acts as coding_type for zero, one, or more Item_identification objects.

4.3.1374 Item_presentation to Activity

Each Item_presentation refers to exactly one Activity in the role of presented_item. Each Activity acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1375 Item_presentation to Activity_element

Each Item_presentation refers to exactly one Activity_element in the role of presented_item. Each Activity_element acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1376 Item_presentation to Alias_identification

Each Item_presentation refers to exactly one Alias_identification in the role of presented_item. Each Alias_identification acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1377 Item_presentation to Annotation_element

Each Item_presentation refers to exactly one Annotation_element in the role of presenting_item. Each Annotation_element acts as presenting_item for zero, one, or more Item_presentation objects.

4.3.1378 Item_presentation to Classification_association

Each Item_presentation refers to exactly one Classification_association in the role of presented_item. Each Classification_association acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1379 Item_presentation to Classification_attribute

Each Item_presentation refers to exactly one Classification_attribute in the role of presented_item. Each Classification_attribute acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1380 Item_presentation to Classification_system

Each Item_presentation refers to exactly one Classification_system in the role of presented_item. Each Classification_system acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1381 Item_presentation to Connecting_line

Each Item_presentation refers to exactly one Connecting_line in the role of presented_item. Each Connecting_line acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1382 Item_presentation to Connectivity_definition

Each Item_presentation refers to exactly one Connectivity_definition in the role of presented_item. Each Connectivity_definition acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1383 Item_presentation to Cross_reference

Each Item_presentation refers to exactly one Cross_reference in the role of presented_item. Each Cross_reference acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1384 Item_presentation to Data_element

Each Item_presentation refers to exactly one Data_element in the role of presented_item. Each Data_element acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1385 Item_presentation to Data_element_definition

Each Item_presentation refers to exactly one Data_element_definition in the role of presented_item. Each Data_element_definition acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1386 Item_presentation to Data_element_specification

Each Item_presentation refers to exactly one Data_element_specification in the role of presented_item. Each Data_element_specification acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1387 Item_presentation to Design_discipline_item_definition

Each Item_presentation refers to exactly one Design_discipline_item_definition in the role of presented_item. Each Design_discipline_item_definition acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1388 Item_presentation to Device

Each Item_presentation refers to exactly one Device in the role of presented_item. Each Device acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1389 Item_presentation to Document

Each Item_presentation refers to exactly one Document in the role of presented_item. Each Document acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1390 Item_presentation to Document_version

Each Item_presentation refers to exactly one Document_version in the role of presented_item. Each Document_version acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1391 Item_presentation to Free_segment

Each Item_presentation refers to exactly one Free_segment in the role of presented_item. Each Free_segment acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1392 Item_presentation to Function_definition

Each Item_presentation refers to exactly one Function_definition in the role of presented_item. Each Function_definition acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1393 Item_presentation to Function_interface

Each Item_presentation refers to exactly one Function_interface in the role of presented_item. Each Function_interface acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1394 Item_presentation to Function_unit

Each Item_presentation refers to exactly one Function_unit in the role of presented_item. Each Function_unit acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1395 Item_presentation to Function_version

Each Item_presentation refers to exactly one Function_version in the role of presented_item. Each Function_version acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1396 Item_presentation to Functional_connectivity_definition

Each Item_presentation refers to exactly one Functional_connectivity_definition in the role of presented_item. Each Functional_connectivity_definition acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1397 Item_presentation to Functionality

Each Item_presentation refers to exactly one Functionality in the role of presented_item. Each Functionality acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1398 Item_presentation to General_classification

Each Item_presentation refers to exactly one General_classification in the role of presented_item. Each General_classification acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1399 Item_presentation to Generic_note

Each Item_presentation refers to exactly one Generic_note in the role of presented_item. Each Generic_note acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1400 Item_presentation to Interface

Each Item_presentation refers to exactly one Interface in the role of presented_item. Each Interface acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1401 Item_presentation to Interface_port

Each Item_presentation refers to exactly one Interface_port in the role of presented_item. Each Interface_port acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1402 Item_presentation to Interface_terminal

Each Item_presentation refers to exactly one Interface_terminal in the role of presented_item. Each Interface_terminal acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1403 Item_presentation to Item

Each Item_presentation refers to exactly one Item in the role of presented_item. Each Item acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1404 Item_presentation to Item_identification

Each Item_presentation refers to exactly one Item_identification in the role of presented_item. Each Item_identification acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1405 Item_presentation to Item_version

Each Item_presentation refers to exactly one Item_version in the role of presented_item. Each Item_version acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1406 Item_presentation to Location

Each Item_presentation refers to exactly one Location in the role of presented_item. Each Location acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1407 Item_presentation to Node

Each Item_presentation refers to exactly one Node in the role of presented_item. Each Node acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1408 Item_presentation to Notification

Each Item_presentation refers to exactly one Notification in the role of presented_item. Each Notification acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1409 Item_presentation to Object_designation

Each Item_presentation refers to exactly one Object_designation in the role of presented_item. Each Object_designation acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1410 Item_presentation to Page_connector_presentation

Each Item_presentation refers to exactly one Page_connector_presentation in the role of presented_item. Each Page_connector_presentation acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1411 Item_presentation to Path

Each Item_presentation refers to exactly one Path in the role of presented_item. Each Path acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1412 Item_presentation to Path_node

Each Item_presentation refers to exactly one Path_node in the role of presented_item. Each Path_node acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1413 Item_presentation to Physical_instance

Each Item_presentation refers to exactly one Physical_instance in the role of presented_item. Each Physical_instance acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1414 Item_presentation to Port

Each Item_presentation refers to exactly one Port in the role of presented_item. Each Port acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1415 Item_presentation to Process_variable

Each Item_presentation refers to exactly one Process_variable in the role of presented_item. Each Process_variable acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1416 Item_presentation to Project

Each Item_presentation refers to exactly one Project in the role of presented_item. Each Project acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1417 Item_presentation to Route

Each Item_presentation refers to exactly one Route in the role of presented_item. Each Route acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1418 Item_presentation to Routed_segment

Each Item_presentation refers to exactly one Routed_segment in the role of presented_item. Each Routed_segment acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1419 Item_presentation to Section

Each Item_presentation refers to exactly one Section in the role of presented_item. Each Section acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1420 Item_presentation to Section_end

Each Item_presentation refers to exactly one Section_end in the role of presented_item. Each Section_end acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1421 Item_presentation to Section_interface

Each Item_presentation refers to exactly one Section_interface in the role of presented_item. Each Section_interface acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1422 Item_presentation to Security_classification

Each Item_presentation refers to exactly one Security_classification in the role of presented_item. Each Security_classification acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1423 Item_presentation to Security_level

Each Item_presentation refers to exactly one Security_level in the role of presented_item. Each Security_level acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1424 Item_presentation to Signal

Each Item_presentation refers to exactly one Signal in the role of presented_item. Each Signal acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1425 Item_presentation to Signal_value

Each Item_presentation refers to exactly one Signal_value in the role of presented_item. Each Signal_value acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1426 Item_presentation to Technical_system

Each Item_presentation refers to exactly one Technical_system in the role of presented_item. Each Technical_system acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1427 Item_presentation to Terminal

Each Item_presentation refers to exactly one Terminal in the role of presented_item. Each Terminal acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1428 Item_presentation to Work_order

Each Item_presentation refers to exactly one Work_order in the role of presented_item. Each Work_order acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1429 Item_presentation to Work_request

Each Item_presentation refers to exactly one Work_request in the role of presented_item. Each Work_request acts as presented_item for zero, one, or more Item_presentation objects.

4.3.1430 Item_version to Item

Each Item_version refers to exactly one Item in the role of associated_item. Each Item acts as associated_item for zero, one, or more Item_version objects.

4.3.1431 Item_version_relationship to Item_version

Each Item_version_relationship refers to exactly one Item_version in the role of related. Each Item_version acts as related for zero, one, or more Item_version_relationship objects.

4.3.1432 Item_version_relationship to Item_version

Each Item_version_relationship refers to exactly one Item_version in the role of relating. Each Item_version acts as relating for zero, one, or more Item_version_relationship objects.

4.3.1433 Layer to Visibility

Each Layer refers to exactly one Visibility in the role of element_visibility. Each Visibility acts as element_visibility for zero, one, or more Layer objects.

4.3.1434 Leader to Annotation_element

Each Leader refers to zero or one Annotation_element in the role of target_element. Each Annotation_element acts as target_element for zero, one, or more Leader objects.

4.3.1435 Leader_directed_dimension to Leader

Each Leader_directed_dimension refers to exactly one Leader in the role of component. Each Leader acts as component for zero, one, or more Leader_directed_dimension objects.

4.3.1436 Leader_terminator to Annotation_symbol

Each Leader_terminator refers to exactly one Annotation_symbol in the role of symbol. Each Annotation_symbol acts as symbol for zero, one, or more Leader_terminator objects.

4.3.1437 Leader_terminator to Leader

Each Leader_terminator refers to exactly one Leader in the role of line. Each Leader acts as line for zero, one, or more Leader_terminator objects.

4.3.1438 Linear_dimension to Dimension_line

Each Linear_dimension refers to exactly one Dimension_line in the role of extent. Each Dimension_line acts as extent for zero, one, or more Linear_dimension objects.

4.3.1439 Linear_dimension to Projection_line

Each Linear_dimension refers to zero, one, or two Projection_line objects in the role of component. Each Projection_line acts as component for zero, one, or more Linear_dimension objects.

4.3.1440 Linear_pattern_location to Cartesian_point

Each Linear_pattern_location refers to exactly one Cartesian_point in the role of start_location. Each Cartesian_point acts as start_location for zero, one, or more Linear_pattern_location objects.

4.3.1441 Location to Cartesian_coordinate_space_3d

Each Location refers to zero or one Cartesian_coordinate_space_3d in the role of local_coordinate_space. Each Cartesian_coordinate_space_3d acts as local_coordinate_space for zero, one, or more Location objects.

4.3.1442 Location to Cartesian_point

Each Location refers to zero or one Cartesian_point in the role of position. Each Cartesian_point acts as position for zero, one, or more Location objects.

4.3.1443 Location to Design_discipline_item_definition

Each Location refers to exactly one Design_discipline_item_definition in the role of defining_item. Each Design_discipline_item_definition acts as defining_item for zero, one, or more Location objects.

4.3.1444 Location to Gis_position

Each Location refers to zero or one Gis_position in the role of position. Each Gis_position acts as position for zero, one, or more Location objects.

4.3.1445 Location to Object_reference_designation

Each Location refers to zero or one Object_reference_designation in the role of extended_designation. Each Object_reference_designation acts as extended_designation for zero, one, or more Location objects.

4.3.1446 Location to Physical_instance

Each Location refers to exactly one Physical_instance in the role of defining_item. Each Physical_instance acts as defining_item for zero, one, or more Location objects.

4.3.1447 Location to Product_component

Each Location refers to exactly one Product_component in the role of defining_item. Each Product_component acts as defining_item for zero, one, or more Location objects.

4.3.1448 Location to Single_device

Each Location refers to exactly one Single_device in the role of defining_item. Each Single_device acts as defining_item for zero, one, or more Location objects.

4.3.1449 Location to Specified_device

Each Location refers to exactly one Specified_device in the role of defining_item. Each Specified_device acts as defining_item for zero, one, or more Location objects.

4.3.1450 Location to Technical_system

Each Location refers to exactly one Technical_system in the role of defining_item. Each Technical_system acts as defining_item for zero, one, or more Location objects.

4.3.1451 Location_assignment to Connectivity_definition

Each Location_assignment refers to exactly one Connectivity_definition in the role of associated_item. Each Connectivity_definition acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1452 Location_assignment to Design_discipline_item_definition

Each Location_assignment refers to exactly one Design_discipline_item_definition in the role of associated_item. Each Design_discipline_item_definition acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1453 Location_assignment to Device

Each Location_assignment refers to exactly one Device in the role of associated_item. Each Device acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1454 Location_assignment to Function_definition

Each Location_assignment refers to exactly one Function_definition in the role of associated_item. Each Function_definition acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1455 Location_assignment to Function_unit

Each Location_assignment refers to exactly one Function_unit in the role of associated_item. Each Function_unit acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1456 Location_assignment to Functional_connectivity_definition

Each Location_assignment refers to exactly one Functional_connectivity_definition in the role of associated_item. Each Functional_connectivity_definition acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1457 Location_assignment to Location

Each Location_assignment refers to exactly one Location in the role of assigned_location. Each Location acts as assigned_location for zero, one, or more Location_assignment objects.

4.3.1458 Location_assignment to Physical_instance

Each Location_assignment refers to exactly one Physical_instance in the role of associated_item. Each Physical_instance acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1459 Location_assignment to Port

Each Location_assignment refers to exactly one Port in the role of associated_item. Each Port acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1460 Location_assignment to Product_component

Each Location_assignment refers to exactly one Product_component in the role of associated_item. Each Product_component acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1461 Location_assignment to Signal

Each Location_assignment refers to exactly one Signal in the role of associated_item. Each Signal acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1462 Location_assignment to Technical_system

Each Location_assignment refers to exactly one Technical_system in the role of associated_item. Each Technical_system acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1463 Location_assignment to Terminal

Each Location_assignment refers to exactly one Terminal in the role of associated_item. Each Terminal acts as associated_item for zero, one, or more Location_assignment objects.

4.3.1464 Location_relationship to Location

Each Location_relationship refers to exactly one Location in the role of related. Each Location acts as related for zero, one, or more Location_relationship objects.

4.3.1465 Location_relationship to Location

Each Location_relationship refers to exactly one Location in the role of relating. Each Location acts as relating for zero, one, or more Location_relationship objects.

4.3.1466 Manufacturing_configuration to Device

Each Manufacturing_configuration refers to exactly one Device in the role of configured_element. Each Device acts as configured_element for zero, one, or more Manufacturing_configuration objects.

4.3.1467 Manufacturing_configuration to Organization

Each Manufacturing_configuration refers to zero, one, or more Organization objects in the role of concerned_organization. Each Organization acts as concerned_organization for zero, one, or more Manufacturing_configuration objects.

4.3.1468 Manufacturing_configuration to Product_design

Each Manufacturing_configuration is_solution_for exactly one Product_design. Each Product_design is related to zero, one, or more Manufacturing_configuration objects.

4.3.1469 Marking to Annotation_element

Each Marking refers to zero or one Annotation_element in the role of figure. Each Annotation_element acts as figure for zero, one, or more Marking objects.

4.3.1470 Marking to Cartesian_point

Each Marking refers to zero, one, or more Cartesian_point objects in the role of position. Each Cartesian_point acts as position for zero, one, or more Marking objects.

4.3.1471 Marking to Classification_system

Each Marking refers to exactly one Classification_system in the role of marking_system. Each Classification_system acts as marking_system for zero, one, or more Marking objects.

4.3.1472 Marking to Data_element

Each Marking refers to exactly one Data_element in the role of meaning. Each Data_element acts as meaning for zero, one, or more Marking objects.

4.3.1473 Marking to Generic_note

Each Marking refers to exactly one Generic_note in the role of meaning. Each Generic_note acts as meaning for zero, one, or more Marking objects.

4.3.1474 Marking to Linear_pattern_location

Each Marking refers to zero, one, or more Linear_pattern_location objects in the role of position. Each Linear_pattern_location acts as position for zero, one, or more Marking objects.

4.3.1475 Marking to Single_device

Each Marking refers to exactly one Single_device in the role of marked_device. Each Single_device acts as marked_device for zero, one, or more Marking objects.

4.3.1476 Mass to Value_with_unit

Each Mass refers to exactly one Value_with_unit in the role of value_of_mass. Each Value_with_unit acts as value_of_mass for zero, one, or more Mass objects.

4.3.1477 Model_placed_annotation to Layer

Each Model_placed_annotation refers to one or more Layer objects in the role of annotation_layers. Each Layer acts as annotation_layers for zero, one, or more Model_placed_annotation objects.

4.3.1478 Model_placed_annotation to Visibility

Each Model_placed_annotation refers to exactly one Visibility in the role of annotation_visibility. Each Visibility acts as annotation_visibility for zero, one, or more Model_placed_annotation objects.

4.3.1479 Network to Port

Each Network refers to zero, one, or more Port objects in the role of connected_port. Each Port acts as connected_port for zero, one, or more Network objects.

4.3.1480 Node to Device

Each Node refers to zero, one, or more Device objects in the role of implemented_by. Each Device acts as implemented_by for zero, one, or more Node objects.

4.3.1481 Node to Location

Each Node refers to exactly one Location in the role of assigned_location. Each Location acts as assigned_location for zero, one, or more Node objects.

4.3.1482 Node to Path_node

Each Node refers to zero or one Path_node in the role of position. Each Path_node acts as position for zero, one, or more Node objects.

4.3.1483 Node_relationship to Node

Each Node_relationship refers to exactly one Node in the role of related. Each Node acts as related for zero, one, or more Node_relationship objects.

4.3.1484 Node_relationship to Node

Each Node_relationship refers to exactly one Node in the role of relating. Each Node acts as relating for zero, one, or more Node_relationship objects.

4.3.1485 Note to Language

Each Note refers to exactly one Language in the role of language_specification. Each Language acts as language_specification for zero, one, or more Note objects.

4.3.1486 Note_association to Activity

Each Note_association refers to exactly one Activity in the role of associated_item. Each Activity acts as associated_item for zero, one, or more Note_association objects.

4.3.1487 Note_association to Activity_method

Each Note_association refers to exactly one Activity_method in the role of associated_item. Each Activity_method acts as associated_item for zero, one, or more Note_association objects.

4.3.1488 Note_association to Activity_relationship

Each Note_association refers to exactly one Activity_relationship in the role of associated_item. Each Activity_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1489 Note_association to Alias_identification

Each Note_association refers to exactly one Alias_identification in the role of associated_item. Each Alias_identification acts as associated_item for zero, one, or more Note_association objects.

4.3.1490 Note_association to Alternate_item_relationship

Each Note_association refers to exactly one Alternate_item_relationship in the role of associated_item. Each Alternate_item_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1491 Note_association to Application_context

Each Note_association refers to exactly one Application_context in the role of associated_item. Each Application_context acts as associated_item for zero, one, or more Note_association objects.

4.3.1492 Note_association to Approval_relationship

Each Note_association refers to exactly one Approval_relationship in the role of associated_item. Each Approval_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1493 Note_association to Assembly_component_relationship

Each Note_association refers to exactly one Assembly_component_relationship in the role of associated_item. Each Assembly_component_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1494 Note_association to Assembly_substitute_relationship

Each Note_association refers to exactly one Assembly_substitute_relationship in the role of associated_item. Each Assembly_substitute_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1495 Note_association to Cable_pull_information

Each Note_association refers to exactly one Cable_pull_information in the role of associated_item. Each Cable_pull_information acts as associated_item for zero, one, or more Note_association objects.

4.3.1496 Note_association to Certification

Each Note_association refers to exactly one Certification in the role of associated_item. Each Certification acts as associated_item for zero, one, or more Note_association objects.

4.3.1497 Note_association to Class_category_association

Each Note_association refers to exactly one Class_category_association in the role of associated_item. Each Class_category_association acts as associated_item for zero, one, or more Note_association objects.

4.3.1498 Note_association to Class_condition_association

Each Note_association refers to exactly one Class_condition_association in the role of associated_item. Each Class_condition_association acts as associated_item for zero, one, or more Note_association objects.

4.3.1499 Note_association to Class_inclusion_association

Each Note_association refers to exactly one Class_inclusion_association in the role of associated_item. Each Class_inclusion_association acts as associated_item for zero, one, or more Note_association objects.

4.3.1500 Note_association to Class_specification_association

Each Note_association refers to exactly one Class_specification_association in the role of associated_item. Each Class_specification_association acts as associated_item for zero, one, or more Note_association objects.

4.3.1501 Note_association to Class_structure_relationship

Each Note_association refers to exactly one Class_structure_relationship in the role of associated_item. Each Class_structure_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1502 Note_association to Classification_attribute

Each Note_association refers to exactly one Classification_attribute in the role of associated_item. Each Classification_attribute acts as associated_item for zero, one, or more Note_association objects.

4.3.1503 Note_association to Classification_system

Each Note_association refers to exactly one Classification_system in the role of associated_item. Each Classification_system acts as associated_item for zero, one, or more Note_association objects.

4.3.1504 Note_association to Classification_system

Each Note_association refers to exactly one Classification_system in the role of associated_item. Each Classification_system acts as associated_item for zero, one, or more Note_association objects.

4.3.1505 Note_association to Complex_product

Each Note_association refers to exactly one Complex_product in the role of associated_item. Each Complex_product acts as associated_item for zero, one, or more Note_association objects.

4.3.1506 Note_association to Complex_product_relationship

Each Note_association refers to exactly one Complex_product_relationship in the role of associated_item. Each Complex_product_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1507 Note_association to Composition_relationship

Each Note_association refers to exactly one Composition_relationship in the role of associated_item. Each Composition_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1508 Note_association to Configuration

Each Note_association refers to exactly one Configuration in the role of associated_item. Each Configuration acts as associated_item for zero, one, or more Note_association objects.

4.3.1509 Note_association to Connectivity_allocation

Each Note_association refers to exactly one Connectivity_allocation in the role of associated_item. Each Connectivity_allocation acts as associated_item for zero, one, or more Note_association objects.

4.3.1510 Note_association to Connectivity_definition

Each Note_association refers to exactly one Connectivity_definition in the role of associated_item. Each Connectivity_definition acts as associated_item for zero, one, or more Note_association objects.

4.3.1511 Note_association to Connectivity_definition_relationship

Each Note_association refers to exactly one Connectivity_definition_relationship in the role of associated_item. Each Connectivity_definition_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1512 Note_association to Contract

Each Note_association refers to exactly one Contract in the role of associated_item. Each Contract acts as associated_item for zero, one, or more Note_association objects.

4.3.1513 Note_association to Data_element

Each Note_association refers to exactly one Data_element in the role of associated_item. Each Data_element acts as associated_item for zero, one, or more Note_association objects.

4.3.1514 Note_association to Data_element_association

Each Note_association refers to exactly one Data_element_association in the role of associated_item. Each Data_element_association acts as associated_item for zero, one, or more Note_association objects.

4.3.1515 Note_association to Data_element_definition

Each Note_association refers to exactly one Data_element_definition in the role of associated_item. Each Data_element_definition acts as associated_item for zero, one, or more Note_association objects.

4.3.1516 Note_association to Data_element_definition_relationship

Each Note_association refers to exactly one Data_element_definition_relationship in the role of associated_item. Each Data_element_definition_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1517 Note_association to Data_element_specification

Each Note_association refers to exactly one Data_element_specification in the role of associated_item. Each Data_element_specification acts as associated_item for zero, one, or more Note_association objects.

4.3.1518 Note_association to Design_discipline_item_definition

Each Note_association refers to exactly one Design_discipline_item_definition in the role of associated_item. Each Design_discipline_item_definition acts as associated_item for zero, one, or more Note_association objects.

4.3.1519 Note_association to Device

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Each Note_association refers to exactly one Device in the role of associated_item. Each Device acts as associated_item for zero, one, or more Note_association objects.

4.3.1520 Note_association to Device_relationship

Each Note_association refers to exactly one Device_relationship in the role of associated_item. Each Device_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1521 Note_association to Document

Each Note_association refers to exactly one Document in the role of associated_item. Each Document acts as associated_item for zero, one, or more Note_association objects.

4.3.1522 Note_association to Document_file

Each Note_association refers to exactly one Document_file in the role of associated_item. Each Document_file acts as associated_item for zero, one, or more Note_association objects.

4.3.1523 Note_association to Document_file_relationship

Each Note_association refers to exactly one Document_file_relationship in the role of associated_item. Each Document_file_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1524 Note_association to Document_version

Each Note_association refers to exactly one Document_version in the role of associated_item. Each Document_version acts as associated_item for zero, one, or more Note_association objects.

4.3.1525 Note_association to Drawing_sheet

Each Note_association refers to exactly one Drawing_sheet in the role of associated_item. Each Drawing_sheet acts as associated_item for zero, one, or more Note_association objects.

4.3.1526 Note_association to Drawing_view

Each Note_association refers to exactly one Drawing_view in the role of associated_item. Each Drawing_view acts as associated_item for zero, one, or more Note_association objects.

4.3.1527 Note_association to Effectivity

Each Note_association refers to exactly one Effectivity in the role of associated_item. Each Effectivity acts as associated_item for zero, one, or more Note_association objects.

4.3.1528 Note_association to Effectivity_relationship

Each Note_association refers to exactly one Effectivity_relationship in the role of associated_item. Each Effectivity_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1529 Note_association to Event_reference

Each Note_association refers to exactly one Event_reference in the role of associated_item. Each Event_reference acts as associated_item for zero, one, or more Note_association objects.

4.3.1530 Note_association to External_library_reference

Each Note_association refers to exactly one External_library_reference in the role of associated_item. Each External_library_reference acts as associated_item for zero, one, or more Note_association objects.

4.3.1531 Note_association to Free_segment

Each Note_association refers to exactly one Free_segment in the role of associated_item. Each Free_segment acts as associated_item for zero, one, or more Note_association objects.

4.3.1532 Note_association to Function_definition

Each Note_association refers to exactly one Function_definition in the role of associated_item. Each Function_definition acts as associated_item for zero, one, or more Note_association objects.

4.3.1533 Note_association to Function_definition_relationship

Each Note_association refers to exactly one Function_definition_relationship in the role of associated_item. Each Function_definition_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1534 Note_association to Function_interface

Each Note_association refers to exactly one Function_interface in the role of associated_item. Each Function_interface acts as associated_item for zero, one, or more Note_association objects.

4.3.1535 Note_association to Function_unit

Each Note_association refers to exactly one Function_unit in the role of associated_item. Each Function_unit acts as associated_item for zero, one, or more Note_association objects.

4.3.1536 Note_association to Function_unit_relationship

Each Note_association refers to exactly one Function_unit_relationship in the role of associated_item. Each Function_unit_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1537 Note_association to Function_version

Each Note_association refers to exactly one Function_version in the role of associated_item. Each Function_version acts as associated_item for zero, one, or more Note_association objects.

4.3.1538 Note_association to Functional_connectivity_definition

Each Note_association refers to exactly one Functional_connectivity_definition in the role of associated_item. Each Functional_connectivity_definition acts as associated_item for zero, one, or more Note_association objects.

4.3.1539 Note_association to Functional_connectivity_definition_relationship

Each Note_association refers to exactly one Functional_connectivity_definition_relationship in the role of associated_item. Each Functional_connectivity_definition_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1540 Note_association to Functional_unit_allocation

Each Note_association refers to exactly one Functional_unit_allocation in the role of associated_item. Each Functional_unit_allocation acts as associated_item for zero, one, or more Note_association objects.

4.3.1541 Note_association to Functionality

Each Note_association refers to exactly one Functionality in the role of associated_item. Each Functionality acts as associated_item for zero, one, or more Note_association objects.

4.3.1542 Note_association to General_classification

Each Note_association refers to exactly one General_classification in the role of associated_item. Each General_classification acts as associated_item for zero, one, or more Note_association objects.

4.3.1543 Note_association to Generic_note

Each Note_association refers to exactly one Generic_note in the role of assigned_note. Each Generic_note acts as assigned_note for zero, one, or more Note_association objects.

4.3.1544 Note_association to Interface

Each Note_association refers to exactly one Interface in the role of associated_item. Each Interface acts as associated_item for zero, one, or more Note_association objects.

4.3.1545 Note_association to Interface_port

Each Note_association refers to exactly one Interface_port in the role of associated_item. Each Interface_port acts as associated_item for zero, one, or more Note_association objects.

4.3.1546 Note_association to Interface_terminal

Each Note_association refers to exactly one Interface_terminal in the role of associated_item. Each Interface_terminal acts as associated_item for zero, one, or more Note_association objects.

4.3.1547 Note_association to Item

Each Note_association refers to exactly one Item in the role of associated_item. Each Item acts as associated_item for zero, one, or more Note_association objects.

4.3.1548 Note_association to Item_definition_relationship

Each Note_association refers to exactly one Item_definition_relationship in the role of associated_item. Each Item_definition_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1549 Note_association to Item_version

Each Note_association refers to exactly one Item_version in the role of associated_item. Each Item_version acts as associated_item for zero, one, or more Note_association objects.

4.3.1550 Note_association to Location

Each Note_association refers to exactly one Location in the role of associated_item. Each Location acts as associated_item for zero, one, or more Note_association objects.

4.3.1551 Note_association to Location_relationship

Each Note_association refers to exactly one Location_relationship in the role of associated_item. Each Location_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1552 Note_association to Marking

Each Note_association refers to exactly one Marking in the role of associated_item. Each Marking acts as associated_item for zero, one, or more Note_association objects.

4.3.1553 Note_association to Material

Each Note_association refers to exactly one Material in the role of associated_item. Each Material acts as associated_item for zero, one, or more Note_association objects.

4.3.1554 Note_association to Node

Each Note_association refers to exactly one Node in the role of associated_item. Each Node acts as associated_item for zero, one, or more Note_association objects.

4.3.1555 Note_association to Node_relationship

Each Note_association refers to exactly one Node_relationship in the role of associated_item. Each Node_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1556 Note_association to Notification

Each Note_association refers to exactly one Notification in the role of associated_item. Each Notification acts as associated_item for zero, one, or more Note_association objects.

4.3.1557 Note_association to Offered_function_allocation

Each Note_association refers to exactly one Offered_function_allocation in the role of associated_item. Each Offered_function_allocation acts as associated_item for zero, one, or more Note_association objects.

4.3.1558 Note_association to Organization_relationship

Each Note_association refers to exactly one Organization_relationship in the role of associated_item. Each Organization_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1559 Note_association to Path

Each Note_association refers to exactly one Path in the role of associated_item. Each Path acts as associated_item for zero, one, or more Note_association objects.

4.3.1560 Note_association to Path_node

Each Note_association refers to exactly one Path_node in the role of associated_item. Each Path_node acts as associated_item for zero, one, or more Note_association objects.

4.3.1561 Note_association to Physical_assembly_relationship

Each Note_association refers to exactly one Physical_assembly_relationship in the role of associated_item. Each Physical_assembly_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1562 Note_association to Physical_instance

Each Note_association refers to exactly one Physical_instance in the role of associated_item. Each Physical_instance acts as associated_item for zero, one, or more Note_association objects.

4.3.1563 Note_association to Port

Each Note_association refers to exactly one Port in the role of associated_item. Each Port acts as associated_item for zero, one, or more Note_association objects.

4.3.1564 Note_association to Port_allocation

Each Note_association refers to exactly one Port_allocation in the role of associated_item. Each Port_allocation acts as associated_item for zero, one, or more Note_association objects.

4.3.1565 Note_association to Preferred_item_allocation

Each Note_association refers to exactly one Preferred_item_allocation in the role of associated_item. Each Preferred_item_allocation acts as associated_item for zero, one, or more Note_association objects.

4.3.1566 Note_association to Preferred_item_terminal_allocation

Each Note_association refers to exactly one Preferred_item_terminal_allocation in the role of associated_item. Each Preferred_item_terminal_allocation acts as associated_item for zero, one, or more Note_association objects.

4.3.1567 Note_association to Process_variable

Each Note_association refers to exactly one Process_variable in the role of associated_item. Each Process_variable acts as associated_item for zero, one, or more Note_association objects.

4.3.1568 Note_association to Product_class

Each Note_association refers to exactly one Product_class in the role of associated_item. Each Product_class acts as associated_item for zero, one, or more Note_association objects.

4.3.1569 Note_association to Product_class_relationship

Each Note_association refers to exactly one Product_class_relationship in the role of associated_item. Each Product_class_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1570 Note_association to Product_identification

Each Note_association refers to exactly one Product_identification in the role of associated_item. Each Product_identification acts as associated_item for zero, one, or more Note_association objects.

4.3.1571 Note_association to Product_specification

Each Note_association refers to exactly one Product_specification in the role of associated_item. Each Product_specification acts as associated_item for zero, one, or more Note_association objects.

4.3.1572 Note_association to Product_structure_relationship

Each Note_association refers to exactly one Product_structure_relationship in the role of associated_item. Each Product_structure_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1573 Note_association to Project

Each Note_association refers to exactly one Project in the role of associated_item. Each Project acts as associated_item for zero, one, or more Note_association objects.

4.3.1574 Note_association to Project_relationship

Each Note_association refers to exactly one Project_relationship in the role of associated_item. Each Project_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1575 Note_association to Requirement

Each Note_association refers to exactly one Requirement in the role of associated_item. Each Requirement acts as associated_item for zero, one, or more Note_association objects.

4.3.1576 Note_association to Route

Each Note_association refers to exactly one Route in the role of associated_item. Each Route acts as associated_item for zero, one, or more Note_association objects.

4.3.1577 Note_association to Route_relationship

Each Note_association refers to exactly one Route_relationship in the role of associated_item. Each Route_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1578 Note_association to Routed_segment

Each Note_association refers to exactly one Routed_segment in the role of associated_item. Each Routed_segment acts as associated_item for zero, one, or more Note_association objects.

4.3.1579 Note_association to Section

Each Note_association refers to exactly one Section in the role of associated_item. Each Section acts as associated_item for zero, one, or more Note_association objects.

4.3.1580 Note_association to Section_end

Each Note_association refers to exactly one Section_end in the role of associated_item. Each Section_end acts as associated_item for zero, one, or more Note_association objects.

4.3.1581 Note_association to Section_interface

Each Note_association refers to exactly one Section_interface in the role of associated_item. Each Section_interface acts as associated_item for zero, one, or more Note_association objects.

4.3.1582 Note_association to Section_interface_relationship

Each Note_association refers to exactly one Section_interface_relationship in the role of associated_item. Each Section_interface_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1583 Note_association to Section_relationship

Each Note_association refers to exactly one Section_relationship in the role of associated_item. Each Section_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1584 Note_association to Signal

Each Note_association refers to exactly one Signal in the role of associated_item. Each Signal acts as associated_item for zero, one, or more Note_association objects.

4.3.1585 Note_association to Signal_value

Each Note_association refers to exactly one Signal_value in the role of associated_item. Each Signal_value acts as associated_item for zero, one, or more Note_association objects.

4.3.1586 Note_association to Specific_item_classification

Each Note_association refers to exactly one Specific_item_classification in the role of associated_item. Each Specific_item_classification acts as associated_item for zero, one, or more Note_association objects.

4.3.1587 Note_association to Specification

Each Note_association refers to exactly one Specification in the role of associated_item. Each Specification acts as associated_item for zero, one, or more Note_association objects.

4.3.1588 Note_association to Specification_category

Each Note_association refers to exactly one Specification_category in the role of associated_item. Each Specification_category acts as associated_item for zero, one, or more Note_association objects.

4.3.1589 Note_association to Specification_expression

Each Note_association refers to exactly one Specification_expression in the role of associated_item. Each Specification_expression acts as associated_item for zero, one, or more Note_association objects.

4.3.1590 Note_association to Specification_expression

Each Note_association refers to exactly one Specification_expression in the role of associated_item. Each Specification_expression acts as associated_item for zero, one, or more Note_association objects.

4.3.1591 Note_association to Specification_inclusion

Each Note_association refers to exactly one Specification_inclusion in the role of associated_item. Each Specification_inclusion acts as associated_item for zero, one, or more Note_association objects.

4.3.1592 Note_association to Technical_system

Each Note_association refers to exactly one Technical_system in the role of associated_item. Each Technical_system acts as associated_item for zero, one, or more Note_association objects.

4.3.1593 Note_association to Technical_system_relationship

Each Note_association refers to exactly one Technical_system_relationship in the role of associated_item. Each Technical_system_relationship acts as associated_item for zero, one, or more Note_association objects.

4.3.1594 Note_association to Terminal

Each Note_association refers to exactly one Terminal in the role of associated_item. Each Terminal acts as associated_item for zero, one, or more Note_association objects.

4.3.1595 Note_association to Work_order

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Each Note_association refers to exactly one Work_order in the role of associated_item. Each Work_order acts as associated_item for zero, one, or more Note_association objects.

4.3.1596 Note_association to Work_request

Each Note_association refers to exactly one Work_request in the role of associated_item. Each Work_request acts as associated_item for zero, one, or more Note_association objects.

4.3.1597 Note_reference to Item_presentation

Each Note_reference refers to exactly one Item_presentation in the role of note_presentation. Each Item_presentation acts as note_presentation for zero, one, or more Note_reference objects.

4.3.1598 Note_reference to Item_presentation

Each Note_reference refers to exactly one Item_presentation in the role of presentation_of_item. Each Item_presentation acts as presentation_of_item for zero, one, or more Note_reference objects.

4.3.1599 Notification to Language

Each Notification refers to zero or one Language in the role of language_specification. Each Language acts as language_specification for zero, one, or more Notification objects.

4.3.1600 Notification to Process_variable

Each Notification refers to zero, one, or more Process_variable objects in the role of trigger. Each Process_variable acts as trigger for zero, one, or more Notification objects.

4.3.1601 Notification to Signal

Each Notification refers to zero, one, or more Signal objects in the role of trigger. Each Signal acts as trigger for zero, one, or more Notification objects.

4.3.1602 Notification to Signal_value

Each Notification refers to zero, one, or more Signal_value objects in the role of trigger. Each Signal_value acts as trigger for zero, one, or more Notification objects.

4.3.1603 Notification_relationship to Notification

Each Notification_relationship refers to exactly one Notification in the role of related. Each Notification acts as related for zero, one, or more Notification_relationship objects.

4.3.1604 Notification_relationship to Notification

Each Notification_relationship refers to exactly one Notification in the role of relating. Each Notification acts as relating for zero, one, or more Notification_relationship objects.

4.3.1605 Object_designation to Classification_system

Each Object_designation refers to zero or one Classification_system in the role of designation_system. Each Classification_system acts as designation_system for zero, one, or more Object_designation objects.

4.3.1606 Object_designation_relationship to Object_designation

Each Object_designation_relationship refers to exactly one Object_designation in the role of related_object_designation. Each Object_designation acts as related_object_designation for zero, one, or more Object_designation_relationship objects.

4.3.1607 Object_designation_relationship to Object_designation

Each Object_designation_relationship refers to exactly one Object_designation in the role of relating_object_designation. Each Object_designation acts as relating_object_designation for zero, one, or more Object_designation_relationship objects.

4.3.1608 Offered_function_allocation to Design_discipline_item_definition

Each Offered_function_allocation refers to exactly one Design_discipline_item_definition in the role of performing_item. Each Design_discipline_item_definition acts as performing_item for zero, one, or more Offered_function_allocation objects.

4.3.1609 Offered_function_allocation to Device

Each Offered_function_allocation refers to exactly one Device in the role of performing_item. Each Device acts as performing_item for zero, one, or more Offered_function_allocation objects.

4.3.1610 Offered_function_allocation to Function_definition

Each Offered_function_allocation refers to exactly one Function_definition in the role of offered_functionality. Each Function_definition acts as offered_functionality for zero, one, or more Offered_function_allocation objects.

4.3.1611 Offered_function_allocation to Physical_instance

Each Offered_function_allocation refers to exactly one Physical_instance in the role of performing_item. Each Physical_instance acts as performing_item for zero, one, or more Offered_function_allocation objects.

4.3.1612 Offered_function_allocation to Product_component

Each Offered_function_allocation refers to exactly one Product_component in the role of performing_item. Each Product_component acts as performing_item for zero, one, or more Offered_function_allocation objects.

4.3.1613 Operating_temperature to Value_with_unit

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Each `Operating_temperature` refers to exactly one `Value_with_unit` in the role of `temperature`. Each `Value_with_unit` acts as `temperature` for zero, one, or more `Operating_temperature` objects.

4.3.1614 Ordinate_dimension to Projection_line

Each `Ordinate_dimension` refers to exactly one `Projection_line` in the role of `component`. Each `Projection_line` acts as `component` for zero, one, or more `Ordinate_dimension` objects.

4.3.1615 Organization to Address

Each `Organization` refers to zero or one `Address` in the role of `delivery_address`. Each `Address` acts as `delivery_address` for zero, one, or more `Organization` objects.

4.3.1616 Organization to Address

Each `Organization` refers to zero or one `Address` in the role of `postal_address`. Each `Address` acts as `postal_address` for zero, one, or more `Organization` objects.

4.3.1617 Organization to Address

Each `Organization` refers to zero or one `Address` in the role of `visitor_address`. Each `Address` acts as `visitor_address` for zero, one, or more `Organization` objects.

4.3.1618 Organization_in_contract to Contract

Each `Organization_in_contract` refers to one or more `Contract` objects in the role of `contract`. Each `Contract` acts as `contract` for zero, one, or more `Organization_in_contract` objects.

4.3.1619 Organization_in_contract to Date_and_person_or_organization

Each `Organization_in_contract` refers to zero, one, or more `Date_and_person_or_organization` objects in the role of `signature`. Each `Date_and_person_or_organization` acts as `signature` for zero, one, or more `Organization_in_contract` objects.

4.3.1620 Organization_in_contract to Organization

Each `Organization_in_contract` refers to exactly one `Organization` in the role of `contracted_organization`. Each `Organization` acts as `contracted_organization` for zero, one, or more `Organization_in_contract` objects.

4.3.1621 Organization_relationship to Organization

Each `Organization_relationship` refers to exactly one `Organization` in the role of `related`. Each `Organization` acts as `related` for zero, one, or more `Organization_relationship` objects.

4.3.1622 Organization_relationship to Organization

Each `Organization_relationship` refers to exactly one `Organization` in the role of `relating`. Each `Organization` acts as `relating` for zero, one, or more `Organization_relationship` objects.

4.3.1623 Outside_diameter to Value_with_unit

Each Outside_diameter refers to exactly one Value_with_unit in the role of value_of_outside_diameter. Each Value_with_unit acts as value_of_outside_diameter for zero, one, or more Outside_diameter objects.

4.3.1624 Page_connector to Connecting_line

Each Page_connector refers to exactly one Connecting_line in the role of part_of. Each Connecting_line acts as part_of for zero, one, or more Page_connector objects.

4.3.1625 Page_connector_presentation to Page_connector

Each Page_connector_presentation refers to exactly one Page_connector in the role of of_page_connector. Each Page_connector acts as of_page_connector for zero, one, or more Page_connector_presentation objects.

4.3.1626 Page_connector_reference to Page_connector

Each Page_connector_reference refers to exactly one Page_connector in the role of refers_to. Each Page_connector acts as refers_to for zero, one, or more Page_connector_reference objects.

4.3.1627 Page_connector_reference to Page_connector_presentation

Each Page_connector_reference refers to exactly one Page_connector_presentation in the role of part_of. Each Page_connector_presentation acts as part_of for zero, one, or more Page_connector_reference objects.

4.3.1628 Page_connector_reference to Page_connector_presentation

Each Page_connector_reference refers to exactly one Page_connector_presentation in the role of refers_to. Each Page_connector_presentation acts as refers_to for zero, one, or more Page_connector_reference objects.

4.3.1629 Path to Path_segment

Each Path refers to one or more Path_segment objects in the role of consists_of. Each Path_segment acts as consists_of for zero, one, or more Path objects.

4.3.1630 Path_node to Cartesian_point

Each Path_node refers to exactly one Cartesian_point in the role of position. Each Cartesian_point acts as position for zero, one, or more Path_node objects.

4.3.1631 Path_node to Location

Each Path_node refers to exactly one Location in the role of defined_in. Each Location acts as defined_in for zero, one, or more Path_node objects.

4.3.1632 Path_node_relationship to Path_node

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Each Path_node_relationship refers to exactly one Path_node in the role of related. Each Path_node acts as related for zero, one, or more Path_node_relationship objects.

4.3.1633 Path_node_relationship to Path_node

Each Path_node_relationship refers to exactly one Path_node in the role of relating. Each Path_node acts as relating for zero, one, or more Path_node_relationship objects.

4.3.1634 Path_relationship to Path

Each Path_relationship refers to exactly one Path in the role of related. Each Path acts as related for zero, one, or more Path_relationship objects.

4.3.1635 Path_relationship to Path

Each Path_relationship refers to exactly one Path in the role of relating. Each Path acts as relating for zero, one, or more Path_relationship objects.

4.3.1636 Path_segment to Curve_3d

Each Path_segment refers to exactly one Curve_3d in the role of form. Each Curve_3d acts as form for zero, one, or more Path_segment objects.

4.3.1637 Path_segment to Location

Each Path_segment refers to exactly one Location in the role of defined_in. Each Location acts as defined_in for zero, one, or more Path_segment objects.

4.3.1638 Path_segment to Path_node

Each Path_segment refers to exactly one Path_node in the role of begins_at. Each Path_node acts as begins_at for zero, one, or more Path_segment objects.

4.3.1639 Path_segment to Path_node

Each Path_segment refers to exactly one Path_node in the role of ends_at. Each Path_node acts as ends_at for zero, one, or more Path_segment objects.

4.3.1640 Person to Address

Each Person refers to zero or one Address in the role of preferred_business_address. Each Address acts as preferred_business_address for zero, one, or more Person objects.

4.3.1641 Person_in_organization to Address

Each Person_in_organization refers to zero or one Address in the role of location. Each Address acts as location for zero, one, or more Person_in_organization objects.

4.3.1642 Person_in_organization to Organization

Each Person_in_organization refers to exactly one Organization in the role of associated_organization. Each Organization acts as associated_organization for zero, one, or more Person_in_organization objects.

4.3.1643 Person_in_organization to Person

Each Person_in_organization refers to exactly one Person in the role of associated_person. Each Person acts as associated_person for zero, one, or more Person_in_organization objects.

4.3.1644 Person_in_organization_relationship to Person_in_organization

Each Person_in_organization_relationship refers to exactly one Person_in_organization in the role of related. Each Person_in_organization acts as related for zero, one, or more Person_in_organization_relationship objects.

4.3.1645 Person_in_organization_relationship to Person_in_organization

Each Person_in_organization_relationship refers to exactly one Person_in_organization in the role of relating. Each Person_in_organization acts as relating for zero, one, or more Person_in_organization_relationship objects.

4.3.1646 Person_organization_assignment to Activity

Each Person_organization_assignment is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Person_organization_assignment objects.

4.3.1647 Person_organization_assignment to Activity_element

Each Person_organization_assignment is_applied_to one or more Activity_element objects. Each Activity_element is related to zero, one, or more Person_organization_assignment objects.

4.3.1648 Person_organization_assignment to Activity_method_assignment

Each Person_organization_assignment is_applied_to one or more Activity_method_assignment objects. Each Activity_method_assignment is related to zero, one, or more Person_organization_assignment objects.

4.3.1649 Person_organization_assignment to Activity_relationship

Each Person_organization_assignment is_applied_to one or more Activity_relationship objects. Each Activity_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1650 Person_organization_assignment to Alternate_item_relationship

Each Person_organization_assignment is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1651 Person_organization_assignment to Approval_status

Each Person_organization_assignment is_applied_to one or more Approval_status objects. Each Approval_status is related to zero, one, or more Person_organization_assignment objects.

4.3.1652 Person_organization_assignment to Assembly_component_relationship

Each Person_organization_assignment is_applied_to one or more Assembly_component_relationship objects. Each Assembly_component_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1653 Person_organization_assignment to Assembly_substitute_relationship

Each Person_organization_assignment is_applied_to one or more Assembly_substitute_relationship objects. Each Assembly_substitute_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1654 Person_organization_assignment to Cable_pull_information

Each Person_organization_assignment is_applied_to one or more Cable_pull_information objects. Each Cable_pull_information is related to zero, one, or more Person_organization_assignment objects.

4.3.1655 Person_organization_assignment to Certification

Each Person_organization_assignment is_applied_to one or more Certification objects. Each Certification is related to zero, one, or more Person_organization_assignment objects.

4.3.1656 Person_organization_assignment to Class_category_association

Each Person_organization_assignment is_applied_to one or more Class_category_association objects. Each Class_category_association is related to zero, one, or more Person_organization_assignment objects.

4.3.1657 Person_organization_assignment to Class_condition_association

Each Person_organization_assignment is_applied_to one or more Class_condition_association objects. Each Class_condition_association is related to zero, one, or more Person_organization_assignment objects.

4.3.1658 Person_organization_assignment to Class_inclusion_association

Each Person_organization_assignment is_applied_to one or more Class_inclusion_association objects. Each Class_inclusion_association is related to zero, one, or more Person_organization_assignment objects.

4.3.1659 Person_organization_assignment to Class_specification_- association

Each Person_organization_assignment is_applied_to one or more Class_specification_association objects. Each Class_specification_association is related to zero, one, or more Person_organization_assignment objects.

4.3.1660 Person_organization_assignment to Class_structure_relationship

Each Person_organization_assignment is_applied_to one or more Class_structure_relationship objects. Each Class_structure_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1661 Person_organization_assignment to Classification_association

Each Person_organization_assignment is_applied_to one or more Classification_association objects. Each Classification_association is related to zero, one, or more Person_organization_assignment objects.

4.3.1662 Person_organization_assignment to Classification_attribute

Each Person_organization_assignment is_applied_to one or more Classification_attribute objects. Each Classification_attribute is related to zero, one, or more Person_organization_assignment objects.

4.3.1663 Person_organization_assignment to Classification_system

Each Person_organization_assignment is_applied_to one or more Classification_system objects. Each Classification_system is related to zero, one, or more Person_organization_assignment objects.

4.3.1664 Person_organization_assignment to Complex_product

Each Person_organization_assignment is_applied_to one or more Complex_product objects. Each Complex_product is related to zero, one, or more Person_organization_assignment objects.

4.3.1665 Person_organization_assignment to Complex_product_- relationship

Each Person_organization_assignment is_applied_to one or more Complex_product_relationship objects. Each Complex_product_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1666 Person_organization_assignment to Composition_relationship

Each Person_organization_assignment is_applied_to one or more Composition_relationship objects. Each Composition_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1667 Person_organization_assignment to Configuration

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Each `Person_organization_assignment` is `applied_to` one or more `Configuration` objects. Each `Configuration` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1668 `Person_organization_assignment` to `Connectivity_allocation`

Each `Person_organization_assignment` is `applied_to` one or more `Connectivity_allocation` objects. Each `Connectivity_allocation` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1669 `Person_organization_assignment` to `Connectivity_definition`

Each `Person_organization_assignment` is `applied_to` one or more `Connectivity_definition` objects. Each `Connectivity_definition` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1670 `Person_organization_assignment` to `Connectivity_definition_relationship`

Each `Person_organization_assignment` is `applied_to` one or more `Connectivity_definition_relationship` objects. Each `Connectivity_definition_relationship` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1671 `Person_organization_assignment` to `Contract`

Each `Person_organization_assignment` is `applied_to` one or more `Contract` objects. Each `Contract` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1672 `Person_organization_assignment` to `Data_element`

Each `Person_organization_assignment` is `applied_to` one or more `Data_element` objects. Each `Data_element` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1673 `Person_organization_assignment` to `Data_element_association`

Each `Person_organization_assignment` is `applied_to` one or more `Data_element_association` objects. Each `Data_element_association` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1674 `Person_organization_assignment` to `Data_element_definition`

Each `Person_organization_assignment` is `applied_to` one or more `Data_element_definition` objects. Each `Data_element_definition` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1675 `Person_organization_assignment` to `Data_element_relationship`

Each `Person_organization_assignment` is `applied_to` one or more `Data_element_relationship` objects. Each `Data_element_relationship` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1676 Person_organization_assignment to Data_element_specification

Each Person_organization_assignment is_applied_to one or more Data_element_specification objects. Each Data_element_specification is related to zero, one, or more Person_organization_assignment objects.

4.3.1677 Person_organization_assignment to Design_discipline_item_definition

Each Person_organization_assignment is_applied_to one or more Design_discipline_item_definition objects. Each Design_discipline_item_definition is related to zero, one, or more Person_organization_assignment objects.

4.3.1678 Person_organization_assignment to Device

Each Person_organization_assignment is_applied_to one or more Device objects. Each Device is related to zero, one, or more Person_organization_assignment objects.

4.3.1679 Person_organization_assignment to Device_relationship

Each Person_organization_assignment is_applied_to one or more Device_relationship objects. Each Device_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1680 Person_organization_assignment to Document

Each Person_organization_assignment is_applied_to one or more Document objects. Each Document is related to zero, one, or more Person_organization_assignment objects.

4.3.1681 Person_organization_assignment to Document_file

Each Person_organization_assignment is_applied_to one or more Document_file objects. Each Document_file is related to zero, one, or more Person_organization_assignment objects.

4.3.1682 Person_organization_assignment to Document_file_relationship

Each Person_organization_assignment is_applied_to one or more Document_file_relationship objects. Each Document_file_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1683 Person_organization_assignment to Document_representation

Each Person_organization_assignment is_applied_to one or more Document_representation objects. Each Document_representation is related to zero, one, or more Person_organization_assignment objects.

4.3.1684 Person_organization_assignment to Document_version

Each Person_organization_assignment is_applied_to one or more Document_version objects. Each Document_version is related to zero, one, or more Person_organization_assignment objects.

4.3.1685 Person_organization_assignment to Document_version_ - relationship

Each Person_organization_assignment is_applied_to one or more Document_version_relationship objects. Each Document_version_relationship is related to zero, one, or more Person_organization_ - assignment objects.

4.3.1686 Person_organization_assignment to Drawing

Each Person_organization_assignment is_applied_to one or more Drawing objects. Each Drawing is related to zero, one, or more Person_organization_assignment objects.

4.3.1687 Person_organization_assignment to Drawing_sequence

Each Person_organization_assignment is_applied_to one or more Drawing_sequence objects. Each Drawing_sequence is related to zero, one, or more Person_organization_assignment objects.

4.3.1688 Person_organization_assignment to Drawing_sheet

Each Person_organization_assignment is_applied_to one or more Drawing_sheet objects. Each Drawing_sheet is related to zero, one, or more Person_organization_assignment objects.

4.3.1689 Person_organization_assignment to Drawing_sheet_relationship

Each Person_organization_assignment is_applied_to one or more Drawing_sheet_relationship objects. Each Drawing_sheet_relationship is related to zero, one, or more Person_organization_ - assignment objects.

4.3.1690 Person_organization_assignment to Free_segment

Each Person_organization_assignment is_applied_to one or more Free_segment objects. Each Free_ - segment is related to zero, one, or more Person_organization_assignment objects.

4.3.1691 Person_organization_assignment to Function_definition

Each Person_organization_assignment is_applied_to one or more Function_definition objects. Each Function_definition is related to zero, one, or more Person_organization_assignment objects.

4.3.1692 Person_organization_assignment to Function_definition_ - relationship

Each Person_organization_assignment is_applied_to one or more Function_definition_relationship objects. Each Function_definition_relationship is related to zero, one, or more Person_organization_ - assignment objects.

4.3.1693 Person_organization_assignment to Function_interface

Each Person_organization_assignment is_applied_to one or more Function_interface objects. Each Function_interface is related to zero, one, or more Person_organization_assignment objects.

4.3.1694 Person_organization_assignment to Function_unit

Each Person_organization_assignment is_applied_to one or more Function_unit objects. Each Function_unit is related to zero, one, or more Person_organization_assignment objects.

4.3.1695 Person_organization_assignment to Function_unit_relationship

Each Person_organization_assignment is_applied_to one or more Function_unit_relationship objects. Each Function_unit_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1696 Person_organization_assignment to Function_version

Each Person_organization_assignment is_applied_to one or more Function_version objects. Each Function_version is related to zero, one, or more Person_organization_assignment objects.

4.3.1697 Person_organization_assignment to Function_version_relationship

Each Person_organization_assignment is_applied_to one or more Function_version_relationship objects. Each Function_version_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1698 Person_organization_assignment to Functional_connectivity_definition

Each Person_organization_assignment is_applied_to one or more Functional_connectivity_definition objects. Each Functional_connectivity_definition is related to zero, one, or more Person_organization_assignment objects.

4.3.1699 Person_organization_assignment to Functional_connectivity_definition_relationship

Each Person_organization_assignment is_applied_to one or more Functional_connectivity_definition_relationship objects. Each Functional_connectivity_definition_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1700 Person_organization_assignment to Functional_unit_allocation

Each Person_organization_assignment is_applied_to one or more Functional_unit_allocation objects. Each Functional_unit_allocation is related to zero, one, or more Person_organization_assignment objects.

4.3.1701 Person_organization_assignment to Functionality

Each Person_organization_assignment is_applied_to one or more Functionality objects. Each Functionality is related to zero, one, or more Person_organization_assignment objects.

4.3.1702 Person_organization_assignment to General_classification

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Each `Person_organization_assignment` is `applied_to` one or more `General_classification` objects. Each `General_classification` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1703 `Person_organization_assignment` to `Generic_note`

Each `Person_organization_assignment` is `applied_to` one or more `Generic_note` objects. Each `Generic_note` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1704 `Person_organization_assignment` to `Interface`

Each `Person_organization_assignment` is `applied_to` one or more `Interface` objects. Each `Interface` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1705 `Person_organization_assignment` to `Interface_port`

Each `Person_organization_assignment` is `applied_to` one or more `Interface_port` objects. Each `Interface_port` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1706 `Person_organization_assignment` to `Interface_terminal`

Each `Person_organization_assignment` is `applied_to` one or more `Interface_terminal` objects. Each `Interface_terminal` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1707 `Person_organization_assignment` to `Item`

Each `Person_organization_assignment` is `applied_to` one or more `Item` objects. Each `Item` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1708 `Person_organization_assignment` to `Item_definition_relationship`

Each `Person_organization_assignment` is `applied_to` one or more `Item_definition_relationship` objects. Each `Item_definition_relationship` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1709 `Person_organization_assignment` to `Item_version`

Each `Person_organization_assignment` is `applied_to` one or more `Item_version` objects. Each `Item_version` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1710 `Person_organization_assignment` to `Item_version_relationship`

Each `Person_organization_assignment` is `applied_to` one or more `Item_version_relationship` objects. Each `Item_version_relationship` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1711 `Person_organization_assignment` to `Location`

Each `Person_organization_assignment` is `applied_to` one or more `Location` objects. Each `Location` is related to zero, one, or more `Person_organization_assignment` objects.

4.3.1712 Person_organization_assignment to Location_relationship

Each Person_organization_assignment is_applied_to one or more Location_relationship objects. Each Location_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1713 Person_organization_assignment to Marking

Each Person_organization_assignment is_applied_to one or more Marking objects. Each Marking is related to zero, one, or more Person_organization_assignment objects.

4.3.1714 Person_organization_assignment to Material

Each Person_organization_assignment is_applied_to one or more Material objects. Each Material is related to zero, one, or more Person_organization_assignment objects.

4.3.1715 Person_organization_assignment to Node

Each Person_organization_assignment is_applied_to one or more Node objects. Each Node is related to zero, one, or more Person_organization_assignment objects.

4.3.1716 Person_organization_assignment to Node_relationship

Each Person_organization_assignment is_applied_to one or more Node_relationship objects. Each Node_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1717 Person_organization_assignment to Notification

Each Person_organization_assignment is_applied_to one or more Notification objects. Each Notification is related to zero, one, or more Person_organization_assignment objects.

4.3.1718 Person_organization_assignment to Notification_relationship

Each Person_organization_assignment is_applied_to one or more Notification_relationship objects. Each Notification_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1719 Person_organization_assignment to Offered_function_allocation

Each Person_organization_assignment is_applied_to one or more Offered_function_allocation objects. Each Offered_function_allocation is related to zero, one, or more Person_organization_assignment objects.

4.3.1720 Person_organization_assignment to Organization

Each Person_organization_assignment refers to exactly one Organization in the role of assigned_person_or_organization. Each Organization acts as assigned_person_or_organization for zero, one, or more Person_organization_assignment objects.

4.3.1721 Person_organization_assignment to Organization_relationship

Each Person_organization_assignment is_applied_to one or more Organization_relationship objects. Each Organization_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1722 Person_organization_assignment to Path

Each Person_organization_assignment is_applied_to one or more Path objects. Each Path is related to zero, one, or more Person_organization_assignment objects.

4.3.1723 Person_organization_assignment to Path_node

Each Person_organization_assignment is_applied_to one or more Path_node objects. Each Path_node is related to zero, one, or more Person_organization_assignment objects.

4.3.1724 Person_organization_assignment to Path_node_relationship

Each Person_organization_assignment is_applied_to one or more Path_node_relationship objects. Each Path_node_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1725 Person_organization_assignment to Path_relationship

Each Person_organization_assignment is_applied_to one or more Path_relationship objects. Each Path_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1726 Person_organization_assignment to Person_in_organization

Each Person_organization_assignment refers to exactly one Person_in_organization in the role of assigned_person_or_organization. Each Person_in_organization acts as assigned_person_or_organization for zero, one, or more Person_organization_assignment objects.

4.3.1727 Person_organization_assignment to Person_in_organization

Each Person_organization_assignment is_applied_to one or more Person_in_organization objects. Each Person_in_organization is related to zero, one, or more Person_organization_assignment objects.

4.3.1728 Person_organization_assignment to Person_in_organization_relationship

Each Person_organization_assignment is_applied_to one or more Person_in_organization_relationship objects. Each Person_in_organization_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1729 Person_organization_assignment to Physical_assembly_-relationship

Each Person_organization_assignment is_applied_to one or more Physical_assembly_relationship objects. Each Physical_assembly_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1730 Person_organization_assignment to Physical_instance

Each Person_organization_assignment is_applied_to one or more Physical_instance objects. Each Physical_instance is related to zero, one, or more Person_organization_assignment objects.

4.3.1731 Person_organization_assignment to Port

Each Person_organization_assignment is_applied_to one or more Port objects. Each Port is related to zero, one, or more Person_organization_assignment objects.

4.3.1732 Person_organization_assignment to Port_allocation

Each Person_organization_assignment is_applied_to one or more Port_allocation objects. Each Port_allocation is related to zero, one, or more Person_organization_assignment objects.

4.3.1733 Person_organization_assignment to Port_association

Each Person_organization_assignment is_applied_to one or more Port_association objects. Each Port_association is related to zero, one, or more Person_organization_assignment objects.

4.3.1734 Person_organization_assignment to Preferred_item_allocation

Each Person_organization_assignment is_applied_to one or more Preferred_item_allocation objects. Each Preferred_item_allocation is related to zero, one, or more Person_organization_assignment objects.

4.3.1735 Person_organization_assignment to Preferred_item_terminal_allocation

Each Person_organization_assignment is_applied_to one or more Preferred_item_terminal_allocation objects. Each Preferred_item_terminal_allocation is related to zero, one, or more Person_organization_assignment objects.

4.3.1736 Person_organization_assignment to Process_variable

Each Person_organization_assignment is_applied_to one or more Process_variable objects. Each Process_variable is related to zero, one, or more Person_organization_assignment objects.

4.3.1737 Person_organization_assignment to Process_variable_- relationship

Each Person_organization_assignment is_applied_to one or more Process_variable_relationship objects. Each Process_variable_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1738 Person_organization_assignment to Product_class

Each Person_organization_assignment is_applied_to one or more Product_class objects. Each Product_class is related to zero, one, or more Person_organization_assignment objects.

4.3.1739 Person_organization_assignment to Product_identification

Each Person_organization_assignment is_applied_to one or more Product_identification objects. Each Product_identification is related to zero, one, or more Person_organization_assignment objects.

4.3.1740 Person_organization_assignment to Product_structure_- relationship

Each Person_organization_assignment is_applied_to one or more Product_structure_relationship objects. Each Product_structure_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1741 Person_organization_assignment to Project

Each Person_organization_assignment is_applied_to one or more Project objects. Each Project is related to zero, one, or more Person_organization_assignment objects.

4.3.1742 Person_organization_assignment to Requirement

Each Person_organization_assignment is_applied_to one or more Requirement objects. Each Requirement is related to zero, one, or more Person_organization_assignment objects.

4.3.1743 Person_organization_assignment to Requirement_document_- assignment

Each Person_organization_assignment is_applied_to one or more Requirement_document_assignment objects. Each Requirement_document_assignment is related to zero, one, or more Person_organization_assignment objects.

4.3.1744 Person_organization_assignment to Route

Each Person_organization_assignment is_applied_to one or more Route objects. Each Route is related to zero, one, or more Person_organization_assignment objects.

4.3.1745 Person_organization_assignment to Route_relationship

Each Person_organization_assignment is_applied_to one or more Route_relationship objects. Each Route_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1746 Person_organization_assignment to Routed_segment

Each Person_organization_assignment is_applied_to one or more Routed_segment objects. Each Routed_segment is related to zero, one, or more Person_organization_assignment objects.

4.3.1747 Person_organization_assignment to Section

Each Person_organization_assignment is_applied_to one or more Section objects. Each Section is related to zero, one, or more Person_organization_assignment objects.

4.3.1748 Person_organization_assignment to Section_end

Each Person_organization_assignment is_applied_to one or more Section_end objects. Each Section_end is related to zero, one, or more Person_organization_assignment objects.

4.3.1749 Person_organization_assignment to Section_interface

Each Person_organization_assignment is_applied_to one or more Section_interface objects. Each Section_interface is related to zero, one, or more Person_organization_assignment objects.

4.3.1750 Person_organization_assignment to Section_interface - relationship

Each Person_organization_assignment is_applied_to one or more Section_interface_relationship objects. Each Section_interface_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1751 Person_organization_assignment to Section_relationship

Each Person_organization_assignment is_applied_to one or more Section_relationship objects. Each Section_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1752 Person_organization_assignment to Security_classification

Each Person_organization_assignment is_applied_to one or more Security_classification objects. Each Security_classification is related to zero, one, or more Person_organization_assignment objects.

4.3.1753 Person_organization_assignment to Security_level

Each Person_organization_assignment is_applied_to one or more Security_level objects. Each Security_level is related to zero, one, or more Person_organization_assignment objects.

4.3.1754 Person_organization_assignment to Signal

Each Person_organization_assignment is_applied_to one or more Signal objects. Each Signal is related to zero, one, or more Person_organization_assignment objects.

4.3.1755 Person_organization_assignment to Signal_relationship

Each Person_organization_assignment is_applied_to one or more Signal_relationship objects. Each Signal_relationship is related to zero, one, or more Person_organization_assignment objects.

4.3.1756 Person_organization_assignment to Signal_value

Each Person_organization_assignment is_applied_to one or more Signal_value objects. Each Signal_value is related to zero, one, or more Person_organization_assignment objects.

4.3.1757 Person_organization_assignment to Specification

Each Person_organization_assignment is_applied_to one or more Specification objects. Each Specification is related to zero, one, or more Person_organization_assignment objects.

4.3.1758 Person_organization_assignment to Specification_category

Each Person_organization_assignment is_applied_to one or more Specification_category objects. Each Specification_category is related to zero, one, or more Person_organization_assignment objects.

4.3.1759 Person_organization_assignment to Specification_expression

Each Person_organization_assignment is_applied_to one or more Specification_expression objects. Each Specification_expression is related to zero, one, or more Person_organization_assignment objects.

4.3.1760 Person_organization_assignment to Specification_inclusion

Each Person_organization_assignment is_applied_to one or more Specification_inclusion objects. Each Specification_inclusion is related to zero, one, or more Person_organization_assignment objects.

4.3.1761 Person_organization_assignment to Technical_system

Each Person_organization_assignment is_applied_to one or more Technical_system objects. Each Technical_system is related to zero, one, or more Person_organization_assignment objects.

4.3.1762 Person_organization_assignment to Technical_system_ - relationship

Each Person_organization_assignment is_applied_to one or more Technical_system_relationship objects. Each Technical_system_relationship is related to zero, one, or more Person_organization_ - assignment objects.

4.3.1763 Person_organization_assignment to Terminal

Each Person_organization_assignment is_applied_to one or more Terminal objects. Each Terminal is related to zero, one, or more Person_organization_assignment objects.

4.3.1764 Person_organization_assignment to Work_order

Each Person_organization_assignment is_applied_to one or more Work_order objects. Each Work_order is related to zero, one, or more Person_organization_assignment objects.

4.3.1765 Person_organization_assignment to Work_request

Each Person_organization_assignment is_applied_to one or more Work_request objects. Each Work_request is related to zero, one, or more Person_organization_assignment objects.

4.3.1766 Physical_assembly_relationship to Device

Each Physical_assembly_relationship is_realization_of exactly one Device. Each Device is related to zero, one, or more Physical_assembly_relationship objects.

4.3.1767 Physical_assembly_relationship to Physical_instance

Each Physical_assembly_relationship refers to exactly one Physical_instance in the role of physical_assembly. Each Physical_instance acts as physical_assembly for zero, one, or more Physical_assembly_relationship objects.

4.3.1768 Physical_assembly_relationship to Physical_instance

Each Physical_assembly_relationship refers to exactly one Physical_instance in the role of physical_component. Each Physical_instance acts as physical_component for zero, one, or more Physical_assembly_relationship objects.

4.3.1769 Physical_document to Hardcopy

Each Physical_document refers to zero, one, or more Hardcopy objects in the role of component. Each Hardcopy acts as component for zero, one, or more Physical_document objects.

4.3.1770 Physical_instance to Design_discipline_item_definition

Each Physical_instance is_realization_of exactly one Design_discipline_item_definition. Each Design_discipline_item_definition is related to zero, one, or more Physical_instance objects.

4.3.1771 Physical_instance to Product_identification

Each Physical_instance is_realization_of exactly one Product_identification. Each Product_identification is related to zero, one, or more Physical_instance objects.

4.3.1772 Port to Interface_port

Each Port refers to exactly one Interface_port in the role of associated_interface_port. Each Interface_port acts as associated_interface_port for zero, one, or more Port objects.

4.3.1773 Port to Single_function_unit

Each Port refers to exactly one Single_function_unit in the role of port_of. Each Single_function_unit acts as port_of for zero, one, or more Port objects.

4.3.1774 Port to Terminal_designation

Each Port refers to zero or one Terminal_designation in the role of extended_designation. Each Terminal_designation acts as extended_designation for zero, one, or more Port objects.

4.3.1775 Port_allocation to Functional_unit_allocation

Each Port_allocation refers to zero or one Functional_unit_allocation in the role of item_allocation. Each Functional_unit_allocation acts as item_allocation for zero, one, or more Port_allocation objects.

4.3.1776 Port_allocation to Port

Each Port_allocation refers to exactly one Port in the role of allocated_port. Each Port acts as allocated_port for zero, one, or more Port_allocation objects.

4.3.1777 Port_allocation to Terminal

Each Port_allocation refers to exactly one Terminal in the role of port_implementation. Each Terminal acts as port_implementation for zero, one, or more Port_allocation objects.

4.3.1778 Port_association to Interface_port

Each Port_association refers to exactly one Interface_port in the role of associated_interface_port. Each Interface_port acts as associated_interface_port for zero, one, or more Port_association objects.

4.3.1779 Port_association to Port

Each Port_association refers to exactly one Port in the role of associated_port. Each Port acts as associated_port for zero, one, or more Port_association objects.

4.3.1780 Port_relationship to Port

Each Port_relationship refers to exactly one Port in the role of related. Each Port acts as related for zero, one, or more Port_relationship objects.

4.3.1781 Port_relationship to Port

Each Port_relationship refers to exactly one Port in the role of relating. Each Port acts as relating for zero, one, or more Port_relationship objects.

4.3.1782 Predefined_data_element to Body_breadth

Each Predefined_data_element refers to exactly one Body_breadth in the role of data. Each Body_breadth acts as data for zero, one, or more Predefined_data_element objects.

4.3.1783 Predefined_data_element to Body_height

Each Predefined_data_element refers to exactly one Body_height in the role of data. Each Body_height acts as data for zero, one, or more Predefined_data_element objects.

4.3.1784 Predefined_data_element to Body_length

Each Predefined_data_element refers to exactly one Body_length in the role of data. Each Body_length acts as data for zero, one, or more Predefined_data_element objects.

4.3.1785 Predefined_data_element to Component_colour

Each Predefined_data_element refers to exactly one Component_colour in the role of data. Each Component_colour acts as data for zero, one, or more Predefined_data_element objects.

4.3.1786 Predefined_data_element to Cross_section

Each Predefined_data_element refers to exactly one Cross_section in the role of data. Each Cross_section acts as data for zero, one, or more Predefined_data_element objects.

4.3.1787 Predefined_data_element to Mass

Each Predefined_data_element refers to exactly one Mass in the role of data. Each Mass acts as data for zero, one, or more Predefined_data_element objects.

4.3.1788 Predefined_data_element to Material

Each Predefined_data_element refers to exactly one Material in the role of data. Each Material acts as data for zero, one, or more Predefined_data_element objects.

4.3.1789 Predefined_data_element to Mounting_features

Each Predefined_data_element refers to exactly one Mounting_features in the role of data. Each Mounting_features acts as data for zero, one, or more Predefined_data_element objects.

4.3.1790 Predefined_data_element to Operating_temperature

Each Predefined_data_element refers to exactly one Operating_temperature in the role of data. Each Operating_temperature acts as data for zero, one, or more Predefined_data_element objects.

4.3.1791 Predefined_data_element to Outside_diameter

Each Predefined_data_element refers to exactly one Outside_diameter in the role of data. Each Outside_diameter acts as data for zero, one, or more Predefined_data_element objects.

4.3.1792 Predefined_data_element to Rated_current

Each Predefined_data_element refers to exactly one Rated_current in the role of data. Each Rated_current acts as data for zero, one, or more Predefined_data_element objects.

4.3.1793 Predefined_data_element to Rated_power

Each Predefined_data_element refers to exactly one Rated_power in the role of data. Each Rated_power acts as data for zero, one, or more Predefined_data_element objects.

4.3.1794 Predefined_data_element to Rated_voltage

Each Predefined_data_element refers to exactly one Rated_voltage in the role of data. Each Rated_voltage acts as data for zero, one, or more Predefined_data_element objects.

4.3.1795 Predefined_data_element to Storage_temperature

Each Predefined_data_element refers to exactly one Storage_temperature in the role of data. Each Storage_temperature acts as data for zero, one, or more Predefined_data_element objects.

4.3.1796 Preferred_equipment_assignment to Design_discipline_item_definition

Each Preferred_equipment_assignment refers to zero, one, or more Design_discipline_item_definition objects in the role of preferred_equipment. Each Design_discipline_item_definition acts as preferred_equipment for zero, one, or more Preferred_equipment_assignment objects.

4.3.1797 Preferred_equipment_assignment to Function_definition

Each Preferred_equipment_assignment refers to zero, one, or more Function_definition objects in the role of preferred_equipment. Each Function_definition acts as preferred_equipment for zero, one, or more Preferred_equipment_assignment objects.

4.3.1798 Preferred_equipment_assignment to Organization

Each Preferred_equipment_assignment refers to zero or one Organization in the role of valid_context. Each Organization acts as valid_context for zero, one, or more Preferred_equipment_assignment objects.

4.3.1799 Preferred_equipment_assignment to Product_class

Each Preferred_equipment_assignment refers to zero or one Product_class in the role of valid_context. Each Product_class acts as valid_context for zero, one, or more Preferred_equipment_assignment objects.

4.3.1800 Preferred_equipment_assignment to Signal

Each Preferred_equipment_assignment refers to exactly one Signal in the role of related_signal. Each Signal acts as related_signal for zero, one, or more Preferred_equipment_assignment objects.

4.3.1801 Preferred_item_allocation to Design_discipline_item_definition

Each Preferred_item_allocation refers to exactly one Design_discipline_item_definition in the role of preferred_item. Each Design_discipline_item_definition acts as preferred_item for zero, one, or more Preferred_item_allocation objects.

4.3.1802 Preferred_item_allocation to Function_definition

Each Preferred_item_allocation refers to exactly one Function_definition in the role of preferred_item. Each Function_definition acts as preferred_item for zero, one, or more Preferred_item_allocation objects.

4.3.1803 Preferred_item_allocation to Single_function_unit

Each Preferred_item_allocation refers to exactly one Single_function_unit in the role of functional_definition. Each Single_function_unit acts as functional_definition for zero, one, or more Preferred_item_allocation objects.

4.3.1804 Preferred_item_terminal_allocation to Interface_port

Each Preferred_item_terminal_allocation refers to exactly one Interface_port in the role of preferred_node. Each Interface_port acts as preferred_node for zero, one, or more Preferred_item_terminal_allocation objects.

4.3.1805 Preferred_item_terminal_allocation to Interface_terminal

Each Preferred_item_terminal_allocation refers to exactly one Interface_terminal in the role of preferred_node. Each Interface_terminal acts as preferred_node for zero, one, or more Preferred_item_terminal_allocation objects.

4.3.1806 Preferred_item_terminal_allocation to Port

Each Preferred_item_terminal_allocation refers to exactly one Port in the role of functional_definition. Each Port acts as functional_definition for zero, one, or more Preferred_item_terminal_allocation objects.

4.3.1807 Preferred_item_terminal_allocation to Preferred_item_allocation

Each Preferred_item_terminal_allocation refers to exactly one Preferred_item_allocation in the role of item_allocation. Each Preferred_item_allocation acts as item_allocation for zero, one, or more Preferred_item_terminal_allocation objects.

4.3.1808 Process_variable to Data_element_value

Each Process_variable refers to zero or one Data_element_value in the role of associated_value. Each Data_element_value acts as associated_value for zero, one, or more Process_variable objects.

4.3.1809 Process_variable_relationship to Process_variable

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Each `Process_variable_relationship` refers to exactly one `Process_variable` in the role of related. Each `Process_variable` acts as related for zero, one, or more `Process_variable_relationship` objects.

4.3.1810 `Process_variable_relationship` to `Process_variable`

Each `Process_variable_relationship` refers to exactly one `Process_variable` in the role of relating. Each `Process_variable` acts as relating for zero, one, or more `Process_variable_relationship` objects.

4.3.1811 `Process_variable_system_assignment` to `Connectivity_definition`

Each `Process_variable_system_assignment` refers to exactly one `Connectivity_definition` in the role of associated_system. Each `Connectivity_definition` acts as associated_system for zero, one, or more `Process_variable_system_assignment` objects.

4.3.1812 `Process_variable_system_assignment` to `Design_discipline_item_definition`

Each `Process_variable_system_assignment` refers to exactly one `Design_discipline_item_definition` in the role of associated_system. Each `Design_discipline_item_definition` acts as associated_system for zero, one, or more `Process_variable_system_assignment` objects.

4.3.1813 `Process_variable_system_assignment` to `Device`

Each `Process_variable_system_assignment` refers to exactly one `Device` in the role of associated_system. Each `Device` acts as associated_system for zero, one, or more `Process_variable_system_assignment` objects.

4.3.1814 `Process_variable_system_assignment` to `Function_definition`

Each `Process_variable_system_assignment` refers to exactly one `Function_definition` in the role of associated_system. Each `Function_definition` acts as associated_system for zero, one, or more `Process_variable_system_assignment` objects.

4.3.1815 `Process_variable_system_assignment` to `Function_unit`

Each `Process_variable_system_assignment` refers to exactly one `Function_unit` in the role of associated_system. Each `Function_unit` acts as associated_system for zero, one, or more `Process_variable_system_assignment` objects.

4.3.1816 `Process_variable_system_assignment` to `Functional_connectivity_definition`

Each `Process_variable_system_assignment` refers to exactly one `Functional_connectivity_definition` in the role of associated_system. Each `Functional_connectivity_definition` acts as associated_system for zero, one, or more `Process_variable_system_assignment` objects.

4.3.1817 Process_variable_system_assignment to Physical_instance

Each Process_variable_system_assignment refers to exactly one Physical_instance in the role of associated_system. Each Physical_instance acts as associated_system for zero, one, or more Process_variable_system_assignment objects.

4.3.1818 Process_variable_system_assignment to Port

Each Process_variable_system_assignment refers to exactly one Port in the role of associated_system. Each Port acts as associated_system for zero, one, or more Process_variable_system_assignment objects.

4.3.1819 Process_variable_system_assignment to Process_variable

Each Process_variable_system_assignment refers to exactly one Process_variable in the role of associated_process_variable. Each Process_variable acts as associated_process_variable for zero, one, or more Process_variable_system_assignment objects.

4.3.1820 Process_variable_system_assignment to Technical_system

Each Process_variable_system_assignment refers to exactly one Technical_system in the role of associated_system. Each Technical_system acts as associated_system for zero, one, or more Process_variable_system_assignment objects.

4.3.1821 Process_variable_system_assignment to Terminal

Each Process_variable_system_assignment refers to exactly one Terminal in the role of associated_system. Each Terminal acts as associated_system for zero, one, or more Process_variable_system_assignment objects.

4.3.1822 Product_class_relationship to Product_class

Each Product_class_relationship refers to exactly one Product_class in the role of related. Each Product_class acts as related for zero, one, or more Product_class_relationship objects.

4.3.1823 Product_class_relationship to Product_class

Each Product_class_relationship refers to exactly one Product_class in the role of relating. Each Product_class acts as relating for zero, one, or more Product_class_relationship objects.

4.3.1824 Product_component to Application_context

Each Product_component is_relevant_for zero, one, or more Application_context objects. Each Application_context is related to zero, one, or more Product_component objects.

4.3.1825 Product_component to Class_category_association

Each Product_component is_influenced_by zero, one, or more Class_category_association objects. Each Class_category_association is related to zero, one, or more Product_component objects.

4.3.1826 Product_component to Object_reference_designation

Each Product_component refers to zero or one Object_reference_designation in the role of extended_designation. Each Object_reference_designation acts as extended_designation for zero, one, or more Product_component objects.

4.3.1827 Product_design to Item_version

Each Product_design refers to exactly one Item_version in the role of design. Each Item_version acts as design for zero, one, or more Product_design objects.

4.3.1828 Product_design to Product_identification

Each Product_design refers to exactly one Product_identification in the role of product. Each Product_identification acts as product for zero, one, or more Product_design objects.

4.3.1829 Product_identification to Product_class

Each Product_identification refers to exactly one Product_class in the role of associated_product_class. Each Product_class acts as associated_product_class for zero, one, or more Product_identification objects.

4.3.1830 Product_specification to Specification

Each Product_specification refers to one or more Specification objects in the role of defining_specification. Each Specification acts as defining_specification for zero, one, or more Product_specification objects.

4.3.1831 Product_structure_relationship to Complex_product

Each Product_structure_relationship refers to exactly one Complex_product in the role of relating. Each Complex_product acts as relating for zero, one, or more Product_structure_relationship objects.

4.3.1832 Product_structure_relationship to Product_constituent

Each Product_structure_relationship refers to exactly one Product_constituent in the role of related. Each Product_constituent acts as related for zero, one, or more Product_structure_relationship objects.

4.3.1833 Project to Activity

Each Project refers to zero, one, or more Activity objects in the role of work_program. Each Activity acts as work_program for zero, one, or more Project objects.

4.3.1834 Project to Date_time

Each Project refers to zero or one Date_time in the role of actual_end_date. Each Date_time acts as actual_end_date for zero, one, or more Project objects.

4.3.1835 Project to Date_time

Each Project refers to zero or one Date_time in the role of actual_start_date. Each Date_time acts as actual_start_date for zero, one, or more Project objects.

4.3.1836 Project to Date_time

Each Project refers to zero or one Date_time in the role of planned_end_date. Each Date_time acts as planned_end_date for zero, one, or more Project objects.

4.3.1837 Project to Date_time

Each Project refers to zero or one Date_time in the role of planned_start_date. Each Date_time acts as planned_start_date for zero, one, or more Project objects.

4.3.1838 Project to Duration

Each Project refers to zero or one Duration in the role of planned_end_date. Each Duration acts as planned_end_date for zero, one, or more Project objects.

4.3.1839 Project to Event_reference

Each Project refers to zero or one Event_reference in the role of planned_end_date. Each Event_reference acts as planned_end_date for zero, one, or more Project objects.

4.3.1840 Project to Event_reference

Each Project refers to zero or one Event_reference in the role of planned_start_date. Each Event_reference acts as planned_start_date for zero, one, or more Project objects.

4.3.1841 Project to Product_class

Each Project refers to zero, one, or more Product_class objects in the role of affected_product_class. Each Product_class acts as affected_product_class for zero, one, or more Project objects.

4.3.1842 Project_relationship to Project

Each Project_relationship refers to exactly one Project in the role of related. Each Project acts as related for zero, one, or more Project_relationship objects.

4.3.1843 Project_relationship to Project

Each Project_relationship refers to exactly one Project in the role of relating. Each Project acts as relating for zero, one, or more Project_relationship objects.

4.3.1844 Projection_line to Annotation_element

Each Projection_line refers to zero or one Annotation_element in the role of projected_element. Each Annotation_element acts as projected_element for zero, one, or more Projection_line objects.

4.3.1845 Property_reference to Class_reference

Each Property_reference refers to exactly one Class_reference in the role of name_scope. Each Class_reference acts as name_scope for zero, one, or more Property_reference objects.

4.3.1846 Quantified_device to Numerical_value

Each Quantified_device refers to exactly one Numerical_value in the role of quantity. Each Numerical_value acts as quantity for zero, one, or more Quantified_device objects.

4.3.1847 Radius_dimension to Dimension_line

Each Radius_dimension refers to exactly one Dimension_line in the role of extent. Each Dimension_line acts as extent for zero, one, or more Radius_dimension objects.

4.3.1848 Radius_dimension to Projection_line

Each Radius_dimension refers to zero or one Projection_line in the role of component. Each Projection_line acts as component for zero, one, or more Radius_dimension objects.

4.3.1849 Rated_current to Value_with_unit

Each Rated_current refers to exactly one Value_with_unit in the role of value_of_rated_current. Each Value_with_unit acts as value_of_rated_current for zero, one, or more Rated_current objects.

4.3.1850 Rated_power to Value_with_unit

Each Rated_power refers to exactly one Value_with_unit in the role of value_of_rated_power. Each Value_with_unit acts as value_of_rated_power for zero, one, or more Rated_power objects.

4.3.1851 Rated_voltage to Value_with_unit

Each Rated_voltage refers to exactly one Value_with_unit in the role of value_of_rated_voltage. Each Value_with_unit acts as value_of_rated_voltage for zero, one, or more Rated_voltage objects.

4.3.1852 Reference_grid_layout to Reference_grid

Each Reference_grid_layout refers to exactly one Reference_grid in the role of assigned_reference_grid. Each Reference_grid acts as assigned_reference_grid for zero, one, or more Reference_grid_layout objects.

4.3.1853 Requirement_assignment to Assembly_component_relationship

Each Requirement_assignment refers to exactly one Assembly_component_relationship in the role of constrained_element. Each Assembly_component_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1854 Requirement_assignment to Complex_product

Each Requirement_assignment refers to exactly one Complex_product in the role of constrained_element. Each Complex_product acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1855 Requirement_assignment to Complex_product_relationship

Each Requirement_assignment refers to exactly one Complex_product_relationship in the role of constrained_element. Each Complex_product_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1856 Requirement_assignment to Composition_relationship

Each Requirement_assignment refers to exactly one Composition_relationship in the role of constrained_element. Each Composition_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1857 Requirement_assignment to Connectivity_definition

Each Requirement_assignment refers to exactly one Connectivity_definition in the role of constrained_element. Each Connectivity_definition acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1858 Requirement_assignment to Connectivity_definition_relationship

Each Requirement_assignment refers to exactly one Connectivity_definition_relationship in the role of constrained_element. Each Connectivity_definition_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1859 Requirement_assignment to Data_element

Each Requirement_assignment refers to exactly one Data_element in the role of constrained_element. Each Data_element acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1860 Requirement_assignment to Design_discipline_item_definition

Each Requirement_assignment refers to exactly one Design_discipline_item_definition in the role of constrained_element. Each Design_discipline_item_definition acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1861 Requirement_assignment to Device

Each Requirement_assignment refers to exactly one Device in the role of constrained_element. Each Device acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1862 Requirement_assignment to Device_relationship

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Each Requirement_assignment refers to exactly one Device_relationship in the role of constrained_element. Each Device_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1863 Requirement_assignment to Document

Each Requirement_assignment refers to exactly one Document in the role of constrained_element. Each Document acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1864 Requirement_assignment to Document_version

Each Requirement_assignment refers to exactly one Document_version in the role of constrained_element. Each Document_version acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1865 Requirement_assignment to Drawing_sheet

Each Requirement_assignment refers to exactly one Drawing_sheet in the role of constrained_element. Each Drawing_sheet acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1866 Requirement_assignment to Drawing_view

Each Requirement_assignment refers to exactly one Drawing_view in the role of constrained_element. Each Drawing_view acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1867 Requirement_assignment to Function_definition

Each Requirement_assignment refers to exactly one Function_definition in the role of constrained_element. Each Function_definition acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1868 Requirement_assignment to Function_definition_relationship

Each Requirement_assignment refers to exactly one Function_definition_relationship in the role of constrained_element. Each Function_definition_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1869 Requirement_assignment to Function_interface

Each Requirement_assignment refers to exactly one Function_interface in the role of constrained_element. Each Function_interface acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1870 Requirement_assignment to Function_unit

Each Requirement_assignment refers to exactly one Function_unit in the role of constrained_element. Each Function_unit acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1871 Requirement_assignment to Function_unit_relationship

Each Requirement_assignment refers to exactly one Function_unit_relationship in the role of constrained_element. Each Function_unit_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1872 Requirement_assignment to Function_version

Each Requirement_assignment refers to exactly one Function_version in the role of constrained_element. Each Function_version acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1873 Requirement_assignment to Functional_connectivity_definition

Each Requirement_assignment refers to exactly one Functional_connectivity_definition in the role of constrained_element. Each Functional_connectivity_definition acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1874 Requirement_assignment to Functional_connectivity_definition_relationship

Each Requirement_assignment refers to exactly one Functional_connectivity_definition_relationship in the role of constrained_element. Each Functional_connectivity_definition_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1875 Requirement_assignment to Functionality

Each Requirement_assignment refers to exactly one Functionality in the role of constrained_element. Each Functionality acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1876 Requirement_assignment to Generic_note

Each Requirement_assignment refers to exactly one Generic_note in the role of constrained_element. Each Generic_note acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1877 Requirement_assignment to Interface

Each Requirement_assignment refers to exactly one Interface in the role of constrained_element. Each Interface acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1878 Requirement_assignment to Interface_port

Each Requirement_assignment refers to exactly one Interface_port in the role of constrained_element. Each Interface_port acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1879 Requirement_assignment to Interface_terminal

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Each Requirement_assignment refers to exactly one Interface_terminal in the role of constrained_element. Each Interface_terminal acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1880 Requirement_assignment to Item

Each Requirement_assignment refers to exactly one Item in the role of constrained_element. Each Item acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1881 Requirement_assignment to Item_definition_relationship

Each Requirement_assignment refers to exactly one Item_definition_relationship in the role of constrained_element. Each Item_definition_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1882 Requirement_assignment to Item_version

Each Requirement_assignment refers to exactly one Item_version in the role of constrained_element. Each Item_version acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1883 Requirement_assignment to Location

Each Requirement_assignment refers to exactly one Location in the role of constrained_element. Each Location acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1884 Requirement_assignment to Location_relationship

Each Requirement_assignment refers to exactly one Location_relationship in the role of constrained_element. Each Location_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1885 Requirement_assignment to Marking

Each Requirement_assignment refers to exactly one Marking in the role of constrained_element. Each Marking acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1886 Requirement_assignment to Node

Each Requirement_assignment refers to exactly one Node in the role of constrained_element. Each Node acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1887 Requirement_assignment to Node_relationship

Each Requirement_assignment refers to exactly one Node_relationship in the role of constrained_element. Each Node_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1888 Requirement_assignment to Notification

Each Requirement_assignment refers to exactly one Notification in the role of constrained_element. Each Notification acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1889 Requirement_assignment to Path

Each Requirement_assignment refers to exactly one Path in the role of constrained_element. Each Path acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1890 Requirement_assignment to Path_node

Each Requirement_assignment refers to exactly one Path_node in the role of constrained_element. Each Path_node acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1891 Requirement_assignment to Physical_assembly_relationship

Each Requirement_assignment refers to exactly one Physical_assembly_relationship in the role of constrained_element. Each Physical_assembly_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1892 Requirement_assignment to Physical_instance

Each Requirement_assignment refers to exactly one Physical_instance in the role of constrained_element. Each Physical_instance acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1893 Requirement_assignment to Port

Each Requirement_assignment refers to exactly one Port in the role of constrained_element. Each Port acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1894 Requirement_assignment to Process_variable

Each Requirement_assignment refers to exactly one Process_variable in the role of constrained_element. Each Process_variable acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1895 Requirement_assignment to Product_class

Each Requirement_assignment refers to exactly one Product_class in the role of constrained_element. Each Product_class acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1896 Requirement_assignment to Product_specification

Each Requirement_assignment refers to exactly one Product_specification in the role of constrained_element. Each Product_specification acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1897 Requirement_assignment to Product_structure_relationship

Each Requirement_assignment refers to exactly one Product_structure_relationship in the role of constrained_element. Each Product_structure_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1898 Requirement_assignment to Requirement

Each Requirement_assignment refers to exactly one Requirement in the role of associated_requirement. Each Requirement acts as associated_requirement for zero, one, or more Requirement_assignment objects.

4.3.1899 Requirement_assignment to Route

Each Requirement_assignment refers to exactly one Route in the role of constrained_element. Each Route acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1900 Requirement_assignment to Route_relationship

Each Requirement_assignment refers to exactly one Route_relationship in the role of constrained_element. Each Route_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1901 Requirement_assignment to Section

Each Requirement_assignment refers to exactly one Section in the role of constrained_element. Each Section acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1902 Requirement_assignment to Section_end

Each Requirement_assignment refers to exactly one Section_end in the role of constrained_element. Each Section_end acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1903 Requirement_assignment to Section_interface

Each Requirement_assignment refers to exactly one Section_interface in the role of constrained_element. Each Section_interface acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1904 Requirement_assignment to Section_interface_relationship

Each Requirement_assignment refers to exactly one Section_interface_relationship in the role of constrained_element. Each Section_interface_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1905 Requirement_assignment to Section_relationship

Each Requirement_assignment refers to exactly one Section_relationship in the role of constrained_element. Each Section_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1906 Requirement_assignment to Signal

Each Requirement_assignment refers to exactly one Signal in the role of constrained_element. Each Signal acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1907 Requirement_assignment to Signal_value

Each Requirement_assignment refers to exactly one Signal_value in the role of constrained_element. Each Signal_value acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1908 Requirement_assignment to Technical_system

Each Requirement_assignment refers to exactly one Technical_system in the role of constrained_element. Each Technical_system acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1909 Requirement_assignment to Technical_system_relationship

Each Requirement_assignment refers to exactly one Technical_system_relationship in the role of constrained_element. Each Technical_system_relationship acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1910 Requirement_assignment to Terminal

Each Requirement_assignment refers to exactly one Terminal in the role of constrained_element. Each Terminal acts as constrained_element for zero, one, or more Requirement_assignment objects.

4.3.1911 Requirement_document_assignment to Document

Each Requirement_document_assignment refers to exactly one Document in the role of documentation. Each Document acts as documentation for zero, one, or more Requirement_document_assignment objects.

4.3.1912 Requirement_document_assignment to Document_file

Each Requirement_document_assignment refers to exactly one Document_file in the role of documentation. Each Document_file acts as documentation for zero, one, or more Requirement_document_assignment objects.

4.3.1913 Requirement_document_assignment to Document_-representation

Each Requirement_document_assignment refers to exactly one Document_representation in the role of documentation. Each Document_representation acts as documentation for zero, one, or more Requirement_document_assignment objects.

4.3.1914 Requirement_document_assignment to Document_version

Each Requirement_document_assignment refers to exactly one Document_version in the role of documentation. Each Document_version acts as documentation for zero, one, or more Requirement_document_assignment objects.

4.3.1915 Requirement_document_assignment to Drawing

Each Requirement_document_assignment refers to exactly one Drawing in the role of documentation. Each Drawing acts as documentation for zero, one, or more Requirement_document_assignment objects.

4.3.1916 Requirement_document_assignment to Requirement

Each Requirement_document_assignment refers to exactly one Requirement in the role of documented_requirement. Each Requirement acts as documented_requirement for zero, one, or more Requirement_document_assignment objects.

4.3.1917 Requirement_relationship to Requirement

Each Requirement_relationship refers to exactly one Requirement in the role of related. Each Requirement acts as related for zero, one, or more Requirement_relationship objects.

4.3.1918 Requirement_relationship to Requirement

Each Requirement_relationship refers to exactly one Requirement in the role of relating. Each Requirement acts as relating for zero, one, or more Requirement_relationship objects.

4.3.1919 Retention_period to Activity

Each Retention_period is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Retention_period objects.

4.3.1920 Retention_period to Activity_element

Each Retention_period is_applied_to one or more Activity_element objects. Each Activity_element is related to zero, one, or more Retention_period objects.

4.3.1921 Retention_period to Activity_method_assignment

Each Retention_period is_applied_to one or more Activity_method_assignment objects. Each Activity_method_assignment is related to zero, one, or more Retention_period objects.

4.3.1922 Retention_period to Activity_relationship

Each Retention_period is_applied_to one or more Activity_relationship objects. Each Activity_relationship is related to zero, one, or more Retention_period objects.

4.3.1923 Retention_period to Alternate_item_relationship

Each Retention_period is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Retention_period objects.

4.3.1924 Retention_period to Approval_status

Each Retention_period is_applied_to one or more Approval_status objects. Each Approval_status is related to zero, one, or more Retention_period objects.

4.3.1925 Retention_period to Assembly_component_relationship

Each Retention_period is_applied_to one or more Assembly_component_relationship objects. Each Assembly_component_relationship is related to zero, one, or more Retention_period objects.

4.3.1926 Retention_period to Assembly_substitute_relationship

Each Retention_period is_applied_to one or more Assembly_substitute_relationship objects. Each Assembly_substitute_relationship is related to zero, one, or more Retention_period objects.

4.3.1927 Retention_period to Cable_pull_information

Each Retention_period is_applied_to one or more Cable_pull_information objects. Each Cable_pull_information is related to zero, one, or more Retention_period objects.

4.3.1928 Retention_period to Certification

Each Retention_period is_applied_to one or more Certification objects. Each Certification is related to zero, one, or more Retention_period objects.

4.3.1929 Retention_period to Class_category_association

Each Retention_period is_applied_to one or more Class_category_association objects. Each Class_category_association is related to zero, one, or more Retention_period objects.

4.3.1930 Retention_period to Class_condition_association

Each Retention_period is_applied_to one or more Class_condition_association objects. Each Class_condition_association is related to zero, one, or more Retention_period objects.

4.3.1931 Retention_period to Class_inclusion_association

Each Retention_period is_applied_to one or more Class_inclusion_association objects. Each Class_inclusion_association is related to zero, one, or more Retention_period objects.

4.3.1932 Retention_period to Class_specification_association

Each Retention_period is_applied_to one or more Class_specification_association objects. Each Class_specification_association is related to zero, one, or more Retention_period objects.

4.3.1933 Retention_period to Class_structure_relationship

Each Retention_period is_applied_to one or more Class_structure_relationship objects. Each Class_structure_relationship is related to zero, one, or more Retention_period objects.

4.3.1934 Retention_period to Classification_association

Each Retention_period is_applied_to one or more Classification_association objects. Each Classification_association is related to zero, one, or more Retention_period objects.

4.3.1935 Retention_period to Classification_attribute

Each Retention_period is_applied_to one or more Classification_attribute objects. Each Classification_attribute is related to zero, one, or more Retention_period objects.

4.3.1936 Retention_period to Classification_system

Each Retention_period is_applied_to one or more Classification_system objects. Each Classification_system is related to zero, one, or more Retention_period objects.

4.3.1937 Retention_period to Complex_product

Each Retention_period is_applied_to one or more Complex_product objects. Each Complex_product is related to zero, one, or more Retention_period objects.

4.3.1938 Retention_period to Complex_product_relationship

Each Retention_period is_applied_to one or more Complex_product_relationship objects. Each Complex_product_relationship is related to zero, one, or more Retention_period objects.

4.3.1939 Retention_period to Composition_relationship

Each Retention_period is_applied_to one or more Composition_relationship objects. Each Composition_relationship is related to zero, one, or more Retention_period objects.

4.3.1940 Retention_period to Configuration

Each Retention_period is_applied_to one or more Configuration objects. Each Configuration is related to zero, one, or more Retention_period objects.

4.3.1941 Retention_period to Connectivity_allocation

Each Retention_period is_applied_to one or more Connectivity_allocation objects. Each Connectivity_allocation is related to zero, one, or more Retention_period objects.

4.3.1942 Retention_period to Connectivity_definition

Each Retention_period is_applied_to one or more Connectivity_definition objects. Each Connectivity_definition is related to zero, one, or more Retention_period objects.

4.3.1943 Retention_period to Connectivity_definition_relationship

Each Retention_period is_applied_to one or more Connectivity_definition_relationship objects. Each Connectivity_definition_relationship is related to zero, one, or more Retention_period objects.

4.3.1944 Retention_period to Contract

Each Retention_period is_applied_to one or more Contract objects. Each Contract is related to zero, one, or more Retention_period objects.

4.3.1945 Retention_period to Data_element

Each Retention_period is_applied_to one or more Data_element objects. Each Data_element is related to zero, one, or more Retention_period objects.

4.3.1946 Retention_period to Data_element_association

Each Retention_period is_applied_to one or more Data_element_association objects. Each Data_element_association is related to zero, one, or more Retention_period objects.

4.3.1947 Retention_period to Data_element_definition

Each Retention_period is_applied_to one or more Data_element_definition objects. Each Data_element_definition is related to zero, one, or more Retention_period objects.

4.3.1948 Retention_period to Data_element_relationship

Each Retention_period is_applied_to one or more Data_element_relationship objects. Each Data_element_relationship is related to zero, one, or more Retention_period objects.

4.3.1949 Retention_period to Data_element_specification

Each Retention_period is_applied_to one or more Data_element_specification objects. Each Data_element_specification is related to zero, one, or more Retention_period objects.

4.3.1950 Retention_period to Date_time

Each Retention_period refers to exactly one Date_time in the role of earliest_end_definition. Each Date_time acts as earliest_end_definition for zero, one, or more Retention_period objects.

4.3.1951 Retention_period to Date_time

Each Retention_period refers to exactly one Date_time in the role of latest_end_definition. Each Date_time acts as latest_end_definition for zero, one, or more Retention_period objects.

4.3.1952 Retention_period to Date_time

Each Retention_period refers to exactly one Date_time in the role of start_definition. Each Date_time acts as start_definition for zero, one, or more Retention_period objects.

4.3.1953 Retention_period to Design_discipline_item_definition

Each Retention_period is_applied_to one or more Design_discipline_item_definition objects. Each Design_discipline_item_definition is related to zero, one, or more Retention_period objects.

4.3.1954 Retention_period to Device

Each Retention_period is_applied_to one or more Device objects. Each Device is related to zero, one, or more Retention_period objects.

4.3.1955 Retention_period to Device_relationship

Each Retention_period is_applied_to one or more Device_relationship objects. Each Device_relationship is related to zero, one, or more Retention_period objects.

4.3.1956 Retention_period to Document

Each Retention_period is_applied_to one or more Document objects. Each Document is related to zero, one, or more Retention_period objects.

4.3.1957 Retention_period to Document_file

Each Retention_period is_applied_to one or more Document_file objects. Each Document_file is related to zero, one, or more Retention_period objects.

4.3.1958 Retention_period to Document_file_relationship

Each Retention_period is_applied_to one or more Document_file_relationship objects. Each Document_file_relationship is related to zero, one, or more Retention_period objects.

4.3.1959 Retention_period to Document_representation

Each Retention_period is_applied_to one or more Document_representation objects. Each Document_representation is related to zero, one, or more Retention_period objects.

4.3.1960 Retention_period to Document_version

Each Retention_period is_applied_to one or more Document_version objects. Each Document_version is related to zero, one, or more Retention_period objects.

4.3.1961 Retention_period to Document_version_relationship

Each Retention_period is_applied_to one or more Document_version_relationship objects. Each Document_version_relationship is related to zero, one, or more Retention_period objects.

4.3.1962 Retention_period to Drawing

Each Retention_period is_applied_to one or more Drawing objects. Each Drawing is related to zero, one, or more Retention_period objects.

4.3.1963 Retention_period to Drawing_sequence

Each Retention_period is_applied_to one or more Drawing_sequence objects. Each Drawing_sequence is related to zero, one, or more Retention_period objects.

4.3.1964 Retention_period to Drawing_sheet

Each Retention_period is_applied_to one or more Drawing_sheet objects. Each Drawing_sheet is related to zero, one, or more Retention_period objects.

4.3.1965 Retention_period to Drawing_sheet_relationship

Each Retention_period is_applied_to one or more Drawing_sheet_relationship objects. Each Drawing_sheet_relationship is related to zero, one, or more Retention_period objects.

4.3.1966 Retention_period to Duration

Each Retention_period refers to exactly one Duration in the role of earliest_end_definition. Each Duration acts as earliest_end_definition for zero, one, or more Retention_period objects.

4.3.1967 Retention_period to Duration

Each Retention_period refers to exactly one Duration in the role of latest_end_definition. Each Duration acts as latest_end_definition for zero, one, or more Retention_period objects.

4.3.1968 Retention_period to Event_reference

Each Retention_period refers to exactly one Event_reference in the role of earliest_end_definition. Each Event_reference acts as earliest_end_definition for zero, one, or more Retention_period objects.

4.3.1969 Retention_period to Event_reference

Each Retention_period refers to exactly one Event_reference in the role of latest_end_definition. Each Event_reference acts as latest_end_definition for zero, one, or more Retention_period objects.

4.3.1970 Retention_period to Event_reference

Each Retention_period refers to exactly one Event_reference in the role of start_definition. Each Event_reference acts as start_definition for zero, one, or more Retention_period objects.

4.3.1971 Retention_period to Free_segment

Each Retention_period is_applied_to one or more Free_segment objects. Each Free_segment is related to zero, one, or more Retention_period objects.

4.3.1972 Retention_period to Function_definition

Each Retention_period is_applied_to one or more Function_definition objects. Each Function_definition is related to zero, one, or more Retention_period objects.

4.3.1973 Retention_period to Function_definition_relationship

Each Retention_period is_applied_to one or more Function_definition_relationship objects. Each Function_definition_relationship is related to zero, one, or more Retention_period objects.

4.3.1974 Retention_period to Function_interface

Each Retention_period is_applied_to one or more Function_interface objects. Each Function_interface is related to zero, one, or more Retention_period objects.

4.3.1975 Retention_period to Function_unit

Each Retention_period is_applied_to one or more Function_unit objects. Each Function_unit is related to zero, one, or more Retention_period objects.

4.3.1976 Retention_period to Function_unit_relationship

Each Retention_period is_applied_to one or more Function_unit_relationship objects. Each Function_unit_relationship is related to zero, one, or more Retention_period objects.

4.3.1977 Retention_period to Function_version

Each Retention_period is_applied_to one or more Function_version objects. Each Function_version is related to zero, one, or more Retention_period objects.

4.3.1978 Retention_period to Function_version_relationship

Each Retention_period is_applied_to one or more Function_version_relationship objects. Each Function_version_relationship is related to zero, one, or more Retention_period objects.

4.3.1979 Retention_period to Functional_connectivity_definition

Each Retention_period is_applied_to one or more Functional_connectivity_definition objects. Each Functional_connectivity_definition is related to zero, one, or more Retention_period objects.

4.3.1980 Retention_period to Functional_connectivity_definition_relationship

Each Retention_period is_applied_to one or more Functional_connectivity_definition_relationship objects. Each Functional_connectivity_definition_relationship is related to zero, one, or more Retention_period objects.

4.3.1981 Retention_period to Functional_unit_allocation

Each Retention_period is_applied_to one or more Functional_unit_allocation objects. Each Functional_unit_allocation is related to zero, one, or more Retention_period objects.

4.3.1982 Retention_period to Functionality

Each Retention_period is_applied_to one or more Functionality objects. Each Functionality is related to zero, one, or more Retention_period objects.

4.3.1983 Retention_period to General_classification

Each Retention_period is_applied_to one or more General_classification objects. Each General_classification is related to zero, one, or more Retention_period objects.

4.3.1984 Retention_period to Generic_note

Each Retention_period is_applied_to one or more Generic_note objects. Each Generic_note is related to zero, one, or more Retention_period objects.

4.3.1985 Retention_period to Interface

Each Retention_period is_applied_to one or more Interface objects. Each Interface is related to zero, one, or more Retention_period objects.

4.3.1986 Retention_period to Interface_port

Each Retention_period is_applied_to one or more Interface_port objects. Each Interface_port is related to zero, one, or more Retention_period objects.

4.3.1987 Retention_period to Interface_terminal

Each Retention_period is_applied_to one or more Interface_terminal objects. Each Interface_terminal is related to zero, one, or more Retention_period objects.

4.3.1988 Retention_period to Item

Each Retention_period is_applied_to one or more Item objects. Each Item is related to zero, one, or more Retention_period objects.

4.3.1989 Retention_period to Item_definition_relationship

Each Retention_period is_applied_to one or more Item_definition_relationship objects. Each Item_definition_relationship is related to zero, one, or more Retention_period objects.

4.3.1990 Retention_period to Item_version

Each Retention_period is_applied_to one or more Item_version objects. Each Item_version is related to zero, one, or more Retention_period objects.

4.3.1991 Retention_period to Item_version_relationship

Each Retention_period is_applied_to one or more Item_version_relationship objects. Each Item_version_relationship is related to zero, one, or more Retention_period objects.

4.3.1992 Retention_period to Location

Each Retention_period is_applied_to one or more Location objects. Each Location is related to zero, one, or more Retention_period objects.

4.3.1993 Retention_period to Location_relationship

Each Retention_period is_applied_to one or more Location_relationship objects. Each Location_relationship is related to zero, one, or more Retention_period objects.

4.3.1994 Retention_period to Marking

Each Retention_period is_applied_to one or more Marking objects. Each Marking is related to zero, one, or more Retention_period objects.

4.3.1995 Retention_period to Material

Each Retention_period is_applied_to one or more Material objects. Each Material is related to zero, one, or more Retention_period objects.

4.3.1996 Retention_period to Node

Each Retention_period is_applied_to one or more Node objects. Each Node is related to zero, one, or more Retention_period objects.

4.3.1997 Retention_period to Node_relationship

Each Retention_period is_applied_to one or more Node_relationship objects. Each Node_relationship is related to zero, one, or more Retention_period objects.

4.3.1998 Retention_period to Notification

Each Retention_period is_applied_to one or more Notification objects. Each Notification is related to zero, one, or more Retention_period objects.

4.3.1999 Retention_period to Notification_relationship

Each Retention_period is_applied_to one or more Notification_relationship objects. Each Notification_relationship is related to zero, one, or more Retention_period objects.

4.3.2000 Retention_period to Offered_function_allocation

Each Retention_period is_applied_to one or more Offered_function_allocation objects. Each Offered_function_allocation is related to zero, one, or more Retention_period objects.

4.3.2001 Retention_period to Organization_relationship

Each Retention_period is_applied_to one or more Organization_relationship objects. Each Organization_relationship is related to zero, one, or more Retention_period objects.

4.3.2002 Retention_period to Path

Each Retention_period is_applied_to one or more Path objects. Each Path is related to zero, one, or more Retention_period objects.

4.3.2003 Retention_period to Path_node

Each Retention_period is_applied_to one or more Path_node objects. Each Path_node is related to zero, one, or more Retention_period objects.

4.3.2004 Retention_period to Path_node_relationship

Each Retention_period is_applied_to one or more Path_node_relationship objects. Each Path_node_relationship is related to zero, one, or more Retention_period objects.

4.3.2005 Retention_period to Path_relationship

Each Retention_period is_applied_to one or more Path_relationship objects. Each Path_relationship is related to zero, one, or more Retention_period objects.

4.3.2006 Retention_period to Person_in_organization

Each Retention_period is_applied_to one or more Person_in_organization objects. Each Person_in_organization is related to zero, one, or more Retention_period objects.

4.3.2007 Retention_period to Person_in_organization_relationship

Each Retention_period is_applied_to one or more Person_in_organization_relationship objects. Each Person_in_organization_relationship is related to zero, one, or more Retention_period objects.

4.3.2008 Retention_period to Physical_assembly_relationship

Each Retention_period is_applied_to one or more Physical_assembly_relationship objects. Each Physical_assembly_relationship is related to zero, one, or more Retention_period objects.

4.3.2009 Retention_period to Physical_instance

Each Retention_period is_applied_to one or more Physical_instance objects. Each Physical_instance is related to zero, one, or more Retention_period objects.

4.3.2010 Retention_period to Port

Each Retention_period is_applied_to one or more Port objects. Each Port is related to zero, one, or more Retention_period objects.

4.3.2011 Retention_period to Port_allocation

Each Retention_period is_applied_to one or more Port_allocation objects. Each Port_allocation is related to zero, one, or more Retention_period objects.

4.3.2012 Retention_period to Port_association

Each Retention_period is_applied_to one or more Port_association objects. Each Port_association is related to zero, one, or more Retention_period objects.

4.3.2013 Retention_period to Preferred_item_allocation

Each Retention_period is_applied_to one or more Preferred_item_allocation objects. Each Preferred_item_allocation is related to zero, one, or more Retention_period objects.

4.3.2014 Retention_period to Preferred_item_terminal_allocation

Each Retention_period is_applied_to one or more Preferred_item_terminal_allocation objects. Each Preferred_item_terminal_allocation is related to zero, one, or more Retention_period objects.

4.3.2015 Retention_period to Process_variable

Each Retention_period is_applied_to one or more Process_variable objects. Each Process_variable is related to zero, one, or more Retention_period objects.

4.3.2016 Retention_period to Process_variable_relationship

Each Retention_period is_applied_to one or more Process_variable_relationship objects. Each Process_variable_relationship is related to zero, one, or more Retention_period objects.

4.3.2017 Retention_period to Product_class

Each Retention_period is_applied_to one or more Product_class objects. Each Product_class is related to zero, one, or more Retention_period objects.

4.3.2018 Retention_period to Product_identification

Each Retention_period is_applied_to one or more Product_identification objects. Each Product_identification is related to zero, one, or more Retention_period objects.

4.3.2019 Retention_period to Product_structure_relationship

Each Retention_period is_applied_to one or more Product_structure_relationship objects. Each Product_structure_relationship is related to zero, one, or more Retention_period objects.

4.3.2020 Retention_period to Project

Each Retention_period is_applied_to one or more Project objects. Each Project is related to zero, one, or more Retention_period objects.

4.3.2021 Retention_period to Requirement

Each Retention_period is_applied_to one or more Requirement objects. Each Requirement is related to zero, one, or more Retention_period objects.

4.3.2022 Retention_period to Requirement_document_assignment

Each Retention_period is_applied_to one or more Requirement_document_assignment objects. Each Requirement_document_assignment is related to zero, one, or more Retention_period objects.

4.3.2023 Retention_period to Route

Each Retention_period is_applied_to one or more Route objects. Each Route is related to zero, one, or more Retention_period objects.

4.3.2024 Retention_period to Route_relationship

Each Retention_period is_applied_to one or more Route_relationship objects. Each Route_relationship is related to zero, one, or more Retention_period objects.

4.3.2025 Retention_period to Routed_segment

Each Retention_period is_applied_to one or more Routed_segment objects. Each Routed_segment is related to zero, one, or more Retention_period objects.

4.3.2026 Retention_period to Section

Each Retention_period is_applied_to one or more Section objects. Each Section is related to zero, one, or more Retention_period objects.

4.3.2027 Retention_period to Section_end

Each Retention_period is_applied_to one or more Section_end objects. Each Section_end is related to zero, one, or more Retention_period objects.

4.3.2028 Retention_period to Section_interface

Each Retention_period is_applied_to one or more Section_interface objects. Each Section_interface is related to zero, one, or more Retention_period objects.

4.3.2029 Retention_period to Section_interface_relationship

Each Retention_period is_applied_to one or more Section_interface_relationship objects. Each Section_interface_relationship is related to zero, one, or more Retention_period objects.

4.3.2030 Retention_period to Section_relationship

Each Retention_period is_applied_to one or more Section_relationship objects. Each Section_relationship is related to zero, one, or more Retention_period objects.

4.3.2031 Retention_period to Security_classification

Each Retention_period is_applied_to one or more Security_classification objects. Each Security_classification is related to zero, one, or more Retention_period objects.

4.3.2032 Retention_period to Security_level

Each Retention_period is_applied_to one or more Security_level objects. Each Security_level is related to zero, one, or more Retention_period objects.

4.3.2033 Retention_period to Signal

Each Retention_period is_applied_to one or more Signal objects. Each Signal is related to zero, one, or more Retention_period objects.

4.3.2034 Retention_period to Signal_relationship

Each Retention_period is_applied_to one or more Signal_relationship objects. Each Signal_relationship is related to zero, one, or more Retention_period objects.

4.3.2035 Retention_period to Signal_value

Each Retention_period is_applied_to one or more Signal_value objects. Each Signal_value is related to zero, one, or more Retention_period objects.

4.3.2036 Retention_period to Specification

Each Retention_period is_applied_to one or more Specification objects. Each Specification is related to zero, one, or more Retention_period objects.

4.3.2037 Retention_period to Specification_category

Each Retention_period is_applied_to one or more Specification_category objects. Each Specification_category is related to zero, one, or more Retention_period objects.

4.3.2038 Retention_period to Specification_expression

Each Retention_period is_applied_to one or more Specification_expression objects. Each Specification_expression is related to zero, one, or more Retention_period objects.

4.3.2039 Retention_period to Specification_inclusion

Each Retention_period is_applied_to one or more Specification_inclusion objects. Each Specification_inclusion is related to zero, one, or more Retention_period objects.

4.3.2040 Retention_period to Technical_system

Each Retention_period is_applied_to one or more Technical_system objects. Each Technical_system is related to zero, one, or more Retention_period objects.

4.3.2041 Retention_period to Technical_system_relationship

Each Retention_period is_applied_to one or more Technical_system_relationship objects. Each Technical_system_relationship is related to zero, one, or more Retention_period objects.

4.3.2042 Retention_period to Terminal

Each Retention_period is_applied_to one or more Terminal objects. Each Terminal is related to zero, one, or more Retention_period objects.

4.3.2043 Retention_period to Work_order

Each Retention_period is_applied_to one or more Work_order objects. Each Work_order is related to zero, one, or more Retention_period objects.

4.3.2044 Retention_period to Work_request

Each Retention_period is_applied_to one or more Work_request objects. Each Work_request is related to zero, one, or more Retention_period objects.

4.3.2045 Route to Connectivity_definition

Each Route refers to zero, one, or more Connectivity_definition objects in the role of encountered_object. Each Connectivity_definition acts as encountered_object for zero, one, or more Route objects.

4.3.2046 Route to Device

Each Route refers to zero, one, or more Device objects in the role of encountered_object. Each Device acts as encountered_object for zero, one, or more Route objects.

4.3.2047 Route to Function_unit

Each Route refers to zero, one, or more Function_unit objects in the role of encountered_object. Each Function_unit acts as encountered_object for zero, one, or more Route objects.

4.3.2048 Route to Functional_connectivity_definition

Each Route refers to zero, one, or more Functional_connectivity_definition objects in the role of encountered_object. Each Functional_connectivity_definition acts as encountered_object for zero, one, or more Route objects.

4.3.2049 Route to Location

Each Route refers to zero, one, or more Location objects in the role of encountered_object. Each Location acts as encountered_object for zero, one, or more Route objects.

4.3.2050 Route to Node

Each Route refers to zero, one, or more Node objects in the role of course. Each Node acts as course for zero, one, or more Route objects.

4.3.2051 Route to Physical_instance

Each Route refers to zero, one, or more Physical_instance objects in the role of encountered_object. Each Physical_instance acts as encountered_object for zero, one, or more Route objects.

4.3.2052 Route to Product_component

Each Route refers to zero, one, or more Product_component objects in the role of encountered_object. Each Product_component acts as encountered_object for zero, one, or more Route objects.

4.3.2053 Route to Section

Each Route refers to zero, one, or more Section objects in the role of course. Each Section acts as course for zero, one, or more Route objects.

4.3.2054 Route to Section_interface

Each Route refers to zero, one, or more Section_interface objects in the role of course. Each Section_interface acts as course for zero, one, or more Route objects.

4.3.2055 Route to Signal

Each Route refers to zero, one, or more Signal objects in the role of encountered_object. Each Signal acts as encountered_object for zero, one, or more Route objects.

4.3.2056 Route_relationship to Route

Each Route_relationship refers to exactly one Route in the role of related. Each Route acts as related for zero, one, or more Route_relationship objects.

4.3.2057 Route_relationship to Route

Each Route_relationship refers to exactly one Route in the role of relating. Each Route acts as relating for zero, one, or more Route_relationship objects.

4.3.2058 Routed_object to Connectivity_definition

Each Routed_object refers to exactly one Connectivity_definition in the role of associated_object. Each Connectivity_definition acts as associated_object for zero, one, or more Routed_object objects.

4.3.2059 Routed_object to Device

Each Routed_object refers to exactly one Device in the role of associated_object. Each Device acts as associated_object for zero, one, or more Routed_object objects.

4.3.2060 Routed_object to Free_segment

Each Routed_object refers to one or more Free_segment objects in the role of arrangement. Each Free_segment acts as arrangement for zero, one, or more Routed_object objects.

4.3.2061 Routed_object to Function_unit

Each Routed_object refers to exactly one Function_unit in the role of associated_object. Each Function_unit acts as associated_object for zero, one, or more Routed_object objects.

4.3.2062 Routed_object to Functional_connectivity_definition

Each Routed_object refers to exactly one Functional_connectivity_definition in the role of associated_object. Each Functional_connectivity_definition acts as associated_object for zero, one, or more Routed_object objects.

4.3.2063 Routed_object to Physical_instance

Each Routed_object refers to exactly one Physical_instance in the role of associated_object. Each Physical_instance acts as associated_object for zero, one, or more Routed_object objects.

4.3.2064 Routed_object to Product_component

Each Routed_object refers to exactly one Product_component in the role of associated_object. Each Product_component acts as associated_object for zero, one, or more Routed_object objects.

4.3.2065 Routed_object to Routed_segment

Each Routed_object refers to one or more Routed_segment objects in the role of arrangement. Each Routed_segment acts as arrangement for zero, one, or more Routed_object objects.

4.3.2066 Routed_segment to Node

Each Routed_segment refers to one or more Node objects in the role of course. Each Node acts as course for zero, one, or more Routed_segment objects.

4.3.2067 Routed_segment to Route

Each Routed_segment refers to one or more Route objects in the role of course. Each Route acts as course for zero, one, or more Routed_segment objects.

4.3.2068 Routed_segment to Section

Each Routed_segment refers to one or more Section objects in the role of course. Each Section acts as course for zero, one, or more Routed_segment objects.

4.3.2069 Routed_segment to Section_interface

Each Routed_segment refers to one or more Section_interface objects in the role of course. Each Section_interface acts as course for zero, one, or more Routed_segment objects.

4.3.2070 Schematic_node to Point_2d

Each Schematic_node refers to exactly one Point_2d in the role of position. Each Point_2d acts as position for zero, one, or more Schematic_node objects.

4.3.2071 Schematic_node to Typical_schematic_node

Each Schematic_node refers to exactly one Typical_schematic_node in the role of definition. Each Typical_schematic_node acts as definition for zero, one, or more Schematic_node objects.

4.3.2072 Schematic_node to User_defined_symbol

Each Schematic_node refers to zero or one User_defined_symbol in the role of assigned_to. Each User_defined_symbol acts as assigned_to for zero, one, or more Schematic_node objects.

4.3.2073 Schematic_text to Schematic_node

Each Schematic_text refers to zero or one Schematic_node in the role of assigned_to. Each Schematic_node acts as assigned_to for zero, one, or more Schematic_text objects.

4.3.2074 Schematic_text to Typical_schematic_text

Each Schematic_text refers to exactly one Typical_schematic_text in the role of definition. Each Typical_schematic_text acts as definition for zero, one, or more Schematic_text objects.

4.3.2075 Schematic_text to User_defined_symbol

Each Schematic_text refers to zero or one User_defined_symbol in the role of assigned_to. Each User_defined_symbol acts as assigned_to for zero, one, or more Schematic_text objects.

4.3.2076 Section to Cross_section

Each Section refers to zero, one, or more Cross_section objects in the role of cross_sectional_area. Each Cross_section acts as cross_sectional_area for zero, one, or more Section objects.

4.3.2077 Section to Device

Each Section refers to zero, one, or more Device objects in the role of implemented_by. Each Device acts as implemented_by for zero, one, or more Section objects.

4.3.2078 Section to Path

Each Section refers to zero or one Path in the role of course. Each Path acts as course for zero, one, or more Section objects.

4.3.2079 Section to Value_with_unit

Each Section refers to zero, one, or more Value_with_unit objects in the role of bending_radius. Each Value_with_unit acts as bending_radius for zero, one, or more Section objects.

4.3.2080 Section to Value_with_unit

Each Section refers to zero, one, or more Value_with_unit objects in the role of length_of_section. Each Value_with_unit acts as length_of_section for zero, one, or more Section objects.

4.3.2081 Section to Value_with_unit

Each Section refers to zero, one, or more Value_with_unit objects in the role of space_factor. Each Value_with_unit acts as space_factor for zero, one, or more Section objects.

4.3.2082 Section_end to Node

Each Section_end refers to zero or one Node in the role of located_at. Each Node acts as located_at for zero, one, or more Section_end objects.

4.3.2083 Section_end to Section

Each Section_end refers to exactly one Section in the role of of_section. Each Section acts as of_section for zero, one, or more Section_end objects.

4.3.2084 Section_interface to Cross_section

Each Section_interface refers to zero, one, or more Cross_section objects in the role of cross_sectional_area. Each Cross_section acts as cross_sectional_area for zero, one, or more Section_interface objects.

4.3.2085 Section_interface to Device

Each Section_interface refers to zero, one, or more Device objects in the role of implemented_by. Each Device acts as implemented_by for zero, one, or more Section_interface objects.

4.3.2086 Section_interface to Node

Each Section_interface refers to zero or one Node in the role of located_at. Each Node acts as located_at for zero, one, or more Section_interface objects.

4.3.2087 Section_interface to Section_end

Each Section_interface refers to zero, one, or more Section_end objects in the role of joins. Each Section_end acts as joins for zero, one, or more Section_interface objects.

4.3.2088 Section_interface to Single_value

Each Section_interface refers to zero, one, or more Single_value objects in the role of space_factor. Each Single_value acts as space_factor for zero, one, or more Section_interface objects.

4.3.2089 Section_interface_relationship to Section_interface

Each Section_interface_relationship refers to exactly one Section_interface in the role of related. Each Section_interface acts as related for zero, one, or more Section_interface_relationship objects.

4.3.2090 Section_interface_relationship to Section_interface

Each Section_interface_relationship refers to exactly one Section_interface in the role of relating. Each Section_interface acts as relating for zero, one, or more Section_interface_relationship objects.

4.3.2091 Section_relationship to Section

Each Section_relationship refers to exactly one Section in the role of related. Each Section acts as related for zero, one, or more Section_relationship objects.

4.3.2092 Section_relationship to Section

Each Section_relationship refers to exactly one Section in the role of relating. Each Section acts as relating for zero, one, or more Section_relationship objects.

4.3.2093 Security_classification to Activity

Each Security_classification is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Security_classification objects.

4.3.2094 Security_classification to Activity

Each Security_classification is_applied_to one or more Activity objects. Each Activity is related to zero, one, or more Security_classification objects.

4.3.2095 Security_classification to Activity_element

Each Security_classification is_applied_to one or more Activity_element objects. Each Activity_element is related to zero, one, or more Security_classification objects.

4.3.2096 Security_classification to Activity_method_assignment

Each Security_classification is_applied_to one or more Activity_method_assignment objects. Each Activity_method_assignment is related to zero, one, or more Security_classification objects.

4.3.2097 Security_classification to Activity_relationship

Each Security_classification is_applied_to one or more Activity_relationship objects. Each Activity_relationship is related to zero, one, or more Security_classification objects.

4.3.2098 Security_classification to Alternate_item_relationship

Each Security_classification is_applied_to one or more Alternate_item_relationship objects. Each Alternate_item_relationship is related to zero, one, or more Security_classification objects.

4.3.2099 Security_classification to Assembly_component_relationship

Each Security_classification is_applied_to one or more Assembly_component_relationship objects. Each Assembly_component_relationship is related to zero, one, or more Security_classification objects.

4.3.2100 Security_classification to Assembly_substitute_relationship

Each Security_classification is_applied_to one or more Assembly_substitute_relationship objects. Each Assembly_substitute_relationship is related to zero, one, or more Security_classification objects.

4.3.2101 Security_classification to Cable_pull_information

Each Security_classification is_applied_to one or more Cable_pull_information objects. Each Cable_pull_information is related to zero, one, or more Security_classification objects.

4.3.2102 Security_classification to Class_structure_relationship

Each Security_classification is_applied_to one or more Class_structure_relationship objects. Each Class_structure_relationship is related to zero, one, or more Security_classification objects.

4.3.2103 Security_classification to Classification_system

Each Security_classification is_applied_to one or more Classification_system objects. Each Classification_system is related to zero, one, or more Security_classification objects.

4.3.2104 Security_classification to Complex_product

Each Security_classification is_applied_to one or more Complex_product objects. Each Complex_product is related to zero, one, or more Security_classification objects.

4.3.2105 Security_classification to Complex_product_relationship

Each Security_classification is_applied_to one or more Complex_product_relationship objects. Each Complex_product_relationship is related to zero, one, or more Security_classification objects.

4.3.2106 Security_classification to Composition_relationship

Each Security_classification is_applied_to one or more Composition_relationship objects. Each Composition_relationship is related to zero, one, or more Security_classification objects.

4.3.2107 Security_classification to Configuration

Each Security_classification is_applied_to one or more Configuration objects. Each Configuration is related to zero, one, or more Security_classification objects.

4.3.2108 Security_classification to Connectivity_allocation

Each Security_classification is_applied_to one or more Connectivity_allocation objects. Each Connectivity_allocation is related to zero, one, or more Security_classification objects.

4.3.2109 Security_classification to Connectivity_definition

Each Security_classification is_applied_to one or more Connectivity_definition objects. Each Connectivity_definition is related to zero, one, or more Security_classification objects.

4.3.2110 Security_classification to Connectivity_definition_relationship

Each Security_classification is_applied_to one or more Connectivity_definition_relationship objects. Each Connectivity_definition_relationship is related to zero, one, or more Security_classification objects.

4.3.2111 Security_classification to Contract

Each Security_classification is_applied_to one or more Contract objects. Each Contract is related to zero, one, or more Security_classification objects.

4.3.2112 Security_classification to Data_element

Each Security_classification is_applied_to one or more Data_element objects. Each Data_element is related to zero, one, or more Security_classification objects.

4.3.2113 Security_classification to Data_element_association

Each Security_classification is_applied_to one or more Data_element_association objects. Each Data_element_association is related to zero, one, or more Security_classification objects.

4.3.2114 Security_classification to Data_element_definition

Each Security_classification is_applied_to one or more Data_element_definition objects. Each Data_element_definition is related to zero, one, or more Security_classification objects.

4.3.2115 Security_classification to Data_element_relationship

Each Security_classification is_applied_to one or more Data_element_relationship objects. Each Data_element_relationship is related to zero, one, or more Security_classification objects.

4.3.2116 Security_classification to Design_discipline_item_definition

Each Security_classification is_applied_to one or more Design_discipline_item_definition objects. Each Design_discipline_item_definition is related to zero, one, or more Security_classification objects.

4.3.2117 Security_classification to Device

Each Security_classification is_applied_to one or more Device objects. Each Device is related to zero, one, or more Security_classification objects.

4.3.2118 Security_classification to Device_relationship

Each Security_classification is_applied_to one or more Device_relationship objects. Each Device_relationship is related to zero, one, or more Security_classification objects.

4.3.2119 Security_classification to Document

Each Security_classification is_applied_to one or more Document objects. Each Document is related to zero, one, or more Security_classification objects.

4.3.2120 Security_classification to Document_file

Each Security_classification is_applied_to one or more Document_file objects. Each Document_file is related to zero, one, or more Security_classification objects.

4.3.2121 Security_classification to Document_file_relationship

Each Security_classification is_applied_to one or more Document_file_relationship objects. Each Document_file_relationship is related to zero, one, or more Security_classification objects.

4.3.2122 Security_classification to Document_representation

Each Security_classification is_applied_to one or more Document_representation objects. Each Document_representation is related to zero, one, or more Security_classification objects.

4.3.2123 Security_classification to Document_version

Each Security_classification is_applied_to one or more Document_version objects. Each Document_version is related to zero, one, or more Security_classification objects.

4.3.2124 Security_classification to Document_version_relationship

Each Security_classification is_applied_to one or more Document_version_relationship objects. Each Document_version_relationship is related to zero, one, or more Security_classification objects.

4.3.2125 Security_classification to Drawing

Each Security_classification is_applied_to one or more Drawing objects. Each Drawing is related to zero, one, or more Security_classification objects.

4.3.2126 Security_classification to Drawing_sequence

Each Security_classification is_applied_to one or more Drawing_sequence objects. Each Drawing_sequence is related to zero, one, or more Security_classification objects.

4.3.2127 Security_classification to Drawing_sheet

Each Security_classification is_applied_to one or more Drawing_sheet objects. Each Drawing_sheet is related to zero, one, or more Security_classification objects.

4.3.2128 Security_classification to Drawing_sheet_relationship

Each Security_classification is_applied_to one or more Drawing_sheet_relationship objects. Each Drawing_sheet_relationship is related to zero, one, or more Security_classification objects.

4.3.2129 Security_classification to Function_definition

Each Security_classification is_applied_to one or more Function_definition objects. Each Function_definition is related to zero, one, or more Security_classification objects.

4.3.2130 Security_classification to Function_definition_relationship

Each Security_classification is_applied_to one or more Function_definition_relationship objects. Each Function_definition_relationship is related to zero, one, or more Security_classification objects.

4.3.2131 Security_classification to Function_interface

Each Security_classification is_applied_to one or more Function_interface objects. Each Function_interface is related to zero, one, or more Security_classification objects.

4.3.2132 Security_classification to Function_unit

Each Security_classification is_applied_to one or more Function_unit objects. Each Function_unit is related to zero, one, or more Security_classification objects.

4.3.2133 Security_classification to Function_unit_relationship

Each Security_classification is_applied_to one or more Function_unit_relationship objects. Each Function_unit_relationship is related to zero, one, or more Security_classification objects.

4.3.2134 Security_classification to Function_version

Each Security_classification is_applied_to one or more Function_version objects. Each Function_version is related to zero, one, or more Security_classification objects.

4.3.2135 Security_classification to Function_version_relationship

Each Security_classification is_applied_to one or more Function_version_relationship objects. Each Function_version_relationship is related to zero, one, or more Security_classification objects.

4.3.2136 Security_classification to Functional_connectivity_definition

Each Security_classification is_applied_to one or more Functional_connectivity_definition objects. Each Functional_connectivity_definition is related to zero, one, or more Security_classification objects.

4.3.2137 Security_classification to Functional_connectivity_definition_relationship

Each Security_classification is_applied_to one or more Functional_connectivity_definition_relationship objects. Each Functional_connectivity_definition_relationship is related to zero, one, or more Security_classification objects.

4.3.2138 Security_classification to Functional_unit_allocation

Each Security_classification is_applied_to one or more Functional_unit_allocation objects. Each Functional_unit_allocation is related to zero, one, or more Security_classification objects.

4.3.2139 Security_classification to Generic_note

Each Security_classification is_applied_to one or more Generic_note objects. Each Generic_note is related to zero, one, or more Security_classification objects.

4.3.2140 Security_classification to Interface

Each Security_classification is_applied_to one or more Interface objects. Each Interface is related to zero, one, or more Security_classification objects.

4.3.2141 Security_classification to Interface_port

Each Security_classification is_applied_to one or more Interface_port objects. Each Interface_port is related to zero, one, or more Security_classification objects.

4.3.2142 Security_classification to Interface_terminal

Each Security_classification is_applied_to one or more Interface_terminal objects. Each Interface_terminal is related to zero, one, or more Security_classification objects.

4.3.2143 Security_classification to Item_definition_relationship

Each Security_classification is_applied_to one or more Item_definition_relationship objects. Each Item_definition_relationship is related to zero, one, or more Security_classification objects.

4.3.2144 Security_classification to Item_version

Each Security_classification is_applied_to one or more Item_version objects. Each Item_version is related to zero, one, or more Security_classification objects.

4.3.2145 Security_classification to Item_version_relationship

Each Security_classification is_applied_to one or more Item_version_relationship objects. Each Item_version_relationship is related to zero, one, or more Security_classification objects.

4.3.2146 Security_classification to Location

Each Security_classification is_applied_to one or more Location objects. Each Location is related to zero, one, or more Security_classification objects.

4.3.2147 Security_classification to Location_relationship

Each Security_classification is_applied_to one or more Location_relationship objects. Each Location_relationship is related to zero, one, or more Security_classification objects.

4.3.2148 Security_classification to Manufacturing_configuration

Each Security_classification is_applied_to one or more Manufacturing_configuration objects. Each Manufacturing_configuration is related to zero, one, or more Security_classification objects.

4.3.2149 Security_classification to Marking

Each Security_classification is_applied_to one or more Marking objects. Each Marking is related to zero, one, or more Security_classification objects.

4.3.2150 Security_classification to Node

Each Security_classification is_applied_to one or more Node objects. Each Node is related to zero, one, or more Security_classification objects.

4.3.2151 Security_classification to Node_relationship

Each Security_classification is_applied_to one or more Node_relationship objects. Each Node_relationship is related to zero, one, or more Security_classification objects.

4.3.2152 Security_classification to Notification

Each Security_classification is_applied_to one or more Notification objects. Each Notification is related to zero, one, or more Security_classification objects.

4.3.2153 Security_classification to Notification_relationship

Each Security_classification is_applied_to one or more Notification_relationship objects. Each Notification_relationship is related to zero, one, or more Security_classification objects.

4.3.2154 Security_classification to Offered_function_allocation

Each Security_classification is_applied_to one or more Offered_function_allocation objects. Each Offered_function_allocation is related to zero, one, or more Security_classification objects.

4.3.2155 Security_classification to Path

Each Security_classification is_applied_to one or more Path objects. Each Path is related to zero, one, or more Security_classification objects.

4.3.2156 Security_classification to Path_node

Each Security_classification is_applied_to one or more Path_node objects. Each Path_node is related to zero, one, or more Security_classification objects.

4.3.2157 Security_classification to Path_node_relationship

Each Security_classification is_applied_to one or more Path_node_relationship objects. Each Path_node_relationship is related to zero, one, or more Security_classification objects.

4.3.2158 Security_classification to Path_relationship

Each Security_classification is_applied_to one or more Path_relationship objects. Each Path_relationship is related to zero, one, or more Security_classification objects.

4.3.2159 Security_classification to Physical_assembly_relationship

Each Security_classification is_applied_to one or more Physical_assembly_relationship objects. Each Physical_assembly_relationship is related to zero, one, or more Security_classification objects.

4.3.2160 Security_classification to Physical_instance

Each Security_classification is_applied_to one or more Physical_instance objects. Each Physical_instance is related to zero, one, or more Security_classification objects.

4.3.2161 Security_classification to Port

Each Security_classification is_applied_to one or more Port objects. Each Port is related to zero, one, or more Security_classification objects.

4.3.2162 Security_classification to Port_allocation

Each Security_classification is_applied_to one or more Port_allocation objects. Each Port_allocation is related to zero, one, or more Security_classification objects.

4.3.2163 Security_classification to Preferred_item_allocation

Each Security_classification is_applied_to one or more Preferred_item_allocation objects. Each Preferred_item_allocation is related to zero, one, or more Security_classification objects.

4.3.2164 Security_classification to Preferred_item_terminal_allocation

Each Security_classification is_applied_to one or more Preferred_item_terminal_allocation objects. Each Preferred_item_terminal_allocation is related to zero, one, or more Security_classification objects.

4.3.2165 Security_classification to Process_variable

Each Security_classification is_applied_to one or more Process_variable objects. Each Process_variable is related to zero, one, or more Security_classification objects.

4.3.2166 Security_classification to Process_variable_relationship

Each Security_classification is_applied_to one or more Process_variable_relationship objects. Each Process_variable_relationship is related to zero, one, or more Security_classification objects.

4.3.2167 Security_classification to Product_class

Each Security_classification is_applied_to one or more Product_class objects. Each Product_class is related to zero, one, or more Security_classification objects.

4.3.2168 Security_classification to Product_identification

Each Security_classification is_applied_to one or more Product_identification objects. Each Product_identification is related to zero, one, or more Security_classification objects.

4.3.2169 Security_classification to Product_structure_relationship

Each Security_classification is_applied_to one or more Product_structure_relationship objects. Each Product_structure_relationship is related to zero, one, or more Security_classification objects.

4.3.2170 Security_classification to Project

Each Security_classification is_applied_to one or more Project objects. Each Project is related to zero, one, or more Security_classification objects.

4.3.2171 Security_classification to Requirement

Each Security_classification is_applied_to one or more Requirement objects. Each Requirement is related to zero, one, or more Security_classification objects.

4.3.2172 Security_classification to Route

Each Security_classification is_applied_to one or more Route objects. Each Route is related to zero, one, or more Security_classification objects.

4.3.2173 Security_classification to Route_relationship

Each Security_classification is_applied_to one or more Route_relationship objects. Each Route_relationship is related to zero, one, or more Security_classification objects.

4.3.2174 Security_classification to Section

Each Security_classification is_applied_to one or more Section objects. Each Section is related to zero, one, or more Security_classification objects.

4.3.2175 Security_classification to Section_end

Each Security_classification is_applied_to one or more Section_end objects. Each Section_end is related to zero, one, or more Security_classification objects.

4.3.2176 Security_classification to Section_interface

Each Security_classification is_applied_to one or more Section_interface objects. Each Section_interface is related to zero, one, or more Security_classification objects.

4.3.2177 Security_classification to Section_interface_relationship

Each Security_classification is_applied_to one or more Section_interface_relationship objects. Each Section_interface_relationship is related to zero, one, or more Security_classification objects.

4.3.2178 Security_classification to Section_relationship

Each Security_classification is_applied_to one or more Section_relationship objects. Each Section_relationship is related to zero, one, or more Security_classification objects.

4.3.2179 Security_classification to Security_level

Each Security_classification refers to exactly one Security_level in the role of security_classification_level. Each Security_level acts as security_classification_level for zero, one, or more Security_classification objects.

4.3.2180 Security_classification to Signal

Each Security_classification is_applied_to one or more Signal objects. Each Signal is related to zero, one, or more Security_classification objects.

4.3.2181 Security_classification to Signal_relationship

Each Security_classification is_applied_to one or more Signal_relationship objects. Each Signal_relationship is related to zero, one, or more Security_classification objects.

4.3.2182 Security_classification to Signal_value

Each Security_classification is_applied_to one or more Signal_value objects. Each Signal_value is related to zero, one, or more Security_classification objects.

4.3.2183 Security_classification to Specification

Each Security_classification is_applied_to one or more Specification objects. Each Specification is related to zero, one, or more Security_classification objects.

4.3.2184 Security_classification to Specification_category

Each Security_classification is_applied_to one or more Specification_category objects. Each Specification_category is related to zero, one, or more Security_classification objects.

4.3.2185 Security_classification to Technical_system

Each Security_classification is_applied_to one or more Technical_system objects. Each Technical_system is related to zero, one, or more Security_classification objects.

4.3.2186 Security_classification to Technical_system_relationship

Each Security_classification is_applied_to one or more Technical_system_relationship objects. Each Technical_system_relationship is related to zero, one, or more Security_classification objects.

4.3.2187 Security_classification to Terminal

Each Security_classification is_applied_to one or more Terminal objects. Each Terminal is related to zero, one, or more Security_classification objects.

4.3.2188 Security_classification to Work_order

Each Security_classification is_applied_to one or more Work_order objects. Each Work_order is related to zero, one, or more Security_classification objects.

4.3.2189 Security_classification to Work_request

Each Security_classification is_applied_to one or more Work_request objects. Each Work_request is related to zero, one, or more Security_classification objects.

4.3.2190 Security_level to Classification_system

Each Security_level refers to zero or one Classification_system in the role of used_classification_system. Each Classification_system acts as used_classification_system for zero, one, or more Security_level objects.

4.3.2191 Selected_device to Value_with_unit

Each Selected_device refers to exactly one Value_with_unit in the role of selected_quantity. Each Value_with_unit acts as selected_quantity for zero, one, or more Selected_device objects.

4.3.2192 Set_of_notes to Generic_note

Each Set_of_notes refers to one or more Generic_note objects in the role of grouped_notes. Each Generic_note acts as grouped_notes for zero, one, or more Set_of_notes objects.

4.3.2193 Shape_assignment to Connectivity_definition

Each Shape_assignment refers to exactly one Connectivity_definition in the role of associated_item. Each Connectivity_definition acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2194 Shape_assignment to Design_discipline_item_definition

Each Shape_assignment refers to exactly one Design_discipline_item_definition in the role of associated_item. Each Design_discipline_item_definition acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2195 Shape_assignment to Device

Each Shape_assignment refers to exactly one Device in the role of associated_item. Each Device acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2196 Shape_assignment to Function_definition

Each Shape_assignment refers to exactly one Function_definition in the role of associated_item. Each Function_definition acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2197 Shape_assignment to Function_unit

Each Shape_assignment refers to exactly one Function_unit in the role of associated_item. Each Function_unit acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2198 Shape_assignment to Functional_connectivity_definition

Each Shape_assignment refers to exactly one Functional_connectivity_definition in the role of associated_item. Each Functional_connectivity_definition acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2199 Shape_assignment to Interface_port

Each Shape_assignment refers to exactly one Interface_port in the role of associated_item. Each Interface_port acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2200 Shape_assignment to Interface_terminal

Each Shape_assignment refers to exactly one Interface_terminal in the role of associated_item. Each Interface_terminal acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2201 Shape_assignment to Location

Each Shape_assignment refers to exactly one Location in the role of associated_item. Each Location acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2202 Shape_assignment to Physical_instance

Each Shape_assignment refers to exactly one Physical_instance in the role of associated_item. Each Physical_instance acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2203 Shape_assignment to Port

Each Shape_assignment refers to exactly one Port in the role of associated_item. Each Port acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2204 Shape_assignment to Product_component

Each Shape_assignment refers to exactly one Product_component in the role of associated_item. Each Product_component acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2205 Shape_assignment to Section

Each Shape_assignment refers to exactly one Section in the role of associated_item. Each Section acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2206 Shape_assignment to Section_interface

Each Shape_assignment refers to exactly one Section_interface in the role of associated_item. Each Section_interface acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2207 Shape_assignment to Shape

Each Shape_assignment refers to exactly one Shape in the role of assigned_shape. Each Shape acts as assigned_shape for zero, one, or more Shape_assignment objects.

4.3.2208 Shape_assignment to Technical_system

Each Shape_assignment refers to exactly one Technical_system in the role of associated_item. Each Technical_system acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2209 Shape_assignment to Terminal

Each Shape_assignment refers to exactly one Terminal in the role of associated_item. Each Terminal acts as associated_item for zero, one, or more Shape_assignment objects.

4.3.2210 Sheet_placed_annotation to Layer

Each Sheet_placed_annotation refers to one or more Layer objects in the role of annotation_layers. Each Layer acts as annotation_layers for zero, one, or more Sheet_placed_annotation objects.

4.3.2211 Sheet_placed_annotation to Visibility

Each Sheet_placed_annotation refers to exactly one Visibility in the role of annotation_visibility. Each Visibility acts as annotation_visibility for zero, one, or more Sheet_placed_annotation objects.

4.3.2212 Signal to Process_variable

Each Signal refers to zero, one, or more Process_variable objects in the role of associated_parameter. Each Process_variable acts as associated_parameter for zero, one, or more Signal objects.

4.3.2213 Signal to Signal_designation

Each Signal refers to zero or one Signal_designation in the role of extended_designation. Each Signal_designation acts as extended_designation for zero, one, or more Signal objects.

4.3.2214 Signal_relationship to Signal

Each Signal_relationship refers to exactly one Signal in the role of related. Each Signal acts as related for zero, one, or more Signal_relationship objects.

4.3.2215 Signal_relationship to Signal

Each Signal_relationship refers to exactly one Signal in the role of relating. Each Signal acts as relating for zero, one, or more Signal_relationship objects.

4.3.2216 Signal_system_assignment to Connectivity_definition

Each Signal_system_assignment refers to exactly one Connectivity_definition in the role of associated_system. Each Connectivity_definition acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2217 Signal_system_assignment to Design_discipline_item_definition

Each Signal_system_assignment refers to exactly one Design_discipline_item_definition in the role of associated_system. Each Design_discipline_item_definition acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2218 Signal_system_assignment to Device

Each Signal_system_assignment refers to exactly one Device in the role of associated_system. Each Device acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2219 Signal_system_assignment to Function_definition

Each Signal_system_assignment refers to exactly one Function_definition in the role of associated_system. Each Function_definition acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2220 Signal_system_assignment to Function_unit

Each Signal_system_assignment refers to exactly one Function_unit in the role of associated_system. Each Function_unit acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2221 Signal_system_assignment to Functional_connectivity_definition

Each Signal_system_assignment refers to exactly one Functional_connectivity_definition in the role of associated_system. Each Functional_connectivity_definition acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2222 Signal_system_assignment to Physical_instance

Each Signal_system_assignment refers to exactly one Physical_instance in the role of associated_system. Each Physical_instance acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2223 Signal_system_assignment to Port

Each Signal_system_assignment refers to exactly one Port in the role of associated_system. Each Port acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2224 Signal_system_assignment to Signal

Each Signal_system_assignment refers to exactly one Signal in the role of associated_signal. Each Signal acts as associated_signal for zero, one, or more Signal_system_assignment objects.

4.3.2225 Signal_system_assignment to Technical_system

Each Signal_system_assignment refers to exactly one Technical_system in the role of associated_system. Each Technical_system acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2226 Signal_system_assignment to Terminal

Each Signal_system_assignment refers to exactly one Terminal in the role of associated_system. Each Terminal acts as associated_system for zero, one, or more Signal_system_assignment objects.

4.3.2227 Signal_value to Data_element_value

Each Signal_value refers to exactly one Data_element_value in the role of value_of_signal. Each Data_element_value acts as value_of_signal for zero, one, or more Signal_value objects.

4.3.2228 Signal_value to Process_variable

Each Signal_value refers to zero or one Process_variable in the role of valued_parameter. Each Process_variable acts as valued_parameter for zero, one, or more Signal_value objects.

4.3.2229 Signal_value to Signal

Each Signal_value refers to exactly one Signal in the role of associated_signal. Each Signal acts as associated_signal for zero, one, or more Signal_value objects.

4.3.2230 Single_value to Binary_value

Each Single_value refers to exactly one Binary_value in the role of value_of_single_value. Each Binary_value acts as value_of_single_value for zero, one, or more Single_value objects.

4.3.2231 Single_value to Logical_value

Each Single_value refers to exactly one Logical_value in the role of value_of_single_value. Each Logical_value acts as value_of_single_value for zero, one, or more Single_value objects.

4.3.2232 Single_value to String_value

Each Single_value refers to exactly one String_value in the role of value_of_single_value. Each String_value acts as value_of_single_value for zero, one, or more Single_value objects.

4.3.2233 Single_value to Value_with_unit

Each Single_value refers to exactly one Value_with_unit in the role of value_of_single_value. Each Value_with_unit acts as value_of_single_value for zero, one, or more Single_value objects.

4.3.2234 Solid_fill_area to Colour

Each Solid_fill_area refers to exactly one Colour in the role of fill_colour. Each Colour acts as fill_colour for zero, one, or more Solid_fill_area objects.

4.3.2235 Solution_instance_assignment to Alternative_solution

Each Solution_instance_assignment refers to exactly one Alternative_solution in the role of solution. Each Alternative_solution acts as solution for zero, one, or more Solution_instance_assignment objects.

4.3.2236 Solution_instance_assignment to Node

Each Solution_instance_assignment refers to exactly one Node in the role of instance. Each Node acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2237 Solution_instance_assignment to Notification

Each Solution_instance_assignment refers to exactly one Notification in the role of instance. Each Notification acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2238 Solution_instance_assignment to Path

Each Solution_instance_assignment refers to exactly one Path in the role of instance. Each Path acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2239 Solution_instance_assignment to Path_node

Each Solution_instance_assignment refers to exactly one Path_node in the role of instance. Each Path_node acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2240 Solution_instance_assignment to Route

Each Solution_instance_assignment refers to exactly one Route in the role of instance. Each Route acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2241 Solution_instance_assignment to Section

Each Solution_instance_assignment refers to exactly one Section in the role of instance. Each Section acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2242 Solution_instance_assignment to Section_end

Each Solution_instance_assignment refers to exactly one Section_end in the role of instance. Each Section_end acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2243 Solution_instance_assignment to Section_interface

Each Solution_instance_assignment refers to exactly one Section_interface in the role of instance. Each Section_interface acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2244 Solution_instance_assignment to Signal

Each Solution_instance_assignment refers to exactly one Signal in the role of instance. Each Signal acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2245 Solution_instance_assignment to Technical_system

Each Solution_instance_assignment refers to exactly one Technical_system in the role of instance. Each Technical_system acts as instance for zero, one, or more Solution_instance_assignment objects.

4.3.2246 Specific_document_classification to Document

Each Specific_document_classification refers to one or more Document objects in the role of associated_document. Each Document acts as associated_document for zero, one, or more Specific_document_classification objects.

4.3.2247 Specific_document_classification_hierarchy to Specific_document_classification

Each Specific_document_classification_hierarchy refers to exactly one Specific_document_classification in the role of sub_classification. Each Specific_document_classification acts as sub_classification for zero, one, or more Specific_document_classification_hierarchy objects.

4.3.2248 Specific_document_classification_hierarchy to Specific_document_classification

Each Specific_document_classification_hierarchy refers to exactly one Specific_document_classification in the role of super_classification. Each Specific_document_classification acts as super_classification for zero, one, or more Specific_document_classification_hierarchy objects.

4.3.2249 Specific_item_classification to Item

Each Specific_item_classification refers to one or more Item objects in the role of associated_item. Each Item acts as associated_item for zero, one, or more Specific_item_classification objects.

4.3.2250 Specific_item_classification_hierarchy to Specific_item_classification

Each Specific_item_classification_hierarchy refers to exactly one Specific_item_classification in the role of sub_classification. Each Specific_item_classification acts as sub_classification for zero, one, or more Specific_item_classification_hierarchy objects.

4.3.2251 Specific_item_classification_hierarchy to Specific_item_classification

Each Specific_item_classification_hierarchy refers to exactly one Specific_item_classification in the role of super_classification. Each Specific_item_classification acts as super_classification for zero, one, or more Specific_item_classification_hierarchy objects.

4.3.2252 Specification to Specification_category

Each Specification refers to exactly one Specification_category in the role of category. Each Specification_category acts as category for zero, one, or more Specification objects.

4.3.2253 Specification_category_hierarchy to Specification_category

Each Specification_category_hierarchy refers to exactly one Specification_category in the role of sub_category. Each Specification_category acts as sub_category for zero, one, or more Specification_category_hierarchy objects.

4.3.2254 Specification_category_hierarchy to Specification_category

Each Specification_category_hierarchy refers to exactly one Specification_category in the role of super_category. Each Specification_category acts as super_category for zero, one, or more Specification_category_hierarchy objects.

4.3.2255 Specification_expression to Specification

Each Specification_expression refers to one or more Specification objects in the role of operand. Each Specification acts as operand for zero, one, or more Specification_expression objects.

4.3.2256 Specification_expression to Specification_expression

Each Specification_expression refers to one or more Specification_expression objects in the role of operand. Each Specification_expression acts as operand for zero, one, or more Specification_expression objects.

4.3.2257 Specification_inclusion to Specification

Each Specification_inclusion refers to exactly one Specification in the role of if_condition. Each Specification acts as if_condition for zero, one, or more Specification_inclusion objects.

4.3.2258 Specification_inclusion to Specification

Each Specification_inclusion refers to exactly one Specification in the role of included_specification. Each Specification acts as included_specification for zero, one, or more Specification_inclusion objects.

4.3.2259 Specification_inclusion to Specification_expression

Each Specification_inclusion refers to exactly one Specification_expression in the role of if_condition. Each Specification_expression acts as if_condition for zero, one, or more Specification_inclusion objects.

4.3.2260 Specification_inclusion to Specification_expression

Each Specification_inclusion refers to exactly one Specification_expression in the role of included_specification. Each Specification_expression acts as included_specification for zero, one, or more Specification_inclusion objects.

4.3.2261 Specified_device to Assembly_definition

Each Specified_device refers to zero or one Assembly_definition in the role of assembly_context. Each Assembly_definition acts as assembly_context for zero, one, or more Specified_device objects.

4.3.2262 Specified_device to Device

Each Specified_device refers to exactly one Device in the role of related_device. Each Device acts as related_device for zero, one, or more Specified_device objects.

4.3.2263 Specified_device to Device

Each Specified_device refers to exactly one Device in the role of upper_usage. Each Device acts as upper_usage for zero, one, or more Specified_device objects.

4.3.2264 Specified_function_unit to Function_definition

Each Specified_function_unit refers to zero or one Function_definition in the role of functional_context. Each Function_definition acts as functional_context for zero, one, or more Specified_function_unit objects.

4.3.2265 Specified_function_unit to Function_unit

Each Specified_function_unit refers to exactly one Function_unit in the role of related_function_unit. Each Function_unit acts as related_function_unit for zero, one, or more Specified_function_unit objects.

4.3.2266 Specified_function_unit to Function_unit

Each Specified_function_unit refers to exactly one Function_unit in the role of upper_usage. Each Function_unit acts as upper_usage for zero, one, or more Specified_function_unit objects.

4.3.2267 Storage_temperature to Value_with_unit

Each Storage_temperature refers to exactly one Value_with_unit in the role of temperature. Each Value_with_unit acts as temperature for zero, one, or more Storage_temperature objects.

4.3.2268 Structured_dimension_callout to Annotation_symbol

Each Structured_dimension_callout refers to zero or one Annotation_symbol in the role of symbol. Each Annotation_symbol acts as symbol for zero, one, or more Structured_dimension_callout objects.

4.3.2269 Structured_dimension_callout to Draughting_callout

Each Structured_dimension_callout refers to zero or one Draughting_callout in the role of prefix_callout. Each Draughting_callout acts as prefix_callout for zero, one, or more Structured_dimension_callout objects.

4.3.2270 Structured_dimension_callout to Draughting_callout

Each Structured_dimension_callout refers to zero or one Draughting_callout in the role of suffix_callout. Each Draughting_callout acts as suffix_callout for zero, one, or more Structured_dimension_callout objects.

4.3.2271 Structured_dimension_callout to Text_string

Each Structured_dimension_callout refers to one or more Text_string objects in the role of dimension_value. Each Text_string acts as dimension_value for zero, one, or more Structured_dimension_callout objects.

4.3.2272 Structured_dimension_callout to Text_string

Each Structured_dimension_callout refers to zero, one, or more Text_string objects in the role of tolerance_value. Each Text_string acts as tolerance_value for zero, one, or more Structured_dimension_callout objects.

4.3.2273 Structured_dimension_callout to Text_string

Each Structured_dimension_callout refers to zero, one, or more Text_string objects in the role of unit_text. Each Text_string acts as unit_text for zero, one, or more Structured_dimension_callout objects.

4.3.2274 Sub_group to Group

Each Sub_group refers to exactly one Group in the role of basis_group. Each Group acts as basis_group for zero, one, or more Sub_group objects.

4.3.2275 Supplier_solution to Organization

Each Supplier_solution refers to exactly one Organization in the role of supplier. Each Organization acts as supplier for zero, one, or more Supplier_solution objects.

4.3.2276 Technical_system to Classification_system

Each Technical_system refers to zero, one, or more Classification_system objects in the role of contains. Each Classification_system acts as contains for zero, one, or more Technical_system objects.

4.3.2277 Technical_system to Device

Each Technical_system refers to zero, one, or more Device objects in the role of contains. Each Device acts as contains for zero, one, or more Technical_system objects.

4.3.2278 Technical_system to Document_representation

Each Technical_system refers to zero, one, or more Document_representation objects in the role of contains. Each Document_representation acts as contains for zero, one, or more Technical_system objects.

4.3.2279 Technical_system to Function_unit

Each Technical_system refers to zero, one, or more Function_unit objects in the role of contains. Each Function_unit acts as contains for zero, one, or more Technical_system objects.

4.3.2280 Technical_system to Notification

Each Technical_system refers to zero, one, or more Notification objects in the role of contains. Each Notification acts as contains for zero, one, or more Technical_system objects.

4.3.2281 Technical_system to Object_reference_designation

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Each `Technical_system` refers to zero or one `Object_reference_designation` in the role of `extended_designation`. Each `Object_reference_designation` acts as `extended_designation` for zero, one, or more `Technical_system` objects.

4.3.2282 Technical_system to Physical_instance

Each `Technical_system` refers to zero, one, or more `Physical_instance` objects in the role of `contains`. Each `Physical_instance` acts as `contains` for zero, one, or more `Technical_system` objects.

4.3.2283 Technical_system to Process_variable

Each `Technical_system` refers to zero, one, or more `Process_variable` objects in the role of `contains`. Each `Process_variable` acts as `contains` for zero, one, or more `Technical_system` objects.

4.3.2284 Technical_system to Requirement

Each `Technical_system` refers to zero, one, or more `Requirement` objects in the role of `contains`. Each `Requirement` acts as `contains` for zero, one, or more `Technical_system` objects.

4.3.2285 Technical_system to Route

Each `Technical_system` refers to zero, one, or more `Route` objects in the role of `contains`. Each `Route` acts as `contains` for zero, one, or more `Technical_system` objects.

4.3.2286 Technical_system to Signal

Each `Technical_system` refers to zero, one, or more `Signal` objects in the role of `contains`. Each `Signal` acts as `contains` for zero, one, or more `Technical_system` objects.

4.3.2287 Technical_system_relationship to Technical_system

Each `Technical_system_relationship` refers to exactly one `Technical_system` in the role of `related`. Each `Technical_system` acts as `related` for zero, one, or more `Technical_system_relationship` objects.

4.3.2288 Technical_system_relationship to Technical_system

Each `Technical_system_relationship` refers to exactly one `Technical_system` in the role of `relating`. Each `Technical_system` acts as `relating` for zero, one, or more `Technical_system_relationship` objects.

4.3.2289 Terminal to Device

Each `Terminal` refers to zero, one, or more `Device` objects in the role of `implemented_by`. Each `Device` acts as `implemented_by` for zero, one, or more `Terminal` objects.

4.3.2290 Terminal to Interface_terminal

Each `Terminal` refers to exactly one `Interface_terminal` in the role of `associated_interface_terminal`. Each `Interface_terminal` acts as `associated_interface_terminal` for zero, one, or more `Terminal` objects.

4.3.2291 Terminal to Physical_instance

Each Terminal refers to zero, one, or more Physical_instance objects in the role of implemented_by. Each Physical_instance acts as implemented_by for zero, one, or more Terminal objects.

4.3.2292 Terminal to Single_device

Each Terminal refers to exactly one Single_device in the role of terminal_of. Each Single_device acts as terminal_of for zero, one, or more Terminal objects.

4.3.2293 Terminal to Terminal_designation

Each Terminal refers to zero or one Terminal_designation in the role of extended_designation. Each Terminal_designation acts as extended_designation for zero, one, or more Terminal objects.

4.3.2294 Terminal_relationship to Terminal

Each Terminal_relationship refers to exactly one Terminal in the role of related. Each Terminal acts as related for zero, one, or more Terminal_relationship objects.

4.3.2295 Terminal_relationship to Terminal

Each Terminal_relationship refers to exactly one Terminal in the role of relating. Each Terminal acts as relating for zero, one, or more Terminal_relationship objects.

4.3.2296 Text to Annotation_curve

Each Text refers to zero, one, or more Annotation_curve objects in the role of boundary_of_displayed_box. Each Annotation_curve acts as boundary_of_displayed_box for zero, one, or more Text objects.

4.3.2297 Text to Rectangular_area

Each Text refers to zero or one Rectangular_area in the role of blanking_box. Each Rectangular_area acts as blanking_box for zero, one, or more Text objects.

4.3.2298 Text to Rectangular_area

Each Text refers to zero or one Rectangular_area in the role of surrounding_box. Each Rectangular_area acts as surrounding_box for zero, one, or more Text objects.

4.3.2299 Text to Text_appearance

Each Text refers to exactly one Text_appearance in the role of default_appearance. Each Text_appearance acts as default_appearance for zero, one, or more Text objects.

4.3.2300 Text_appearance to Colour

Each Text_appearance refers to exactly one Colour in the role of text_colour. Each Colour acts as text_colour for zero, one, or more Text_appearance objects.

4.3.2301 Text_appearance to Text_font

Each Text_appearance refers to exactly one Text_font in the role of font. Each Text_font acts as font for zero, one, or more Text_appearance objects.

4.3.2302 Text_string to Point_2d

Each Text_string refers to exactly one Point_2d in the role of position. Each Point_2d acts as position for zero, one, or more Text_string objects.

4.3.2303 Text_string to Rectangular_area

Each Text_string refers to exactly one Rectangular_area in the role of surrounding_box. Each Rectangular_area acts as surrounding_box for zero, one, or more Text_string objects.

4.3.2304 Text_string to Text

Each Text_string refers to exactly one Text in the role of containing_text. Each Text acts as containing_text for zero, one, or more Text_string objects.

4.3.2305 Text_string to Text_appearance

Each Text_string refers to zero or one Text_appearance in the role of assigned_appearance. Each Text_appearance acts as assigned_appearance for zero, one, or more Text_string objects.

4.3.2306 Tile to Colour

Each Tile refers to zero or one Colour in the role of overriding_colour. Each Colour acts as overriding_colour for zero, one, or more Tile objects.

4.3.2307 Typical_schematic_node to Annotation_curve

Each Typical_schematic_node refers to zero, one, or more Annotation_curve objects in the role of consists_of. Each Annotation_curve acts as consists_of for zero, one, or more Typical_schematic_node objects.

4.3.2308 Typical_schematic_node to Cartesian_coordinate_space_2d

Each Typical_schematic_node refers to exactly one Cartesian_coordinate_space_2d in the role of coordinate_space. Each Cartesian_coordinate_space_2d acts as coordinate_space for zero, one, or more Typical_schematic_node objects.

4.3.2309 Typical_schematic_node to Connect_area

Each Typical_schematic_node refers to zero, one, or more Connect_area objects in the role of node_area. Each Connect_area acts as node_area for zero, one, or more Typical_schematic_node objects.

4.3.2310 Typical_schematic_node to Fill_area

Each Typical_schematic_node refers to zero, one, or more Fill_area objects in the role of consists_of. Each Fill_area acts as consists_of for zero, one, or more Typical_schematic_node objects.

4.3.2311 Typical_schematic_node to Text

Each Typical_schematic_node refers to zero, one, or more Text objects in the role of consists_of. Each Text acts as consists_of for zero, one, or more Typical_schematic_node objects.

4.3.2312 Typical_schematic_text to Text

Each Typical_schematic_text refers to exactly one Text in the role of consists_of. Each Text acts as consists_of for zero, one, or more Typical_schematic_text objects.

4.3.2313 Unstructured_dimension_callout to Draughting_callout

Each Unstructured_dimension_callout refers to exactly one Draughting_callout in the role of basis_callout. Each Draughting_callout acts as basis_callout for zero, one, or more Unstructured_dimension_callout objects.

4.3.2314 User_defined_data_element to Data_element_definition

Each User_defined_data_element refers to exactly one Data_element_definition in the role of definition. Each Data_element_definition acts as definition for zero, one, or more User_defined_data_element objects.

4.3.2315 User_defined_data_element to Data_element_value

Each User_defined_data_element refers to zero or one Data_element_value in the role of value_of_data_element. Each Data_element_value acts as value_of_data_element for zero, one, or more User_defined_data_element objects.

4.3.2316 User_defined_hatching to Hatching_pattern

Each User_defined_hatching refers to one or more Hatching_pattern objects in the role of defining_pattern. Each Hatching_pattern acts as defining_pattern for zero, one, or more User_defined_hatching objects.

4.3.2317 User_defined_symbol to User_defined_symbol_definition

Each User_defined_symbol refers to exactly one User_defined_symbol_definition in the role of definition. Each User_defined_symbol_definition acts as definition for zero, one, or more User_defined_symbol objects.

4.3.2318 User_defined_symbol_definition to Annotation_element

Each User_defined_symbol_definition refers to one or more Annotation_element objects in the role of components. Each Annotation_element acts as components for zero, one, or more User_defined_symbol_definition objects.

4.3.2319 User_defined_symbol_definition to Cartesian_coordinate_space_2d

Each User_defined_symbol_definition refers to exactly one Cartesian_coordinate_space_2d in the role of coordinate_space. Each Cartesian_coordinate_space_2d acts as coordinate_space for zero, one, or more User_defined_symbol_definition objects.

4.3.2320 User_defined_symbol_definition to Rectangular_area

Each User_defined_symbol_definition refers to zero or one Rectangular_area in the role of blanking_box. Each Rectangular_area acts as blanking_box for zero, one, or more User_defined_symbol_definition objects.

4.3.2321 User_defined_tile to User_defined_symbol_definition

Each User_defined_tile refers to exactly one User_defined_symbol_definition in the role of definition. Each User_defined_symbol_definition acts as definition for zero, one, or more User_defined_tile objects.

4.3.2322 User_defined_tiling to Tile

Each User_defined_tiling refers to exactly one Tile in the role of defining_tile. Each Tile acts as defining_tile for zero, one, or more User_defined_tiling objects.

4.3.2323 View_displayed_model to Appearance

Each View_displayed_model refers to zero or one Appearance in the role of overriding_appearance. Each Appearance acts as overriding_appearance for zero, one, or more View_displayed_model objects.

4.3.2324 View_displayed_model to Draughting_model

Each View_displayed_model refers to exactly one Draughting_model in the role of displayed_model. Each Draughting_model acts as displayed_model for zero, one, or more View_displayed_model objects.

4.3.2325 View_displayed_model to Drawing_view

Each View_displayed_model refers to exactly one Drawing_view in the role of presented_in. Each Drawing_view acts as presented_in for zero, one, or more View_displayed_model objects.

4.3.2326 View_displayed_model to Rectangular_area

Each View_displayed_model refers to exactly one Rectangular_area in the role of clipping. Each Rectangular_area acts as clipping for zero, one, or more View_displayed_model objects.

4.3.2327 View_placed_annotation to Drawing_view

Each View_placed_annotation refers to exactly one Drawing_view in the role of containing_view. Each Drawing_view acts as containing_view for zero, one, or more View_placed_annotation objects.

4.3.2328 View_placed_annotation to Layer

Each View_placed_annotation refers to one or more Layer objects in the role of annotation_layers. Each Layer acts as annotation_layers for zero, one, or more View_placed_annotation objects.

4.3.2329 View_placed_annotation to Visibility

Each View_placed_annotation refers to exactly one Visibility in the role of annotation_visibility. Each Visibility acts as annotation_visibility for zero, one, or more View_placed_annotation objects.

4.3.2330 Work_order to Activity

Each Work_order is_controlling exactly one Activity. Each Activity is related to zero, one, or more Work_order objects.

4.3.2331 Work_request to Activity_method

Each Work_request refers to zero, one, or more Activity_method objects in the role of scope. Each Activity_method acts as scope for zero, one, or more Work_request objects.

4.3.2332 Work_request to Activity_relationship

Each Work_request refers to zero, one, or more Activity_relationship objects in the role of scope. Each Activity_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2333 Work_request to Alternate_item_relationship

Each Work_request refers to zero, one, or more Alternate_item_relationship objects in the role of scope. Each Alternate_item_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2334 Work_request to Alternate_item_relationship

Each Work_request refers to zero, one, or more Alternate_item_relationship objects in the role of scope. Each Alternate_item_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2335 Work_request to Assembly_component_relationship

Each Work_request refers to zero, one, or more Assembly_component_relationship objects in the role of scope. Each Assembly_component_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2336 Work_request to Cable_pull_information

Each Work_request refers to zero, one, or more Cable_pull_information objects in the role of scope. Each Cable_pull_information acts as scope for zero, one, or more Work_request objects.

4.3.2337 Work_request to Class_category_association

Each Work_request refers to zero, one, or more Class_category_association objects in the role of scope. Each Class_category_association acts as scope for zero, one, or more Work_request objects.

4.3.2338 Work_request to Class_condition_association

Each Work_request refers to zero, one, or more Class_condition_association objects in the role of scope. Each Class_condition_association acts as scope for zero, one, or more Work_request objects.

4.3.2339 Work_request to Class_inclusion_association

Each Work_request refers to zero, one, or more Class_inclusion_association objects in the role of scope. Each Class_inclusion_association acts as scope for zero, one, or more Work_request objects.

4.3.2340 Work_request to Class_specification_association

Each Work_request refers to zero, one, or more Class_specification_association objects in the role of scope. Each Class_specification_association acts as scope for zero, one, or more Work_request objects.

4.3.2341 Work_request to Class_structure_relationship

Each Work_request refers to zero, one, or more Class_structure_relationship objects in the role of scope. Each Class_structure_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2342 Work_request to Classification_system

Each Work_request refers to zero, one, or more Classification_system objects in the role of scope. Each Classification_system acts as scope for zero, one, or more Work_request objects.

4.3.2343 Work_request to Complex_product

Each Work_request refers to zero, one, or more Complex_product objects in the role of scope. Each Complex_product acts as scope for zero, one, or more Work_request objects.

4.3.2344 Work_request to Complex_product_relationship

Each Work_request refers to zero, one, or more Complex_product_relationship objects in the role of scope. Each Complex_product_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2345 Work_request to Composition_relationship

Each Work_request refers to zero, one, or more Composition_relationship objects in the role of scope. Each Composition_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2346 Work_request to Configuration

Each Work_request refers to zero, one, or more Configuration objects in the role of scope. Each Configuration acts as scope for zero, one, or more Work_request objects.

4.3.2347 Work_request to Connectivity_definition

Each Work_request refers to zero, one, or more Connectivity_definition objects in the role of scope. Each Connectivity_definition acts as scope for zero, one, or more Work_request objects.

4.3.2348 Work_request to Connectivity_definition_relationship

Each Work_request refers to zero, one, or more Connectivity_definition_relationship objects in the role of scope. Each Connectivity_definition_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2349 Work_request to Data_element

Each Work_request refers to zero, one, or more Data_element objects in the role of scope. Each Data_element acts as scope for zero, one, or more Work_request objects.

4.3.2350 Work_request to Data_element_association

Each Work_request refers to zero, one, or more Data_element_association objects in the role of scope. Each Data_element_association acts as scope for zero, one, or more Work_request objects.

4.3.2351 Work_request to Data_element_definition

Each Work_request refers to zero, one, or more Data_element_definition objects in the role of scope. Each Data_element_definition acts as scope for zero, one, or more Work_request objects.

4.3.2352 Work_request to Data_element_relationship

Each Work_request refers to zero, one, or more Data_element_relationship objects in the role of scope. Each Data_element_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2353 Work_request to Date_and_person_or_organization

Each Work_request refers to one or more Date_and_person_or_organization objects in the role of notified_person_or_organization. Each Date_and_person_or_organization acts as notified_person_or_organization for zero, one, or more Work_request objects.

4.3.2354 Work_request to Date_and_person_or_organization

Each Work_request refers to zero or one Date_and_person_or_organization in the role of requestor. Each Date_and_person_or_organization acts as requestor for zero, one, or more Work_request objects.

4.3.2355 Work_request to Design_discipline_item_definition

Each Work_request refers to zero, one, or more Design_discipline_item_definition objects in the role of scope. Each Design_discipline_item_definition acts as scope for zero, one, or more Work_request objects.

4.3.2356 Work_request to Device

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Each Work_request refers to zero, one, or more Device objects in the role of scope. Each Device acts as scope for zero, one, or more Work_request objects.

4.3.2357 Work_request to Device_relationship

Each Work_request refers to zero, one, or more Device_relationship objects in the role of scope. Each Device_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2358 Work_request to Document

Each Work_request refers to zero, one, or more Document objects in the role of scope. Each Document acts as scope for zero, one, or more Work_request objects.

4.3.2359 Work_request to Document_file

Each Work_request refers to zero, one, or more Document_file objects in the role of scope. Each Document_file acts as scope for zero, one, or more Work_request objects.

4.3.2360 Work_request to Document_file_relationship

Each Work_request refers to zero, one, or more Document_file_relationship objects in the role of scope. Each Document_file_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2361 Work_request to Document_representation

Each Work_request refers to zero, one, or more Document_representation objects in the role of scope. Each Document_representation acts as scope for zero, one, or more Work_request objects.

4.3.2362 Work_request to Document_version

Each Work_request refers to zero, one, or more Document_version objects in the role of scope. Each Document_version acts as scope for zero, one, or more Work_request objects.

4.3.2363 Work_request to Document_version_relationship

Each Work_request refers to zero, one, or more Document_version_relationship objects in the role of scope. Each Document_version_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2364 Work_request to Drawing

Each Work_request refers to zero, one, or more Drawing objects in the role of scope. Each Drawing acts as scope for zero, one, or more Work_request objects.

4.3.2365 Work_request to Drawing_sequence

Each Work_request refers to zero, one, or more Drawing_sequence objects in the role of scope. Each Drawing_sequence acts as scope for zero, one, or more Work_request objects.

4.3.2366 Work_request to Drawing_sheet

Each Work_request refers to zero, one, or more Drawing_sheet objects in the role of scope. Each Drawing_sheet acts as scope for zero, one, or more Work_request objects.

4.3.2367 Work_request to Drawing_sheet_relationship

Each Work_request refers to zero, one, or more Drawing_sheet_relationship objects in the role of scope. Each Drawing_sheet_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2368 Work_request to Function_definition

Each Work_request refers to zero, one, or more Function_definition objects in the role of scope. Each Function_definition acts as scope for zero, one, or more Work_request objects.

4.3.2369 Work_request to Function_definition_relationship

Each Work_request refers to zero, one, or more Function_definition_relationship objects in the role of scope. Each Function_definition_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2370 Work_request to Function_interface

Each Work_request refers to zero, one, or more Function_interface objects in the role of scope. Each Function_interface acts as scope for zero, one, or more Work_request objects.

4.3.2371 Work_request to Function_unit

Each Work_request refers to zero, one, or more Function_unit objects in the role of scope. Each Function_unit acts as scope for zero, one, or more Work_request objects.

4.3.2372 Work_request to Function_unit_relationship

Each Work_request refers to zero, one, or more Function_unit_relationship objects in the role of scope. Each Function_unit_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2373 Work_request to Function_version

Each Work_request refers to zero, one, or more Function_version objects in the role of scope. Each Function_version acts as scope for zero, one, or more Work_request objects.

4.3.2374 Work_request to Function_version_relationship

Each Work_request refers to zero, one, or more Function_version_relationship objects in the role of scope. Each Function_version_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2375 Work_request to Functional_connectivity_definition

Each Work_request refers to zero, one, or more Functional_connectivity_definition objects in the role of scope. Each Functional_connectivity_definition acts as scope for zero, one, or more Work_request objects.

4.3.2376 Work_request to Functional_connectivity_definition_relationship

Each Work_request refers to zero, one, or more Functional_connectivity_definition_relationship objects in the role of scope. Each Functional_connectivity_definition_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2377 Work_request to Generic_note

Each Work_request refers to zero, one, or more Generic_note objects in the role of scope. Each Generic_note acts as scope for zero, one, or more Work_request objects.

4.3.2378 Work_request to Interface

Each Work_request refers to zero, one, or more Interface objects in the role of scope. Each Interface acts as scope for zero, one, or more Work_request objects.

4.3.2379 Work_request to Interface_port

Each Work_request refers to zero, one, or more Interface_port objects in the role of scope. Each Interface_port acts as scope for zero, one, or more Work_request objects.

4.3.2380 Work_request to Interface_terminal

Each Work_request refers to zero, one, or more Interface_terminal objects in the role of scope. Each Interface_terminal acts as scope for zero, one, or more Work_request objects.

4.3.2381 Work_request to Item

Each Work_request refers to zero, one, or more Item objects in the role of scope. Each Item acts as scope for zero, one, or more Work_request objects.

4.3.2382 Work_request to Item_definition_relationship

Each Work_request refers to zero, one, or more Item_definition_relationship objects in the role of scope. Each Item_definition_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2383 Work_request to Item_version

Each Work_request refers to zero, one, or more Item_version objects in the role of scope. Each Item_version acts as scope for zero, one, or more Work_request objects.

4.3.2384 Work_request to Item_version_relationship

Each Work_request refers to zero, one, or more Item_version_relationship objects in the role of scope. Each Item_version_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2385 Work_request to Location

Each Work_request refers to zero, one, or more Location objects in the role of scope. Each Location acts as scope for zero, one, or more Work_request objects.

4.3.2386 Work_request to Location_relationship

Each Work_request refers to zero, one, or more Location_relationship objects in the role of scope. Each Location_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2387 Work_request to Manufacturing_configuration

Each Work_request refers to zero, one, or more Manufacturing_configuration objects in the role of scope. Each Manufacturing_configuration acts as scope for zero, one, or more Work_request objects.

4.3.2388 Work_request to Marking

Each Work_request refers to zero, one, or more Marking objects in the role of scope. Each Marking acts as scope for zero, one, or more Work_request objects.

4.3.2389 Work_request to Node

Each Work_request refers to zero, one, or more Node objects in the role of scope. Each Node acts as scope for zero, one, or more Work_request objects.

4.3.2390 Work_request to Node_relationship

Each Work_request refers to zero, one, or more Node_relationship objects in the role of scope. Each Node_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2391 Work_request to Notification

Each Work_request refers to zero, one, or more Notification objects in the role of scope. Each Notification acts as scope for zero, one, or more Work_request objects.

4.3.2392 Work_request to Notification_relationship

Each Work_request refers to zero, one, or more Notification_relationship objects in the role of scope. Each Notification_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2393 Work_request to Path

Each Work_request refers to zero, one, or more Path objects in the role of scope. Each Path acts as scope for zero, one, or more Work_request objects.

4.3.2394 Work_request to Path_node

Each Work_request refers to zero, one, or more Path_node objects in the role of scope. Each Path_node acts as scope for zero, one, or more Work_request objects.

4.3.2395 Work_request to Path_node_relationship

Each Work_request refers to zero, one, or more Path_node_relationship objects in the role of scope. Each Path_node_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2396 Work_request to Path_relationship

Each Work_request refers to zero, one, or more Path_relationship objects in the role of scope. Each Path_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2397 Work_request to Physical_assembly_relationship

Each Work_request refers to zero, one, or more Physical_assembly_relationship objects in the role of scope. Each Physical_assembly_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2398 Work_request to Physical_instance

Each Work_request refers to zero, one, or more Physical_instance objects in the role of scope. Each Physical_instance acts as scope for zero, one, or more Work_request objects.

4.3.2399 Work_request to Port

Each Work_request refers to zero, one, or more Port objects in the role of scope. Each Port acts as scope for zero, one, or more Work_request objects.

4.3.2400 Work_request to Process_variable

Each Work_request refers to zero, one, or more Process_variable objects in the role of scope. Each Process_variable acts as scope for zero, one, or more Work_request objects.

4.3.2401 Work_request to Process_variable_relationship

Each Work_request refers to zero, one, or more Process_variable_relationship objects in the role of scope. Each Process_variable_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2402 Work_request to Product_class

Each Work_request refers to zero, one, or more Product_class objects in the role of scope. Each Product_class acts as scope for zero, one, or more Work_request objects.

4.3.2403 Work_request to Product_identification

Each Work_request refers to zero, one, or more Product_identification objects in the role of scope. Each Product_identification acts as scope for zero, one, or more Work_request objects.

4.3.2404 Work_request to Product_structure_relationship

Each Work_request refers to zero, one, or more Product_structure_relationship objects in the role of scope. Each Product_structure_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2405 Work_request to Requirement

Each Work_request refers to zero, one, or more Requirement objects in the role of scope. Each Requirement acts as scope for zero, one, or more Work_request objects.

4.3.2406 Work_request to Route

Each Work_request refers to zero, one, or more Route objects in the role of scope. Each Route acts as scope for zero, one, or more Work_request objects.

4.3.2407 Work_request to Route_relationship

Each Work_request refers to zero, one, or more Route_relationship objects in the role of scope. Each Route_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2408 Work_request to Section

Each Work_request refers to zero, one, or more Section objects in the role of scope. Each Section acts as scope for zero, one, or more Work_request objects.

4.3.2409 Work_request to Section_end

Each Work_request refers to zero, one, or more Section_end objects in the role of scope. Each Section_end acts as scope for zero, one, or more Work_request objects.

4.3.2410 Work_request to Section_interface

Each Work_request refers to zero, one, or more Section_interface objects in the role of scope. Each Section_interface acts as scope for zero, one, or more Work_request objects.

4.3.2411 Work_request to Section_interface_relationship

Each Work_request refers to zero, one, or more Section_interface_relationship objects in the role of scope. Each Section_interface_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2412 Work_request to Section_relationship

Each Work_request refers to zero, one, or more Section_relationship objects in the role of scope. Each Section_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2413 Work_request to Signal

Each Work_request refers to zero, one, or more Signal objects in the role of scope. Each Signal acts as scope for zero, one, or more Work_request objects.

4.3.2414 Work_request to Signal_relationship

Each Work_request refers to zero, one, or more Signal_relationship objects in the role of scope. Each Signal_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2415 Work_request to Signal_value

Each Work_request refers to zero, one, or more Signal_value objects in the role of scope. Each Signal_value acts as scope for zero, one, or more Work_request objects.

4.3.2416 Work_request to Specification

Each Work_request refers to zero, one, or more Specification objects in the role of scope. Each Specification acts as scope for zero, one, or more Work_request objects.

4.3.2417 Work_request to Specification_category

Each Work_request refers to zero, one, or more Specification_category objects in the role of scope. Each Specification_category acts as scope for zero, one, or more Work_request objects.

4.3.2418 Work_request to Specification_expression

Each Work_request refers to zero, one, or more Specification_expression objects in the role of scope. Each Specification_expression acts as scope for zero, one, or more Work_request objects.

4.3.2419 Work_request to Specification_inclusion

Each Work_request refers to zero, one, or more Specification_inclusion objects in the role of scope. Each Specification_inclusion acts as scope for zero, one, or more Work_request objects.

4.3.2420 Work_request to Technical_system

Each Work_request refers to zero, one, or more Technical_system objects in the role of scope. Each Technical_system acts as scope for zero, one, or more Work_request objects.

4.3.2421 Work_request to Technical_system_relationship

Each Work_request refers to zero, one, or more Technical_system_relationship objects in the role of scope. Each Technical_system_relationship acts as scope for zero, one, or more Work_request objects.

4.3.2422 Work_request to Terminal

Each Work_request refers to zero, one, or more Terminal objects in the role of scope. Each Terminal acts as scope for zero, one, or more Work_request objects.

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5 Application interpreted model

5.1 Mapping table

This clause contains the mapping table that shows how each UoF and application object of this part of ISO 10303 (see clause 4) maps to one or more AIM constructs (see annex A). The mapping table is organized in five columns.

Column 1) Application element: Name of an application element as it appears in the application object definition in 4.2. Application object names are written in uppercase. Attribute names and assertions are listed after the application object to which they belong and are written in lower case.

Column 2) AIM element: Name of an AIM element as it appears in the AIM (see annex A), the term 'IDENTICAL MAPPING', or the term 'PATH'. AIM entities are written in lower case. Attribute names of AIM entities are referred to as <entity name>.<attribute name>. The mapping of an application element may result in several related AIM elements. Each of these AIM elements requires a line of its own in the table. The term 'IDENTICAL MAPPING' indicates that both application objects of an application assertion map to the same AIM element. The term 'PATH' indicates that the application assertion maps to the entire reference path.

Column 3) Source: For those AIM elements that are interpreted from the integrated resources or the application interpreted constructs, this is the number of the corresponding part of ISO 10303. For those AIM elements that are created for the purpose of this part of ISO 10303, this is the number of this part. Entities or types that are defined within the integrated resources have an AIC as the source reference if the use of the entity or type for the mapping is within the scope of the AIC.

Column 4) Rules: One or more numbers may be given that refer to rules that apply to the current AIM element or reference path. For rules that are derived from relationships between application objects, the same rule is referred to by the mapping entries of all the involved AIM elements. The expanded names of the rules are listed after the table.

Column 5) Reference path: To describe fully the mapping of an application object, it may be necessary to specify a reference path through several related AIM elements. The reference path column documents the role of an AIM element relative to the AIM element in the row succeeding it. Two or more such related AIM elements define the interpretation of the integrated resources that satisfies the requirement specified by the application object. For each AIM element that has been created for use within this part of ISO 10303, a reference path up to its supertype from an integrated resource is specified.

For the expression of reference paths and the relationships between AIM elements the following notational conventions apply:

- a) `[]`: enclosed section constrains multiple AIM elements or sections of the reference path are required to satisfy an information requirement;
- b) `()`: enclosed section constrains multiple AIM elements or sections of the reference path are identified as alternatives within the mapping to satisfy an information requirement;
- c) `{}`: enclosed section constrains the reference path to satisfy an information requirement;

- d) <>: enclosed section constrains at one or more required reference paths;
- e) ||: enclosed section constrains the supertype entity;
- f) ->: attribute references the entity or select type given in the following row;
- g) <-: entity or select type is referenced by the attribute in the following row;
- h) [i]: attribute is an aggregation of which a single member is given in the following row;
- i) [n]: attribute is an aggregation of which member n is given in the following row;
- j) =>: entity is a supertype of the entity given in the following row;
- k) <=: entity is a subtype of the entity given in the following row;
- l) =: the string, select, or enumeration type is constrained to a choice or value;
- m) \: the reference path expression continues on the next line.

This part of ISO 10303 makes use of the application interpreted constructs (AIC) given in Table 3.

Table 3 - AIC references for mapping tables

AIC title	Mapping table symbol	AIC schema name
Draughting annotation	504	aic_draughting_annotation
Draughting elements	506	aic_draughting_elements

Table 4 – Mapping table allocation UoF (AL1)

Application element	AM element	Source	Rules	Reference path
FUNCTIONALUNIT- ALLOCATION #1: If the function_unit- allocation is used in the context of CF1. #2: If the function_unit- allocation is not used in the context of CF1.	#1: (product- definition- relationship) #2: (property- definition- relationship)	41 45	65,69	{#1: (product_definition_relationship product_definition_relationship.name = 'functional unit allocation') #2: (property_definition_relationship property_definition_relationship.name = 'functional unit allocation')}}
description	#1: (product- definition- relationship. description) #2: (property- definition- relationship. description)	41 45		
functional_unit- allocation to function_unit (as allocated- functional_unit)	PATH			#1: (product_definition_relationship product_definition_relationship.relation.product_definition -> product_definition) #2: (property_definition_relationship property_definition_relationship.relation.property_definition -> property_definition) characterized_definition -> characterized_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)

Table 4 – Mapping table allocation UoF (AL1) (continued)

Application element	AIM element	Source	Rules	Reference path
functional_unit.- allocation to device (as function.- implementation)	PATH			#1: (product_definition.relationship product_definition.relationship.related_product_definition -> product_definition) #2: (property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition = product_definition.relationship product_definition.relationship => product_definition_usage => assembly_component_usage) #1: (product_definition.relationship product_definition.relationship.related_product_definition -> #2: (property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition) #1: (product_definition.relationship product_definition.relationship.related_product_definition -> #2: (property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition) #1: (product_definition.relationship product_definition.relationship.related_product_definition -> #2: (property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition)
functional_unit.- allocation to physical- instance (as function.- implementation)	PATH			
functional_unit.- allocation to product- component (as function.- implementation)	PATH			#1: (product_definition.relationship product_definition.relationship.related_product_definition -> #2: (property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition) #1: (product_definition.relationship product_definition.relationship.related_product_definition -> #2: (property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition)

Table 4 – Mapping table allocation UoF (AL1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition.name = 'conceptual definition' product_definition.formation -> product_definition_formation </pre>
OFFERED_FUNCTION_- ALLOCATION #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1.	#1: (product_- definition_- relationship) #2: (property_- definition_- relationship)	41 45	65,69	
description	#1: (product_- definition_- relationship. description) #2: (property_- definition_- relationship. description)	41		
relation_type	#1: (product_- definition_- relationship.name) #2: (property_- definition_- relationship.name)	41	65,69	<pre> #1: (product_definition_relationship.name (product_definition_relationship.name = 'dedicated function') (product_definition_relationship.name = 'offered function')) #2: (property_definition_relationship.name (product_definition_relationship.name = 'dedicated function') (product_definition_relationship.name = 'offered function')) product_definition.related_product_definition -> property_definition_relationship.related_property_definition -> property_definition characterized_definition characterized_product_definition </pre>
offered_function_- allocation to function_- definition (as offered_- functionality)	PATH			<pre> product_definition.relationship product_definition.related_product_definition -> property_definition_relationship characterized_definition characterized_product_definition </pre>

Table 4 – Mapping table allocation UoF (AL1) (continued)

Application element	AIM element	Source	Rules	Reference path
offered_function- allocation to design- discipline_item- definition (as performing- item)	PATH			characterized_product_definition = product_definition product_definition.relationship.relatng_product_definition -> product_definition #1: (product_definition.relationship product_definition) #2: (property_definition.relationship property_definition.relatng_property_definition -> property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition
offered_function- allocation to device (as performing- item)	PATH			#1: (product_definition.relationship product_definition.relationship.relatng_product_definition -> product_definition) #2: (property_definition.relationship property_definition.relationship.relatng_property_definition -> property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition.relationship.relatng_usage => product_definition_usage => assembly_component_usage)
offered_function- allocation to physical- instance (as performing- item)	PATH			product_definition.relationship product_definition.relationship.relatng_product_definition -> product_definition

Table 4 – Mapping table allocation UoF (AL1) (continued)

Application element	AIM element	Source	Rules	Reference path
offered_function_allocation_to_product_component (as performing-item)	PATH			product_definition_relating_product_definition -> product_definition_relating_product_definition -> product_definition_relating_product_definition -> {product_definition_frame_of_reference -> product_definition_context <= application_context_element product_definition_formation -> product_definition_formation}
PREFERRED_ITEM_ALLOCATION #1: If the preferred_item_allocation is not used in the context of CF1. #2: If the preferred_item_allocation is used in the context of CF1.	#1: (product_definition_relationship) #2: (property_definition_relationship)	41 45	65,69	{#1: (product_definition_relationship product_definition_relationship_name = 'preferred item allocation') #2: (property_definition_relationship property_definition_relationship_name = 'preferred item allocation')}
description	#1: (product_definition_relationship_description) #2: (property_definition_relationship_description) PATH	41 41		
preferred_item_allocation_to_single_functional_unit (as functional_definition)				#1: (product_definition_relationship product_definition_relating_product_definition -> product_definition) #2: (property_definition_relationship property_definition_relating_property_definition -> property_definition) property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition

Table 4 – Mapping table allocation UoF (AL1) (concluded)

Application element	AIM element	Source	Rules	Reference path
preferred_item_allocation_to_design_discipline_item_definition (as preferred_item)	PATH			characterized_product_definition = product_definition_relationship product_definition_usage => assembly_component_usage #1: (product_definition_relationship product_definition.related_product_definition -> product_definition) #2: (property_definition_relationship property_definition.related_property_definition -> property_definition characterized_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_usage => assembly_component_usage)
preferred_item_allocation_to_function_definition (as preferred_item)	PATH			#1: (product_definition_relationship product_definition.related_product_definition -> #2: (property_definition_relationship property_definition.related_property_definition -> property_definition property_definition_definition -> characterized_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_usage => assembly_component_usage)

Table 5 – Mapping table classification UoF (CA1)

Application element	AIM element	Source	Rules	Reference path
<p>CLASSIFICATION_-ASSOCIATION</p> <p>#1: If classification_-association.definitional is TRUE.</p> <p>#2: If classification_-association.definitional is FALSE.</p> <p>#3: If classification_-association.definitional is not instantiated.</p> <p>#4: If product_class is used with UoF EF1.</p> <p>#5: If product_class is used with UoF CF1.</p> <p>#6: If specification_-category.implicit_-exclusive_condition is FALSE.</p> <p>#7: If specification_-category.implicit_-exclusive_condition is TRUE.</p> <p>#8: If device is not used in the context of UoF CF1.</p> <p>#9: If device is used in the context of UoF CF1.</p> <p>#10: If function_unit is not used in the context of UoF CF1.</p> <p>#11: If function_unit.is used in the context of UoF CF1.</p> <p>#12: If product_-identification is used with UoF EF1.</p>	<p>applied_classification_-assignment</p>	212	9	<p>applied_classification_-assignment <=</p> <p>classification_-assignment</p> <p>{classification_-assignment.role -></p> <p>classification_-role</p> <p>classification_-role.name</p> <p>#1: (classification_role.name = 'definitional')</p> <p>#2: (classification_role.name = 'non-definitional')</p> <p>#3: (classification_role.name = ")}}</p>

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
#13: If product_-identification is used with UoF CFL.				
definitional	classification_role.name	41	15	<pre> applied_classification_assignment <= classification_assignment classification_assignment.role -> classification_role classification_role.name {#1: (classification_role.name = 'definitional') #2: (classification_role.name = 'non-definitional') #3: (classification_role.name = '')} </pre>
role	classification_role.description	41	15	<pre> applied_classification_assignment <= classification_assignment classification_assignment.role -> classification_role classification_role.description {(classification_role.description = 'electromagnetic compatibility') (classification_role.description = 'environmental conditions') (classification_role.description = 'flow direction') (classification_role.description = 'protection class')} applied_classification_assignment <= classification_assignment classification_assignment.assigned_classification -> group => class </pre>
classification_-association to general_-classification (as classification)	PATH			
classification_-association to activity_method (as classified_-element)	PATH			<pre> applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = action_method action_method </pre>

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
classification- association to annotation- subfigure- definition (as classified- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = symbol_representation_map symbol_representation_map
classification- association to approval (as classified- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = approval approval
classification- association to approval_status (as classified- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = approval_status approval_status
classification- association to complex_product (as classified- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = product_definition_formation product_definition_formation
classification- association to connectivity- definition (as classified- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = connectivity_definition connectivity_definition
classification- association to contract (as classified- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = contract contract

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
classification_- association to data_element_- (as classified_- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = representation representation
classification_- association to data_element_- definition (as classified_- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = general_property general_property
classification_- association to design_- discipline_item_- definition (as classified_- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = product_definition product_definition
classification_- association to device (as classified_- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item #8: (classification_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #9: (classification_item = product_definition product_definition)
classification_- association to document (as classified_- element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item classification_item = product product

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
classification_-association to document_file (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = document_file document_file
classification_-association to document_version (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = product_definition_formation product_definition_formation
classification_-association to drawing (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = drawing_revision drawing_revision
classification_-association to drawing_sheet (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = drawing_sheet_revision drawing_sheet_revision
classification_-association to function_definition (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = product_definition product_definition
classification_-association to function_unit (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item #10: (classification_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #11: (classification_item = product_definition product_definition)

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
classification_-association to function_version (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item product_definition_formation
classification_-functional_-connectivity_-definition (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item connectivity_definition
classification_-association to functionality (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item product
classification_-association to interface_port (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item terminal
classification_-association to interface_-terminal (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item terminal
classification_-association to item (as classified_-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i]-> classification_item product

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
classification_- association to item_version (as classified_- element)	PATH			applied_classification_assignment classification_item -> classification_item product_definition_formation
classification_- association to location (as classified_- element)	PATH			applied_classification_assignment classification_item -> classification_item installation_location
classification_- association to path (as classified_- element)	PATH			applied_classification_assignment classification_item -> classification_item path
classification_- association to path_node (as classified_- element)	PATH			applied_classification_assignment classification_item -> classification_item vertex
classification_- association to port (as classified_- element)	PATH			applied_classification_assignment classification_item -> classification_item terminal
classification_- association to product_class (as classified_- element)	PATH			applied_classification_assignment classification_item -> classification_item #4: (product_concept) #5: (product_concept => product_class)

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
classification-association to product-identification (as classified-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = configuration_item #12: (configuration_item) #13: (configuration_item => product_identification)
classification-association to project (as classified-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = organizational_project organizational_project
classification-association to requirement (as classified-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = product_definition product_definition
classification-association to route (as classified-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = installation_route installation_route
classification-association to section (as classified-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = installation_section installation_section
classification-association to section-interface (as classified-element)	PATH			applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = installation_section_interface installation_section_interface

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
classification-association to security_level (as classified-element)	PATH			<pre> applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = security_classification_level security_classification_level </pre>
classification-association to signal (as classified-element)	PATH			<pre> applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = signal signal </pre>
classification-association to specification_category (as classified-element)	PATH			<pre> applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = product_concept_feature_category #6: (product_concept_feature_category) #7: (product_concept_feature_category => exclusive_product_concept_feature_category) </pre>
classification-association to terminal (as classified-element)	PATH			<pre> applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = terminal terminal </pre>
classification-association to typical_schematic_node (as classified-element)	PATH			<pre> applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = symbol_representation_map symbol_representation_map </pre>
classification-association to user_defined_symbol_definition (as classified-element)	PATH			<pre> applied_classification_assignment applied_classification_assignment.items[i] -> classification_item classification_item = symbol_representation_map symbol_representation_map </pre>

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
CLASSIFICATION- ATTRIBUTE	property_definition	41	8	
description	property_definition. description	41		
id	property_definition.id	41		
name	property_definition. name			
classification- attribute to data_element (as allowed- value)	PATH			<pre> property_definition {derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property} represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation.definition property_definition_representation.used_representation -> representation </pre>
classification- attribute to general- classification (as associated- classification)	PATH			<pre> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => characterized_class </pre>
classification- attribute to data_element- definition (as attribute- definition)	PATH			<pre> property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association {general_property_association.name = 'attribute_definition'} general_property_association.base_definition -> general_property </pre>

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
CLASSIFICATION- SYSTEM	class.system	212	51	class.system <= group
description	group.description	41		class.system <= group group.description
id	group.name	41		class.system <= group group.name
CLASS_REFERENCE #1: If the type_of_- repository is user defined. #2: If the type_of_- repository is predefined.	externally_defined_- class	212	46,51	externally_defined_class <= [class <= group] [externally_defined_item]
code	externally_defined_- item.item_id	41		externally_defined_class <= externally_defined_item externally_defined_item.item_id
supplier	organization.id	41	29	externally_defined_class <= class organization_item = class organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'class supplier'} organization_assignment.assigned_organization -> organization organization.id
type_of_- repository	(external_source. source.id) (pre_defined_item. name)	41 41	54,56	externally_defined_class <= externally_defined_item externally_defined_item.source -> #1: (external_source external_source.source.id)

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
version	identification_- assignment_assigned_id	41	25,53	<pre>#2: (external_source => known_source known_source <= pre_defined_item pre_defined_item.name {(pre_defined_item.name = 'IEC 61360 library') (pre_defined_item.name = 'ISO 13584 library')}) externally_defined_class external_identification_item = externally_defined_class external_identification_item <- applied_external_identification_assignment.items[1] applied_external_identification_assignment <= external_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment_assigned_id</pre>
GENERAL_- CLASSIFICATION #1: If the general_- classification is not referenced by an classification_attribute. #2: If the general_- classification is referenced by an classification_attribute.	#1: (class) #2: (characterized_- class)	212 212	51	<pre>#1: (class <=) class <=) group</pre>
description	group.description	41		<pre>class <= group group.description</pre>
id	group.name	41		<pre>class <= group group.name</pre>

Table 5 – Mapping table classification UoF (CA1) (continued)

Application element	AIM element	Source	Rules	Reference path
version_id	identification.- assignment.assigned_id	41	25	<pre> class identification_item = class identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id {class => externally_defined_class} </pre>
general- classification to class.- reference (as classification.- source)	IDENTICAL MAPPING		46,54	
general- classification to external.- library.- reference (as classification.- source)	IDENTICAL MAPPING		46	<pre> {class => externally_defined_class} </pre>
general- classification to classification.- system (as used.- classification.- system)	PATH			<pre> #2: (characterized_class <= class) #1: (class) classification_item = class classification_item <- applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment.role -> classification_role} </pre>

Table 5 – Mapping table classification UoF (CA1) (concluded)

Application element	AIM element	Source	Rules	Reference path
				classification_role.name = 'class system membership' classification_assignment.assigned_class -> group => class_system
GENERAL- CLASSIFICATION- HIERARCHY	group_relationship	41	50	{group_relationship [group_relationship.name = 'class hierarchy'] [[group_relationship.related_group ->] [group_relationship.relatng_group ->] group => class}}
general- classification- hierarchy to general- classification (as sub- classification)	PATH			group_relationship group_relationship.related_group -> group => class
general- classification- hierarchy to general- classification (as super- classification)	PATH			group_relationship group_relationship.relatng_group -> group => class

Table 6 – Mapping table conditions UoF (CD1)

Application element	AIM element	Source	Rules	Reference path
REQUIREMENT	product_definition_formation	41	62	<pre> product_definition_formation.of_product -> product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'requirement' [product_definition_formation <- product_definition_formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'requirement_definition'} group_assignment.assigned_group -> group {group.name = 'requirement_group'}] [product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'requirement_definition']] </pre>
description	product_definition_formation.description	41		
id	product_id	41		<pre> product_definition_formation product product_id </pre>

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
name	product.name	41		product_definition_formation_of_product -> product product.name
version_id	product_definition_formation_id	41		
<p>REQUIREMENT_-ASSIGNMENT</p> <p>#1: If device is not used in the context of UoF CF1.</p> <p>#2: If device is used in the context of UoF CF1.</p> <p>#3: If device_ relationship is not of type 'substitution'.</p> <p>#4: If device_ relationship is of type 'substitution'.</p> <p>#5: If function_unit is not used in the context of UoF CF1.</p> <p>#6: If function_unit is used in the context of UoF CF1.</p> <p>#7: If product_class is used with UoF EF1.</p> <p>#8: If product_class is used with UoF CF1.</p>	<p>applied_group_ assignment</p>	212		<p>applied_group_assignment <= group_assignment {group_assignment.assigned_group -> group group.name = 'requirement_group'}</p>
description	object_role.description	41		<p>applied_group_assignment <= group_assignment role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -></p>

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
relation_type	object_role.name	41		<pre> object_role object_role.description applied_group_assignment <= group_assignment role_select = group_assignment role_association.item_with_role role_association role_association.role -> object_role object_role.name {(object_role.name)} (object_role.name = 'compelled element') (object_role.name = 'solution') applied_group_assignment <= group_assignment group_assignment.assigned_group -> group <- {group.name = 'requirement group'} group_assignment.assigned_group group_assignment => applied_group_assignment group_item group_item = product_definition product_definition_formation -> product_definition_formation applied_group_assignment applied_group_assignment.items[] -> group_item group_item = product_definition product_definition_formation -> product_definition_formation applied_group_assignment applied_group_assignment.items[] -> group_item group_item = product_definition_formation product_definition_formation => product_definition_usage => assembly_component_usage </pre>
requirement_assignment to requirement (as associated requirement)	PATH			
requirement_assignment to assembly_component_relationship (as constrained element)	PATH			

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- assignment to complex_product_- (as constrained_- element)				<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition product_definition.formatation product_definition.formatation </pre>
requirement_- assignment to complex_product_- relationship (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition.relationship product_definition.formatation.relationship </pre>
requirement_- assignment to composition_- relationship (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition.relationship product_definition.relationship => product_definition.usage => assembly_component_usage </pre>
requirement_- assignment to connectivity_- definition (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => connectivity_definition </pre>
requirement_- assignment to connectivity_- definition_- relationship (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect.relationship shape_aspect.relationship </pre>

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- assignment to data_element (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = representation representation </pre>
requirement_- assignment to design_- discipline_item_- definition (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition product_definition </pre>
requirement_- assignment to device (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item #1: (group_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #2: (group_item = product_definition) </pre>
requirement_- assignment to device_- relationship (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item #3: (group_item = product_definition_relationship product_definition_relationship) #4: (group_item = product_definition_substitute product_definition_substitute) </pre>
requirement_- assignment to document (as constrained_- element)	PATH			<pre> applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product product </pre>

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- assignment to document_version (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_formation product_definition_formation
requirement_- assignment to drawing_sheet (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = drawing_sheet_revision drawing_sheet_revision
requirement_- assignment to drawing_view (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = presentation_view presentation_view
requirement_- assignment to function_- definition (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition product_definition
requirement_- assignment to function_- definition_- relationship (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_relationship product_definition_relationship
requirement_- assignment to function_- interface (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => interface

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- assignment to function_unit_- (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item #5: (group_item = product_definition) #6: (group_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)
requirement_- assignment to function_unit_- relationship (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_relationship product_definition_relationship
requirement_- assignment to function_version (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_formation product_definition_formation
requirement_- assignment to functional_- connectivity_- definition (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => connectivity_definition
requirement_- assignment to functional_- connectivity_- definition_- relationship (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect_relationship shape_aspect_relationship

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- assignment to functionality (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product product
requirement_- assignment to generic_note (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = note_representation note_representation
requirement_- assignment to interface (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => interface
requirement_- assignment to interface_port (as constrained_- element)				applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = terminal terminal
requirement_- assignment to interface_- terminal (as constrained_- element)				applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = terminal terminal
requirement_- assignment to item (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product product

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_-assignment to item_definition_relationship (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_relationship product_definition_relationship
requirement_-assignment to item_version (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_formation product_definition_formation
requirement_-assignment to location (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => installation_location
requirement_-assignment to location_relationship (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect_relationship shape_aspect_relationship
requirement_-assignment to marking (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => equipment_marking
requirement_-assignment to node (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => installation_node

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_-assignment to node_-relationship (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect_relationship shape_aspect_relationship
requirement_-assignment to notification (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = characterized_object characterized_object => notification
requirement_-assignment to path (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = path path
requirement_-assignment to path_node (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = vertex vertex
requirement_-assignment to physical_-assembly_-relationship (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage
requirement_-assignment to physical_-instance (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition product_definition

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_-assignment to port (as constrained_-element)				applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = terminal terminal
requirement_-assignment to process_variable (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = characterized_object characterized_object => process_variable
requirement_-assignment to product_class (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item #7: (group_item = product_concept) #8: (group_item = product_class) applied_group_assignment
requirement_-assignment to product_specification (as constrained_-element)	PATH			applied_group_assignment.items[i] -> group_item group_item = characterized_object characterized_object => product_specification
requirement_-assignment to product_structure_relationship (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_relationship product_definition_relationship => product_definition_usage
requirement_-assignment to route (as constrained_-element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => installation_route

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- assignment to route_- relationship (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect_relationship shape_aspect_relationship
requirement_- assignment to section (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => installation_section
requirement_- assignment to section_end (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => installation_section_end
requirement_- assignment to section_- interface (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect shape_aspect => installation_section_interface
requirement_- assignment to section_- interface_- relationship (as constrained_- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = shape_aspect_relationship shape_aspect_relationship

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement.- assignment to section.- relationship (as constrained.- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item shape_aspect_relationship shape_aspect_relationship
requirement.- assignment to signal (as constrained.- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = characterized_object characterized_object => signal
requirement.- assignment to signal_value (as constrained.- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = representation representation
requirement.- assignment to technical_system (as constrained.- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition_formation product_definition_formation
requirement.- assignment to technical_system.- relationship (as constrained.- element)	PATH			applied_group_assignment.items[i] -> group_item group_item = product_definition_formation_relationship product_definition_formation_relationship
requirement.- assignment to terminal (as constrained.- element)	PATH			applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = terminal terminal

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>REQUIREMENT_- DOCUMENT_- ASSIGNMENT</p> <p>#1: If the requirement_- document_assignment assigns a complete document.</p> <p>#2: If the requirement_- document_assignment assigns a partial document.</p> <p>#3: If the requirement_- document_assignment assigns a drawing.</p>	<p>#1: (applied_document_- reference)</p> <p>#2: (applied_document_- usage_constraint_- assignment)</p> <p>#3: (applied_- presented_item)</p>	<p>212</p> <p>212</p> <p>212</p>		<p>#1: (applied_document_reference <= document_reference)</p> <p>#2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment)</p> <p>#3: (applied_presented_item <= presented_item)</p>
<p>description</p>	<p>#1: (object_role. description)</p> <p>#2: (document_usage_- role.description)</p> <p>#3: (classification_- role.description)</p>	<p>41</p> <p>41</p> <p>41</p>	<p>22,28</p>	<p>#1: (applied_document_reference <= document_reference)</p> <p>role_select = document_reference</p> <p>role_select <- role_association.item_with_role</p> <p>role_association role_association.role -> object_role</p> <p>object_role.description</p> <p>#2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment)</p> <p>document_usage_constraint_assignment.role -> document_usage_role</p> <p>document_usage_role.description</p> <p>#3: (applied_presented_item -< applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment)</p> <p>classification_assignment.role -> classification_role</p> <p>classification_role.description)</p>

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
role_of_document	(object_role.name) (document_usage_role.name) #3: (classification_role.name)	41 41	22,28	<pre> #1: (applied_document_reference <= document_reference role_select = document_reference role_select <- role_association_item_with_role role_association role_association_role -> object_role object_role.name {(object_role.name {object_role.name = 'additional information' (object_role.name = 'specification' (object_role.name = 'verification')}}) #2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment document_usage_constraint_assignment_role -> document_usage_role document_usage_role.name {(document_usage_role.name {document_usage_role.name = 'additional information' (document_usage_role.name = 'specification' (document_usage_role.name = 'verification')}}) #3: (applied_presented_item -< applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment_role -> classification_role classification_role.name = 'role of document'} classification_assignment.assigned_classification -> group group.name {(group.name) (group.name = 'additional information')} </pre>

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- document_- assignment to document (as documentation)	PATH		21	<pre>(group.name = 'specification') (group.name = 'verification')}} #1: (applied_document.reference <= document.reference document.reference.assigned_document ->) #2: (applied_document.usage_constraint_assignment <= document.usage_constraint_assignment document.usage_constraint.assigned_document.usage -> document.usage_constraint document.usage_constraint.source ->) document <- {document.kind -> document.type document.type.product_data_type = 'configuration controlled document'} document.product_association.relation.document {document.product_association => document.product_equality} document.product_association.related_product -> product_or_formation_or_definition product_or_formation_or_definition = product product #1: (applied_document.reference <= document.reference document.reference.assigned_document ->) #2: (applied_document.usage_constraint_assignment <= document.usage_constraint_assignment document.usage_constraint.assigned_document.usage -> document.usage_constraint document.usage_constraint.source ->) document => document_file</pre>
requirement_- document_- assignment to document_file (as documentation)	PATH			

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- document_- assignment to document_- representation (as documentation)	PATH		21	<pre> #1: (applied_document_reference <= document_reference document_reference.assigned_document ->) #2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment document_usage_constraint.assigned_document_usage -> document_usage_constraint document_usage_constraint.source ->) {document_kind -> document_type document_type.product_data.type = 'configuration controlled document definition'} document_product_association.relatng_document {document_product_association => document_product_equivalence} document_product_association.related_product -> product_or_formation_or_definition product_or_formation_or_definition = product_definition product_definition </pre>
requirement_- document_- assignment to document_version (as documentation)	PATH		21	<pre> #1: (applied_document_reference <= document_reference document_reference.assigned_document ->) #2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment document_usage_constraint.assigned_document_usage -> document_usage_constraint document_usage_constraint.source ->) {document_kind -> document_type document_type.product_data.type = 'configuration controlled document version'} document_product_association.relatng_document {document_product_association => document_product_equivalence} </pre>

Table 6 – Mapping table conditions UoF (CD1) (continued)

Application element	AIM element	Source	Rules	Reference path
requirement_- document_- assignment to drawing (as documentation)	PATH			document_product_association.related_product -> product_or_formation_or_definition = product_definition_formation product_definition_formation applied_presented_item <= presented_item <- presented_item_representation.item presented_item_representation presented_item_representation -> presentation_representation_select presentation_representation_select = presentation_set presentation_set => drawing_revision
requirement_- document_- assignment to requirement (as documented_- requirement)	PATH			(#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference.item = product_definition_formation #3: (applied_presented_item applied_presented_item.items[] -> presented_item_select presented_item_select = product_definition_formation) product_definition_formation
REQUIREMENT_- RELATIONSHIP description	product_definition_- relationship product_definition_- relationship. description	41		
relation_type	product_definition_- relationship.name	41		{(product_definition_relationship.name) (product_definition_relationship.name = 'alternate') (product_definition_relationship.name = 'decomposition') (product_definition_relationship.name = 'derivation') (product_definition_relationship.name = 'substitution') (product_definition_relationship.name = 'version hierarchy') (product_definition_relationship.name = 'version sequence')}

Table 6 – Mapping table conditions UoF (CD1) (concluded)

Application element	AIM element	Source	Rules	Reference path
requirement_- relationship to requirement (as related)	PATH			product_definition_relationship product_definition_related_product_definition -> product_definition product_definition_formation -> product_definition_formation
requirement_- relationship to requirement (as relating)	PATH			product_definition_relationship product_definition_related_product_definition -> product_definition product_definition_formation -> product_definition_formation

Table 7 – Mapping table configuration management UoF (CF1)

Application element	AIM element	Source	Rules	Reference path
ALTERNATIVE- SOLUTION	product_definition_formation	41	62	<pre> {product_definition_formation product <- [product_related_product_category.products[] product_related_product_category <= product_category product_category.name = 'alternative solution'] [product_definition_formation <- product_definition_formation product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative definition']] </pre>
alternative- solution to alternative- solution (as base- element)	PATH			<pre> product_definition_formation product_definition <- product_definition.relationship.related_product_definition product_definition.relationship {product_definition.relationship.name = 'solution alternative definition'} product_definition.relationship.related_product_definition -> product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative definition'} product_definition_formation product_definition_formation <- product_definition_formation product_definition <- product_definition.relationship.related_product_definition product_definition.relationship {product_definition.relationship.name = 'solution alternative definition'} product_definition.relationship.related_product_definition -> product_definition </pre>
alternative- solution to function- definition (as base- element)	PATH			<pre> product_definition_formation product_definition <- product_definition.relationship.related_product_definition product_definition.relationship {product_definition.relationship.name = 'solution alternative definition'} product_definition.relationship.related_product_definition -> product_definition </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
alternative- solution to product- component (as base- element)	PATH			<pre> product_definition_formation <- product_definition_formation product_definition <- product_definition_relationship.related_product_definition product_definition_relationship {product_definition_relationship.name = 'solution alternative definition'} product_definition_relationship.related_product_definition -> product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition_formation -> product_definition_formation } } </pre>
alternative- solution to single_function_- unit (as base- element)	PATH			<pre> product_definition_formation <- product_definition_relationship.related_product_definition product_definition_relationship {product_definition_relationship.name = 'solution alternative definition'} product_definition_relationship.related_product_definition -> product_definition </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>CLASS_CATEGORY_- ASSOCIATION #1: If class_category_- association_mandatory is TRUE. #2: If class_category_- association_mandatory is FALSE. #3: If specification_- category_implicit_- exclusive_condition is FALSE. #4: If specification_- category_implicit_- exclusive_condition is TRUE.</p>	<p>product_concept_- feature_category_usage</p>	212		<p>product_concept_feature_category_usage <= group_assignment</p>
<p>mandatory</p>	<p>object_role.name</p>	212		<p>product_concept_feature_category_usage <= group_assignment role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name {#1: (object_role.name = 'mandatory category usage') #2: (object_role.name = 'optional category usage')} product_concept_feature_category_usage <= group_assignment group_assignment.assigned_group -> group => product_concept_feature_category {#3: (product_concept_feature_category) #4: (product_concept_feature_category => exclusive_product_concept_feature_category)}</p>
<p>class_category_- association to specification_- category (as associated_- category)</p>	<p>PATH</p>			

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
class_category_- association to product_class (as associated_- product_class)	PATH			product_concept_feature_category_usage product_concept_feature_category_usage.items[1] -> category_usage_item category_usage_item = product_class product_class
CLASS_CONDITION_- ASSOCIATION condition_type	product_concept_- feature_association product_concept_- feature_association. name	44		{product_concept_feature_association (product_concept_feature_association.name = 'part_usage') (product_concept_feature_association.name = 'identification') (product_concept_feature_association.name = 'validity') (product_concept_feature_association.name = 'design case')} }
description	product_concept_- feature_association. description PATH	44		
class_condition_- association to specification_- expression (as associated_- condition)	product_concept_feature_association product_concept_feature_association.feature -> product_concept_feature => conditional_concept_feature			
class_condition_- association to product_class (as associated_- product_class)	product_concept_feature_association product_concept_feature_association.concept -> product_concept => product_class			
CLASS_INCLUSION_- ASSOCIATION description	product_concept_- feature_association product_concept_- feature_association. description	44		
		44		

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
class_inclusion_- association to specification_- inclusion (as associated_- inclusion)	PATH			product_concept_feature_association product_concept_feature_association.feature -> product_concept_feature => conditional_concept_feature => inclusion_product_concept_feature
class_inclusion_- association to product_class (as associated_- product_class)	PATH			product_concept_feature_association product_concept_feature_association.concept -> product_concept => product_class
CLASS_- SPECIFICATION_- ASSOCIATION #1: If class_- specification_association. associated_specification. package is FALSE, #2: If class_- specification_association. associated_specification. package is TRUE,	product_concept_- feature_association	44		
association_type	product_concept_- feature_association. name	44		{(product_concept_feature_association.name) (product_concept_feature_association.name = 'replaceable standard') (product_concept_feature_association.name = 'non replaceable standard') (product_concept_feature_association.name = 'availability') (product_concept_feature_association.name = 'identification') (product_concept_feature_association.name = 'option') (product_concept_feature_association.name = 'part usage')}}

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
class- specification- association to product_class (as associated- product_class)	PATH			product_concept_feature_association product_concept_feature_association.concept -> product_concept => product_class
class- specification- association to specification (as associated- specification)	PATH			product_concept_feature_association product_concept_feature -> product_concept_feature {#1: (product_concept_feature)} #2: (product_concept_feature => package-product_concept_feature)}
CLASS_STRUCTURE- RELATIONSHIP #1: If class_structure- relationship.related is a function_definition. #2: If class_structure- relationship.related is a product_component.	configuration_design	44		
description	description_attribute. attribute_value	41		configuration_design description_attribute_select = configuration_design description_attribute_select <- description_attribute_described_item description_attribute description_attribute.attribute_value
relation_type	name_attribute. attribute_value	41		configuration_design name_attribute_select = configuration_design name_attribute_select <- name_attribute_named_item name_attribute name_attribute.attribute_value {(name_attribute.attribute_value = 'functionality') (name_attribute.attribute_value = 'realization')}}

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
class-structure- relationship to function- definition (as related)				configuration_design -> configuration_design_item configuration_design_item = product_definition product_definition
class-structure- relationship to product- component (as related)	PATH			configuration_design configuration_design_item configuration_design_item = product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition.formatation -> product_definition.formatation }
class-structure- relationship to product.class (as relating)	PATH			configuration_design configuration_design.configuration -> configuration_item {#1: (configuration_item.name = 'functional structure item') #2: (configuration_item.name = 'conceptual structure item') configuration_item.item_concept -> product_concept => product_class
COMPLEX_PRODUCT #1: If complex-product is an alternative-solution. #2: If complex-product is a product-component.	product_definition- formation	41	170,1001	{product_definition.formatation product_definition.formatation.of_product -> product <- product_related_product_category.products[[] product_related_product_category <= product_category #1: (product_category.name = 'alternative solution') #2: (product_category.name = 'conceptual product')] [product_definition.formatation <- product_definition.formatation product_definition

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
				product_definition.frame_of_reference -> product_definition.context <= application_context_element #1: (application_context_element.name = 'alternative_definition') #2: (application_context_element.name = 'conceptual_definition')]]
id	product.id	41		product_definition.formatation_of_product -> product product.id
version_id	product_definition.- formation.id	41		
COMPLEX-PRODUCT.- RELATIONSHIP description	product_definition.- formation_relationship. product_definition.- formation_relationship. description	41		
relation_type	product_definition.- formation_relationship. name	41		{(product_definition_formation_relationship.name) (product_definition_formation_relationship.name = 'derivation') (product_definition_formation_relationship.name = 'hierarchy') ¹⁾ (product_definition_formation_relationship.name = 'sequence') ²⁾ (product_definition_formation_relationship.name = 'replacement') (product_definition_formation_relationship.name = 'redundancy')}}
complex_product.- relationship to complex_product (as related)	PATH			product_definition_formation_relationship product_definition_related_product_definition_formation -> product_definition_formation
complex_product.- relationship to complex_product (as relating)	PATH			product_definition_formation_relationship product_definition_formation_relatng_product_definition_formation -> product_definition_formation

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>COMPONENT_-PLACEMENT</p> <p>#1: If placement is established by a geometric relationship with transformation.</p> <p>#2: If placement is established by a replica.</p> <p>#3: If the transformation is implicitly defined by two items.</p> <p>#4: If the transformation is explicitly defined.</p> <p>#5: If the item is a placement.</p> <p>#6: If the item is a transformation operator.</p>	<p>#1: (representation_-relationship_with_-transformation)</p> <p>#2: (mapped_item)</p>	<p>43</p> <p>43</p>	<p>75</p>	<p>#1: ({representation_relationship_with_transformation <= representation_relationship representation_relationship.name = 'component_placement'})</p>
<p>transformation</p>	<p>#2: (mapped_item, mapping_target) [representation_map, mapping_origin]</p> <p>#1: (#3: (item_-defined_-transformation))</p> <p>#4: (functionally_-defined_-transformation))</p>	<p>43</p> <p>43</p> <p>43</p> <p>43</p>		<p>#2: (mapped_item [mapped_item.mapping_target -> {mapped_item.mapping_target -> representation_item => geometric_representation_item => #5: (placement => axis2_placement_3d) #6: (cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1,0} cartesian_transformation_operator_3d})) [mapped_item.mapping_source -> representation_map representation_map.mapped_representation representation_map representation_map.mapping_origin {representation_map.mapping_origin -> representation_item => geometric_representation_item =></p>

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> placement => axis2_placement_3d))) #1: (representation_relationship_with_transformation {representation_relationship_with_transformation <= representation_relationship => shape_representation_relationship} representation_relationship_with_transformation_operator -> transformation #3: (transformation = item_defined_transformation item_defined_transformation {[item_defined_transformation_transform_item_1 -> representation_item => geometric_representation_item => placement => axis2_placement_3d] item_defined_transformation_transform_item_2 -> representation_item => geometric_representation_item => placement => axis2_placement_3d}) #5: (placement => axis2_placement_3d) #6: (cartesian_transformation_operator => {cartesian_transformation_operator_scl = 1.0} cartesian_transformation_operator_3d)) #4: (transformation = functionally_defined_transformation functionally_defined_transformation {functionally_defined_transformation => cartesian_transformation_operator => {cartesian_transformation_operator_scl = 1.0} cartesian_transformation_operator_3d)) </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
component_- placement to product_- component (as placed_- component)	PATH			<pre> representation_relationship_with_transformation <= {representation_relationship.name = 'component_placement'} representation_relationship.rep_1 -> #2: (mapped_item mapped_item.mapping_source -> representation_map representation_map.mapped_representation ->) representation <- {representation.name = 'model property value'} property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition.name = 'conceptual definition'} product_definition_formation -> product_definition_formation </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
component_- placement to product_- component (as reference_- product_- component)	PATH			<pre> representation_relationship_with_transformation <= representation_relationship {representation_relationship.name = 'component_placement'} #2: (mapped_item <= representation_item <- representation.items[i]) representation <- {representation.name = 'model property value'} property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'conceptual definition'} product_definition_formation -> product_definition_formation </pre>
CONFIGURATION	configured_effectivity_- assignment	212	42	
configuration_- type	object_role.name	41	28	<pre> configured_effectivity_assignment <= effectivity_assignment role_select = effectivity_assignment role_select <- role_association_item_with_role role_association </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
inheritance_type	object_role. description	41	28	<pre> role_association.role -> object_role { (object_role.name = 'design') (object_role.name = 'usage') } configured_effectivity_assignment <= effectivity_assignment role_select = effectivity_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.description { (object_role.description = 'exception') (object_role.description = 'inherited') (object_role.description = 'local') } configured_effectivity_assignment configured_effectivity_assignment.items[1] -> configured_effectivity_item configured_effectivity_item = product_definition product_definition { product_definition.frame_of_reference -> product_definition application_context_element application_context_element product_definition.name = 'alternative definition' } product_definition_formation configured_effectivity_assignment configured_effectivity_assignment.items[j] -> configured_effectivity_item configured_effectivity_item = connectivity_definition connectivity_definition </pre>
configuration to complex_product (as configured_-- element)				
configuration to connectivity_-- definition (as configured_-- element)	PATH			

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
configuration to device (as configured-element)	PATH			configured_effectivity_assignment configured_effectivity_items[] -> configured_effectivity_item configured_effectivity_item = product_definition product_definition
configuration to function_unit (as configured-element)	PATH			configured_effectivity_assignment configured_effectivity_items[] -> configured_effectivity_item configured_effectivity_item = product_definition product_definition
configuration to functional_connectivity_definition (as configured-element)	PATH			configured_effectivity_assignment configured_effectivity_items[] -> configured_effectivity_item configured_effectivity_item = connectivity_definition connectivity_definition
configuration to location (as configured-element)	PATH			configured_effectivity_assignment configured_effectivity_items[] -> configured_effectivity_item configured_effectivity_item = installation_location installation_location
configuration to signal (as configured-element)	PATH			configured_effectivity_assignment configured_effectivity_items[] -> configured_effectivity_item configured_effectivity_item = signal signal
configuration to class_association (as is_solution_for)	PATH			configured_effectivity_assignment <= effectivity_assignment <- effectivity_assignment.assigned_effectivity_assignment effectivity_context_assignment => configured_effectivity_context_assignment configured_effectivity_context_assignment.items[] -> configured_effectivity_context_item product_concept_feature_association product_concept_feature_association

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
configuration to class_ association (as is_solution_ for)	PATH			<pre> configured_effectivity_assignment <= effectivity_assignment <- effectivity_context_assigned_effectivity_assignment effectivity_context_assignment => configured_effectivity_context_assignment configured_effectivity_context_assignment.items[] -> configured_effectivity_context_item configured_effectivity_item = product_concept_feature_association product_concept_feature_association </pre>
DESCRIPTIVE- SPECIFICATION description	descriptive_ representation_item	45		
	descriptive_ representation_item. description	45		
	representation_item. name	43		<pre> descriptive_representation_item <= representation_item representation_item.name </pre>
FINAL_SOLUTION #1: If final_solution is not a complex instance. #2: If final_solution is also of type technical_ solution. #3: If final_solution is also of type supplier_ solution. #4: If final_solution is also of type technical_ solution and supplier_ solution.	product_definition_ formation	41	62	<pre> {product_definition_formation <- product_definition_formation product_definition [name_attribute_select = product_definition name_attribute_select <- name_attribute_named_item name_attribute #1: (product_definition.name = 'final') #2: (product_definition.name = 'technical final') #3: (product_definition.name = 'supplier final') #4: (product_definition.name = 'technical supplier final')] [product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative definition']} </pre>
final_status	descriptive_ representation_item. description	45	72	<pre> product_definition_formation <- product_definition_formation product_definition {product_definition.frame_of_reference -> </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
final_solution to_descriptive_-- specification (as final_-- specification)	PATH		72	<pre> product_definition_context <= application_context_element characterized_product_definition = product_definition characterized_product_definition characterized_definition <- property_definition.definition represented_definition = property_definition property_definition.definition <- property_definition.representation.definition property_definition.representation property_definition.used_representation -> representation {representation.name = 'final item characteristics'} representation.items[] -> representation_item => {representation_item.name = 'final item status'} descriptive_representation_item.description product_definition_formation <- product_definition_formation product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element characterized_product_definition = product_definition characterized_product_definition characterized_definition <- property_definition.definition represented_definition = property_definition represented_definition <- } </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
final_solution to design_- discipline_item_- definition (as final_- specification)	PATH		65	<pre> property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'final item characteristics' representation.items[] -> representation_item => {representation_item.name = 'final specification' descriptive_representation_item product_definition_formation <- product_definition_formation product_definition <- product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative definition' product_definition.relationship.relatng_product_definition product_definition_relationship product_definition_relationship.name = 'final specification' product_definition_relationship.related_product_definition -> product_definition product_definition_formation <- product_definition_formation product_definition <- product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative definition' product_definition.relationship.relatng_product_definition product_definition_relationship product_definition_relationship.name = 'final specification' product_definition_relationship.related_product_definition -> product_definition </pre>
final_solution to function_- definition (as final_- specification)	PATH		65	<pre> product_definition_formation <- product_definition_formation product_definition <- product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative definition' product_definition.relationship.relatng_product_definition product_definition_relationship product_definition_relationship.name = 'final specification' product_definition_relationship.related_product_definition -> product_definition </pre>

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
final_solution to physical- instance (as final- specification)	PATH		65	product_definition_formation <- product_definition_formation product_definition <- {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative definition'} product_definition.relationship.related_product_definition product_definition.relationship {product_definition.relationship.name = 'final specification'} product_definition.relationship.related_product_definition -> product_definition
INSTANCE- PLACEMENT #1: If placement is established by a geometric relationship with transformation. #2: If placement is established by a replica. #3: If the transformation is implicitly defined by two items. #4: If the transformation is explicitly defined. #5: If the item is a placement. #6: If the item is a transformation operator.	#1: (representation_- relationship_with_- transformation) #2: (mapped_item)	43 43	75	#1: ({representation_relationship_with_transformation <= representation_relationship representation_relationship.name = 'instance placement'})
transformation	#2: (mapped_item. mapping_target) [representation_map. mapping_origin] #1: (#3: (item_- defined_-	43 43 43		#2: (mapped_item [mapped_item.mapping_target -> representation_item => geometric_representation_item => #5: (placement =>

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
	<pre> transformation) #4: (functionally- defined- transformation)) </pre>	43		<pre> axis2_placement_3d #6: (cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} cartesian_transformation_operator_3d)) [mapped_item.mapping_source -> representation_map.mapped_representation representation_map representation_map.mapping_origin {representation_map.mapping_origin -> representation_item => geometric_representation_item => placement => axis2_placement_3d}} #1: (representation_relationship_with_transformation {representation_relationship_with_transformation <= representation_relationship => shape_representation_relationship} representation_relationship_with_transformation_operator -> transformation #3: (transformation = item_defined_transformation item_defined_transformation {[item_defined_transformation.transformation_item_1 -> representation_item => geometric_representation_item => placement => axis2_placement_3d] [item_defined_transformation.transformation_item_2 -> representation_item => geometric_representation_item => #5: (placement => axis2_placement_3d) #6: (cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
instance_ placement to single_ device (as placed_ instance)	PATH			<pre> cartesian_transformation_operator_3d}}} #4: (transformation = functionally_defined_transformation functionally_defined_transformation {functionally_defined_transformation => cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} cartesian_transformation_operator_3d})) #1: (representation_relationship_with_transformation <= representation_relationship {representation_relationship.name = 'instance_placement'} representation_relationship.rep_1 ->) #2: (mapped_item mapped_item.mapping_source -> representation_map representation_map.mapped_representation ->) representation <- {representation => shape_representation} property_definition_representation.used_representation property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.definition -> represented_definition = property_definition property_definition {property_definition => product_definition_shape} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition </pre>

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
instance.- placement to single_function.- unit (as placed.- instance)	PATH			<pre> product_definition representation_with_transformation <= representation_relationship {representation_relationship.name = 'instance placement'} representation_relationship.rep_1 -> #2: (mapped_item mapped_item.mapping_source -> representation_map representation_map.mapped_representation ->) representation <- {representation => shape_representation} property_definition_used_representation property_definition_representation => {property_definition_representation => shape_definition_representation} property_definition_representation -> represented_definition represented_definition = property_definition property_definition {property_definition => product_definition_shape} property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
instance- placement to product- component (as referenced- product- component)	PATH			<pre> representation_relationship_with_transformation <= representation_relationship {representation_relationship.name = 'instance placement'} representation_relationship.rep_2 ->) #2: (mapped_item <= representation_item <- representation.items[i]) representation <- {representation.name = 'model property value'} property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'conceptual definition'} product_definition_formation -> product_definition_formation </pre>
PRODUCT_CLASS	product_class	212	8	<pre> product_class <= [product_concept] [characterized_object] product_class <= product_concept product_concept.description product_class <= product_concept </pre>
description	product_concept. description	44		
id	product_concept.id	44		

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
level_type	characterized_object. name	41		product_class <= characterized_object characterized_object.name
name	product_concept.name	44		product_class <= product_concept product_concept.name
version_id	identification_- assignment.assigned_id	41	25,53	product_class <= product_concept identification_item = product_concept identification_item <- applied_identification_assignment.items[i] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id
PRODUCT_CLASS_- RELATIONSHIP	product_concept_- relationship	44		
description	product_concept_- relationship. description	44		
relation_type	product_concept_- relationship.name	44		{(product_concept_relationship.name) (product_concept_relationship.name = 'derivation') (product_concept_relationship.name = 'hierarchy') (product_concept_relationship.name = 'version sequence') (product_concept_relationship.name = 'substitution')}
product_class_- relationship to product_class (as related)	PATH			product_concept_relationship product_concept_relationship.related_product_concept -> product_concept => product_class

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
product_class.- relationship to product_class (as relating)	PATH			product_concept_relationship product_concept_relating_product_concept -> product_concept => product_class
PRODUCT.- COMPONENT #1: If product_component. instance_required is TRUE. #2: If product_component. instance_required is FALSE.	product_definition.- formation	41	62	{product_definition_formation_of_product -> product <- product_related_product_category.products[1] product_related_product_category <= product_category product_category.name = 'conceptual product' [product_definition_formation <- product_definition.formation product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'conceptual definition']}
description	product_definition. description	41		
instance.- required	product_definition. name	41		product_definition_formation <- product_definition.formation product_definition product_definition.name {#1: (product_definition.name = 'instance required') #2: (product_definition.name = 'no instance required')}
name	product.name	41		product_definition_formation product_definition_formation_of_product -> product product.name
product.- component to object_reference.- designation (as extended.- designation)	PATH			product_definition_formation item_designation_item = product_definition_formation item_designation_item <- item_designation_assignment.items[1] item_designation_assignment => {item_designation_assignment <= identification_assignment

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
product_- component to class_category_- association (as is_- influenced_by)	PATH		42,43	<pre> identification_assignment.role -> identification_role identification_role.description = 'primary' object_reference_designation_assignment product_definition_formation <- product_definition_formation class_usage_effectivity_context_item = product_definition class_usage_effectivity_context_item <- class_usage_effectivity_context_assignment.items[1] class_usage_effectivity_context_assignment <= effectivity_context_assignment {effectivity_context_assignment.role -> effectivity_context_role effectivity_context_role.name = 'class usage influence'} effectivity_context_assignment.assigned_effectivity_assignment -> effectivity_assignment => {effectivity_assignment.assigned_effectivity -> effectivity effectivity.id = 'class usage'} applied_effectivity_assignment applied_effectivity_assignment.items[i] -> effectivity_item effectivity_item = product_concept_feature_category_usage product_concept_feature_category_usage product_definition_formation <- product_definition_formation product_definition <- product_definition_context_association.definition product_definition_context_association {product_definition_context_association.role -> product_definition_context_role product_definition_context_role.name = 'application context'} product_definition_context_association.frame_of_reference -> product_definition_context </pre>
product_- component to application_- context (as is_relevant_- for)	PATH		63	

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AMM element	Source	Rules	Reference path
PRODUCT_-IDENTIFICATION	product_identification	212		product_identification <= [configuration_item] [characterized_object]
description	configuration_item.description	44		product_identification <= configuration_item
id	configuration_item.id	44		configuration_item.description product_identification <= configuration_item
name	configuration_item.name	44		configuration_item.id product_identification <= configuration_item
version_id	identification_-assignment.assigned_id	41	25,53,98	product_identification <= configuration_item configuration_item = configuration_item identification_item <- identification_item <- applied_identification_assignment.items[i] applied_identification_assignment <= identification_assignment {identification_role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id
product_-identification to product_class (as associated_-product_class)	PATH			product_identification <= configuration_item configuration_item.item.concept -> product_concept => product_class

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
PRODUCT- SPECIFICATION #1: If product- specification.defining- specification.package is FALSE. #2: If product- specification.defining- specification.package is TRUE.	product_specification	212	8	product_specification <= [product_identification] [configurable_item]
product- specification to specification (as defining- specification)	PATH			product_specification <= configurable_item configurable_item.item_item_concept_feature[] -> product_concept_feature_association product_concept_feature_association.feature -> product_concept_feature #1: (product_concept_feature) #2: (product_concept_feature => package-product_concept_feature)
PRODUCT- STRUCTURE- RELATIONSHIP #1: If product- constituent is not a product_component. #2: If product- constituent is a product- component.	product_definition- usage	41		
description	product_definition- relationship. description	41		product_definition_usage <= product_definition_relationship product_definition_relationship.description
relation-type	product_definition- relationship.name	44		product_definition_usage <= product_definition_relationship product_definition_relationship.name

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
				{(product_definition_relationship.name = 'decomposition') (product_definition_relationship.name = 'specialization') (product_definition_relationship.name = 'realization')}}
product_ structure_ relationship to product_ constituent (as related)	PATH			product_definition_usage <= product_definition_relationship #1: (product_definition) #2: (product_definition) product_definition_formation -> product_definition_formation)
product_ structure_ relationship to complex_ product (as relating)	PATH			product_definition_usage <= product_definition_relationship product_definition_relatng_ product_definition -> product_definition_formation -> product_definition_formation)
SOLUTION_ INSTANCE_ ASSIGNMENT #1: If solution_ instance_ assignment is associated to technical_ system. #2: If solution_ instance_ assignment is associated to node, notification, route, section, section_ end, section_ interface or signal. #3: If solution_ instance_ assignment is associated to path or path_ node.	#1: (product_ definition_ relationship) #2: (property_ definition_ relationship) #3: (property_ definition_ representation)	41 45 41		product_definition_relationship {#1: (product_definition_relationship product_definition_relationship.name = 'solution element') #2: (property_definition_relationship property_definition_relationship.name = 'solution element') #3: (property_definition_representation name_attribute_select = property_definition_representation name_attribute_named_item name_attribute name_attribute.value = 'solution element')}}

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
solution_-instance_-assignment to node (as instance)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition characterized_definition -> characterized_definition = shape_definition shape_definition shape_aspect = shape_aspect shape_aspect => installation_node
solution_-instance_-assignment to notification (as instance)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => notification
solution_-instance_-assignment to path (as instance)	PATH			property_definition.representation property_definition.representation.used_representation -> representation representation.items[] -> representation_item => topological_representation_item => path
solution_-instance_-assignment to path_node (as instance)	PATH			property_definition.representation property_definition.representation.used_representation -> representation representation.items[] -> representation_item => topological_representation_item => vertex

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
solution- instance- assignment to route (as instance)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_route
solution- instance- assignment to section (as instance)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section
solution- instance- assignment to section_end (as instance)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section_end

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
solution- instance- assignment to section- interface (as instance)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section.interface
solution- instance- assignment to signal (as instance)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal
solution- instance- assignment to technical_system (as instance)	PATH			product_definition_formation.relationship product_definition_formation.relationship.related_product_definition_formation -> product_definition_formation
solution- instance- assignment to alternative- solution (as solution)	PATH			#1: (product_definition_relationship product_definition_relationship.related_product_definition ->) #2: (property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition) #3: (property_definition_representation

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	ATM element	Source	Rules	Reference path
				<pre> property_definition.representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition) product_definition {product_definition.frame_of_reference -> product_definition.context <= application_context_element product_definition.formatation -> product_definition.formatation </pre>
SPECIFICATION #1: If specification. package is FALSE. #2: If specification. package is TRUE. #3: If specification._ category.implicit_= exclusive_condition is FALSE. #4: If specification._ category.implicit_= exclusive_condition is TRUE.	product_concept_= feature	44	61	<pre> #1: (product_concept_feature) #2: (package_product_concept_feature <= product_concept_feature) </pre>
description	product_concept_= feature.description	44		
id	product_concept_= feature.id	44		

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
name	product_concept_-- feature.name	44		
package	IDENTICAL MAPPING			#1: ({product_concept_feature}) #2: (package-product_concept_feature <= product_concept_feature)
version_id	identification_-- assignment.assigned_id	41	25,53, 102	product_concept_feature identification_item = product_concept_feature identification_item <- applied_identification_assignment.items[j] applied_identification_assignment <= identification_assignment {identification_assignment identification_role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id
specification to specification_-- category (as category)	PATH			product_concept_feature group_item = product_concept_feature group_item <- applied_group_assignment.items[j] applied_group_assignment <= group_assignment {group_assignment.role -> object_role group_assignment.assigned_group -> group => product_concept_feature.category #3: ({product_concept_feature_category}) #4: (product_concept_feature_category => exclusive-product_concept_feature_category)

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
SPECIFICATION-CATEGORY #1: If specification_category.implicit_exclusive_condition is FALSE. #2: If specification_category.implicit_exclusive_condition is TRUE.	#1: (product_concept_feature_category) #2: (exclusive_product_concept_feature_category)	212 212	51	#1: (product_concept_feature_category <=) #2: (exclusive_product_concept_feature_category <=) group
description	group.description	41		#1: (product_concept_feature_category <=) #2: (exclusive_product_concept_feature_category <=) group group.description
id	group.name	41		#1: (product_concept_feature_category <=) #2: (exclusive_product_concept_feature_category <=) group group.name
implicit_exclusive_condition	IDENTICAL MAPPING			

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
SPECIFICATION_- CATEGORY_- HIERARCHY #1: If specification_- category.implicit_- exclusive_condition is FALSE. #2: If specification_- category.implicit_- exclusive_condition is TRUE.	group_relationship	41	1002	{group_relationship.name = 'specification category hierarchy'}
specification_- category_- hierarchy to specification_- category (as sub_- category)	PATH			group_relationship.related_group-> group => product_concept_feature_category #1: (product_concept_feature_category) #2: (product_concept_feature_category => exclusive_product_concept_feature_category)
specification_- category_- hierarchy to specification_- category (as super_- category)	PATH			group_relationship.relatng_group-> group => product_concept_feature_category #1: (product_concept_feature_category) #2: (product_concept_feature_category => exclusive_product_concept_feature_category)
SPECIFICATION_- EXPRESSION description	conditional_concept_- feature product_concept_- feature.description	44		conditional_concept_feature <= product_concept_feature product_concept_feature.description
id	product_concept_- feature.id	44		conditional_concept_feature <= product_concept_feature product_concept_feature.id
operation	concept_feature_- relationship_with_-	44	61	conditional_concept_feature conditional_concept_feature.condition ->

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
	condition.conditional_operator			concept_feature_relationship_with_condition.conditional_operator -> concept_feature_operator {(concept_feature_operator.name = 'and') (concept_feature_operator.name = 'or') (concept_feature_operator.name = 'oneof') (concept_feature_operator.name = 'not')} }
specification-expression to specification (as operand)	PATH			conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= concept_feature_relationship (concept_feature_relationship.related_product_concept_feature ->) (concept_feature_relationship.related_product_concept_feature ->) ³⁾ product_concept_feature {(product_concept_feature) (product_concept_feature => conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= concept_feature_relationship * 4) }
specification-expression to specification-expression (as operand)	PATH		61	conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= concept_feature_relationship (concept_feature_relationship.related_product_concept_feature ->) (concept_feature_relationship.related_product_concept_feature ->) ⁵⁾ product_concept_feature => conditional_concept_feature {(conditional_concept_feature) (conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= concept_feature_relationship * 6) }

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AM element	Source	Rules	Reference path
<p>SPECIFICATION_- INCLUSION #1: If specification. package is FALSE. #2: If specification. package is TRUE.</p>	<p>inclusion_product_- concept_feature</p>	212	61	<p>inclusion_product_concept_feature <= conditional_concept_feature {conditional_concept_feature.condition -> concept_feature_relationship_with_condition concept_feature_relationship_with_condition.conditional_operator -> concept_feature_operator concept_feature_operator.name = 'implication'}</p>
<p>description</p>	<p>product_concept_- feature.description</p>	44		<p>inclusion_product_concept_feature <= conditional_concept_feature <= product_concept_feature product_concept_feature.description</p>
<p>id</p>	<p>product_concept_- feature.id</p>	44		<p>inclusion_product_concept_feature <= conditional_concept_feature <= product_concept_feature product_concept_feature.id</p>
<p>specification_- inclusion to specification (as if_- condition)</p>	<p>PATH</p>			<p>inclusion_product_concept_feature <= conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= {concept_feature_relationship_with_condition.conditional_operator -> concept_feature_operator concept_feature_operator.name = 'implication'}</p> <p>concept_feature_relationship_relating_product_concept_feature -> product_concept_feature #1: (product_concept_feature) #1: (product_concept_feature => package-product_concept_feature)</p>
<p>specification_- inclusion to specification_- expression (as if_- condition)</p>	<p>PATH</p>			<p>inclusion_product_concept_feature <= conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= {concept_feature_relationship_with_condition.conditional_operator -> concept_feature_operator concept_feature_operator.name = 'implication'}</p> <p>concept_feature_relationship_relating_product_concept_feature <= conditional_concept_feature</p>

Table 7 – Mapping table configuration management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
specification- inclusion to specification- (as included- specification)	PATH			concept_feature_relationship.relationg_product_concept_feature -> product_concept_feature => [conditional_concept_feature] inclusion_product_concept_feature <= conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= {concept_feature_relationship_with_condition.conditional_operator -> concept_feature_operator concept_feature_operator.name = 'implication' } concept_feature_relationship product_concept_feature concept_feature_relationship.related_product_concept_feature -> product_concept_feature #1: (product_concept_feature) #2: (product_concept_feature => package_product_concept_feature)
specification- inclusion to specification- expression (as included- specification)	PATH			inclusion_product_concept_feature <= conditional_concept_feature conditional_concept_feature.condition -> concept_feature_relationship_with_condition <= {concept_feature_relationship_with_condition.conditional_operator -> concept_feature_operator concept_feature_operator.name = 'implication' } concept_feature_relationship product_concept_feature.related_product_concept_feature -> product_concept_feature => [conditional_concept_feature]

Table 7 – Mapping table configuration_management UoF (CF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>SUPPLIER_ SOLUTION</p> <p>#1: If supplier_solution is not a complex instance.</p> <p>#2: If supplier_solution is also of type technical_solution.</p> <p>#3: If supplier_solution is also of type final_solution.</p> <p>#4: If supplier_solution is also of type technical_solution and final_solution.</p>	<p>product_definition_formation</p>	41	62	<pre> product_definition_formation <- product_definition_formation product_definition [#1: (product_definition.name = 'supplier') #2: (product_definition.name = 'technical supplier') #3: (product_definition.name = 'supplier final') #4: (product_definition.name = 'technical supplier final')] [product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'alternative definition']] </pre>
<p>probability_rate</p>	<p>measure_representation_item</p>	45	72	<pre> product_definition_formation <- product_definition_formation product_definition {product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'alternative definition'} characterized_product_definition = product_definition characterized_product_definition characterized_definition <- property_definition.definition property_definition represented_definition <- represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'supplier probability'} representation.items[] -> </pre>

Table 7 – Mapping table configuration_management UoF (CF1) (concluded)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation_item => {representation_item.name = 'probability rate'} measure_representation_item {measure_representation_item <= measure_with_unit => ratio_measure_with_unit} product_definition_formation organization_item = product_definition_formation organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'supplier'} organization_assignment.assigned_organization -> organization </pre>
supplier- solution to organization (as supplier)	PATH	29		
TECHNICAL- SOLUTION #1: If technical_solution is not a complex instance. #2: If technical_solution is also of type supplier- solution. #3: If technical_solution is also of type final- solution. #4: If technical_solution is also of type final- solution and supplier- solution.	product_definition- formation	41	62	<pre> {product_definition_formation <- product_definition_formation product_definition [#1: (product_definition.name = 'technical') #2: (product_definition.name = 'technical_supplier') #3: (product_definition.name = 'technical_final') #4: (product_definition.name = 'technical_supplier_final')] [product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'alternative_definition']} </pre>
description	product_definition- formation.description	41		

NOTE - The following note numbers correspond to the footnotemarks listed in the table above:

- 1 Permissive list value 'version hierarchy' in ARM renamed to 'hierarchy' as product_definition_formation_relationship already implies a relationship between two version objects.
- 2 Permissive list value 'version sequence' in ARM renamed to 'sequence' as product_definition_formation_relationship already implies a relationship between two version objects.
- 3 Due to the SET, there is no order or specific semantics related to the usage of relating_product_concept_feature or related_product_concept_feature.
- 4 In case the SET of operands is greater than two, a tree structure has to be built using the constructs stated in the parentheses. In this case, all concept_feature_relationship_with_condition instances used reference the same concept_feature_operator as the conditional_operator.
- 5 Due to the SET, there is no order or specific semantics related to the usage of relating_product_concept_feature or related_product_concept_feature.
- 6 In case the SET of operands is greater than two, a tree structure has to be built using the constructs stated in the parentheses.

Table 8 – Mapping table course UoF (CO1)

Application element	AIM element	Source	Rules	Reference path
<p>CURVE_3D</p> <p>#1: If the curve_3D is a b_spline_curve.</p> <p>#2: If the curve_3D is a composite_curve.</p> <p>#3: If the curve_3D is a polyline.</p> <p>#4: If the curve_3D is a trimmed_curve.</p>	<p>#1: (b_spline_curve)</p> <p>#2: (composite_curve)</p> <p>#3: (polyline)</p> <p>#4: (trimmed_curve)</p>	<p>42</p> <p>42</p> <p>42</p> <p>42</p>	<p>108,111</p>	<p>#1: (b_spline_curve {b_spline_curve => <(b_spline_curve_with_knots (bezier_curve) (quasi_uniform_curve) (uniform_curve)> <rational_b_spline_curve>})</p> <p>#2: (composite_curve {composite_curve.segments[j] -> composite_curve_segment composite_curve_segment.parent_curve -> curve => bounded_curve => (b_spline_curve {b_spline_curve => <(b_spline_curve_with_knots (bezier_curve) (quasi_uniform_curve) (uniform_curve)> <rational_b_spline_curve>}) (composite_curve) (polyline) (trimmed_curve)})</p> <p>#3: (trimmed_curve {trimmed_curve.basis_curve -> curve => (line) (conic)})</p>

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AM element	Source	Rules	Reference path
NODE #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1.	installation_node	212	105	installation_node <=> shape_aspect
description	shape_aspect.description	41		installation_node <=> shape_aspect shape_aspect.description
id	shape_aspect.name	41		installation_node <=> shape_aspect shape_aspect.name
node to location (as assigned location)	PATH		104	installation_node <=> shape_aspect <-> shape_aspect.relationship.relation_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'node residence'} shape_aspect.relationship.relation_shape_aspect -> shape_aspect => installation_location
node to device (as implemented by)	PATH			installation_node <=> shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <-> property_definition.definition <-> property_definition <-> {property_definition.name = 'node requirements'} property_definition.relationship property_definition.relationship.relation_shape_definition -> property_definition.relationship.relation_shape_definition <-> {property_definition.name = 'node characteristics'} characterized_definition <-> characterized_definition

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AIM element	Source	Rules	Reference path
node to path_- node (as position)	PATH			<pre> characterized-product_definition product_definition = product_definition_relationship product_definition_usage => assembly_component_usage) #2: (characterized-product_definition = product_definition product_definition) installation_location <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.used_representation -> representation {representation => [shape_representation] [representation_context_of_items -> representation_context => geometric_representation_context representation_context.coordinate_space_dimension = 3]} representation_item => geometric_representation_item => vertex_point <= vertex </pre>

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AIM element	Source	Rules	Reference path
NODE- RELATIONSHIP description	shape_aspect_- relationship	41		
relation_type	shape_aspect_- relationship. description	41		
node_- relationship to node (as related)	shape_aspect_- relationship.name	41		{(shape_aspect_relationship.name) (shape_aspect_relationship.name = 'alternate') (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'derivation') (shape_aspect_relationship.name = 'substitution')}} shape_aspect_relationship
node_- relationship to node (as relating)	PATH			shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_node
PATH id	PATH			shape_aspect_relationship shape_aspect_relationship.relatng_shape_aspect -> shape_aspect => installation_node
version_id	representation_item. name	42		path <= topological_representation_item <= representation_item representation_item.name path
	identification_- assignment.assigned_id	43		identification_item = path identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment identification_role identification_role.name = 'version'} identification_assignment.assigned_id
		41	25,53, 101	

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AIM element	Source	Rules	Reference path
path to path-segment (as consists_of)	PATH			<pre> path path.edge_list[] -> oriented_edge oriented_edge.edge_element -> edge </pre>
PATH_NODE	vertex	42	74	<pre> vertex <= topological_representation_item <= representation_item representation_item.name vertex => </pre>
id	representation_item.name	43		<pre> vertex_point <= geometric_representation_item <= representation_item < representation_items[] representation {representation <- {representation => shape_representation} property_definition_representation.used_representation property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section} representation.context_of_items -> representation_context <- </pre>
path_node to location (as defined_in)	PATH			

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> {representation_context => geometric_representation_context.coordinate_space_dimension = 3} representation_context_of_items representation <- {representation => shape_representation} property_definition_used_representation property_definition_representation => {property_definition_representation} shape_definition_representation -> property_definition_representation_definition -> represented_definition property_definition property_definition_definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_location vertex => vertex_point vertex_point.vertex_geometry -> point => cartesian_point </pre>
path_node to cartesian_point (as position)	PATH			
PATHNODE-RELATIONSHIP	representation_item-relationship	43		
description	representation_item-relationship.description	43		
relation_type	representation_item-relationship.name	43		<pre> {(representation_item_relationship.name) (representation_item_relationship.name = 'alternate') (representation_item_relationship.name = 'substitution')} </pre>

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AIM element	Source	Rules	Reference path
path_node_ relationship to path_node (as related)	PATH			representation_item.relationship representation_item.related_representation_item -> representation_item => topological_representation_item => vertex
path_node_ relationship to path_node (as relating)	PATH			representation_item.relationship representation_item.relationing_representation_item -> representation_item => topological_representation_item => vertex
PATH_ RELATIONSHIP description	representation_item_ relationship	43		
relation_type	representation_item_ relationship.description	43		
path_ relationship to path (as related)	representation_item_ relationship.name	43		{(representation_item.relationship.name) (representation_item.relationship.name = 'alternate') (representation_item.relationship.name = 'derivation') (representation_item.relationship.name = 'substitution')}
path_ relationship to path (as relating)	PATH			representation_item.relationship representation_item.related_representation_item -> representation_item => topological_representation_item => path
path_ relationship to path (as relating)	PATH			representation_item.relationship representation_item.relationing_representation_item -> representation_item => topological_representation_item => path

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>PATHSEGMENT</p> <p>#1: If the curve_3D is a b_spline_curve.</p> <p>#2: If the curve_3D is a composite_curve.</p> <p>#3: If the curve_3D is a polyline.</p> <p>#4: If the curve_3D is a trimmed_curve.</p>	edge	42		
id	representation_item.name	43		<pre> edge <= topological_representation_item <= representation_item representation_item.name edge edge.edge_start -> vertex edge => edge_curve <= geometric_representation_item <= representation_item <- representation_items[] representation {representation <- {representation => shape_representation} property_definition_representation.used_representation property_definition_representation => {property_definition_representation} shape_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition </pre>
<p>path_segment to path_node (as begins.at)</p> <p>path_segment to location (as defined.in)</p>	<p>PATH</p> <p>PATH</p>			

Table 8 – Mapping table course UoF (CO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> characterized_definition = shape_definition shape_definition shape_aspect => installation_section} representation_context_of_items -> representation_context <- {representation_context => geometric_representation_context representation_context.coordinate_space_dimension = 3} representation_context_of_items representation <- {representation => shape_representation} property_definition_representation.used_representation property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_aspect => installation_location edge edge.edge_end -> vertex edge => edge_curve edge_curve.edge_geometry -> curve => </pre>
path_segment to path_node (as ends.at)	PATH			
path_segment to curve_3d (as form)	PATH			

Table 8 – Mapping table course UoF (CO1) (concluded)

Application element	AIM element	Source	Rules	Reference path
				<pre> bounded_curve => #1: (b_spline_curve {b_spline_curve => <(b_spline_curve_with_knots (bezier_curve) (quasi_uniform_curve) (uniform_curve)> <rational_b_spline_curve>}) #2: (composite_curve {composite_curve.segments[i] -> composite_curve_segment composite_curve_segment.parent_curve -> curve => bounded_curve => (b_spline_curve {b_spline_curve => <(b_spline_curve_with_knots (bezier_curve) (quasi_uniform_curve) (uniform_curve)> <rational_b_spline_curve>}) (composite_curve (polyline) (trimmed_curve)) #3: (polyline) #4: (trimmed_curve {trimmed_curve.basis_curve -> curve => (line) (conic)}}) </pre>

Table 9 – Mapping table designation UoF (DE1)

Application element	AIM element	Source	Rules	Reference path
DOCUMENT_- DESIGNATION	document_designation_- assignment	212	53	document_designation_assignment <= item_designation_assignment <= identification_assignment
OBJECT_- DESIGNATION designator	item_designation_- assignment identification_- assignment_assigned_id	212 41	53	item_designation_assignment <= identification_assignment <= item_designation_assignment <= identification_assignment identification_assignment_assigned_id
type_of_object_- designation	identification_role_ name	41	25	item_designation_assignment <= identification_assignment <= identification_assignment_role -> identification_role identification_role.name {(identification_role.name) (identification_role.name = 'function designation') (identification_role.name = 'location designation') (identification_role.name = 'product designation')}} item_designation_assignment
object_- designation to classification_- system (as designation_- system)	PATH			classification_item = item_designation_assignment classification_item <- applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'class system membership'} classification_assignment_assigned_classification -> group => class_system
OBJECT_- DESIGNATION_- RELATIONSHIP	identification_- assignment_- relationship	41	52	identification_assignment_relationship {identification_assignment_relationship.name = 'item designation composition'}

Table 9 – Mapping table designation UoF (DE1) (concluded)

Application element	AIM element	Source	Rules	Reference path
object_- designation_- relationship to object_- designation (as related_- object_- designation)	PATH			identification_assignment_relationship identification_relationship_related_identification_assignment -> identification_assignment => item_designation_assignment
object_- designation_- relationship to object_- designation (as relating_- object_- designation)	PATH			identification_assignment_relationship identification_assignment_relatng_identification_assignment -> identification_assignment => item_designation_assignment
OBJECTREFERENCE_- DESIGNATION	object_reference_- designation_assignment	212	53	object_reference_designation_assignment <= item_designation_assignment <= identification_assignment
SIGNAL_- DESIGNATION	signal_designation_- assignment	212	53	signal_designation_assignment <= item_designation_assignment <= identification_assignment
TERMINAL_- DESIGNATION	terminal_designation_- assignment	212	53	terminal_designation_assignment <= item_designation_assignment <= identification_assignment

Table 10 – Mapping table dimensioned documentation UoF (DI1)

Application element	AIM element	Source	Rules	Reference path
ANGULAR- DIMENSION	angular_dimension	506		angular_dimension <= dimension_curve_directed_callout
angular- dimension to projection_line (as component)	PATH			angular_dimension <= dimension_curve_directed_callout <= draughting_callout <= {draughting_callout => draughting_elements} draughting_callout.contents[i] -> annotation_curve_element = annotation_curve_occurrence annotation_curve_occurrence => projection_curve
angular- dimension to dimension_line (as extent)	PATH			angular_dimension <= dimension_curve_directed_callout <= draughting_callout <= {draughting_callout => draughting_elements} draughting_callout.contents[i] -> annotation_curve_element = annotation_curve_occurrence annotation_curve_occurrence => dimension_curve
CHAINED- DIMENSION_PAIR	dimension_pair	506		dimension_pair <= draughting_callout_relationship {draughting_callout_relationship.name = 'chained'}
CURVE_DIMENSION	curve_dimension	506		curve_dimension <= dimension_curve_directed_callout
curve_dimension to projection_- line (as component)	PATH			curve_dimension <= dimension_curve_directed_callout <= draughting_callout <= {draughting_callout => draughting_elements} draughting_callout.contents[i] -> annotation_curve_element = annotation_curve_occurrence annotation_curve_occurrence => projection_curve

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	ATM element	Source	Rules	Reference path
curve_dimension to dimension_line (as extent)	PATH			curve_dimension <= dimension_curve_directed_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> annotation_curve_occurrence annotation_curve_occurrence => dimension_curve
DATUMFEATURE- CALLOUT	datum_feature_callout	506		datum_feature_callout <= draughting_callout {draughting_callout => draughting_elements}
DATUMTARGET- CALLOUT	datum_target_callout	506		datum_target_callout <= draughting_callout {draughting_callout => draughting_elements}
DIAMETER- DIMENSION	diameter_dimension	506		diameter_dimension <= dimension_curve_directed_callout
diameter- dimension to projection_line (as component)	PATH			diameter_dimension <= dimension_curve_directed_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> annotation_curve_occurrence annotation_curve_occurrence => projection_curve
diameter- dimension to dimension_line (as extent)	PATH			diameter_dimension <= dimension_curve_directed_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> annotation_curve_occurrence annotation_curve_occurrence =>

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DIMENSION</p> <p>#1: If the dimension is a angular_dimension.</p> <p>#2: If the dimension is a curve_dimension.</p> <p>#3: If the dimension is a diameter_dimension.</p> <p>#4: If the dimension is a leader_directed_dimension.</p> <p>#5: If the dimension is a linear_dimension.</p> <p>#6: If the dimension is a ordinate_dimension.</p> <p>#7: If the dimension is a radius_dimension.</p>	<p>#1: (angular_dimension)</p> <p>#2: (curve_dimension)</p> <p>#3: (diameter_dimension)</p> <p>#4: (leader_directed_dimension)</p> <p>#5: (linear_dimension)</p> <p>#6: (ordinate_dimension)</p> <p>#7: (radius_dimension)</p>	<p>506</p> <p>506</p> <p>506</p> <p>506</p> <p>506</p> <p>506</p> <p>506</p>		<p>dimension_curve</p> <p>#1: (angular_dimension <= dimension_curve_directed_callout)</p> <p>#2: (curve_dimension <= dimension_curve_directed_callout)</p> <p>#3: (diameter_dimension <= dimension_curve_directed_callout)</p> <p>#4: (leader_directed_dimension <= leader_directed_callout)</p> <p>#5: (linear_dimension <= dimension_curve_directed_callout)</p> <p>#6: (ordinate_dimension <= projection_directed_callout)</p> <p>#7: (radius_dimension <= dimension_curve_directed_callout)</p>

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DIMENSION_-CALLOUT #1: If the dimension_-callout is an unstructured_-dimension_-callout. #2: If the dimension_-callout is a structured_-dimension_-callout. #3: If the dimension is a angular_dimension. #4: If the dimension is a curve_dimension. #5: If the dimension is a diameter_dimension. #6: If the dimension is a linear_dimension. #7: If the dimension is a ordinate_dimension. #8: If the dimension is a radius_dimension.</p>	<p>#1: (draughting_-callout) #2: (structured_-dimension_-callout)</p>	<p>506 506</p>		<p>#2: (structured_dimension_callout <= draughting_callout)</p>
<p>dimension_-callout to dimension (as defined_-primary_-dimension)</p>	<p>PATH</p>			<p>#1: (draughting_callout <-) #2: (structured_dimension_callout <= draughting_callout <-) draughting_callout.related_draughting_callout draughting_callout.relationship {draughting_callout.relationship.name = 'primary'} dimension_callout.relationship => draughting_callout.relationship.related_draughting_callout -> draughting_callout => {draughting_elements} draughting_curve_directed_callout => angular_dimension #3: (dimension_curve_directed_callout => #4: (dimension_curve_directed_callout =></p>

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
dimension_- callout to dimension (as defined_- secondary_- dimension)	PATH			<pre> curve-dimension dimension_curve_directed_callout => diameter-dimension dimension_curve_directed_callout => linear-dimension #7: (projection_directed_callout => ordinate-dimension) #8: (dimension_curve_directed_callout => radius-dimension) #1: (draughting_callout <-) #2: (structured_dimension_callout <= draughting_callout <-) draughting_callout_relation.related_draughting_callout draughting_callout_relation {draughting_callout_relation.name = 'secondary'} dimension_callout_relation => draughting_callout_relation.related_draughting_callout -> draughting_callout => {draughting_callout => draughting_elements} #3: (dimension_curve_directed_callout => angular-dimension) #4: (dimension_curve_directed_callout => curve-dimension) #5: (dimension_curve_directed_callout => diameter-dimension) #6: (dimension_curve_directed_callout => linear-dimension) #7: (projection_directed_callout => ordinate-dimension) #8: (dimension_curve_directed_callout => radius-dimension) </pre>
DIMENSIONLINE	dimension_curve	506		

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
DIMENSIONLINE_-- TERMINATOR	dimension_curve_-- terminator PATH	506		dimension_curve_terminator <= terminator_symbol terminator_symbol.annotated_curve -> annotation_curve_occurrence => dimension_curve
dimension_line_-- terminator to dimension_line (as line)				dimension_curve_terminator <= terminator_symbol <= annotation_symbol_occurrence
dimension_line_-- terminator to annotation_-- symbol (as symbol)	PATH			
DIMENSION_-- SEQUENCE_PAIR #1: If the dimension is a angular_dimension. #2: If the dimension is a curve_dimension. #3: If the dimension is a diameter_dimension. #4: If the dimension is a linear_dimension. #5: If the dimension is a ordinate_dimension. #6: If the dimension is a radius_dimension.	dimension_pair	506		dimension_pair <= draughting_callout_relationship
dimension_-- sequence_pair to dimension (as predecessor)	PATH			dimension_pair <= draughting_callout_relationship draughting_callout_relationship.draughting_callout -> draughting_callout => {draughting_callout => draughting_elements} #1: (dimension_curve_directed_callout => angular_dimension) #2: (dimension_curve_directed_callout =>

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
dimension- sequence-pair to dimension (as successor)	PATH			curve_dimension #3: (dimension_curve_directed_callout ==> diameter_dimension) #4: (dimension_curve_directed_callout ==> linear_dimension) #5: (projection_directed_callout ==> ordinate_dimension) #6: (dimension_curve_directed_callout ==> radius_dimension) dimension_pair <= draughting_callout_relationship draughting_callout_relationship.related_draughting_callout -> draughting_callout ==> {draughting_callout ==> draughting_elements} #1: (dimension_curve_directed_callout ==> angular_dimension) #2: (dimension_curve_directed_callout ==> curve_dimension) #3: (dimension_curve_directed_callout ==> diameter_dimension) #4: (dimension_curve_directed_callout ==> linear_dimension) #5: (projection_directed_callout ==> ordinate_dimension) #6: (dimension_curve_directed_callout ==> radius_dimension)
DIMENSION_SYMBOL	annotation_symbol_ occurrence	504	115	{annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence ==> draughting_annotation_occurrence} styled_item styled_item.item -> representation_item ==> geometric_representation_item ==> defined_symbol

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
symbol.type	pre_defined_item.name	504		<pre> defined_symbol.definition -> defined_symbol.select = pre_defined_symbol pre_defined_symbol => pre_defined_dimension_symbol} annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = pre_defined_symbol pre_defined_symbol <= {pre_defined_symbol => pre_defined_dimension_symbol} pre_defined_item pre_defined_item.name </pre>
<p>DIRECTED_CURVE #1: If the directed_curve is a dimension_curve. #2: If the directed_curve is a leader_curve. #3: If the directed_curve is a projection_curve.</p>	<pre> (dimension_curve) (leader_curve) (projection_curve) </pre>	506 506 506		
<p>directed_curve to draughting_- callout (as directed_- callout)</p>	PATH			<pre> #1: (dimension_curve <=) #2: (leader_curve <=) #3: (projection_curve <=) annotation_curve_occurrence draughting_callout_element <- draughting_callout_contents[i] draughting_callout => </pre>

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
DRAUGHTING_- CALLOUT	draughting_elements	506	113	draughting_elements <= draughting_callout
draughting_- callout to annotation_curve (as components)	PATH			draughting_elements <= draughting_callout draughting_callout.contents[i] -> draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence
draughting_- callout to annotation_- symbol (as components)	PATH			draughting_elements <= draughting_callout draughting_callout.contents[i] -> draughting_callout_element = annotation_symbolOccurrence annotation_symbolOccurrence
draughting_- callout to text (as components)	PATH			draughting_elements <= draughting_callout draughting_callout.contents[i] -> draughting_callout_element = annotation_text_occurrence annotation_text_occurrence
GEOMETRICAL_- TOLERANCE	geometrical_tolerance_- callout	506		geometrical_tolerance_callout <= draughting_callout {draughting_callout => draughting_elements}
GEOMETRICAL_- TOLERANCE_SYMBOL	annotation_symbol_- occurrence	504	115	{annotation_symbolOccurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence } styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = pre_defined_symbol pre_defined_symbol => pre_defined_geometrical_tolerance_symbol}

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
symbolType	pre_defined_item.name	504		annotation_symbolOccurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = pre_defined_symbol pre_defined_symbol <= {pre_defined_symbol => pre_defined_geometrical_tolerance_symbol} pre_defined_item pre_defined_item.name
LEADER #1: If the annotation_- element is an annotation_- curve. #2: If the annotation_- element is a fillArea. #3: If the annotation_- element is an annotation_- subfigure. #4: If the annotation_- element is an annotation_- symbol. #5: If the annotation_- element is a text.	leader_curve	506		

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
leader to annotation_-element (as target_-element)	PATH			leader_curve <= annotation_occurrence <= annotation_occurrence.related_annotation_occurrence annotation_occurrence.relationship {annotation_occurrence.relationship => annotation_occurrence.associativity} annotation_occurrence.relationship.annotation_occurrence -> annotation_occurrence => #1: (annotation_curve_occurrence) #2: (annotation_fill_area_occurrence) #3: (annotation_subfigure_occurrence) #4: (annotation_symbol_occurrence) #5: (annotation_text_occurrence)
LEADER-DIRECTED_-DIMENSION	leader_directed_-dimension	506		leader_directed_dimension <= leader_directed_dimension <= leader_directed_dimension <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> draughting_callout.element = annotation_curve_occurrence annotation_curve_occurrence => leader_curve
leader_directed_-dimension to leader (as component)	PATH			leader_terminator <= terminator_symbol terminator_symbol.annotated_curve -> annotation_curve_occurrence => leader_curve
LEADER_-TERMINATOR	leader_terminator	506		
leader_-terminator to leader (as line)	PATH			

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
leader-terminator to annotation-symbol (as symbol)	PATH			leader_terminator <= terminator_symbol <= annotation_symbol_occurrence
LINEAR_DIMENSION	linear_dimension	506		linear_dimension <= dimension_curve_directed_callout
linear_dimension to projection_line (as component)	PATH			dimension_curve_directed_callout <= dimension_curve_directed_callout <= {draughting_callout => draughting_callout draughting_elements} draughting_callout_contents[i] -> draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence => projection_curve
linear_dimension to dimension_line (as extent)	PATH			linear_dimension <= dimension_curve_directed_callout <= dimension_curve_directed_callout <= {draughting_callout => draughting_callout draughting_elements} draughting_callout_contents[i] -> draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence => dimension_curve
ORDINATE_DIMENSION	ordinate_dimension	506		ordinate_dimension <= projection_directed_callout
ordinate_dimension to projection_line (as component)	PATH			ordinate_dimension <= projection_directed_callout <= projection_directed_callout <= {draughting_callout => draughting_callout draughting_elements} draughting_callout_contents[i] -> draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence => projection_curve

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
PARALLEL-DIMENSION_PAIR	dimension_pair	506		dimension_pair <= draughting_callout_relationship {draughting_callout_relationship.name = 'parallel'}
POINT_MARKER-SYMBOL	annotation_symbol_occurrence	504	115	{annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = pre_defined_symbol pre_defined_symbol => pre_defined_point_marker_symbol} annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = pre_defined_symbol {pre_defined_symbol <= {pre_defined_symbol => pre_defined_point_marker_symbol} pre_defined_item pre_defined_item.name
symbol_type	pre_defined_item.name	504		{annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = pre_defined_symbol {pre_defined_symbol <= {pre_defined_symbol => pre_defined_point_marker_symbol} pre_defined_item pre_defined_item.name
PREDEFINED-SYMBOL	annotation_symbol_occurrence	504	115	{annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence}

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> styled_item representation_item -> geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = pre_defined_symbol} </pre>
<p>PROJECTION_LINE #1: If the annotation_-element is an annotation_-curve. #2: If the annotation_-element is a fill_area. #3: If the annotation_-element is an annotation_-subfigure. #4: If the annotation_-element is an annotation_-symbol. #5: If the annotation_-element is a text.</p>	<p>projection_curve</p>	<p>506</p>		
<p>projection_line to annotation_-element (as projected_-element)</p>	<p>PATH</p>			<pre> projection_curve <= annotation_curve_occurrence <= annotation_occurrence <- annotation_occurrence.related_annotation_occurrence annotation_occurrence.relationship {annotation_occurrence_relationship => annotation_occurrence_associativity} annotation_occurrence.relating_annotation_occurrence -> annotation_occurrence => #1: (annotation_curve_occurrence) #2: (annotation_fill_area_occurrence) #3: (annotation_subfigure_occurrence) #4: (annotation_symbol_occurrence) #5: (annotation_text_occurrence) </pre>

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
RADIUS_DIMENSION	radius_dimension	506		radius_dimension <= dimension_curve_directed_callout <= radius_dimension <= dimension_curve_directed_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence => projection_curve
radius_dimension to projection_- line (as component)	PATH			radius_dimension <= dimension_curve_directed_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence => dimension_curve
radius_dimension to dimension_- line (as extent)	PATH			radius_dimension <= dimension_curve_directed_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence => dimension_curve
STRUCTURED_- DIMENSION_- CALLOUT #1: If the text is a single literal. #2: If the text is a composite.	structured_dimension_- callout	506		structured_dimension_callout <= draughting_callout
structured_- dimension_- callout to text_- string (as dimension_- value)	PATH			structured_dimension_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[j] -> draughting_callout_element = annotation_text_occurrence annotation_text_occurrence <= annotation_occurrence <= annotation_occurrence <=

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
structured- dimension- callout to draughting- callout (as prefix- callout)	PATH			<pre> {annotation_occurrence => draughting_annotation_occurrence} styled_item representation_item <= representation_item {dimension value} styled_item -> representation_item => geometric_representation_item => #1: (composite_text composite_text_collected_text[] -> text_or_character = text_literal text_literal) #2: (text_literal) structured_dimension_callout <- draughting_callout_relationship.related_draughting_callout draughting_callout_relationship draughting_callout_relationship => {draughting_callout_relationship} dimension_callout_component_relationship {draughting_callout_relationship.name = 'prefix'} draughting_callout_relationship.related_draughting_callout -> draughting_callout => {draughting_callout.contents[] -> draughting_callout_element draughting_callout_element draughting_callout_element = annotation_text_occurrence annotation_text_occurrence <= annotation_occurrence <= styled_item <= representation_item representation_item.name = 'prefix text'} draughting_elements </pre>

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
structured- dimension- callout to draughting- callout (as suffix- callout)	PATH			structured_dimension_callout <- draughting_callout_relationship_relatng_draughting_callout draughting_callout_relationship {draughting_callout_relationship => dimension_callout_component_relationship} {draughting_callout_relationship.name = 'suffix'} draughting_callout_relationship_related_draughting_callout -> draughting_callout => {draughting_callout.contents[] -> draughting_callout_element annotation_text_occurrence = annotation_text_occurrence annotation_text_occurrence <= annotation_text_occurrence <= styled_item <= representation_item representation_item.name = 'suffix text'} draughting_elements
structured- dimension- callout to annotation- symbol (as symbol)	PATH			structured_dimension_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[] -> draughting_callout_element = annotation_symbol_occurrence annotation_symbol_occurrence
structured- dimension- callout to text- string (as tolerance- value)	PATH			structured_dimension_callout <= draughting_callout {draughting_callout => draughting_elements} draughting_callout.contents[] -> draughting_callout_element = annotation_text_occurrence annotation_text_occurrence <= annotation_text_occurrence <= {annotation_text_occurrence => draughting_annotation_occurrence} styled_item {styled_item <= }

Table 10 – Mapping table dimensioned documentation UoF (DI1) (continued)

Application element	AIM element	Source	Rules	Reference path
structured_ dimension_ callout to text_ string (as unit_text)	PATH			<pre> representation_item representation_item.name = 'tolerance value' styled_item -> representation_item => geometric_representation_item => #1: (composite_text composite_text.collected_text[j] -> text_or_character = text_literal text_literal #2: (text_literal)) structured_dimension_callout <= draughting_callout {draughting_callout => draughting_elements draughting_callout.contents[j] -> draughting_callout_element = annotation_text_occurrence annotation_text_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence styled_item {styled_item <= representation_item representation_item.name = 'unit text' styled_item -> representation_item => geometric_representation_item => #1: (composite_text composite_text.collected_text[j] -> text_or_character = text_literal text_literal #2: (text_literal)) } } } } } {annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence } } </pre>
TERMINATOR_ SYMBOL	annotation_symbol_ occurrence	504	115	

Table 10 – Mapping table dimensioned documentation UoF (DI1) (concluded)

Application element	AIM element	Source	Rules	Reference path
symbol_type	pre_defined_item.name	504		<pre> styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = pre_defined_symbol pre_defined_symbol => pre_defined_terminator_symbol} annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = pre_defined_symbol pre_defined_symbol <= {pre_defined_symbol => pre_defined_terminator_symbol} pre_defined_item pre_defined_item.name </pre>
UNSTRUCTURED- DIMENSION- CALLOUT	draughting_callout	506		
unstructured- dimension- callout to draughting- callout (as basis- callout)	IDENTIAL MAPPING			<pre> draughting_callout => draughting_elements </pre>

Table 11 – Mapping table documentation UoF (DOI)

Application element	AIM element	Source	Rules	Reference path
ANNOTATION_CURVE	annotation_curve_ occurrence	504		{annotation_curve_occurrence <= annotation_occurrence => draughting_annotation_occurrence}
annotation_curve to curve_ appearance (as assigned_ appearance)	PATH			annotation_curve_occurrence <= styled_item presentation_style_assignment presentation_style_assignment.styles[i] -> presentation_style_select presentation_style_select = curve_style curve_style
ANNOTATION_ELEMENT	#1: (annotation_curve_ occurrence) #2: (annotation_fill_area_occurrence) #3: (annotation_subfigure_occurrence) #4: (annotation_symbol_occurrence) #5: (annotation_text_ occurrence)	504 504 504 504 504	107	#1: {annotation_curve_occurrence <= annotation_occurrence => draughting_annotation_occurrence} #2: {annotation_fill_area_occurrence <= annotation_occurrence => draughting_annotation_occurrence} #3: (annotation_subfigure_occurrence <= annotation_symbol_occurrence <= annotation_symbol_occurrence <= annotation_occurrence => draughting_annotation_occurrence) #4: {annotation_symbol_occurrence <= annotation_occurrence => draughting_annotation_occurrence} #6: (representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_source -> symbol_representation_map) #7: (representation_item =>
#1: If the annotation_ element is an annotation_ curve. #2: If the annotation_ element is a fill_area. #3: If the annotation_ element is an annotation_ subfigure. #4: If the annotation_ element is an annotation_ symbol. #5: If the annotation_ element is a text. #6: If the annotation_ symbol is user-defined. #7: If the annotation_ symbol is externally defined. #8: If the annotation_ symbol is pre-defined.				

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = externally_defined_symbol) #8: (representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = pre_defined_symbol)}) #5: ({annotation_text_occurrence <= annotation_occurrence => draughting_annotation_occurrence}) </pre>
ANNOTATION- PLACED- ANNOTATION #1: If the draughting- annotation is not a callout. #2: If the draughting- annotation is a callout.	#1: (draughting- annotation_occurrence) #2: (draughting- elements)	504 506	107,113	<pre> #1: (draughting_annotation_occurrence <= annotation_occurrence) #2: (draughting_elements <= draughting_callout) </pre>
ANNOTATION- SUBFIGURE	annotation_subfigure- occurrence	504		<pre> annotation_subfigure_occurrence <= annotation_symbol_occurrence <= {annotation_symbol_occurrence <= annotation_occurrence => draughting_annotation_occurrence} </pre>
rotation	axis2_placement_2d.ref- direction	504		<pre> annotation_subfigure_occurrence <= annotation_symbol_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_target -> </pre>

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation_item => geometric_representation_item => symbol_target symbol_target.placement -> axis2_placement axis2_placement = axis2_placement_2d axis2_placement_2d axis2_placement_2d.ref_direction </pre>
scale	<pre> [symbol_target.x- scale] [symbol_target.y- scale] </pre>	504 504		<pre> annotation_subfigure_occurrence <= annotation_symbol_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_target -> representation_item => geometric_representation_item => symbol_target [symbol_target.x_scale] [symbol_target.y_scale] </pre>
<pre> annotation- subfigure to annotation- subfigure- definition (as definition) </pre>	PATH			<pre> annotation_subfigure_occurrence <= annotation_symbol_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_source -> representation_map => symbol_representation_map </pre>

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
annotation_- subfigure to point_2d (as position)	PATH			annotation_subfigure_occurrence <= annotation_symbol_occurrence <= annotation_occurrence <= styled_item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item_mapping_target -> representation_item => geometric_representation_item => symbol_target symbol_target_placement -> axis2_placement axis2_placement = axis2_placement_2d axis2_placement_2d <= placement placement.location -> cartesian_point
ANNOTATION_- SUBFIGURE_- DEFINITION	symbol_representation_- map	504		{symbol_representation_map <= representation_map representation_map.mapped_representation -> representation => symbol_representation => draughting_subfigure_representation} symbol_representation_map <= representation_map representation_map.mapped_representation -> representation
name	representation.name	504		representation.name

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
annotation_- subfigure_- definition to rectangular_area (as blanking_- box)	PATH			symbol_representation_map <= representation_map representation_map.mapped_representation -> representation representation.items[j] -> representation_item => geometric_representation_item => planar_extent => planar_box
annotation_- subfigure_- definition to cartesian_- coordinate_space_- 2d (as coordinate_- space)	PATH			symbol_representation_map <= representation_map representation_map.mapped_representation -> representation representation.context_of_items -> representation_context => geometric_representation_context
ANNOTATION_- SUBFIGURE_- DEFINITION_- ELEMENT #1: If the draughting_- annotation is not a callout. #2: If the draughting_- annotation is a callout. #3: If the annotation_- element is a text. #4: If the annotation_- element is an annotation_- curve. #5: If the annotation_- element is an annotation_- symbol.	#1: (draughting_- annotation_occurrence) #2: (draughting_- elements)	504 506	107,113	#1: (draughting_annotation_occurrence annotation_occurrence) #2: (draughting_elements <= draughting_callout)

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
annotation_- subfigure_- definition_- element to layer (as annotation_- layers)	PATH		36	<pre> #1: (draughting_annotation_occurrence <= annotation_occurrence <= styled_item <=) #2: (draughting_elements <= draughting_callout <= geometric_representation_item <=) representation_item layered_item = representation_item layered_item <- presentation_layer_assignment presentation_layer_assignment #1: (draughting_annotation_occurrence <= annotation_occurrence <=) #2: (draughting_elements <= draughting_callout draughting_callout.contents[i] -> draughting_callout_element draughting_callout_element = annotation_text_occurrence annotation_text_occurrence <=) #3: (draughting_callout_element = annotation_text_occurrence annotation_text_occurrence <=) #4: (draughting_callout_element = annotation_curve_occurrence annotation_curve_occurrence <=) #5: (draughting_callout_element = annotation_symbol_occurrence annotation_symbol_occurrence <=) annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item invisible_item = styled_item invisible_item <- invisibility.invisible_items[i] invisibility </pre>
annotation_- subfigure_- definition_- element to visibility (as annotation_- visibility)	PATH			

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
annotation_- subfigure_- definition_- element to annotation_- subfigure_- definition (as containing_- definition)	PATH			<pre> #1: (draughting_annotation_occurrence <= annotation_occurrence <= styled_item <=) #2: (draughting_elements <= draughting_callout <= geometric_representation_item <=) representation_item <- representation.items[] representation <- representation_map.mapped_representation representation_map => symbol_representation_map </pre>
annotation_- subfigure_- definition_- element to annotation_- placed_- annotation (as used_- annotation)	IDENTICAL MAPPING			
ANNOTATION_- SYMBOL #1: If the annotation_- symbol is user-defined. #2: If the annotation_- symbol is externally defined. #3: If the annotation_- symbol is pre-defined. #4: If the colour is user-defined. #5: If the colour is pre-defined.	annotation_symbol_- occurrence	504		<pre> {annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item #1: (representation_item -> mapped_item {mapped_item => annotation_symbol}) mapped_item.mapping_source -> symbol_representation_map) #2: (representation_item => geometric_representation_item => defined_symbol </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> defined_symbol.definition -> defined_symbol.select = externally_defined_symbol #3: (representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = pre_defined_symbol)} annotation_symbol_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_target -> representation_item => geometric_representation_item => symbol_target symbol_target.placement -> axis2_placement axis2_placement = axis2_placement_2d axis2_placement_2d axis2_placement_2d.ref_direction annotation_symbol_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_target -> representation_item => geometric_representation_item => symbol_target </pre>
rotation	axis2_placement_2d.ref-direction	504		
scale	[symbol_target.x-scale] [symbol_target.y-scale]	504 504		

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
annotation_- symbol to rectangular_area (as blanking_- box)	PATH			<pre> symbol_target_x_scale symbol_target_y_scale annotation_symbol_occurrence <= styled_item annotation_occurrence <= styled_item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_source -> symbol_representation_map <= representation_map representation_map.mapped_representation -> representation {representation => symbol_representation => draughting_symbol_representation} representation.items[i] -> representation_item => geometric_representation_item => planar_extent => planar_box annotation_symbol_occurrence <= annotation_occurrence <= styled_item presentation_style_assignment presentation_style_assignment.styles[i] -> presentation_style_select presentation_style_select = symbol_style symbol_style symbol_style_of_symbol -> symbol_style_select = symbol_colour symbol_colour symbol_colour.colour_of_symbol -> </pre>
annotation_- symbol to colour (as overriding_- colour)	PATH			

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
annotation_2d symbol to point_2d (as position)	PATH			<pre> colour => #4: (colour_specification => colour_rgb) #5: (pre_defined_colour => draughting_pre_defined_colour) annotation_symbol_occurrence <= annotation_occurrence <= styled_item styled_item_item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item_mapping_target -> representation_item => geometric_representation_item => symbol_target symbol_target_placement -> axis2_placement axis2_placement = axis2_placement_2d axis2_placement_2d <= placement placement_location -> cartesian_point </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>APPEARANCE</p> <p>#1: If the appearance is a curve_appearance.</p> <p>#2: If the fill_area_appearance is an externally defined hatching.</p> <p>#3: If the fill_area_appearance is an externally defined tiling.</p> <p>#4: If the fill_area_appearance is a solid fill area.</p> <p>#5: If the fill_area_appearance is a user-defined hatching.</p> <p>#6: If the fill_area_appearance is a user-defined tiling.</p> <p>#7: If text does not appear mirrored.</p> <p>#8: If text appears mirrored.</p>	<p>#1: (curve_style)</p> <p>#2: (externally_defined_hatch_style)</p> <p>#3: (externally_defined_tile_style)</p> <p>#4: (fill_area_style)</p> <p>#5: (fill_area_style_colour)</p> <p>#6: (fill_area_style_tiles)</p> <p>#7: (text_style_with_box_characteristics)</p> <p>#8: ([text_style_with_box_characteristics] [text_style_with_mirror])</p>	<p>504</p> <p>504</p> <p>504</p> <p>504</p> <p>504</p> <p>504</p> <p>504</p> <p>504</p>		
<p>CARTESIAN_COORDINATE_SPACE_2D</p> <p>length_measure_unit</p>	<p>geometric_representation_context</p> <p>length_unit</p>	<p>504</p> <p>504</p>	<p>34</p> <p>27,48</p>	<p>{geometric_representation_context geometric_representation_context.coordinate_space_dimension = 2}</p> <p>geometric_representation_context <= representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => length_unit</p>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
plane_angle_- measure.unit	plane_angle_unit	504	27,48	geometric_representation_context <= representation_context => global_unit_assigned_context. global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => plane_angle_unit
cartesian_- coordinate_space_- 2d to numerical_- precision (as precision)	PATH			geometric_representation_context <= representation_context => global_uncertainty_assigned_context
COLOUR #1: If the colour is user-defined. #2: If the colour is pre-defined.	#1: (colour_rgb) #2: (draughting_pre_- defined_colour)	504 212		#2: (draughting_pre_defined_colour <= pre_defined_colour)
CURVE_2D #1: If the curve_2D is a composite curve. #2: If the curve_2D is a polyline. #3: If the curve_2D is a trimmed curve. #4: If the curve_2D is an offset_curve_2D.	#1: (composite_curve) #2: (polyline) #3: (trimmed_curve) #4: (offset_curve_2D)	42 42 42 42	108,111	#1: ({composite_curve composite_curve.segments[i] -> composite_curve.segment composite_curve.segment.parent_curve -> curve => (bounded_curve => (composite_curve (polyline (trimmed_curve)) (offset_curve_2D))} #3: ({trimmed_curve trimmed_curve.basis_curve -> curve => (line (conic))} #4: ({offset_curve_2D offset_curve_2D.basis_curve ->

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> curve => bounded_curve => (composite_curve) (polyline) (trimmed_curve) (offset_curve_2D)} </pre>
<p>CURVE-APPEARANCE #1: If the colour is user-defined. #2: If the colour is pre-defined. #3: If the line_font is a user-defined font. #4: If the line_font is a pre-defined font. #5: If the line_font is an externally defined font.</p>	curve_style	504		
corner_styles	curve_style.with_ends_and_corners.curve_corners	46		<pre> curve_style => curve_style.with_ends_and_corners curve_style.with_ends_and_corners.curve_corners </pre>
curve_ends	curve_style.with_ends_and_corners.curve_corners	46		<pre> curve_style => curve_style.with_ends_and_corners.curve_ends </pre>
draughting_role	curve_style.name	504		
width	curve_style.curve_width	504		<pre> {curve_style.curve_width -> size_select = measure_with_unit measure_with_unit => length_measure_with_unit} </pre>
<p>curve_appearance to colour (as curve_colour)</p>	PATH			<pre> curve_style.curve_colour -> colour => #1: (colour_specification => colour_rgb) #2: (pre_defined_colour => </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
curve_appearance to line_font (as font)	PATH			draughting_pre_defined.colour curve_style curve_style.curve_font -> curve_font_or_scaled_curve_font_select curve_font_or_scaled_curve_font_select = curve_style_font_select #3: (curve_style_font_select = curve_style_font curve_style_font) #4: (curve_style_font_select = pre_defined_curve_font pre_defined_curve_font => draughting_pre_defined_curve_font) #5: (curve_style_font_select = externally_defined_curve_font externally_defined_curve_font)
DRAUGHTING- ANNOTATION #1: If the draughting- annotation is not a callout. #2: If the draughting- annotation is a callout.	#1: (draughting- annotation_occurrence) #2: (draughting- elements)	504 506	107,113	#1: (draughting_annotation_occurrence <= annotation_occurrence) #2: (draughting_elements <= draughting_callout)
DRAUGHTING-MODEL #1: If the draughting- annotation is not a callout. #2: If the draughting- annotation is a callout.	draughting_model	212	76	draughting_model <= representation
name	representation.name	43		draughting_model <= representation representation.name

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
draughting_model to cartesian_- coordinate_space_- 2d (as coordinate_- space)	PATH			draughting_model <= representation representation_context_of_items -> representation_context => geometric_representation_context
draughting_model to model_placed_- annotation (as element)	PATH			draughting_model <= representation representation_items[] -> representation_item => #1: (styled_item => annotation_occurrence => draughting_annotation_occurrence) #2: (geometric_representation_item => draughting_callout => draughting_elements)
DRAWING #1: If the language used in the drawing is not classified. #2: If the language used in the drawing is based on a classification.	drawing_revision	101		
drawing_- specification	document_id	41		drawing_revision specified_item = drawing_revision specified_item <- draughting_specification_reference_specified_items[] draughting_specification_reference <= document_reference document_reference.assigned_document -> document {document_kind -> document_type document_type.product_data_type = 'draughting_specification'} document_id

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AM element	Source	Rules	Reference path
drawing-type	drawing_definition. drawing_type	101		drawing_revision drawing_revision.drawing_identifier -> drawing_definition drawing_definition.drawing_type
id	drawing_definition. drawing_number	101		drawing_revision drawing_revision.drawing_identifier -> drawing_definition drawing_definition.drawing_number
language-code	#1: (draughting_title. language) #2: ((draughting_title.language)- [PATH])	101 101	109	drawing_revision draughting_titled_item = drawing_revision draughting_titled_item <- draughting_title.items[] draughting_title #1: (draughting_title.language) #2: ((draughting_title.language) [attribute_language_item = draughting_title attribute_language_item <- attribute_language_assignment.items[] attribute_language_assignment <= attribute_classification_assignment attribute_classification_assignment.attribute_name = 'language'])
name	draughting_title. contents	101	86	drawing_revision draughting_titled_item = drawing_revision draughting_titled_item <- draughting_title.items[1] draughting_title draughting_title.contents
source	identification_- assignment.assigned_id	41	25.53	drawing_revision external_identification_item = drawing_revision external_identification_item <- applied_external_identification_assignment.items[1] applied_external_identification_assignment <= external_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
version_id	drawing_revision. revision_identifier	101		identification_role.name = 'document source' identification_assignment.assigned_id
drawing to document_- designation (as extended_- designation)	PATH		25,37	drawing_revision item_designation_item = drawing_revision item_designation_item <- item_designation_assignment.items[1] {item_designation_assignment => identification_assignment <= identification_assignment_role -> identification_role identification_role.description = 'primary' object_reference_designation_assignment

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DRAWING_- ASSIGNMENT</p> <p>#1: If device is used in the context of UoF CF1. #2: If device is not used in the context of UoF CF1. #3: If function_unit is not used in the context of UoF CF1. #4: If function_unit is used in the context of UoF CF1. #5: If product_class is used with UoF EF1. #6: If product_class is used with UoF CF1. #7: If specification_category.implicit_exclusive_condition is FALSE. #8: If specification_category.implicit_exclusive_condition is TRUE. #9: If the drawing is assigned to an item_version. #10: If the drawing is not assigned to an item_version.</p>	<p>#9: (draughting_presentationItem) #10: (applied_presentationItem)</p>	<p>505 212</p>	60	<p>#9: (draughting_presentationItem <=) #10: (applied_presentationItem <=)</p>

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to drawing (as assigned-- drawing)	PATH			#10: (applied_presented_item <=) #9: (draughting_presented_item <=) presented_item <- presented_item_representation.item presented_item_representation presented_item_representation -> presentation_representation_select presentation_set => drawing_revision
drawing-- assignment to activity (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[j] -> presented_item_select presented_item_select = executed_action executed_action
drawing-- assignment to address (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[j] -> presented_item_select presented_item_select = address address
drawing-- assignment to approval (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[j] -> presented_item_select presented_item_select = approval approval
drawing-- assignment to approval_status (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[j] -> presented_item_select presented_item_select = approval_status approval_status

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to cable_pull-- information (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = representation representation
drawing-- assignment to class_category-- association (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_concept_feature_category_usage product_concept_feature_category_usage
drawing-- assignment to class_condition-- association (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_concept_feature_association product_concept_feature_association
drawing-- assignment to class_inclusion-- association (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_concept_feature_association product_concept_feature_association
drawing-- assignment to class-- specification-- association (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_concept_feature_association product_concept_feature_association

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to classification-- attribute (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = property_definition property_definition
drawing-- assignment to classification-- system (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = class_system class_system
drawing-- assignment to complex_product (as is_assigned-- to)				applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_definition_formation product_definition_formation
drawing-- assignment to connectivity-- definition (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = connectivity_definition connectivity_definition
drawing-- assignment to contract (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select = contract contract
drawing-- assignment to data_element (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select = representation representation

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to data_element_- definition (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = general_property general_property
drawing-- assignment to data_element_- specification (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = representation representation
drawing-- assignment to design_- discipline_item_- definition (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_definition product_definition
drawing-- assignment to device (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select #1: (presented_item_select = product_definition product_definition) #2: (presented_item_select = assembly_component_usage assembly_component_usage)
drawing-- assignment to function_- definition (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_definition product_definition

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to function-- interface (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = interface interface
drawing-- assignment to function_unit (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select #4: (presented_item_select = product_definition product_definition) #3: (presented_item_select = assembly_component_usage assembly_component_usage)
drawing-- assignment to function_version (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_definition_formation product_definition_formation
drawing-- assignment to functional-- connectivity-- definition (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = connectivity_definition connectivity_definition
drawing-- assignment to functionality (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product product

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to general-- classification (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = class class
drawing-- assignment to generic_note (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = note_representation note_representation
drawing-- assignment to interface (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = interface interface
drawing-- assignment to interface_port (as is_assigned-- to)				applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = terminal terminal
drawing-- assignment to interface-- terminal (as is_assigned-- to)				applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = terminal terminal
drawing-- assignment to item (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product product

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to item-- identification (as is_assigned-- to)	PATH			applied_presented_item.items[i] -> presented_item_select = applied_identification_assignment applied_identification_assignment
drawing-- assignment to item_version (as is_assigned-- to)	PATH			draughting_presented_item draughting_presented_item.items[i] -> draughting_presented_item_select draughting_presented_item_select = product_definition_formation product_definition_formation
drawing-- assignment to location (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = installation_location installation_location
drawing-- assignment to marking (as is_assigned-- to)	PATH			applied_presented_item.items[i] -> presented_item_select presented_item_select = equipment_marking equipment_marking
drawing-- assignment to node (as is_assigned-- to)	PATH			applied_presented_item presented_item_select = installation_node installation_node
drawing-- assignment to notification (as is_assigned-- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = notification notification

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to object-- designation (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = item_designation_assignment item_designation_assignment
drawing-- assignment to organization (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = organization organization
drawing-- assignment to path (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = path path
drawing-- assignment to path_node (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = vertex vertex
drawing-- assignment to person (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = person person
drawing-- assignment to physical-- assembly-- relationship (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = assembly_component_usage assembly_component_usage

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to physical_ instance (as is_assigned_ to)	PATH			applied_presentation_item applied_presentation_item.items[i] -> presentation_item_select presentation_item_select = product_definition product_definition
drawing-- assignment to port (as is_assigned_ to)				applied_presentation_item applied_presentation_item.items[i] -> presentation_item_select presentation_item_select = terminal terminal
drawing-- assignment to process_variable (as is_assigned_ to)	PATH			applied_presentation_item applied_presentation_item.items[i] -> presentation_item_select presentation_item_select = process_variable process_variable
drawing-- assignment to product_class (as is_assigned_ to)	PATH			applied_presentation_item applied_presentation_item.items[i] -> presentation_item_select presentation_item_select = product_concept #5: (product_concept) #6: (product_concept => product_class)
drawing-- assignment to product_ identification (as is_assigned_ to)	PATH			applied_presentation_item applied_presentation_item.items[i] -> presentation_item_select presentation_item_select = configuration_item configuration_item
drawing-- assignment to project (as is_assigned_ to)	PATH			applied_presentation_item applied_presentation_item.items[i] -> presentation_item_select presentation_item_select = organizational_project organizational_project

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to retention_period (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = action retention => retention
drawing-- assignment to route (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = installation_route installation_route
drawing-- assignment to section (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = installation_section installation_section
drawing-- assignment to section_end (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = installation_section_end installation_section_end
drawing-- assignment to section_- interface (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = installation_section_interface installation_section_interface
drawing-- assignment to security_- classification (as is_assigned_- to)	PATH			applied_presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = security_classification security_classification

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to security_level (as is_assigned_- to)	PATH			applied-presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = security_classification_level security_classification_level
drawing-- assignment to signal (as is_assigned_- to)	PATH			applied-presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = signal signal
drawing-- assignment to signal_value (as is_assigned_- to)	PATH			applied-presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = representation representation
drawing-- assignment to specification (as is_assigned_- to)	PATH			applied-presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_concept_feature product_concept_feature
drawing-- assignment to specification_- category (as is_assigned_- to)	PATH			applied-presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_concept_feature_category product_concept_feature_category #7: (product_concept_feature_category => #8: (product_concept_feature_category => exclusive_product_concept_feature_category)
drawing-- assignment to specification_- expression (as is_assigned_- to)	PATH			applied-presented_item applied_presented_item.items[i] -> presented_item_select presented_item_select = product_concept_feature product_concept_feature => conditional_concept_feature

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing-- assignment to specification_- inclusion (as is assigned_- to)	PATH			applied_presented_item presented_item_select product_concept_feature => inclusion_product_concept_feature
drawing-- assignment to technical_system (as is assigned_- to)	PATH			applied_presented_item presented_item_select product_definition_formation
drawing-- assignment to terminal (as is assigned_- to)				applied_presented_item presented_item_select = terminal terminal
drawing-- assignment to work_order (as is assigned_- to)	PATH			applied_presented_item presented_item_select action_directive
drawing-- assignment to work_request (as is assigned_- to)	PATH			applied_presented_item.items[i] -> presented_item_select versioned_action_request
DRAWING_SEQUENCE	drawing_revision_- sequence	101		
drawing_sequence to drawing (as following_- version)	PATH			drawing_revision_sequence drawing_revision_sequence.successor -> drawing_revision

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing_sequence to drawing (as preceding- version)	PATH			drawing_revision_sequence drawing_revision_predecessor -> drawing_revision
DRAWING_SHEET name	drawing_sheet_revision draughting_title. contents	101 101	76 87	drawing_sheet_revision draughting_titled_item = drawing_sheet_revision draughting_titled_item <- draughting_title.items[1] draughting_title draughting_title.contents drawing_sheet_revision <= presentation_area
orientation	representation_item. name	504		presentation_size_assignment_select = presentation_area presentation_size_assignment_select <- presentation_size.unit presentation_size.size -> planar_box planar_box.placement -> axis2_placement axis2_placement = axis2_placement_2d axis2_placement_2d <= placement <= geometric_representation_item <= representation_item representation_item.name {(representation_item.name = 'landscape') (representation_item.name = 'portrait')}
sheet_number	drawing_sheet_revision_- usage.sheet_number	101		drawing_sheet_revision <= presentation_area <- area_in_set.area area_in_set => drawing_sheet_revision_usage drawing_sheet_revision_usage.sheet_number

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
version_id	drawing_sheet_revision. revision_identifier	101		
drawing_sheet to drawing (as associated_ drawing)	PATH		106	drawing_sheet_revision <= presentation_area <- area_in_set.area area_in_set {area_in_set => drawing_sheet_revision_usage} area_in_set.in_set -> presentation_set => drawing_revision
drawing_sheet to cartesian_ coordinate_space_ 2d (as coordinate_ space)	PATH			drawing_sheet_revision <= presentation_area <= presentation_representation <= representation representation.context_of_items -> representation_context => geometric_representation_context
drawing_sheet to document_ designation (as extended_ designation)	PATH		25,40	drawing_sheet_revision item_designation_item = drawing_sheet_revision item_designation_item <- item_designation_assignment.items[1] item_designation_assignment => {item_designation_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.description = 'primary'} document_designation_assignment
drawing_sheet to rectangular_size (as size)	PATH		57	drawing_sheet_revision <= presentation_area presentation_size_assignment_select = presentation_area presentation_size_assignment_select <- presentation_size.unit presentation_size presentation_size.size ->

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				planar_box <= planar_extnt
DRAWING_SHEET_- LAYOUT	symbol_representation_- map	504	39	{symbol_representation_map <= representation_map_mapped_representation -> representation => symbol_representation => draughting_symbol_representation => drawing_sheet_layout}
DRAWING_SHEET_- RELATIONSHIP	representation_- relationship	43		
description	representation_- relationship_- description	43		
relation_type	representation_- relationship_name	43		{(representation_relationship_name (representation_relationship_name = 'derivation') (representation_relationship_name = 'substitution') (representation_relationship_name = 'translation') (representation_relationship_name = 'version hierarchy')) (representation_relationship_name = 'version sequence'))}
drawing_sheet_- relationship to drawing_sheet (as related)	PATH			representation_relationship representation_relationship.rep_2 -> representation => presentation_representation => presentation_area => drawing_sheet_revision
drawing_sheet_- relationship to drawing_sheet (as relating)	PATH			representation_relationship representation_relationship.rep_1 -> presentation_representation => presentation_area => drawing_sheet_revision
DRAWING_VIEW	presentation_view	46	76	
id	presentation_name	43		presentation_view <= presentation_representation <= presentation

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
rotation	axis2_placement_2d.ref-direction	504		<pre> representation.name presentation_view <= presentation_representation <= representation <- representation_map.mapped_representation mapped_item.mapping_source mapped_item mapped_item.mapping_target -> representation_item => geometric_representation_item => placement => axis2_placement_2d axis2_placement_2d.ref_direction presentation_view <= presentation_representation <= representation <- representation_map.mapped_representation mapped_item.mapping_source mapped_item <= representation_item <- representation.items[] representation => presentation_representation => presentation_area => drawing_sheet_revision presentation_view <= presentation_representation <= representation representation.context_of_items -> representation_context => geometric_representation_context </pre>
drawing_view to drawing_sheet (as containing-sheet)	PATH		59	
drawing_view to cartesian-coordinate-space-2d (as coordinate-space)	PATH			

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
drawing_view to point_2d (as position)	PATH			presentation_view <= presentation_representation <= representation <= representation_map.mapped_representation representation_map <= mapped_item.mapping_source mapped_item mapped_item.mapping_target -> representation_item => geometric_representation_item => placement {placement => axis2_placement_2d} placement.location -> cartesian_point
EXTERNALLY_DEFINED_HATCHING hatching_name	externally_defined_hatch_style externally_defined_item.item_id	504 504		externally_defined_hatch_style <= externally_defined_item externally_defined_item.item_id
hatching_reference	external_source.source_id	504		externally_defined_hatch_style <= externally_defined_item externally_defined_item.source -> external_source external_source.source_id
EXTERNALLY_DEFINED_LINE_FONT font_id	externally_defined_curve_font	504	11,46	
font_reference	externally_defined_item.item_id external_source.source_id	504 504		externally_defined_curve_font <= externally_defined_item externally_defined_item.item_id externally_defined_curve_font <= externally_defined_item externally_defined_item.source -> external_source external_source.source_id

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
EXTERNALLY_DEFINED_SYMBOL	annotation_symbol_occurrence	504	46	{annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item representation_item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = externally_defined_symbol}
symbol_name	externally_defined_item.item_id	504		annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item representation_item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = externally_defined_symbol <= externally_defined_item
symbol_reference	external_source.source_id	504		externally_defined_item.item_id annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item representation_item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = externally_defined_symbol

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
				externally_defined_symbol <= externally_defined_item externally_defined_item.source -> external_source external_source_id
EXTERNALLY_DEFINED_TEXT_FONT	externally_defined_text_font	504	46,116	
font_id	externally_defined_item.item_id	504		externally_defined_text_font <= externally_defined_item externally_defined_item.item_id
font_reference	external_source.source_id	504		externally_defined_text_font <= externally_defined_item externally_defined_item.source -> external_source external_source_id
EXTERNALLY_DEFINED_TILE	annotation_symbol_occurrence	504	46	{annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = externally_defined_symbol}
tile_name	externally_defined_item.item_id	504		annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
tile_reference	external_source.source_id	504		defined_symbol.definition -> defined_symbol.select = externally_defined_symbol externally_defined_symbol <= externally_defined_item externally_defined_item.id annotation_symbol.occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol.select = externally_defined_symbol externally_defined_symbol <= externally_defined_item externally_defined_item.source -> external_source external_source.source_id
EXTERNALLY_DEFINED_TILING	externally_defined_tile_style	504	46	
tiling_name	externally_defined_item.item_id	504		externally_defined_tile_style <= externally_defined_item externally_defined_item.item.id externally_defined_file_style <= externally_defined_item externally_defined_item.source -> external_source external_source.source_id
tiling_reference	external_source.source_id	504		

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>FILL_AREA #1: If the fill_area appearance is an externally defined hatching. #2: If the fill_area appearance is an externally defined tiling. #3: If the fill_area appearance is a solid fill area. #4: If the fill_area appearance is a user-defined hatching. #5: If the fill_area appearance is a user-defined tiling.</p>	<p>annotation_fill_area_occurrence</p>	504		<pre>{annotation_fill_area_occurrence <= annotation_occurrence => draughting_annotation_occurrence}</pre>
<p>fill_area to fill_area- appearance (as assigned- appearance)</p>	<p>PATH</p>			<pre>annotation_fill_area_occurrence <= annotation_occurrence <= styled_item presentation_style_assignment presentation_style_assignment.styles[j] -> presentation_style_select #1: (presentation_style_select = fill_area_style fill_area_style fill_area_style.fill_styles[j] -> fill_style_select = externally_defined_hatch_style externally_defined_hatch_style) #2: (presentation_style_select = fill_area_style fill_area_style fill_area_style.fill_styles[j] -> fill_style_select = externally_defined_tile_style externally_defined_tile_style) #3: (presentation_style_select = fill_area_style</pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> fill_area_style #4: (presentation_style_select = fill_area_style fill_area_style fill_area_style.fill_styles[i] -> fill_style_select = fill_area_style.colour fill_area_style.colour) #5: (presentation_style_select = fill_area_style fill_area_style fill_area_style.fill_styles[i] -> fill_style_select = fill_area_style.tiles fill_area_style.tiles) </pre>
fill_area to fill_area_- boundary (as boundary)	PATH			<pre> annotation_fill_area_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => geometric_representation_item => annotation_fill_area annotation_fill_area.boundaries[i] -> curve </pre>
fill_area to point_2d (as reference_- point)	PATH			<pre> annotation_fill_area_occurrence annotation_fill_area_occurrence.fill_style_target -> point => cartesian_point </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>FILL_AREA_-APPEARANCE #1: If the fill-area appearance is an externally defined hatching. #2: If the fill-area appearance is an externally defined tiling. #3: If the fill-area appearance is a solid fill area. #4: If the fill-area appearance is a user-defined hatching. #5: If the fill-area appearance is a user-defined tiling.</p>	<p>#1: (externally_defined_hatch_style) #2: (externally_defined_tile_style) #3: (fill_area_style) #4: (fill_area_style_colour) #5: (fill_area_style_tiles)</p>	<p>504 504 504 504 504</p>		
<p>draughting_role</p>	<p>fill_area_style.name</p>	<p>504</p>		<p>#1: (externally_defined_hatch_style fill_style_select = externally_defined_hatch_style fill_style_select <- fill_area_style.fill_styles[i] fill_area_style) #2: (externally_defined_tile_style fill_style_select = externally_defined_tile_style fill_style_select <- fill_area_style.fill_styles[i] fill_area_style) #3: (fill_area_style) #4: (fill_area_style.colour fill_style_select = fill_area_style.colour fill_style_select <- fill_area_style.fill_styles[i] fill_area_style) #5: (fill_area_style.tiles</p>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> fill_style.select = fill_area_style.tiles fill_style.select <- fill_area_style.fill_styles[i] fill_area_style fill_area_style.name </pre>
<p>FILL-AREA-BOUNDARY #1: If the curve_2D is a composite curve. #2: If the curve_2D is a polyline. #3: If the curve_2D is a trimmed_curve. #4: If the curve_2D is an offset_curve_2D.</p>	curve	504		<pre> {curve => bounded_curve => #1: {composite_curve {composite_curve composite_curve.segments[i] -> composite_curve.segment composite_curve.segment.parent_curve -> curve => bounded_curve => (composite_curve) (polyline) (trimmed_curve)} #2: (polyline) #3: (trimmed_curve {trimmed_curve trimmed_curve.basis_curve -> curve => (line) (conic)} #4: (offset_curve_2D)} curve <= </pre>
<p>fill_area- boundary to annotation_curve (as defining- curve)</p>	PATH			<pre> geometric_representation_item <= representation_item <- styled_item.item styled_item => annotation_occurrence => annotation_curve_occurrence </pre>
GROUP	group	41		
description	group.description	41		
id	group.name	41		

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
group to group- element (as members)	PATH		49	<pre> group <- (group_assignment.assigned_group group_assignment => draughting_group_elements.assignment draughting_group_elements.items[i] -> draughting_group_element) (group_relationship.relatng_group group_relationship group_relationship.related_group -> group) </pre>
GROUP_ANNOTATION_ ELEMENT #1: If the draughting- annotation is not a callout. #2: If the draughting- annotation is a callout.	<pre> #1: (draughting- annotation_occurrence) #2: (draughting- elements) </pre>	<p>504</p> <p>506</p>	<p>49,107, 113</p>	<pre> #1: (draughting_annotation_occurrence <= {draughting_annotation_occurrence draughting_group_element = draughting_annotation_occurrence draughting_group_element <- draughting_group_elements.assignment.items[i] draughting_group_elements.assignment <= group_assignment group_assignment.assigned_group -> group } annotation_occurrence) #2: (draughting_elements <= {draughting_elements draughting_group_element = draughting_elements draughting_group_element <- draughting_group_elements.assignment.items[i] draughting_group_elements.assignment <= group_assignment group_assignment.assigned_group -> group } draughting_callout) </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
group_annotation-- element to draughting-- annotation (as basis-- annotation)	IDENTICAL MAPPING			
GROUP_ELEMENT #1: If the draughting-- annotation is not a callout. #2: If the draughting-- annotation is a callout. #3: If the group_element is a subgroup.	#1: (draughting-- annotation_occurrence) #2: (draughting-- elements) #3: (group)	504 506 41	49,107, 113	#1: (draughting_annotation_occurrence <= {draughting_annotation_occurrence draughting_group_element = draughting_annotation_occurrence draughting_group_element <- draughting_group_elements_assignment.items[i] draughting_group_elements_assignment <= group_assignment group } annotation_occurrence) #2: (draughting_elements <= {draughting_elements draughting_group_element = draughting_elements draughting_group_element <- draughting_group_elements_assignment.items[i] draughting_group_elements_assignment <= group_assignment group } draughting_callout) #3: ({ group <- group_relationship.related_group group_relationship group_relationship.related_group -> group })
HATCHING_PATTERN	fill_area_style-- hatching	504		

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
angle	fill_area_style_hatching.hatch_line_angle	504		
displacement	one_direction_repeat_factor.repeat_factor	504		fill_area_style_hatching fill_area_style_hatching.start_of_next_hatch_line -> one_direction_repeat_factor one_direction_repeat_factor.repeat_factor
hatching_pattern to curve appearance (as hatch_line appearance)	PATH			fill_area_style_hatching fill_area_style_hatching.hatch_line_appearance -> curve_style
LAYER	presentation_layer_assignment	46		
description	presentation_layer_assignment.description	46		
layer_id	presentation_layer_assignment.name	46		
layer to visibility (as element visibility)	PATH			presentation_layer_assignment invisible_item = presentation_layer_assignment invisible_item < invisible_items[j] invisible
LINE_FONT #1: If the line_font is a user-defined font. #2: If the line_font is a pre-defined font. #3: If the line_font is an externally defined font.	#1: (curve_style_font) #2: (draughting_pre_defined_curve_font) #3: (externally_defined_curve_font)	504 212 504	11,46, 114	draughting_pre_defined_curve_font <= pre_defined_curve_font

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
MODEL_PLACED_ANNOTATION #1: If the draughting_ANNOTATION element is not a callout. #2: If the draughting_ANNOTATION element is a callout. #3: If the annotation_ELEMENT is a text. #4: If the annotation_ELEMENT is an annotation_CURVE. #5: If the annotation_ELEMENT is an annotation_SYMBOL.	#1: (draughting_ANNOTATION_occurrence) #2: (draughting_elements)	504 506	107,113	#1: (draughting_ANNOTATION_occurrence <= ANNOTATION_occurrence) #2: (draughting_elements <= draughting_callout)
model_placed_ANNOTATION_layer (as annotation_layers)	PATH		35	#1: (draughting_ANNOTATION_occurrence <= ANNOTATION_occurrence <= STYLED_ITEM <=) #2: (draughting_elements <= draughting_callout <= geometric_representation_ITEM <=) representation_ITEM layered_ITEM <= presentation_LAYER_assignment_assigned_ITEMS[i] presentation_LAYER_assignment
model_placed_ANNOTATION_visibility (as annotation_visibility)	PATH			#1: (draughting_ANNOTATION_occurrence <= ANNOTATION_occurrence <=) #2: (draughting_elements <= draughting_callout draughting_callout.contents[i] -> draughting_callout_ELEMENT draughting_callout_ELEMENT = annotation_TEXT_occurrence ANNOTATION_TEXT_occurrence <=) #3: (draughting_callout_ELEMENT = annotation_TEXT_occurrence ANNOTATION_TEXT_occurrence <=) #4: (draughting_callout_ELEMENT = annotation_CURVE_occurrence ANNOTATION_CURVE_occurrence <=)

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> annotation_curve_occurrence <= annotation_callout_element = annotation_symbol_occurrence annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} invisible_item = styled_item invisible_item <- visibility.invisible_items[i] visibility </pre>
NUMERICAL- PRECISION angular- precision	global_uncertainty_- assigned_context uncertainty_measure_- with_unit	43 43	95	<pre> global_uncertainty_assigned_context global_uncertainty_assigned_context.uncertainty[i] -> uncertainty_measure_with_unit {uncertainty_measure_with_unit <= measure_with_unit => plane_angle_measure_with_unit} </pre>
distance_- precision	uncertainty_measure_- with_unit	43		<pre> global_uncertainty_assigned_context global_uncertainty_assigned_context.uncertainty[i] -> uncertainty_measure_with_unit {uncertainty_measure_with_unit <= measure_with_unit => length_measure_with_unit} </pre>
POINT_2D	cartesian_point	504		<pre> cartesian_point <= point <= geometric_representation_item geometric_representation_item.dim = 2} </pre>
PREDEFINED- COLOUR colour_id	draughting_pre_defined_- colour pre_defined_item.name	212 41		<pre> draughting_pre_defined_colour <= pre_defined_colour <= draughting_pre_defined_colour <= pre_defined_colour <= pre_defined_item pre_defined_item.name </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AM element	Source	Rules	Reference path
PREDEFINEDLINE_FONT font_id	draughting_pre_defined_curve_font pre_defined_item.name	212 41	11,114	draughting_pre_defined_curve_font <= pre_defined_curve_font draughting_pre_defined_curve_font <= pre_defined_curve_font <= pre_defined_item.name
PREDEFINEDTEXT_FONT #1: If the text_font is pre-defined in the context of draughting. #2: If the text_font is pre-defined.	#1: (draughting_pre_defined_text_font) #2: (pre_defined_text_font)	212 46	116	draughting_pre_defined_text_font <= pre_defined_text_font
font_id	pre_defined_item.name	41		#1: (draughting_pre_defined_text_font <= pre_defined_text_font <= pre_defined_item.name) #2: ({pre_defined_item.name (pre_defined_item.name = 'IEC 61286') (pre_defined_item.name = 'ISO 646') (pre_defined_item.name = 'ISO 6937') (pre_defined_item.name = 'ISO 8859-1') (pre_defined_item.name = 'ISO 10646')})
RECTANGULAR_AREA height position width	planar_box planar_extent.size_in_y planar_box.placement planar_extent.size_in_x	504 504 504 504		planar_box <= planar_extent planar_extent.size_in_y planar_box <= planar_extent planar_extent.size_in_x

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
SHEETPLACED_ANNOTATION #1: If the draughting_ANNOTATION is not a callout. #2: If the draughting_ANNOTATION is a callout. #3: If the annotation_ELEMENT is a text. #4: If the annotation_ELEMENT is an annotation_CURVE. #5: If the annotation_ELEMENT is an annotation_SYMBOL.	#1: (draughting_ANNOTATION_occurrence) #2: (draughting_ELEMENTS)	504 506	107,113	#1: (draughting_ANNOTATION_occurrence <= annotation_occurrence) #2: (draughting_ELEMENTS <= draughting_CALLOUT)
sheet_placed_ANNOTATION to layer (as annotation_LAYERS)	PATH		38	#1: (draughting_ANNOTATION_occurrence <= annotation_occurrence <= styled_ITEM <=) #2: (draughting_ELEMENTS <= draughting_CALLOUT <= geometric_representation_ITEM <= representation_ITEM layered_ITEM <= presentation_LAYER_assigned_ITEMS[i]) #3: (draughting_ANNOTATION_occurrence <= presentation_LAYER_assigned_ITEMS[i]) #4: (draughting_ANNOTATION_occurrence <= annotation_occurrence <=) #5: (draughting_ELEMENTS <= draughting_CALLOUT <= draughting_CALLOUT_CONTENTS[i] -> draughting_CALLOUT_ELEMENT <= annotation_TEXT_occurrence <=) #6: (draughting_CALLOUT_ELEMENT = annotation_CURVE_occurrence <=)
sheet_placed_ANNOTATION to visibility (as annotation_VISIBILITY)	PATH			#1: (draughting_ANNOTATION_occurrence <= annotation_occurrence <=) #2: (draughting_ELEMENTS <= draughting_CALLOUT <= draughting_CALLOUT_CONTENTS[i] -> draughting_CALLOUT_ELEMENT <= annotation_TEXT_occurrence <=) #3: (draughting_CALLOUT_ELEMENT = annotation_CURVE_occurrence <=) #4: (draughting_CALLOUT_ELEMENT = annotation_CURVE_occurrence <=)

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				#5: (draughting_callout_element = annotation_symbol_occurrence <=> annotation_symbol_occurrence <=> {annotation_occurrence <=> draughting_annotation_occurrence}) styled_item invisible_item = styled_item invisible_item <- invisibility.invisible_items[i] invisibility
SOLID_FILL_AREA #1: If the colour is user-defined. #2: If the colour is pre-defined.	fill_area_style_colour	504		
solid_fill_area to colour (as fill_colour)	PATH			fill_area_style_colour fill_area_style_colour.fill_colour -> colour => #1: (colour_specification => colour_rgb) #2: (pre_defined_colour => draughting_pre_defined_colour)
SUB_GROUP	group	41		{ group <- group_relationship.related_group group_relationship group_relationship.related_group -> group }
sub_group to group (as basis_group)	IDENTICAL MAPPING			

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>TEXT</p> <p>#1: If the text is a composite.</p> <p>#2: If the text is a single literal.</p> <p>#3: If the curve_2D is a composite curve.</p> <p>#4: If the curve_2D is a polyline.</p> <p>#5: If the curve_2D is a trimmed-curve.</p>	<p>annotation_text_ occurrence</p>	504		<pre>{annotation_text_occurrence <= annotation_occurrence => draughting_annotation_occurrence}</pre>
<p>alignment</p>	<p>text_literal.alignment</p>	504		<pre>annotation_text_occurrence <= styled_item styled_item.item -> representation_item => geometric_representation_item => #1: (composite_text composite_text.collected_text[i] -> text_or_character = text_literal text_literal) #2: (text_literal text_literal.alignment {(text_literal.alignment = 'centre') (text_literal.alignment = 'left') (text_literal.alignment = 'right')})</pre>
<p>language_code</p>	<p>group.name</p>	41	9,15,89	<pre>annotation_text_occurrence language_item = annotation_text_occurrence language_item <- language_assignment.items[i] language_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'language'}</pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
mirror_angle	text_style_with_mirror. mirror_placement	504		classification_assigned_classification -> group {group.description = 'ISO 639-2 language code'} group.name annotation_text_occurrence <= annotation_occurrence <= styled_item styled_item.styles[i] -> presentation_style_assignment presentation_style_assignment.styles[i] -> presentation_style_select presentation_style_select = text_style text_style => text_style_with_mirror text_style_with_mirror.mirror_placement
text to rectangular_area (as blanking_ box)	PATH			annotation_text_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => geometric_representation_item => #1: (composite_text => composite_text_with_blanking_box composite_text_with_blanking_box.blanking -> #2: (text_literal => text_literal_with_blanking_box text_literal_with_blanking_box.blanking -> planar_box
text to annotation_curve (as boundary_of_ displayed_box)	PATH			annotation_text_occurrence <= annotation_occurrence <= styled_item styled_item.item -> representation_item => geometric_representation_item => #1: (composite_text => composite_text_with_associated_curves

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> composite_text_with_associated_curves.associated_curves -> #2: (text_literal => text_literal_with_associated_curves text_literal_with_associated_curves.associated_curves ->) curve <-> {curve => bounded_curve => #3: (composite_curve {composite_curve composite_curve.segments[i] -> composite_curve_segment composite_curve_segment.parent_curve -> curve => bounded_curve => (composite_curve (polyline (trimmed_curve))} #4: (polyline #5: (trimmed_curve {trimmed_curve trimmed_curve.basis_curve -> curve => (line) (conic)})} styled_item.item styled_item => annotation_occurrence => annotation_curve_occurrence annotation_text_occurrence <=> annotation_occurrence <=> styled_item styled_item.styles[i] -> presentation_style_assignment presentation_style_assignment.styles[i] -> presentation_style_select presentation_style_select = text_style </pre>
text to text_- appearance (as default_- appearance)	PATH			

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
text to rectangular_area (as surrounding--box)	PATH			text_style ==> (text_style_with_box_characteristics ([text_style_with_box_characteristics] [text_style_with_mirror]) annotation_text_occurrence <= styled_item styled_item.item -> representation_item ==> geometric_representation_item ==> composite_text ==> composite_text_with_extent composite_text_with_extent.extent -> planar_extent ==> planar_box

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>TEXT_APPEARANCE</p> <p>#1: If the text is a composite.</p> <p>#2: If the text is a single literal.</p> <p>#3: If the text_font is pre-defined in the context of draughting.</p> <p>#4: If the text_font is externally defined.</p> <p>#5: If the text_font is pre-defined.</p> <p>#6: If the colour is user-defined.</p> <p>#7: If the colour is pre-defined.</p> <p>#8: If text does not appear mirrored.</p> <p>#9: If text appears mirrored.</p>	<p>#8: (text_style_with_box_characteristics)</p> <p>#9: ([text_style_with_box_characteristics] [text_style_with_mirror])</p>	<p>504</p> <p>504</p> <p>504</p>		
<p>character_aspect_ratio</p>	<p>text_style_with_box_characteristics</p>	<p>504</p>		<p>text_style_with_box_characteristics</p> <p>{[text_style_with_box_characteristics.characteristics[i] -> box_characteristic_select = box_height]</p> <p>[text_style_with_box_characteristics.characteristics[i] -> box_characteristic_select = box_width]}</p>
<p>character_rotation_angle</p>	<p>text_style_with_box_characteristics</p>	<p>504</p>		<p>text_style_with_box_characteristics</p> <p>{[text_style_with_box_characteristics.characteristics[i] -> box_characteristic_select = box_rotate_angle]}</p>
<p>character_scale</p>	<p>text_style_with_box_characteristics</p>	<p>504</p>		<p>text_style_with_box_characteristics</p> <p>{[text_style_with_box_characteristics.characteristics[i] -> box_characteristic_select = box_height]</p> <p>[text_style_with_box_characteristics.characteristics[i] -></p>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
character_slant_angle	text_style_with_box_characteristics.characteristics	504		<pre> box_characteristic_select = box_width{ text_style_with_box_characteristics {text_style_with_box_characteristics.characteristics[i] -> box_characteristic_select = box_slant_angle} text_style_with_box_characteristics <= text_style presentation_style_select = text_style presentation_style_select <- presentation_style_assignment.styles[i] presentation_style_assignment <- styled_item.styles[i] styled_item {styled_item => annotation_occurrence => annotation_text_occurrence} styled_item -> representation_item => geometric_representation_item => #1: (composite_text composite_text_collected_text[i] -> text_or_character = text_literal text_literal) #2: (text_literal) text_literal.font -> #3: (font_select = pre_defined_text_font pre_defined_text_font => draughting_pre_defined_text_font) #4: (font_select = externally_defined_text_font externally_defined_text_font) #5: (font_select = pre_defined_text_font pre_defined_text_font) text_style_with_box_characteristics <= text_style text_style.character_appearance -> character_style_select = text_style_for_defined_font </pre>
text_appearance_to_text_font (as font)	PATH		116	
text_appearance_to_colour (as text_colour)	PATH			

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> text_style_for_defined_font text_style_for_defined_font.text_colour -> colour => #6: (colour_specification => colour_rgb) #7: (pre_defined_colour => draughting_pre_defined_colour) </pre>
<p>TEXT_FONT #1: If the text_font is pre-defined in the context of draughting. #2: If the text_font is externally defined. #3: If the text_font is pre-defined.</p>	#1: (draughting_pre_defined_text_font) #2: (externally_defined_text_font) #3: (pre_defined_text_font)	212 46 46	46,116	
<p>TEXT_STRING #1: If the text is a composite. #2: If the text is a single literal.</p>	text_literal	504		
character_alignment	text_literal.alignment	504		<pre> {(text_literal.alignment = 'down') (text_literal.alignment = 'left') (text_literal.alignment = 'right') (text_literal.alignment = 'up')} </pre>
character_string overline_underscoreline	text_literal_literal text_literal_with_delineation.delineation	504 504		<pre> text_literal => text_literal_with_delineation {text_literal_with_delineation => draughting_text_literal_with_delineation} text_literal_with_delineation.delineation </pre>
rotation	axis2_placement_2d.ref_direction	504		<pre> text_literal text_literal_placement axis2_placement axis2_placement = axis2_placement_2d </pre>

Table 11 – Mapping table documentation UoF (DOI) (continued)

Application element	AIM element	Source	Rules	Reference path
text_string to text_appearance (as assigned appearance)	PATH			axis2_placement_2d axis2_placement_2d.ref_direction text_literal <= geometric_representation_item <= representation_item <= styled_item.item styled_item {styled_item => over_riding_styled_item => context_dependent_over_riding_styled_item context_dependent_over_riding_styled_item.style_context[j] -> style_context_select style_context_select = representation_item representation_item => geometric_representation_item => composite_text styled_item.styles[j] -> presentation_style_assignment presentation_style_assignment.styles[j] -> presentation_style_select presentation_style_select = text_style text_style => text_style_with_box_characteristics #2: (text_literal <=)
text_string to text (as containing text)	PATH			#1: (text_literal text_or_character = text_literal text_or_character <= composite_text.collected_text[j] composite_text <= geometric_representation_item <= representation_item <= styled_item.item styled_item => annotation_occurrence => annotation_text_occurrence

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
text-string to point_2d (as position)	PATH			text_literal.placement -> axis2_placement axis2_placement = axis2_placement_2d <= axis2_placement_2d <= placement placement.location -> cartesian_point text_literal => text_literal_with_extent text_literal_with_extent.extent -> planar_extent => planar_box
text-string to rectangular-area (as surrounding-box)	PATH			
TITLE #1: If the annotation_-symbol is user-defined. #2: If the annotation_-symbol is externally defined. #3: If the colour is user-defined. #4: If the colour is pre-defined.	annotation_symbol_occurrence	504		{annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => representation_item => #1: (geometric_representation_item => defined_symbol defined_symbol.definition -> defined_symbol_select = externally_defined_symbol) #2: (mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_source -> symbol_representation_map)} annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.styles[] -> presentation_style_assignment
tile to colour (as overriding-colour)	PATH			

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> presentation_style_assignment.styles[j] -> presentation_style_select presentation_style_select = symbol_style symbol_style symbol_style.style_of_symbol -> symbol_style_select = symbol_colour symbol_colour symbol_colour.colour_of_symbol -> colour => #3: (colour_specification => colour_rgb) #4: (pre_defined_colour => draughting_pre_defined_colour) </pre>
USER_DEFINED_COLOUR	colour_rgb	504		
blue_proportion	colour_rgb.blue	504		
colour_id	colour_specification.name	504		colour_rgb <= colour_specification colour_specification.name
green_proportion	colour_rgb.green	504		
red_proportion	colour_rgb.red	504		
USER_DEFINED_HATCHING	fill_area_style	504		<pre> {fill_area_style fill_area_style.fill_styles[j] -> fill_style_select = fill_area_style_hatching} fill_area_style fill_area_style.fill_styles[j] -> fill_style_select = fill_area_style_hatching fill_area_style_hatching </pre>
user_defined_hatching_to_hatching_pattern (as defining_pattern)	PATH			
USER_DEFINED_LINE_FONT	curve_style_font	504	11	
font_id	curve_style_font.name	504		
pattern	curve_style_font.pattern_list	504		

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
USER_DEFINED_SYMBOL	annotation_symbol_occurrence	504		<pre> {annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_source -> symbol_representation_map} </pre>
user_defined_symbol_to_user_defined_symbol_definition (as definition)	PATH			<pre> annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_source -> symbol_representation_map} </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>USER_DEFINED.- SYMBOL.- DEFINITION #1: If the annotation.- element is an annotation.- curve. #2: If the annotation.- element is a fill_area. #3: If the annotation.- element is an annotation.- subfigure. #4: If the annotation.- element is an annotation.- symbol. #5: If the annotation.- element is a text.</p>	<p>symbol_representation.- map</p>	504		<pre>{symbol_representation_map <= representation_map.mapped_representation -> representation => symbol_representation => draughting_symbol_representation }</pre>
<p>symbol.- definition_id</p>	<p>representation_item. name</p>	504		<pre>symbol_representation_map <= representation_map representation_map.mapped_representation -> representation representation.name</pre>
<p>user_defined.- symbol.- definition to rectangular_area (as blanking.- box)</p>	<p>PATH</p>			<pre>symbol_representation_map <= representation_map representation_map.mapped_representation -> representation representation.items[] -> representation_item => geometric_representation_item => planar_extent => planar_box</pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
user_defined_- symbol_- definition to annotation_- element (as components)	PATH			<pre> symbol_representation_map <= representation_map representation_map.mapped_representation -> representation representation.items[] -> representation_item => styled_item => annotation_occurrence => #1: (annotation_curve_occurrence) #2: (annotation_fill_area_occurrence) #3: (annotation_subfigure_occurrence) #4: (annotation_symbol_occurrence) #5: (annotation_text_occurrence) </pre>
user_defined_- symbol_- definition to cartesian_- coordinate_space_- 2d (as coordinate_- space)	PATH			<pre> symbol_representation_map <= representation_map representation_map.mapped_representation -> representation representation.context.of_items -> representation_context => [geometric_representation_context] [global_unit_assigned_context] </pre>
USER_DEFINED_- TITLE	annotation_symbol_- occurrence	504		<pre> {annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence styled_item } styled_item.item -> representation_item => mapped_item {mapped_item => annotation_symbol } mapped_item.mapping_source -> symbol_representation_map } </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
user_defined_- tile to user_- defined_symbol_- definition (as definition)	PATH			annotation_symbol_occurrence <= styled_item styled_item_item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item_mapping_source -> symbol_representation_map
USER_DEFINED_- TILING #1: If the annotation_- symbol is user-defined. #2: If the annotation_- symbol is externally defined.	fill_area_style_tiles	504		
angle	axis2_placement_2d.ref_- direction	504		fill_area_style_tiles fill_area_style_tiles.tiles[] -> fill_area_style_tile_shape_select = fill_area_style_tile_symbol_with_style fill_area_style_tile_symbol_with_style.symbol -> annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item_item -> representation_item => #1: (geometric_representation_item => defined_symbol {defined_symbol.definition -> defined_symbol_select = externally_defined_symbol} defined_symbol.target -> #2: (mapped_item {mapped_item =>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> annotation_symbol} mapped_item.mapping_target -> representation_item => geometric_representation_item => symbol_target symbol_target.placement -> axis2_placement axis2_placement = axis2_placement_2d axis2_placement_2d axis2_placement_2d.ref_direction fill_area_style_tiles fill_area_style.tiles.tiling_pattern -> two_direction_repeat_factor <= one_direction_repeat_factor one_direction_repeat_factor.repeat_factor fill_area_style_tiles fill_area_style.tiles.tiling_pattern -> two_direction_repeat_factor two_direction_repeat_factor.second_repeat_factor </pre>
repeat_vector.1	one_direction_repeat_factor.repeat_factor	504		
repeat_vector.2	two_direction_repeat_factor.second_repeat_factor	504		
scale	fill_area_style.tiles.tiling_scale	504		
user_defined_tiling to tile (as defining tile)	PATH			<pre> fill_area_style_tiles fill_area_style.tiles.tiles[i] -> fill_area_style.tile_shape_select = fill_area_style_tile_symbol_with_style fill_area_style_tile_symbol_with_style fill_area_style_tile_symbol_with_style.symbol -> annotation_symbol_occurrence </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>VIEW_DISPLAYED_- MODEL</p> <p>#1: If the draughting- annotation is not a callout. #2: If the draughting- annotation is a callout. #3: If the annotation- element is an annotation- curve. #4: If the annotation- element is an annotation- symbol. #5: If the annotation- element is a text. #6: If the appearance is overridden context independent. #7: If the appearance is overridden context dependent. #8: If the appearance is a curve_appearance. #9: If the fill_area appearance is an externally defined hatching. #10: If the fill_area appearance is an externally defined tiling. #11: If the fill_area appearance is a solid fill area. #12: If the fill_area appearance is a user-defined hatching.</p>	<p>camera_image_2d_with_- scale</p>	212	109	<p>camera_image_2d_with_scale <= camera_image</p>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
#13: If the fill_area appearance is a user-defined tiling. #14: If the text is a composite. #15: If the text is a single literal.				
scale	camera_image_2d_with_- scale.scale	212		
transformation	PATH			[camera_image_2d_with_scale <= camera_image <= mapped_item mapped_item.mapping_source -> representation_map {representation_map => camera_usage} representation_map.mapping_origin -> representation_item => geometric_representation_item => camera_model => camera_model.d2 camera_model.d2.view_window -> planar_box planar_box.placement -> axis2_placement = axis2_placement_2d axis2_placement_2d <= placement placement.location] [camera_image_2d_with_scale <= camera_image <= mapped_item {mapped_item.mapping_source -> representation_map {representation_map => camera_usage}

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation_map.mapping_origin -> representation_item => geometric_representation_item => camera_model => camera_model_d2} mapped_item.mapping_target -> representation_item => geometric_representation_item => planar_extent => planar_box planar_box.placement -> axis2_placement = axis2_placement_2d axis2_placement_2d <= placement placement.location] </pre>
view_displayed_- model to rectangular_area (as clipping)	PATH		110	<pre> camera_image_2d_with_scale <= camera_image <= mapped_item mapped_item.mapping_source -> representation_map {representation_map => camera_usage} representation_map.mapping_origin -> representation_item => geometric_representation_item => camera_model => camera_model_d2 camera_model_d2.view_window -> planar_box </pre>
view_displayed_- model to draughting_model (as displayed_- model)	PATH			<pre> camera_image_2d_with_scale <= camera_image <= mapped_item mapped_item.mapping_source -> representation_map representation_map.mapped_representation -> representation => </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
view_displayed_model to appearance (as overriding appearance)	PATH		58	<pre> draughting_model camera_image_2d_with_scale <= mapped_item mapped_item.mapping_source -> representation_map.mapped_representation -> representation {representation => draughting_model} representation.items[i] -> representation_item => styled_item {styled_item => #1: (annotation_occurrence => draughting_annotation_occurrence) #2: (annotation_occurrence => #3: (annotation_curve_occurrence draughting_callout_element = annotation_curve_occurrence) #4: (annotation_symbol_occurrence draughting_callout_element = annotation_symbol_occurrence) #5: (annotation_text_occurrence draughting_callout_element = annotation_text_occurrence) draughting_callout_element <- draughting_callout_contents[i] draughting_callout <= draughting_elements}} styled_item.styles[i] -> #6: (presentation_style_assignment) #7: (presentation_style_assignment {presentation_style_assignment => presentation_style_by_context presentation_style_by_context.style_context -> style_context_select style_context_select = presentation_item representation_item => </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> mapped_item => camera_image_2d_with_scale => presentation_style_assignment.styles[j] -> #8: (presentation_style_select = curve_style curve_style) #9: (presentation_style_select = fill_area_style fill_area_style) fill_area_style.fill_styles[j] -> fill_style_select = externally_defined_hatch_style externally_defined_hatch_style) #10: (presentation_style_select = fill_area_style fill_area_style) fill_area_style.fill_styles[j] -> fill_style_select = externally_defined_tile_style externally_defined_tile_style) #11: (presentation_style_select = fill_area_style fill_area_style) #12: (presentation_style_select = fill_area_style fill_area_style) fill_area_style.fill_styles[j] -> fill_style_select = fill_area_style_colour fill_area_style_colour) #13: (presentation_style_select = fill_area_style fill_area_style) fill_area_style.fill_styles[j] -> fill_style_select = fill_area_style_tiles fill_area_style_tiles) #14: (presentation_style_select = text_style text_style => text_style_with_box_characteristics) #15: (presentation_style_select = text_style text_style => [text_style_with_box_characteristics] [text_style_with_mirror]) </pre>

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
view_displayed_- model to drawing_- view (as presented_- in)	PATH		110	camera_image_2d_with_scale <= camera_image <= mapped_item <= {mapped_item.mapping_source -> representation_map {representation_map => camera_usage} representation_map.mapping_origin -> representation_item => geometric_representation_item => camera_model => camera_model_d2} representation_item <- representation_items[i] representation => representation_representation => presentation_view
VIEW_PLACED_- ANNOTATION #1: If the draughting_- annotation is not a callout. #2: If the draughting_- annotation is a callout. #3: If the annotation_- element is a text. #4: If the annotation_- element is an annotation_- curve. #5: If the annotation_- element is an annotation_- symbol.	#1: (draughting_- annotation_occurrence) #2: (draughting_- elements)	504 506	107, 113	#1: (draughting_annotation_occurrence <= annotation_occurrence) #2: (draughting_elements <= draughting_callout)

Table 11 – Mapping table documentation UoF (DO1) (continued)

Application element	AIM element	Source	Rules	Reference path
view_placed_ annotation to layer (as annotation_ layers)	PATH		41	(draughting_annotation_occurrence <= annotation_occurrence <= styled_item <=) (draughting_elements <= draughting_callout <= geometric_representation_item <=) representation_item layered_item = representation_item presentation_layer_assignment assigned_items[i] presentation_layer_assignment
view_placed_ annotation to visibility (as annotation_ visibility)	PATH			#1: (draughting_annotation_occurrence <= annotation_occurrence <=) #2: (draughting_elements <= draughting_callout draughting_callout.contents[i] -> draughting_callout_element annotation_text_occurrence <=) annotation_text_occurrence <=) #3: (draughting_callout_element = annotation_text_occurrence annotation_curve_occurrence <=) annotation_curve_occurrence <=) #4: (draughting_callout_element = annotation_curve_occurrence annotation_symbol_occurrence <=) annotation_symbol_occurrence <=) annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item invisible_item = styled_item invisible_item <= invisibility.invisible_items[i] invisibility

Table 11 – Mapping table documentation UoF (DO1) (concluded)

Application element	AIM element	Source	Rules	Reference path
view_placed_ annotation to drawing_view (as containing view)	PATH			(draughting_annotation_occurrence <= styled_item <=) (draughting_elements <= draughting_callout <= geometric_representation_item <=) representation_item <- representation.items[] representation ==> representation_representation ==> presentation_representation ==> presentation_view
VISIBILITY #1: If the visibility is defined context independent. #2: If the visibility is defined context dependent.	visibility	504		#1: (visibility) #2: (visibility {visibility ==> context_dependent_visibility presentation_representation ==> presentation_view})

Table 12 – Mapping table effectivity data UoF (EF1)

Application element	AIM element	Source	Rules	Reference path
<p>DATED-CONFIGURATION</p> <p>#1: If start_date or end_date are only specified as a certain calendar day.</p> <p>#2: If start_date or end_date are specified as a certain calendar day and a time.</p>	[datedEffectivity][configuration-effectivity]	41 44	42?	{datedEffectivity <= effectivity => product_definition_effectivity => configuration_effectivity}
end_date	#1: (calendar_date) #2: (date_and_time)	41 41	I6,17, 112	datedEffectivity dated_effectivity.effectivity_end_date -> date_time_or_event_occurrence date_time_or_event_occurrence = date_time_select #1: (date_time_select = date date => calendar_date) #2: (date_time_select = date_and_time date_and_time)
start_date	#1: (calendar_date) #2: (date_and_time)	41 41	I6,17, 112	datedEffectivity dated_effectivity.effectivity_start_date -> date_time_or_event_occurrence date_time_or_event_occurrence = date_time_select #1: (date_time_select = date date => calendar_date) #2: (date_time_select = date_and_time date_and_time)

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>EFFECTIVITY</p> <p>#1: If at least one of the attributes start_-, definition or end_-, definition is specified.</p> <p>#2: If neither one of the attributes start_-, definition and end_-, definition are specified.</p> <p>#3: If a start_-, definition is given and no period is specified.</p> <p>#4: If no start_-, definition is given or a period is specified.</p> <p>#5: If start_-, definition or end_-, definition reference a date-time with no time specified.</p> <p>#6: If start_-, definition or end_-, definition reference a date-time with a time specified.</p> <p>#7: If event_-, reference, offset is not instantiated.</p> <p>#8: If event_-, reference, offset is instantiated.</p>	effectivity	41	214:88	<pre> {#1: (effectivity => #3: (dated_effectivity) #4: (time_interval_based_effectivity) #2: (effectivity <- effectivity_relationship.related_effectivity effectivity_relationship effectivity_relationship.name = 'inheritance')}} </pre>
description	description_attribute.attribute_value	41		<pre> effectivity description_attribute.select = effectivity description_attribute.select <- description_attribute.described_item description_attribute description_attribute.attribute_value </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity- context	name_attribute, attribute_value	41	23,42,43	effectivity name_attribute_select = effectivity name_attribute_select <- name_attribute_named_item name_attribute name_attribute_attribute_value
id	effectivity.id	41		
version_id	identification_- assignment_assigned_id	41	25,53,99	effectivity identification_item = effectivity identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment_assigned_id
effectivity to organization (as concerned_- organization)	PATH		23,42,43	effectivity <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'concerned organization'} organization_assignment_assigned_organization -> organization
effectivity to date_time (as end_- definition)	PATH		18,19,80	effectivity => #3: (dated_effectivity dated_effectivity_end_date -> date_time_or_event_occurrence date_time_or_event_occurrence = date_time_select #5: (date_time_select = date date => calendar_date) #6: (date_time_select = date_and_time date_and_time))

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity to event_reference (as end-definition)	PATH		24,80	#4: (time_interval_based_effectivity time_interval_based_effectivity.effectivity_period -> time_interval => time_interval_with_bounds time_interval_with_bounds.secondary_bound -> date_time_or_event_occurrence date_time_or_event_occurrence = date_time_select #5: (date_time_select = date date => calendar_date) #6: (date_time_select = date_and_time date_and_time)) effectivity => #3: (dated_effectivity dated_effectivity.effectivity_end_date -> #4: (time_interval_based_effectivity time_interval_based_effectivity.effectivity_period -> time_interval => time_interval_with_bounds time_interval_with_bounds.secondary_bound -> date_time_or_event_occurrence date_time_or_event_occurrence = event_occurrence #7: (event_occurrence) #8: (event_occurrence => relative_event_occurrence) effectivity => time_interval_based_effectivity time_interval_based_effectivity.effectivity_period -> time_interval => time_interval_with_bounds time_interval_with_bounds.duration -> time_measure_with_unit
effectivity to duration (as period)	PATH			effectivity => time_interval_based_effectivity time_interval_based_effectivity.effectivity_period -> time_interval => time_interval_with_bounds time_interval_with_bounds.duration -> time_measure_with_unit

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity to date_time (as start- definition)	PATH			effectivity => #3: (dated_effectivity dated_effectivity_start_date -> date_time_or_event_occurrence #5: (date_time_select = date date => calendar_date) #6: (date_time_select = date_and_time date_and_time)) #4: (time_interval_based_effectivity time_interval_based_effectivity_period -> time_interval => time_interval_with_bounds time_interval_with_bounds_primary_bound -> date_time_or_event_occurrence #5: (date_time_select = date date => calendar_date) #6: (date_time_select = date_and_time date_and_time))
effectivity to event_reference (as start- definition)	PATH			effectivity => #3: (dated_effectivity dated_effectivity_start_date -> #4: (time_interval_based_effectivity time_interval_based_effectivity_period -> time_interval => time_interval_with_bounds time_interval_with_bounds_primary_bound -> date_time_or_event_occurrence #5: (date_time_select = date date => calendar_date) #6: (date_time_select = date_and_time date_and_time))

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>EFFECTIVITY- ASSIGNMENT #1: If effectivity- assignment.effectivity- indication is TRUE. #2: If effectivity- assignment.effectivity- indication is FALSE. #3: If device is not used in the context of UoF CF1. #4: If device is used in the context of UoF CF1. #5: If device- relationship is not of type 'substitution'. #6: If device- relationship is of type 'substitution'. #7: If effectivity- assignment is not used in the context of UoF CF1. #8: If effectivity- assignment is used in the context of UoF CF1. #9: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic- note, path, path_node, or work_order. #10: If data_element is associated to activity or work_order. #11: If data_element is associated to cable_pull- information, device-</p>	<p>#1: (applied- effectivity- assignment) #2: (applied- ineffectivity- assignment)</p>	<p>212 212</p>		<p>#1: (applied_effectivity_assignment <= effectivity_assignment) #2: (applied_ineffectivity_assignment <= effectivity_assignment)</p>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node. #12: If specification_- category.implicit_- exclusive_condition is FALSE. #13: If specification_- category.implicit_- exclusive_condition is TRUE. #14: If the document_- representation is not a physical_model. #15: If the document_- representation is a physical_model. #16: If function_unit is not used in the context of UoF CF1. #17: If function_unit is used in the context of UoF CF1.				
effectivity_- indication	IDENTICAL MAPPING			
role	object_role.name	41	28	#1: (applied_effectivity_assignment <=) effectivity_assignment effectivity_assignment.role -> object_role object_role.name {(object_role.name (object_role.name = 'actual') (object_role.name = 'planned'))

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to activity_- (as assigned_- effectivity)	PATH			(object_role.name = required')} #1: (applied_effectivity_assignment <=) #2: (applied_ineffectivity_assignment <=) effectivity_assignment.assigned_effectivity -> effectivity
effectivity_- assignment to activity_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item
effectivity_- assignment to alternate_item_- relationship (as is_applied_- to)	PATH			effectivity_item = applied_action_assignment #1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item
effectivity_- assignment to assembly_- component_- relationship (as is_applied_- to)	PATH			effectivity_item = alternate_product_relationship #1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item
effectivity_- assignment to assembly_- substitute_- relationship (as is_applied_- to)	PATH			effectivity_item = product_definition_relationship product_definition_relationship #1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = assembly_component_usage_substitute assembly_component_usage_substitute

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to cable-pull-information (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = representation representation
effectivity-assignment to class_category-association (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = product_concept_feature_category_usage product_concept_feature_category_usage
effectivity-assignment to class_condition-association (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = product_concept_feature_usage product_concept_feature_usage
effectivity-assignment to class_inclusion-association (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = product_concept_feature_usage product_concept_feature_usage
effectivity-assignment to class_specification-association (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = product_concept_feature_usage product_concept_feature_usage

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to classification-system (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = class_system class_system
effectivity-assignment to complex_product (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = product_definition_formation product_definition_formation
effectivity-assignment to complex_product-relationship (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = product_definition_formation product_definition_formation_relationship
effectivity-assignment to composition-relationship (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = assembly_component_usage assembly_component_usage
effectivity-assignment to configuration (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = configured_effectivity_assignment configured_effectivity_assignment

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to connectivity-definition (as is applied, to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = connectivity_definition connectivity_definition
effectivity-assignment to connectivity-definition-relationship (as is applied, to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = shape_aspect_relationship shape_aspect_relationship
effectivity-assignment to data_element (as is applied, to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = representation representation
effectivity-assignment to data_element-association (as is applied, to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item #9: (effectivity_item = property_definition property_definition) #10: (effectivity_item = action_property action_property) #11: (effectivity_item = representation_relationship representation_relationship)

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to data_element_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item = representation_relationship representation_relationship
effectivity_- assignment to design_- discipline_item_- definition (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item = product_definition product_definition
effectivity_- assignment to device (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item #3: (effectivity_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #4: (effectivity_item = product_definition product_definition)
effectivity_- assignment to device_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item #5: (effectivity_item = product_definition_relationship product_definition_relationship) #6: (effectivity_item = product_definition_substitute product_definition_substitute)

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to document (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product product
effectivity_- assignment to document_file (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = document_file document_file
effectivity_- assignment to document_file_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = document_relationship
effectivity_- assignment to document_- representation (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_definition effectivity_item = product_definition #14: (product_definition => #15: (product_definition => product_definition_with_associated_documents => physically_modelled_product_definition)
effectivity_- assignment to document_version (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_definition_formation

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to document_version_- relationship (as is_applied_- to)	PATH			product_definition_formation #1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_definition_formation_relationship product_definition_formation_relationship
effectivity_- assignment to drawing (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = drawing_revision drawing_revision
effectivity_- assignment to drawing_sequence (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = drawing_revision_sequence drawing_revision_sequence
effectivity_- assignment to drawing_sheet (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = drawing_sheet_revision drawing_sheet_revision
effectivity_- assignment to drawing_sheet_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = representation_relationship representation_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to function_- definition (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_definition product_definition
effectivity_- assignment to function_- definition_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_definition_relationship product_definition_relationship
effectivity_- assignment to function_- interface (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = interface interface
effectivity_- assignment to function_unit (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item #16: (effectivity_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #17: (effectivity_item = product_definition product_definition)

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to function_unit_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item product_definition_relationship product_definition_relationship
effectivity_- assignment to function_version_- (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item product_definition_formation product_definition_formation
effectivity_- assignment to function_version_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item product_definition_formation_relationship product_definition_formation_relationship
effectivity_- assignment to functional_- connectivity_- definition (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item connectivity_definition connectivity_definition

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to functional_- connectivity_- definition_- relationship (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item shape_aspect_relationship shape_aspect_relationship
effectivity_- assignment to generic_note (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = note_representation note_representation
effectivity_- assignment to interface (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = interface interface
effectivity_- assignment to interface_port (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = terminal terminal
effectivity_- assignment to interface_- terminal (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = terminal terminal

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to item (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product product
effectivity-assignment to item_definition_relationship (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_definition_relationship product_definition_relationship
effectivity-assignment to item_version (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_definition_formation product_definition_formation
effectivity-assignment to item_version_relationship (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_definition_formation_relationship product_definition_formation_relationship
effectivity-assignment to location (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = installation_location installation_location

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to location-relationship (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item shape_aspect_relationship shape_aspect_relationship
effectivity-assignment to marking (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = equipment_marking equipment_marking
effectivity-assignment to node (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = installation_node installation_node
effectivity-assignment to node-relationship (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = shape_aspect_relationship shape_aspect_relationship
effectivity-assignment to notification (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = notification notification

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to notification-relationship (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = characterized_object_relationship.characterized_object_relationship
effectivity-assignment to path (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = path
effectivity-assignment to path_node (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = vertex
effectivity-assignment to path_node-relationship (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = representation_item_relationship
effectivity-assignment to path-relationship (as is_applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = representation_item_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to physical-assembly-relationship (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = assembly_component_usage assembly_component_usage
effectivity-assignment to physical-instance (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = product_definition product_definition
effectivity-assignment to port (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = terminal terminal
effectivity-assignment to process.variable (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = process_variable process_variable
effectivity-assignment to process.variable-relationship (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = characterized_object_relationship characterized_object_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_-assignment to product_class (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_concept product_concept #7: (product_concept #8: (product_concept => product_class)
effectivity_-assignment to product_-identification (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = configuration_item configuration_item #7: (configuration_item #8: (configuration_item => product_identification)
effectivity_-assignment to product_-structure_-relationship (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_definition_relationship product_definition_relationship => product_definition_usage
effectivity_-assignment to requirement (as is_applied_-to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_definition product_definition

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to route (as is-applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = installation_route installation_route
effectivity-assignment to route-relationship (as is-applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = shape_aspect_relationship shape_aspect_relationship
effectivity-assignment to section (as is-applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = installation_section installation_section
effectivity-assignment to section_end (as is-applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = installation_section_end installation_section_end
effectivity-assignment to section_interface (as is-applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item = installation_section_interface installation_section_interface

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity-assignment to interface-relationship (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item shape_aspect_relationship effectivity_item = shape_aspect_relationship shape_aspect_relationship
effectivity-assignment to section-relationship (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = shape_aspect_relationship shape_aspect_relationship
effectivity-assignment to security-classification (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = security_classification security_classification
effectivity-assignment to signal (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = signal signal
effectivity-assignment to signal-relationship (as is applied-to)	PATH			#1: (applied_effectivity_assignment.applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment.applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = characterized_object_relationship characterized_object_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity_- assignment to signal_value (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = representation representation
effectivity_- assignment to specification (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_concept_feature product_concept_feature
effectivity_- assignment to specification_- category (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_concept_feature_category product_concept_feature_category #12: (product_concept_feature_category) #13: (product_concept_feature_category => exclusive_product_concept_feature_category)
effectivity_- assignment to specification_- expression (as is_applied_- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[j] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[j] ->) effectivity_item effectivity_item = product_concept_feature product_concept_feature => conditional_concept_feature

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
effectivity- assignment to specification- inclusion (as is_applied- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_concept_feature product_concept_feature => conditional_concept_feature => inclusion_product_concept_feature
effectivity- assignment to technical_system (as is_applied- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_definition_formation product_definition_formation
effectivity- assignment to technical_system- relationship (as is_applied- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = product_definition_formation_relationship product_definition_formation_relationship
effectivity- assignment to terminal (as is_applied- to)	PATH			#1: (applied_effectivity_assignment applied_effectivity_assignment.items[] ->) #2: (applied_ineffectivity_assignment applied_ineffectivity_assignment.items[] ->) effectivity_item effectivity_item = terminal terminal
EFFECTIVITY- RELATIONSHIP description	effectivity- relationship effectivity- relationship. description	41		
		41		

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
relation-type	effectivity- relationship.name	41		{effectivity_relationship effectivity_relationship.name (effectivity_relationship.name = 'constraint') (effectivity_relationship.name = 'inheritance')}}
effectivity- relationship to effectivity (as related)	PATH			effectivity_relationship.related_effectivity -> effectivity
effectivity- relationship to effectivity (as relating)	PATH			effectivity_relationship effectivity_relationship.related_effectivity -> effectivity

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>EVENT_REFERENCE #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1. #3: If device--relationship is not of type 'substitution'. #4: If device--relationship is of type 'substitution'. #5: If event_reference is not used in the context of UoF CF1. #6: If event_reference is used in the context of UoF CF1. #7: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order. #8: If data_element is associated to activity or work_order. #9: If data_element is associated to cable_pull_information, device--relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node. #10: If specification_category.implicit--exclusive_condition is</p>	<p>#12: (event_occurrence) #13: (relative_event_occurrence)</p>	<p>41 41</p>		

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>FALSE.</p> <p>#11: If specification_-category.implicit_-exclusive_condition is TRUE.</p> <p>#12: If event_reference.offset is not instantiated.</p> <p>#13: If event_reference.offset is instantiated.</p> <p>#14: If the connectivity_allocation references a device, function_unit, or a physical_instance.</p> <p>#15: If the connectivity_allocation references a connectivity_definition.</p> <p>#16: If function_unit is not used in the context of UoF CF1.</p> <p>#17: If function_unit is used in the context of UoF CF1.</p> <p>#18: If the requirement_document_assignment assigns a complete document.</p> <p>#19: If the requirement_document_assignment assigns a partial document.</p> <p>#20: If the document_representation is not a physical_model.</p> <p>#21: If the document_representation is a</p>				

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
physical_model.				
description	event_occurrence. description	41		#13: (relative_event_occurrence relative_event_occurrence.base_event -> event_occurrence event_occurrence.description)
event_type	event_occurrence.name	41		#13: (relative_event_occurrence relative_event_occurrence.base_event -> event_occurrence event_occurrence.name)
event_reference to activity (as event_ context)	PATH		78	#12: {event_occurrence} #13: (relative_event_occurrence <= event_occurrence <- event_occurrence.assigned_event_occurrence event_occurrence_assignment ==> {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = executed_action executed_action
event_reference to activity_ element (as event_ context)	PATH		78	#12: {event_occurrence} #13: (relative_event_occurrence <= event_occurrence <- event_occurrence.assigned_event_occurrence event_occurrence_assignment ==> {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = applied_action_assignment applied_action_assignment

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to activity_-- method_-- assignment (as event_-- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = action_request_solution action_request_solution
event_reference to activity_-- relationship (as event_-- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = action_relationship action_relationship
event_reference to alternate_-- item_-- relationship (as event_-- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] ->

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to assembly_ component_ relationship (as event_ context)	PATH		78	event_occurrence_item alternate_product_relationship #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_relationship product_definition_relationship #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = assembly_component_usage_substitute assembly_component_usage_substitute
event_reference to assembly_ substitute_ relationship (as event_ context)	PATH		78	#12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = assembly_component_usage_substitute assembly_component_usage_substitute
event_reference to cable_pull_information (as event_ context)	PATH		78	#12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to class_-- category_-- association (as event_-- context)	PATH		78	<pre> event_occurrence.role.name = 'event context'} applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = representation representation #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence.assignment.assigned_event_occurrence {event_occurrence.assignment => event_occurrence.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature_category_usage product_concept_feature_category_usage #12: {event_occurrence} event_occurrence <- event_occurrence.assignment.assigned_event_occurrence {event_occurrence.assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature_association product_concept_feature_association </pre>
event_reference to class_-- condition_-- association (as event_-- context)	PATH		78	<pre> #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence.assignment.assigned_event_occurrence {event_occurrence.assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature_usage product_concept_feature_usage #12: {event_occurrence} event_occurrence <- event_occurrence.assignment.assigned_event_occurrence {event_occurrence.assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature_association product_concept_feature_association </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to class_- inclusion_- association (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <- event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature_association product_concept_feature_association
event_reference to class_- specification_- association (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <- event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature_association product_concept_feature_association
event_reference to classification_- association (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <- event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] ->

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to classification_-- attribute (as event_-- context)	PATH		78	<pre> event_occurrence_item = applied_classification_assignment applied_classification_assignment #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = property_definition property_definition #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment event_occurrence_item event_occurrence_item = class_system class_system #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment event_occurrence_item event_occurrence_item = class_system class_system </pre>
event_reference to classification_-- system (as event_-- context)	PATH		78	<pre> #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment event_occurrence_item event_occurrence_item = class_system class_system #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment event_occurrence_item event_occurrence_item = class_system class_system </pre>
event_reference to complex_-- product (as event_-- context)	PATH			<pre> #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment event_occurrence_item event_occurrence_item = class_system class_system </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to complex_ product_ relationship (as event_ context)	PATH			<pre> event_occurrence.role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation_relationship product_definition_formation_relationship #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = assembly_component_usage assembly_component_usage </pre>
event_reference to composition_ relationship (as event_ context)	PATH		78	

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to configuration (as event_-- context)	PATH		78	#12: (event_occurrence) event_occurrence <= #13: (relative_event_occurrence <= event_occurrence <- event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = configured_effectivity_assignment configured_effectivity_assignment
event_reference_-- to connectivity_-- allocation (as event_-- context)	PATH		78	#12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <= event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item #14: (event_occurrence_item = property_definition_relationship property_definition_relationship) #15: (event_occurrence_item = shape_aspect_relationship)
event_reference_-- to connectivity_-- definition (as event_-- context)	PATH		78	#12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <= event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to connectivity_-- definition_-- relationship_-- (as event_-- context)	PATH		78	<pre> applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = connectivity_definition connectivity_definition #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship </pre>
event_reference to contract (as event_-- context)	PATH		78	<pre> #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = contract contract </pre>
event_reference to data_element (as event_-- context)	PATH		78	<pre> #12: {relative_event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to data_element_- association (as event_- context)	PATH			<pre> event_occurrence.role applied_event_occurrence.assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = representation representation #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role => event_occurrence_role } event_occurrence_role.name = 'event context' applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item #7: {event_occurrence_item = property_definition property_definition #8: {event_occurrence_item = action_property action_property #9: {event_occurrence_item = representation_relationship representation_relationship #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role => event_occurrence_role } event_occurrence_role.name = 'event context' applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = general_property } } } } } } } </pre>
event_reference to data_element_- definition (as event_- context)	PATH		78	

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to data_element_- relationship (as event_- context)	PATH		78	<pre> general_property #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- {event_occurrence_assigned_event_occurrence event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = representation_relationship representation_relationship </pre>
event_reference to data_element_- specification (as event_- context)	PATH		78	<pre> #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- {event_occurrence_assigned_event_occurrence event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = representation representation </pre>
event_reference to design_- discipline_item_- definition (as event_- context)	PATH		78	<pre> #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- {event_occurrence_assigned_event_occurrence event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to device (as event_- context)	PATH		78	<pre> applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition product_definition #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item #1: {event_occurrence_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) product_definition_item = product_definition product_definition} #2: {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item #3: {event_occurrence_item = product_definition_relationship product_definition_relationship) product_definition_item = product_definition_substitute product_definition_substitute} </pre>
event_reference to device_- relationship (as event_- context)	PATH		78	<pre> #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item #3: {event_occurrence_item = product_definition_relationship product_definition_relationship) product_definition_item = product_definition_substitute product_definition_substitute} </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to document (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_--assigned_event_occurrence {event_occurrence_--assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_--assignment applied_event_occurrence_--assignment.items[1] -> event_occurrence_item event_occurrence_item = product product</pre>
event_reference to document_file (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_--assigned_event_occurrence {event_occurrence_--assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_--assignment applied_event_occurrence_--assignment.items[1] -> event_occurrence_item event_occurrence_item = document_file document_file</pre>
event_reference to document_file_-- relationship (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_--assigned_event_occurrence {event_occurrence_--assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_--assignment applied_event_occurrence_--assignment.items[1] -></pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to document_- representation (as event_- context)	PATH			<pre> event_occurrence_item document_relationship event_occurrence_item = document_relationship document_relationship #12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition #20: (product_definition) #21: (product_definition => product_definition_with_associated_documents => physically_modelled_product_definition) #12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation </pre>
event_reference to document_- version (as event_- context)	PATH		78	<pre> event_occurrence_assigned_event_occurrence event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to document_- version_- relationship (as event_- context)	PATH		78	<pre> #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence.assigned_event_occurrence event_occurrence.assigned_event_occurrence {event_occurrence.assigned_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation_relationship product_definition_formation_relationship </pre>
event_reference to drawing_- (as event_- context)	PATH		78	<pre> #12: {event_occurrence} event_occurrence <- event_occurrence.assigned_event_occurrence event_occurrence.assigned_event_occurrence {event_occurrence.assigned_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = drawing_revision drawing_revision </pre>
event_reference to drawing_- sequence (as event_- context)	PATH		78	<pre> #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence.assigned_event_occurrence event_occurrence.assigned_event_occurrence {event_occurrence.assigned_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to drawing_sheet (as event_- context)	PATH		78	<pre> event_occurrence_item drawing_revision_sequence #12: {relative_event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assignment ==> {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = drawing_sheet_revision drawing_sheet_revision </pre>
event_reference to drawing_sheet_- relationship (as event_- context)	PATH		78	<pre> #12: {relative_event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assignment ==> {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = representation_relationship representation_relationship </pre>
event_reference to free_segment (as event_- context)	PATH		78	<pre> #12: {relative_event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assignment ==> {event_occurrence_assignment.role -> event_occurrence_role </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to function_-- definition_-- (as event_-- context)	PATH		78	<pre> event_occurrence.role.name = 'event context' } applied_event_occurrence_assignment event_occurrence_item event_occurrence_item = installation_segment free_segment #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment = > event_occurrence_role event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition product_definition </pre>
event_reference to function_-- definition_-- relationship_-- (as event_-- context)	PATH		78	<pre> #12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment = > event_occurrence_role event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_relationship product_definition_relationship </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to function_-- interface (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = interface interface</pre>
event_reference to function_unit (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item #16: {event_occurrence_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #17: {event_occurrence_item = product_definition product_definition}</pre>
event_reference to function_unit_-- relationship (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -></pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to function_- version_- (as event_- context)	PATH		78	<pre> event_occurrence.role applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_relationship product_definition_relationship #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence.assignment.assigned_event_occurrence {event_occurrence.assignment.role -> event_occurrence_role } event_occurrence.role.name = 'event context' applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation </pre>
event_reference to function_- version_- relationship (as event_- context)	PATH		78	<pre> #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence.assignment.assigned_event_occurrence {event_occurrence.assignment.role -> event_occurrence_role } event_occurrence.role.name = 'event context' applied_event_occurrence.assignment applied_event_occurrence.assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to functional_ connectivity_ definition (as event_ context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = connectivity_definition connectivity_definition
event_reference to functional_ connectivity_ definition_ relationship (as event_ context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment => event_occurrence_role event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship
event_reference to functional_ unit_allocation (as event_ context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment => event_occurrence_role event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] ->

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to functionality (as event_- context)	PATH		78	<pre> event_occurrence_item product_definition_relationship #16: (event_occurrence_item = product_definition_relationship product_definition_relationship) #17: (event_occurrence_item = property_definition_relationship property_definition_relationship) #12: {event_occurrence} #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned.event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product product </pre>
event_reference to general_- classification (as event_- context)	PATH		78	<pre> #12: {event_occurrence} #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned.event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = class class </pre>
event_reference to generic_note (as event_- context)	PATH		78	<pre> #12: {event_occurrence} #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned.event_occurrence event_occurrence_assignment event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = class class </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to interface (as event_-- context)	PATH		78	<pre> {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = note_representation note_representation #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = interface interface #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = terminal terminal </pre>
event_reference to interface_-- port (as event_-- context)	PATH			

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to interface_-- terminal (as event_-- context)	PATH			<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = terminal terminal</pre>
event_reference to item (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product product</pre>
event_reference to item_-- definition_-- relationship (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -></pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to item_version (as event_- context)	PATH		78	<pre> event_occurrence_item = product_definition_relationship product_definition_relationship #12: (relative_event_occurrence) event_occurrence <= event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation_formation product_definition_formation_formation #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation_relationship product_definition_formation_relationship #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} </pre>
event_reference to item_version_- relationship (as event_- context)	PATH		78	<pre> event_occurrence_item = product_definition_formation product_definition_formation #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation_formation product_definition_formation_formation #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} </pre>
event_reference to location (as event_- context)	PATH		78	<pre> event_occurrence_item = product_definition_formation_relationship product_definition_formation_relationship #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to location_-- relationship (as event_-- context)	PATH		78	<pre> event_occurrence.role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = installation_location installation_location #12: {relative_event_occurrence} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence {event_occurrence_assignment.role => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship #13: {relative_event_occurrence} event_occurrence <- event_occurrence_assignment.role => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = equipment_marking equipment_marking </pre>
event_reference to marking (as event_-- context)	PATH		78	<pre> #12: {relative_event_occurrence} event_occurrence <- event_occurrence_assignment.role => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = equipment_marking equipment_marking </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to material (as event_-- context)	PATH			<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = descriptive_representation_item</pre>
event_reference to node (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = installation_node installation_node</pre>
event_reference to node_-- relationship (as event_-- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -></pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to notification_- (as event_- context)	PATH		78	<pre> event_occurrence_item = shape_aspect_relationship shape_aspect_relationship #12: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = notification notification </pre>
event_reference to notification_- relationship_- (as event_- context)	PATH		78	<pre> #12: {relative_event_occurrence} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = characterized_object_relationship characterized_object_relationship </pre>
event_reference to offered_- function_- allocation (as event_- context)	PATH		78	<pre> #12: {relative_event_occurrence} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => event_occurrence_assignment.role -> event_occurrence_role </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to path (as event_ context)	PATH		78	<pre> event_occurrence.role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_relationship product_definition_relationship #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = path path </pre>
event_reference to path_node (as event_ context)	PATH		78	<pre> #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = vertex vertex </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to path_node_-- relationship (as event_-- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = representation_item_relationship representation_item_relationship
event_reference to path_-- relationship (as event_-- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = representation_item_relationship representation_item_relationship
event_reference to physical_-- assembly_-- relationship (as event_-- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] ->

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to physical- instance (as event- context)	PATH		78	<pre> event_occurrence_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage #12: {event_occurrence} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition product_definition </pre>
event_reference to port (as event- context)	PATH			<pre> #12: {event_occurrence} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = terminal terminal </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to port_- allocation (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: (relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship
event_reference to port_- association (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: (relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship
event_reference to preferred_- item_allocation (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: (relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] ->

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to preferred_ item_terminal_ allocation (as event_ context)	PATH		78	event_occurrence_item = product_definition_relationship product_definition_relationship #12: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable
event_reference to process_ variable (as event_ context)	PATH		78	#12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable
event_reference to process_ variable_ relationship (as event_ context)	PATH		78	#12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable #12: (relative_event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = process_variable process_variable

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to product_class (as event_-- context)	PATH		78	<pre> event_occurrence.role.name = 'event_context' applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = characterized_object_relationship characterized_object_relationship #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event_context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept #5: (product_concept) #6: (product_concept => product_class) </pre>
event_reference to product_-- identification (as event_-- context)	PATH		78	<pre> #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event_context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = configuration_item #5: (configuration_item) #6: (configuration_item => product_identification) </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to product_- structure_- relationship (as event_- context)	PATH			<pre> #12: (event_occurrence event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role applied_event_occurrence_assignment applied_event_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_relationship product_definition_relationship => product_definition_usage } </pre>
event_reference to project (as event_- context)	PATH		78	<pre> #12: (event_occurrence event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_assignment.items[1] -> event_occurrence_item event_occurrence_item = organizational_project organizational_project } </pre>
event_reference to requirement (as event_- context)	PATH		78	<pre> #12: (event_occurrence event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to requirement_document_assignment (as event_context)	PATH		78	<pre> applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition product_definition #12: (event_occurrence) event_occurrence <= event_occurrence <- event_occurrence_assigned.event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item #18: (event_occurrence_item = applied_document_reference applied_document_reference) #19: (event_occurrence_item = applied_presented_item applied_presented_item) </pre>
event_reference to route (as event_context)	PATH		78	<pre> #12: (relative_event_occurrence) event_occurrence <= event_occurrence <- event_occurrence_assigned.event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = installation_route installation_route </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to route_ relationship (as event_ context)	PATH		78	<pre>#12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship</pre>
event_reference to routed_ segment (as event_ context)	PATH		78	<pre>#12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = installation_segment installation_segment => routed_segment</pre>
event_reference to section (as event_ context)	PATH		78	<pre>#12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment</pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to section_end (as event_-- context)	PATH		78	<pre> applied_event_occurrence_assignment.items[1] -> event_occurrence_item installation_section event_occurrence_item = installation_section installation_section #12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence <- {event_occurrence_assignment ==> event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = installation_section_end installation_section_end </pre>
event_reference to section_-- interface (as event_-- context)	PATH		78	<pre> #12: (event_occurrence) event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence <- {event_occurrence_assignment ==> event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = installation_section_interface installation_section_interface </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to section_- interface_- relationship (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship
event_reference to section_- relationship (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = shape_aspect_relationship shape_aspect_relationship
event_reference to security_- classification (as event_- context)	PATH		78	#12: {event_occurrence} event_occurrence <= #13: {relative_event_occurrence <= event_occurrence <= event_occurrence_assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] ->

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to security_- level (as event_- context)	PATH		78	<pre> event_occurrence_item = security_classification security_classification #12: (event_occurrence) event_occurrence <= #13: (relative_event_occurrence) event_occurrence <- {event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = security_classification_level security_classification_level #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal </pre>
event_reference to signal (as event_- context)	PATH		78	<pre> event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal </pre>
event_reference to signal_- relationship (as event_- context)	PATH		78	<pre> event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assignment => event_occurrence_role -> event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = signal signal </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to signal_value (as event_-- context)	PATH		78	<pre> event_occurrence.role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = characterized_object_relationship characterized_object_relationship #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = representation representation </pre>
event_reference to specification (as event_-- context)	PATH		78	<pre> #12: {event_occurrence} #13: {relative_event_occurrence <=} event_occurrence <- event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature product_concept_feature </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to specification_ category (as event_ context)	PATH		78	<pre>#12: (event_occurrence event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = event_context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature_category product_concept_feature_category #10: (product_concept_feature_category) #11: (product_concept_feature_category => exclusive_product_concept_feature_category)</pre>
event_reference to specification_ expression (as event_ context)	PATH		78	<pre>#12: (event_occurrence event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = event_context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature product_concept_feature => conditional_concept_feature #12: (event_occurrence) #13: (relative_event_occurrence <=) event_occurrence <- event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = event_context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature product_concept_feature => conditional_concept_feature</pre>
event_reference to specification_ inclusion (as event_ context)	PATH		78	<pre>#12: (event_occurrence event_occurrence <- #13: (relative_event_occurrence <=) event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -></pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to technical_ system (as event_ context)	PATH		78	<pre> event_occurrence.role event_occurrence.role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_concept_feature product_concept_feature => conditional_concept_feature => inclusion_product_concept_feature #12: {relative_event_occurrence} event_occurrence <- #13: {relative_event_occurrence =>} event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation product_definition_formation </pre>
event_reference to technical_ system_ relationship (as event_ context)	PATH		78	<pre> #12: {relative_event_occurrence} event_occurrence <- #13: {relative_event_occurrence =>} event_occurrence_assignment.assigned_event_occurrence event_occurrence_assignment => {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context' } applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = product_definition_formation_relationship product_definition_formation_relationship </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to terminal (as event_- context)	PATH			<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = terminal terminal</pre>
event_reference to work_order (as event_- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -> event_occurrence_item event_occurrence_item = action_directive action_directive</pre>
event_reference to work_request (as event_- context)	PATH		78	<pre>#12: {event_occurrence} event_occurrence <- #13: {relative_event_occurrence <=} event_occurrence_assigned_event_occurrence {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'event context'} applied_event_occurrence_assignment applied_event_occurrence_assignment.items[1] -></pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
event_reference to duration (as offset)	PATH			event_occurrence_item versioned_action_request
LOT_ CONFIGURATION	[lot_effectivity] [configuration_ effectivity]	41 44	42	#13: (relative_event_occurrence relative_event_occurrence_offset -> time_measure_with_unit) {lot_effectivity <= effectivity => product_definition_effectivity => configuration_effectivity}
lot_id	lot_effectivity. effectivity_lot_id	41		
lot_size	measure_with_unit	41		lot_effectivity measure_with_unit
MANUFACTURING_ CONFIGURATION	configuration_ effectivity PATH	44	42	
manufacturing_ configuration to organization (as concerned_ organization)				configuration_effectivity <= product_definition_effectivity <= effectivity organization_item = effectivity organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'concerned organization'} organization_assignment.assigned_organization -> organization
manufacturing_ configuration to device (as configured_ element)	PATH		42	configuration_effectivity <= product_definition_effectivity product_definition_effectivity.usage -> product_definition_relationship <- {product_definition_relationship => product_definition_usage =>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> assembly_component_usage} product_definition_occurrence_relationship_occurrence_usage product_definition_occurrence_relationship product_definition_occurrence_relationship_occurrence -> product_definition </pre>
manufacturing-configuration to product_design (as is_solution_-for)	PATH			<pre> configuration_effectivity configuration_design </pre>
PRODUCT_CLASS	product_concept	44		
description	product_concept.description	44		
id	product_concept.id	44		
levelType	see NOTE 1	41		1)
name	product_concept.name	44		
version_id	product_concept.assigned_id	41	25,53	<pre> product_concept identification_item <- applied_identification_assignment.items[i] applied_identification_assignment <= {identification_assignment identification_role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id </pre>
PRODUCT_DESIGN	configuration_design	44		<pre> {configuration_design.name = 'product design'} </pre>
#1: If product-identification is not used in the context of UoF CF1.				
#2: If product-identification is used in the context of UoF CF1.				

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
product_design to item_version (as design)	PATH			configuration_design configuration_design.design -> configuration_design.item configuration_design.item = product_definition_formation product_definition_formation
product_design to product_- identification (as product)	PATH			configuration_design configuration_design.configuration -> #1: (configuration_item) #2: (configuration_item => product_identification)
product_design to product_- identification (as product)	PATH			configuration_design configuration_design.configuration -> #1: (configuration_item) #2: (configuration_item => product_identification)
PRODUCT_- IDENTIFICATION description	configuration_item	44		
	configuration_item. description	44		
	configuration_item.id	44		
	configuration_item. name	44	1032, 1158	
	identification_- assignment.assigned_id	41	1029, 1199	configuration_item configuration_item = configuration_item identification_item <- applied_identification_assignment.items[i] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
product_ identification to product_ class (as associated_ product_ class)	PATH			configuration_ item product_ concept -> product_ concept

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>RETENTION_PERIOD</p> <p>#1: If earliest_end_definition, latest_end_definition, or start_definition reference a date_time with no time specified.</p> <p>#2: If earliest_end_definition, latest_end_definition, or start_definition reference a date_time with a time specified.</p> <p>#3: If device is not used in the context of UoF CF1.</p> <p>#4: If device is used in the context of UoF CF1.</p> <p>#5: If device-relationship is not of type 'substitution'.</p> <p>#6: If device-relationship is of type 'substitution'.</p> <p>#7: If retention_period is not used in the context of UoF CF1.</p> <p>#8: If retention_period is used in the context of UoF CF1.</p> <p>#9: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#10: If data_element is</p>	retention	212	3,28	<pre> retention <= action {action <- action_assignment.assigned_action action_assignment role_select = action_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'retention'}</pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>associated to activity or work_order.</p> <p>#11: If data_element is associated to cable_pull_information, device_relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node.</p> <p>#12: If specification_category.implicit_exclusive_condition is FALSE.</p> <p>#13: If specification_category.implicit_exclusive_condition is TRUE.</p> <p>#14: If event_reference_offset is not instantiated.</p> <p>#15: If event_reference_offset is instantiated.</p> <p>#16: If the document_representation is not a physical_model.</p> <p>#17: If the document_representation is a physical_model.</p> <p>#18: If function_unit is not used in the context of UoF CF1.</p> <p>#19: If function_unit is used in the context of UoF CF1.</p> <p>#20: If the connectivity_allocation references a</p>				

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>connectivity_definition. #21: If the connectivity_allocation references a device, function_unit, or a physical_instance. #22: If the requirement_document_assignment assigns a complete document. #23: If the requirement_document_assignment assigns a partial document.</p>	<p>action_description</p>	41		
<p>retention-purpose</p>	<p>action_description</p>		18,19,80	<p>retention <= action.action_description</p> <p>retention <= action</p> <p>time_interval_item = action.time_interval_item <- applied_time_interval_assignment.items[j]</p> <p>time_interval_assignment <= {time_interval_assignment.role -> time_interval_role}</p> <p>time_interval_role.name = 'minimum retention period'</p> <p>time_interval_assignment.assigned_time_interval -> time_interval =></p> <p>time_interval.with_bounds</p> <p>time_interval.with_bounds.secondary_bound -> date_time_or_event_occurrence</p> <p>date_time_or_event_occurrence</p> <p>#1: (date_time_select = date date => calendar_date)</p>
<p>retention-period to date_time (as earliest_end-definition)</p>	<p>PATH</p>			

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to duration (as earliest_end_ definition)	PATH			<pre>#2: (date_time_select = date_and_time date_and_time) retention <= action time_interval_item = action time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role} time_interval_role.name = 'minimum retention period' time_interval_assignment.assigned_time_interval -> time_interval => time_interval_with_bounds time_interval_with_bounds.duration -> time_measure_with_unit</pre>
retention_period to event_ reference (as earliest_end_ definition)	PATH		24,80	<pre>retention <= action time_interval_item = action time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role} time_interval_role.name = 'minimum retention period' time_interval_assignment.assigned_time_interval -> time_interval => time_interval_with_bounds time_interval_with_bounds.secondary_bound -> date_time_or_event_occurrence #14: {event_occurrence} #15: {event_occurrence => relative_event_occurrence}</pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention-period to activity_- (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = executed_action
retention-period to activity_- element (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = applied_action_assignment applied_action_assignment
retention-period to activity_- method_- assignment (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = action_request_solution action_request_solution
retention-period to activity_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = action_relationship action_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to alternate_- item_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = alternate_product_relationship alternate_product_relationship
retention_period to assembly_- component_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = assembly_component_usage assembly_component_usage
retention_period to assembly_- substitute_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = assembly_component_usage_substitute assembly_component_usage_substitute
retention_period to cable_pull_- information (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = representation representation

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to class_- category_- association (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_concept_feature_category_usage product_concept_feature_category_usage
retention_period to class_- condition_- association (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_concept_feature_association product_concept_feature_association
retention_period to class_- inclusion_- association (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_concept_feature_association product_concept_feature_association
retention_period to class_- specification_- association (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_concept_feature_association product_concept_feature_association

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to classification_- association (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = applied_classification_assignment applied_classification_assignment
retention_period to classification_- attribute (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = property_definition property_definition
retention_period to classification_- system (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = class_system class_system
retention_period to complex_- product (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_definition_formation product_definition_formation

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to complex_-- product_-- relationship (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation_relationship product_definition_formation_relationship
retention_period to composition_-- relationship (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = assembly_component_usage assembly_component_usage
retention_period to configuration (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = configured_effectivity_assignment configured_effectivity_assignment
retention_period to connectivity_-- allocation (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = property_definition_relationship property_definition_relationship #20: (action_item = property_definition_relationship property_definition_relationship)

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to connectivity_-- definition (as is_applied_-- to)	PATH			#21: (action_item = shape_aspect_relationship shape_aspect_relationship) retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = connectivity_definition connectivity_definition
retention_period to connectivity_-- definition_-- relationship (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
retention_period to contract (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = contract contract
retention_period to data_element (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to data_element_- association (as is_applied_- to)	PATH			action_item = representation representation retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item #9: (action_item = property_definition property_item = action_property action_property) #10: (action_item = representation_relationship representation_relationship) #11: (action_item = representation_relationship representation_relationship)
retention_period to data_element_- definition (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = general_property general_property
retention_period to data_element_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = representation_relationship representation_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to data_element_ specification (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = representation representation
retention_period to design_ discipline_item_ definition (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition product_definition
retention_period to device (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment action_item #3: (action_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #4: (action_item = product_definition product_definition)

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to device- relationship (as is_applied- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item #5: (action_item = product_definition_relationship product_definition_relationship) #6: (action_item = product_definition_substitute product_definition_substitute)
retention_period to document (as is_applied- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = product product {product <- product_related_product_category.products[] product_related_product_category <= product_category product_category.name = 'document'}
retention_period to document_file (as is_applied- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = document_file document_file

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to document_file_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = document_relationship document_relationship
retention_period to document_- representation (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = product_definition #16: (product_definition) #17: (product_definition => product_definition_with_associated_documents => physically_modelled_product_definition)
retention_period to document_- version (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = product_definition_formation product_definition_formation

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to document_- version_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_definition_formation_relationship product_definition_formation_relationship
retention_period to drawing (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = drawing_revision drawing_revision
retention_period to drawing_- sequence (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = drawing_revision_sequence drawing_revision_sequence
retention_period to drawing_sheet (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = drawing_sheet_revision drawing_sheet_revision

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to drawing_sheet_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = representation_relationship representation_relationship
retention_period to free_segment (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = installation_segment installation_segment => free_segment
retention_period to function_- definition (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition product_definition
retention_period to function_- definition_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_relationship product_definition_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to function_- interface (as is_applied_- to)	PATH			product_definition_relationship retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = interface interface
retention_period to function_unit_- (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item #18: (action_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #19: (action_item = product_definition product_definition)
retention_period to function_unit_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_definition_relationship product_definition_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to functional_ version (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_definition_formation product_definition_formation
retention_period to functional_ version_ relationship (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_definition_formation_relationship product_definition_formation_relationship
retention_period to functional_ connectivity_ definition (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = connectivity_definition connectivity_definition
retention_period to functional_ connectivity_ definition_ relationship (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to functional_ unit_allocation (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item #18: (action_item = product_definition_relationship product_definition_relationship) #19: (action_item = property_definition_relationship property_definition_relationship)
retention_period to functionality (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product product
retention_period to general_ classification (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = class class
retention_period to generic_note (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to interface (as is applied_ to)	PATH			action_item = note_representation note_representation retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = interface interface
retention_period to interface_ port (as is applied_ to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = terminal terminal
retention_period to interface_ terminal (as is applied_ to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = terminal terminal
retention_period to item (as is applied_ to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = terminal terminal

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to item_-- definition_-- relationship (as is_applied_-- to)	PATH			action_item = product product retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_relationship product_definition_relationship
retention_period to item_version_-- (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation product_definition_formation
retention_period to item_version_-- relationship (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation_relationship product_definition_formation_relationship
retention_period to location (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to location_- relationship (as is_applied_- to)	PATH			action_item = installation_location installation_location retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
retention_period to marking (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = equipment_marking equipment_marking
retention_period to material (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = descriptive_representation_item descriptive_representation_item
retention_period to node (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to node_-- relationship (as is_applied_-- to)	PATH			action_item = installation_node installation_node retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
retention_period to notification (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = notification notification
retention_period to notification_-- relationship (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = characterized_object_relationship characterized_object_relationship
retention_period to offered_-- function_-- allocation (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = notification notification

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to path (as is_applied_ to)	PATH			action_item = product_definition_relationship product_definition_relationship retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = path path
retention_period to path_node (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = vertex vertex
retention_period to path_node_ relationship (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = representation_item_relationship representation_item_relationship action_item
retention_period to path_ relationship (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = representation_item_relationship representation_item_relationship action_item

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to physical_- assembly_- relationship (as is_applied_- to)	PATH			action_item = representation_item.relationship representation_item.relationship retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = assembly_component_usage assembly_component_usage
retention_period to physical_- instance (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition product_definition
retention_period to port (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = terminal terminal
retention_period to port_- allocation (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to port_-- association (as is_applied_-- to)	PATH			action_item = shape_aspect_relationship shape_aspect_relationship retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
retention_period to preferred_-- item_allocation (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_relationship product_definition_relationship
retention_period to preferred_-- item_terminal_-- allocation (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
retention_period to process_-- variable (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned.action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention-period to process- variable- relationship (as is_applied- to)	PATH			action_item = process_variable process_variable retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = characterized_object_relationship characterized_object_relationship
retention-period to product_class (as is_applied- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = product_concept #7: (product_concept) #8: (product_concept => product_class)
retention-period to product_ identification (as is_applied- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = configuration_item #7: (configuration_item) #8: (configuration_item => product_identification)

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to product_-- structure_-- relationship (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_relationship product_definition_relationship => product_definition_usage retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = organizational_project organizational_project
retention_period to project (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = organizational_project organizational_project
retention_period to requirement (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition product_definition
retention_period to requirement_-- document_-- assignment (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = applied_document_reference #22: (action_item = applied_document_reference

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to route (as is_applied_- to)	PATH			applied_document.reference #23: (action_item = applied_presented_item applied_presented_item) retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = installation_route installation_route
retention_period to route_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
retention_period to routed_- segment (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = installation_segment installation_segment => routed_segment
retention_period to section (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to section_end (as is_applied_ to)	PATH			applied_action_assignment.items[] -> action_item installation_section installation_section retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = installation_section_end installation_section_end
retention_period to section_ interface (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = installation_section_interface installation_section_interface
retention_period to section_ interface_ relationship (as is_applied_ to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to section_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
retention_period to security_- classification (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = security_classification security_classification
retention_period to security_- level (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = security_classification_level security_classification_level
retention_period to signal (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = signal signal

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to signal_-- relationship (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = characterized_object_relationship characterized_object_relationship
retention_period to signal_value (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = representation
retention_period to specification (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_concept_feature product_concept_feature
retention_period to specification_-- category (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_concept_feature_category product_concept_feature_category

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to specification_-- expression (as is_applied_-- to)	PATH			#12: (product_concept_feature_category) #13: (product_concept_feature_category => exclusive_product_concept_feature_category) retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_concept_feature product_concept_feature => conditional_concept_feature
retention_period to specification_-- inclusion (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_concept_feature product_concept_feature => conditional_concept_feature inclusion_product_concept_feature
retention_period to technical_-- system (as is_applied_-- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation product_definition_formation

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to technical_- system_- relationship (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = product_definition_formation_relationship product_definition_formation_relationship
retention_period to terminal (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = terminal terminal
retention_period to work_order (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = action_directive action_directive
retention_period to work_request (as is_applied_- to)	PATH			retention <= action <- action_assignment.assigned_action action_assignment => applied_action_assignment applied_action_assignment.items[j] -> action_item action_item = versioned_action_request versioned_action_request

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to date_time (as latest_end_- definition)	PATH		18,19,80	<pre> retention <= action time_interval_item = action time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= {time_interval_assignment time_interval_role -> time_interval_role.name = 'maximum retention period'} time_interval_assignment.assigned_time_interval -> time_interval => time_interval_with_bounds time_interval_with_bounds.secondary_bound -> date_time_or_event_occurrence date_time_or_event_occurrence = date_time_select #1: (date_time_select = date date => calendar_date) #2: (date_time_select = date_and_time date_and_time) </pre>
retention_period to duration (as latest_end_- definition)				<pre> retention <= action time_interval_item = action time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= {time_interval_assignment time_interval_role -> time_interval_role.name = 'maximum retention period'} time_interval_assignment.assigned_time_interval -> time_interval => time_interval_with_bounds time_interval_with_bounds.duration -> time_measure_with_unit </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to event_- reference (as latest_end_- definition)	PATH		24,80	retention <= action time_interval_item = action time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role time_interval.name = 'maximum retention period'} time_interval_assignment.assigned_time_interval -> time_interval => time_interval.with_bounds time_interval.with_bounds.secondary_bound -> date_time_or_event_occurrence date_time_or_event_occurrence = event_occurrence #14: {event_occurrence} #15: {event_occurrence => relative_event_occurrence}
retention_period to date_time (as start_- definition)	PATH		18,19,33, 80	retention <= action time_interval_item = action time_interval_item <- [applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role time_interval.name = 'minimum retention period'} time_interval_assignment.assigned_time_interval -> time_interval => [applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role

Table 12 – Mapping table effectivity data UoF (EF1) (continued)

Application element	AIM element	Source	Rules	Reference path
retention_period to event_-- reference (as start_-- definition)	PATH		24,33,80	<pre> time_interval_role.name = 'maximum retention period' time_interval_assignment.assigned_time_interval -> time_interval =>] time_interval_with_bounds date_time_or_event_occurrence date_time_or_event_occurrence = date_time_select #1: (date_time_select = date date => calendar_date) #2: (date_time_select = date_and_time date_and_time) retention <= action time_interval_item = action time_interval_item <- [applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role time_interval_role.name = 'minimum retention period'} time_interval_assignment.assigned_time_interval -> time_interval =>] [applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role time_interval_role.name = 'maximum retention period'} time_interval_assignment.assigned_time_interval -> time_interval =>] time_interval_with_bounds time_interval_with_bounds.primary_bound -> date_time_or_event_occurrence date_time_or_event_occurrence = event_occurrence </pre>

Table 12 – Mapping table effectivity data UoF (EF1) (concluded)

Application element	AIM element	Source	Rules	Reference path
				#14: (event_occurrence) #15: (event_occurrence => relative_event_occurrence)
SERIAL_	[serial_numbered_	41	42	{serial_numbered_effectivity <= effectivity =>
CONFIGURATION	[configuration_	44		product_definition_effectivity => configuration_effectivity}
serial_end_	serial_numbered_	41		
number	effectivity.			
serial_start_	effectivity_end_id			
number	serial_numbered_	41		
	effectivity.			
	effectivity_start_id			

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NOTE - The following note numbers correspond to the footnotemarks listed in the table above:

- 1 In the context of this UoF, the ARM disallows instantiation of this attribute. A mapping is given in the context of UoF CF1.

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Table 13 – Mapping table external_reference UoF (ER1)

Application element	AIM element	Source	Rules	Reference path
CODED_SIZE #1: If no density is specified for the rectangular_size. #2: If a density is specified for the rectangular_size.	#1: ([planar_extent] [descriptive- representation_item]) #2: ([planar_extent] [descriptive- representation_item] [measure- representation_item])	46 45 46 45 45		{#1: ([planar_extent] <= geometric_representation_item <= [descriptive_representation_item <= #2: ([planar_extent] <= geometric_representation_item <= [descriptive_representation_item <= [measure_representation_item <= representation_item representation_item.name = 'size format'] {#1: ([planar_extent] <= geometric_representation_item <= [descriptive_representation_item <= #2: ([planar_extent] <= geometric_representation_item <= [descriptive_representation_item <= [measure_representation_item <= representation_item representation_item.name = 'size format'] planar_extent {#1: ([planar_extent] <= geometric_representation_item <= [descriptive_representation_item <= #2: ([planar_extent] <= geometric_representation_item <= [descriptive_representation_item <= [measure_representation_item <= representation_item representation_item.name = 'size format'] classification_item <- representation_item.name = 'size format'] classification_item = planar_extent applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'class system membership'}
size	descriptive- representation_item. description	45		
coded_size to classification_- system (as referenced_- standard)	PATH		28	

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
				classification_assignment.assigned_class -> group => class_system
DIGITAL_DOCUMENT	product_definition	41	62	{product_definition product_definition.frame_of_reference -> product_definition.context <= application_context.element application_context.element.name = 'digital document definition' }
digital_document to digital_file (as file)	PATH			product_definition => {product_definition.frame_of_reference -> product_definition.context <= application_context.element application_context.element.name = 'digital document definition' } product_definition_with_associated_documents.documentation_ids[i] -> document => {document_representation_types[i] -> document_representation_type document_representation_type.name = 'digital' } document_file
DIGITAL_FILE	document_file	212	8	document_file <= [document document_representation_types[1] -> document_representation_type document_representation_type.name = 'digital'] [characterized_object]
DOCUMENT	product	41		{product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'document' }
description	product.description	41		
id	product.id	41		
name	product.name	41		

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document to document_- designation (as extended_- designation)	PATH		25	product item_designation_item = product item_designation_item <- item_designation_assignment.items[1] item_designation_assignment => {item_designation_assignment <= identification_assignment identification_role -> identification_role.description = 'primary'} document_designation_assignment

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DOCUMENT_- ASSIGNMENT</p> <p>#1: If document assignment is not a partial document assignment.</p> <p>#2: If document assignment is also a partial document assignment.</p> <p>#3: If function_unit is not used in the context of UoF CF1.</p> <p>#4: If function_unit is used in the context of UoF CF1.</p> <p>#5: If device is not used in the context of UoF CF1.</p> <p>#6: If device is used in the context of UoF CF1.</p> <p>#7: If specification_category.implicit_exclusive_condition is FALSE.</p> <p>#8: If specification_category.implicit_exclusive_condition is TRUE.</p> <p>#9: If product_class is used with UoF EF1.</p> <p>#10: If product_class is used with UoF CF1.</p> <p>#11: If product_identification is used with UoF EF1.</p> <p>#12: If product_</p>	<p>#1: (applied_document_reference)</p> <p>#2: (applied_document_usage_constraint_assignment)</p>	<p>212</p> <p>212</p>		<p>#1: (applied_document_reference <= document_reference)</p> <p>#2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment)</p>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>identification is used with UoF CF1. #13: If class.-specification.association.package is FALSE. #14: If class.-specification.association.package is TRUE.</p>	<p>#1: (object_role.name) #2: (document_usage_role.name)</p>	<p>41 41</p>	<p>22,28</p>	<pre>#1: (applied_document_reference <= document_reference object_role object_role.name {(object_role.name = 'additional information') (object_role.name = 'behavior') (object_role.name = 'catalogue') (object_role.name = 'description') (object_role.name = 'informative') (object_role.name = 'mandatory') (object_role.name = 'manual') (object_role.name = 'mathematical description') (object_role.name = 'specification')})} #2: (applied_document_usage_constraint_assignment document_usage_constraint_assignment document_usage_role document_usage_role.name {(document_usage_role.name = 'additional information') (document_usage_role.name = 'behavior') (document_usage_role.name = 'catalogue') (document_usage_role.name = 'description')})</pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_-assignment to document (as assigned_-document)	PATH		21	<pre>(document_usage_role.name = 'informative') (document_usage_role.name = 'mandatory') (document_usage_role.name = 'manual') (document_usage_role.name = 'mathematical description') (document_usage_role.name = 'specification')) #1: (applied_document_reference <= document_reference document_reference.assigned_document ->) #2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment document_usage_constraint_assignment.assigned_document_usage -> document_usage_constraint document_usage_constraint.source ->) document <- {document_kind -> document_type document_type.product_data_type = 'configuration controlled document'} document_product_association.relation_document document_product_association {document_product_association => document_product_equivalence} document_product_association.related_product -> product_or_formation_or_definition product_or_formation_or_definition = product product #1: (applied_document_reference <= document_reference document_reference.assigned_document ->) #2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment document_usage_constraint_assignment.assigned_document_usage -> document_usage_constraint document_usage_constraint.source ->) document => {document_representation_types[j] -> document_representation_type</pre>
document_-assignment to document_file (as assigned_-document)	PATH			

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_-assignment to document_-representation (as assigned_-document)	PATH		21	<pre>(document_representation_type.name = 'digital') (document_representation_type.name = 'physical') document_file #1: (applied_document_reference <= document_reference document_reference.assigned_document ->) #2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assignment document_usage_constraint_assigned_document_usage -> document_usage_constraint document <- document.kind -> {document_kind -> document_type document_type.product_data_type = 'configuration controlled document definition'}) document_product_association.relatng_document document_product_association {document_product_association => document_product_equivalence} document_product_association.related_product -> product_or_formation_or_definition product_or_formation_or_definition = product_definition product_definition</pre>
document_-assignment to document_version (as assigned_-document)	PATH		21	<pre>#1: (applied_document_reference <= document_reference document_reference.assigned_document ->) #2: (applied_document_usage_constraint_assignment <= document_usage_constraint_assigned_document_usage -> document_usage_constraint document <- document.kind -> {document_kind -> document_type document_type.product_data_type = 'configuration controlled document version'}) document_product_association.relatng_document</pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to activity (as is_assigned_- to)	PATH			document_product_association {document_product_association => document_product_equivalence} document_product_association.related_product -> product_or_formation_or_definition product_or_formation = product_definition_formation product_definition_formation #1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->)
document_- assignment to activity_method (as is_assigned_- to)	PATH			document_reference_item document_reference_item = executed_action executed_action #1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item document_reference_item = action_method action_method
document_- assignment to address (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item = address address
document_- assignment to approval (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item = approval approval

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to approval_status (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item approval_status
document_- assignment to assembly_- component_- relationship (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage
document_- assignment to cable_pull_ information (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = representation representation
document_- assignment to class_category_- association (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = product_concept_feature_category_usage product_concept_feature_category_usage

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_-- assignment to class_condition_-- association (as is_assigned_-- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item product_concept_feature_association product_concept_feature_association
document_-- assignment to class_inclusion_-- association (as is_assigned_-- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = product_concept_feature_association product_concept_feature_association
document_-- assignment to class_-- specification_-- association (as is_assigned_-- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = product_concept_feature_association product_concept_feature_association product_concept_feature_association {product_concept_feature_association.feature -> #13: (product_concept_feature) #14: (product_concept_feature => package-product_concept_feature)}
document_-- assignment to classification_-- association (as is_assigned_-- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = applied_classification_assignment applied_classification_assignment

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to classification_- attribute (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = property_definition property_definition
document_- assignment to classification_- system (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = class_system class_system
document_- assignment to complex_product (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = product_definition_formation product_definition_formation
document_- assignment to connectivity_- definition (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = connectivity_definition connectivity_definition
document_- assignment to contract (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = contract contract

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to data_element_- (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = representation representation
document_- assignment to data_element_- definition (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = general_property general_property
document_- assignment to data_element_- specification (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = representation representation
document_- assignment to design_- discipline_item_- definition (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = product_definition product_definition
document_- assignment to device (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item #5: (document_reference_item = product_definition_relationship product_definition_relationship => product_definition_usage =>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to drawing (as is_assigned_- to)	PATH			assembly_component_usage product_definition #6: (document_reference_item = product_definition product_definition) #1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item drawing_revision drawing_revision
document_- assignment to drawing_sheet (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item drawing_sheet_revision drawing_sheet_revision
document_- assignment to drawing_view (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item presentation_view presentation_view
document_- assignment to function_- definition (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item product_definition product_definition

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to function_- interface (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = interface interface
document_- assignment to function_unit (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item #3: (document_reference_item = product_definition_relationship => product_definition_usage => assembly_component_usage) #4: (document_reference_item = product_definition product_definition)
document_- assignment to function_version (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = product_definition_formation product_definition_formation
document_- assignment to functional_- connectivity_- definition (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = connectivity_definition connectivity_definition

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to functionality (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = product product
document_- assignment to general_- classification (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = class class
document_- assignment to generic_note (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = note_representation note_representation
document_- assignment to interface (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = interface interface
document_- assignment to interface_port (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = terminal terminal

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to interface_- terminal (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = terminal terminal
document_- assignment to item (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = product product
document_- assignment to item_definition_- relationship (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = product_definition_relationship product_definition_relationship
document_- assignment to item_- identification (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = applied_identification_assignment applied_identification_assignment
document_- assignment to item_version (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = product_definition_formation product_definition_formation

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to location (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = installation_location installation_location
document_- assignment to marking (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = equipment_marking equipment_marking
document_- assignment to node (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = installation_node installation_node
document_- assignment to notification (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = notification notification
document_- assignment to object_- designation (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = item_designation_assignment item_designation_assignment

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to organization (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = organization
document_- assignment to path (as is_assigned_- to)	PATH			organization #1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = path
document_- assignment to path_node (as is_assigned_- to)	PATH			path #1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = vertex
document_- assignment to person (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = person
document_- assignment to physical_- assembly_- relationship (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = product_definition_relationship product_definition_relationship => product_definition_usage =>

Table 13 – Mapping table external reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to physical_- instance (as is_assigned_- to)	PATH			assembly_component_usage #1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = product_definition product_definition
document_- assignment to port (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = terminal terminal
document_- assignment to process.variable (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = process_variable process_variable
document_- assignment to product_class (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item = product_concept product_concept #9: (product_concept #10: (product_concept => product_class)

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to product_- identification (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item document_reference_item = configuration_item #11: (configuration_item) #12: (configuration_item => product_identification)
document_- assignment to product_- structure_- relationship (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item document_reference_item = product_definition_relationship product_definition_relationship => product_definition_usage
document_- assignment to project (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item document_reference_item = organizational_project organizational_project
document_- assignment to retention_period (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item document_reference_item = action action => retention

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to route (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = installation_route installation_route
document_- assignment to section (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = installation_section installation_section
document_- assignment to section_end (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = installation_section_end installation_section_end
document_- assignment to section_- interface (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = installation_section_interface installation_section_interface
document_- assignment to security_- classification (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item document_reference_item = security_classification security_classification

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to security_level (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item security_classification_level
document_- assignment to signal (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item signal
document_- assignment to signal_value (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item representation
document_- assignment to specification (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item product_concept_feature product_concept_feature
document_- assignment to specification_- category (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference_item product_concept_feature_category product_concept_feature_category

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to specification_- expression (as is_assigned_- to)	PATH			#8: (document_reference.item = product_concept_feature_category product_concept_feature_category => exclusive_product_concept_feature_category) #1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference.item product_concept_feature => product_concept_feature => conditional_concept_feature
document_- assignment to specification_- inclusion (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference.item document_reference.item = product_concept_feature product_concept_feature => inclusion_product_concept_feature
document_- assignment to technical.system (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference.item document_reference.item = product_definition_formation product_definition_formation
document_- assignment to terminal (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[] ->) document_reference.item = terminal terminal

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- assignment to work_order (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item = action_directive action_directive
document_- assignment to work_request (as is_assigned_- to)	PATH			#1: (applied_document_reference applied_document_reference.items[i] ->) #2: (applied_document_usage_constraint_assignment applied_document_usage_constraint_assignment.items[i] ->) document_reference_item document_reference_item = versioned_action_request versioned_action_request
DOCUMENT_CONTENT_- PROPERTY #1: If the unit is not assigned globally. #2: If the unit is assigned globally.	representation	43	43500, 43501	{representation.name = 'document content'} [representation.context_of_items -> representation.context representation.context.type = 'document parameters'] property_definition_representation.used_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition {property_definition.name = 'document_property'}} representation representation.items[i] -> representation_item => {representation_item.name = 'detail level'} descriptive_representation_item descriptive_representation_item.description {(descriptive_representation_item.description = 'rough 3d shape') (descriptive_representation_item.description = 'rounded edges')}}
detail_level	descriptive_- representation_item. description	45		

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
geometry_type	descriptive_representation_item.description	45		<pre> representation representation.items[] -> representation_item => {representation_item.name = 'geometry type'} descriptive_representation_item descriptive_representation_item.description {(descriptive_representation_item.description = '3D wireframe model') (descriptive_representation_item.description = '2D shape') (descriptive_representation_item.description = 'surface model') (descriptive_representation_item.description = 'closed volume') (descriptive_representation_item.description = 'solid model') (descriptive_representation_item.description = 'solid and surface model') (descriptive_representation_item.description = 'assembly') (descriptive_representation_item.description = 'assembly with mating elements') (descriptive_representation_item.description = '2D drawing') (descriptive_representation_item.description = 'drawing derived from 3D data') (descriptive_representation_item.description = 'drawing related to 3D data')}} </pre>
document_content_language (as languages)	PATH			<pre> representation language_item = representation language_item <- language_assignment.items[j] language_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'language'} classification_assignment.assigned_class -> group => language </pre>
document_content_numerical_value (as real_world_scale)	#1: (measure_representation_item) #2: (value_representation_item)	45 43		<pre> representation representation.items[] -> representation_item => {representation_item.name = 'real world scale'} #1: (measure_representation_item) #2: (value_representation_item) </pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> measure_with_unit measure_with_unit.value_component -> measure_value [measure_value = ratio_measure] [measure_with_unit.value_component -> unit unit = named_unit named_unit => ratio_unit]] #2: (value_representation_item) </pre>
DOCUMENT- CREATION- PROPERTY	representation	43	43500, 43502	<pre> {representation_name = 'document creation'} [representation_context_of_items -> representation_context property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition = 'document_property'}} </pre>
creating- interface	descriptive- representation_item. description	45		<pre> representation representation.items[j] -> representation_item => {representation_item.name = 'creating interface'} descriptive_representation_item descriptive_representation_item.description </pre>
creating_system	descriptive- representation_item. description	45		<pre> representation.items[j] -> representation_item => {representation_item.name = 'creating system'} descriptive_representation_item descriptive_representation_item.description </pre>
operating_system	descriptive- representation_item.	45		<pre> representation representation.items[j] -> </pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element description	Source	Rules	Reference path
				{representation_item.name = 'operating system'} descriptive_representation_item descriptive_representation_item.description
DOCUMENT_FILE	document_file	212	8	{document_file <= [document {document_representation_types[i] -> document_representation_type (document_representation_type.name = 'digital') (document_representation_type.name = 'physical')}} [characterized_object]]
id	document.id	41		document_file <= document {document_representation_types[i] -> document_representation_type (document_representation_type.name = 'digital') (document_representation_type.name = 'physical')}} document.id
version_id	identification.- assignment.assigned_id	41	25	document_file identification_item = document_file identification_item <- applied_identification_assignment.items[i] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id
document_file to document_content.- property (as content)	PATH			document_file <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition.definition property_definition property_definition.name = 'document property' represented_definition = property_definition

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_file to document_ creation_ property (as creation)	PATH			<pre> represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'document content'} document_file <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition.definition property_definition {property_definition.name = 'document property'} represented_definition = property_definition represented_definition <- property_definition.definition property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'document creation'} </pre>
document_file to document_type_ property (as document_ file_type)	PATH			<pre> document_file <= document document.kind -> document_type </pre>
document_file to external_file_id_ and_location (as external_id_ and_location)	PATH			<pre> document_file external_identification_item = document_file external_identification_item <- applied_external_identification_assignment.items[i] applied_external_identification_assignment {applied_external_identification_assignment <= external_identification_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.name = 'alternative document id and location'} </pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_file to document_format.- property (as file_format)	PATH			document_file <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition.definition property_definition {property_definition.name = 'document property'} represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation property_definition.representation.used_representation -> representation {representation.name = 'document format'}
document_file to document_size.- property (as size)	PATH			document_file <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition.definition property_definition {property_definition.name = 'document property'} represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation property_definition.representation.used_representation -> representation {representation.name = 'document size'}
DOCUMENT_FILE.- RELATIONSHIP description	document_relationship	41		
relation_type	document_relationship. description document_relationship. name	41		{document_relationship document_relationship.name (document_relationship.name) (document_relationship.name = 'addition')}

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre>(document_relationship.name = 'copy') (document_relationship.name = 'decomposition') (document_relationship.name = 'derivation') (document_relationship.name = 'peer') (document_relationship.name = 'reference') (document_relationship.name = 'sequence') (document_relationship.name = 'substitution') (document_relationship.name = 'translation')</pre>
document_file- relationship to document_file (as related)	PATH			<pre>document_relationship.related_document -> document => document_file</pre>
document_file- relationship to document_file (as relating)	PATH			<pre>document_relationship.relatng_document -> document => document_file</pre>
DOCUMENT_FORMAT- PROPERTY	representation	43	43500, 43503	<pre>{representation.name = 'document format'} [representation.context_of_items -> representation.context representation.context_type = 'document parameters'] property_definition.representation.used_representation property_definition.representation property_definition.representation.definition -> represented_definition represented_definition = property_definition property_definition {property_definition.name = 'document property'}}</pre>
character_code	descriptive- representation_item. description	45		<pre>representation representation.items[i] -> representation_item => {representation_item.name = 'character code'} descriptive_representation_item descriptive_representation_item.description {(descriptive_representation_item.description = 'binary')}</pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre>(descriptive_representation_item.description = 'IEC 61286') (descriptive_representation_item.description = 'ISO 646') (descriptive_representation_item.description = 'ISO 3098-1') (descriptive_representation_item.description = 'ISO 6937') (descriptive_representation_item.description = 'ISO 8859-1') (descriptive_representation_item.description = 'ISO 10646')}</pre>
data_format	descriptive- representation_item. description	45		<pre>representation representation.items[] -> representation_item => {representation_name = 'data format'} descriptive_representation_item { (descriptive_representation_item.description (descriptive_representation_item.description = 'DXF') (descriptive_representation_item.description = 'IGES') (descriptive_representation_item.description = 'ISO 10303-203') (descriptive_representation_item.description = 'ISO 10303-214') (descriptive_representation_item.description = 'TIFF CCITT GR4') (descriptive_representation_item.description = 'VDAS') (descriptive_representation_item.description = 'VOXEL')} }</pre>
document_format- property to rectangular_size (as size_format)	PATH			<pre>representation representation.items[] -> representation_item => {representation_name = 'size format'} geometric_representation_item => planar_extent</pre>
DOCUMENT- LOCATION- PROPERTY	external_source	41		
location_name	external_source.source- id	41		

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
DOCUMENT- REPRESENTATION #1: If the document- representation is not a physical_model. #2: If the document- representation is a physical_model.	#1: (product- definition) #2: (physically- modelled-product- definition)	41 212	62	{#1: (product_definition) #2: (physically_modelled_product_definition <= product_definition_with_associated_documents <= product_definition) product_definition.frame_of_reference -> product_definition_context <= application_context_element #1: ((application_context_element.name = 'digital document definition') (application_context_element.name = 'physical document definition')) #2: (application_context_element.name = 'physical model occurrence')}}
description	product_definition. description	41		
id	product_definition.id	41	8	
document- representation to document- version (as associated- document- version)	PATH			product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element #1: ((application_context_element.name = 'digital document definition') (application_context_element.name = 'physical document definition')) #2: (application_context_element.name = 'physical model occurrence')}} product_definition.frame_of_reference -> product_definition_formation {product_definition_formation.of_product -> product <- product_related_product_category.products[] product_related_product_category <= product_category product_category.name = 'document'} product_definition
document- representation to document- location- property (as common- location)	PATH			{product_definition.frame_of_reference -> product_definition_context <= application_context_element #1: ((application_context_element.name = 'digital document definition') (application_context_element.name = 'physical document definition')) #2: (application_context_element.name = 'physical model occurrence')}} external_identification_item = product_definition

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_-representation to document_-content_-property (as content)	PATH			<pre> external_identification_item <- applied_external_identification_assignment.items[i] applied_external_identification_assignment <= external_identification_assignment {external_identification_assignment <= identification_assignment {identification_assignment identification_assigned_id = " } identification_role -> identification_role identification_role.name = 'common location' } external_identification_assignment.source -> external_source product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element #1: ((application_context_element.name = 'digital document definition') (application_context_element.name = 'physical document definition')) #2: (application_context_element.name = 'physical model occurrence')}} characterized_definition = product_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'document property'} represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation property_definition.representation.used_representation -> representation {representation.name = 'document content'}}</pre>

Table 13 – Mapping table external reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- representation to document_- creation_- property (as creation)	PATH			<pre> product_definition product_definition.frame_of_reference -> product_definition.context <= application_context_element #1: ((application_context_element.name = 'digital document definition') (application_context_element.name = 'physical document definition')) #2: ((application_context_element.name = 'physical model occurrence') characterized_definition = product_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'document property'} represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'document creation'}} </pre>
document_- representation to document_- format_property (as representation_- format)	PATH			<pre> product_definition product_definition.frame_of_reference -> product_definition.context <= application_context_element #1: ((application_context_element.name = 'digital document definition') (application_context_element.name = 'physical document definition')) #2: ((application_context_element.name = 'physical model occurrence') characterized_definition = product_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'document property'} represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation </pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_- representation to document_size_- property (as size)	PATH			<pre> representation {representation.name = 'document format'} product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element (application_context_element.name = 'digital document definition') (application_context_element.name = 'physical document definition')} #1: ((application_context_element.name = 'physical model occurrence')) #2: ((application_context_element.name = 'physical model occurrence')) characterized_definition = product_definition characterized_definition <- property_definition_definition property_definition {property_definition.name = 'document property'} represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'document size'} </pre>
DOCUMENT_SIZE_- PROPERTY #1: If the value_with_- unit is a numerical_value or a value_limit, and the unit is not assigned globally. #2: If the value_with_- unit is a value_range. #3: If the value_with_- unit is a numerical_value or a value_limit, and the unit is assigned globally.	representation	43	43500, 43504	<pre> representation <- {representation.name = 'document size'} [representation.context_of_items -> representation_context representation_context.type = 'document parameters'} property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition {property_definition.name = 'document property'}} </pre>

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_size- property to numerical_value (as file_size)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'file size'} #1: (measure_representation_item) #2: (compound_representation_item => value_range) #3: (value_representation_item) </pre>
document_size- property to numerical_value (as page_count)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'page count'} #1: (measure_representation_item <= measure_with_unit measure_value) measure_value = count_measure} #2: (compound_representation_item {compound_representation_item => value_range} compound_representation_item.item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item[] -> representation_item => measure_representation_item <= measure_with_unit measure_value = count_measure} #3: (value_representation_item) </pre>
DOCUMENT_- STRUCTURE	product_definition_- relationship	41		
description	product_definition_- relationship.	41		

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
relation_type	product_definition_relationship_name description	41		{document_relationship_name} (document_relationship_name = 'addition') (document_relationship_name = 'copy') (document_relationship_name = 'derivation') (document_relationship_name = 'decomposition') (document_relationship_name = 'peer') (document_relationship_name = 'reference') (document_relationship_name = 'sequence') (document_relationship_name = 'substitution') (document_relationship_name = 'translation')}
document_ structure to document_ representation (as related)	PATH			product_definition_related_product_definition -> product_definition
document_ structure to document_ representation (as relating)	PATH			product_definition_relationship product_definition_related_product_definition -> product_definition
DOCUMENT_TYPE_ PROPERTY	document_type	41		
document_type_ name	document_type.product_ data_type	41		{document_type.product_data_type (document_type.product_data_type) (document_type.product_data_type = 'geometry') (document_type.product_data_type = 'NC data') (document_type.product_data_type = 'FE data') (document_type.product_data_type = 'sample data') (document_type.product_data_type = 'process plan') (document_type.product_data_type = 'check plan') (document_type.product_data_type = 'drawing')}

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_type-- property to classification-- system (as used-- classification-- system)	PATH		12.4384	document_type classification_item = document_type classification_item <- applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'class system membership'} classification_assignment.assigned_class -> group => class_system
DOCUMENT_VERSION	product_definition-- formation	41		{product_definition_formation product_definition_formation.of_product -> product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'document'}
description	product_definition-- formation.description	41		
id	product_definition-- formation.id	41		
document_version to document (as associated-- document)	PATH			product_definition_formation product_definition_formation.of_product -> product
DOCUMENT_VERSION-- RELATIONSHIP description	product_definition-- formation_relationship-- description	41		
relation_type	product_definition-- formation_relationship-- name	41		{product_definition_formation_relationship (product_definition_formation_relationship.name = 'derivation') (product_definition_formation_relationship.name = 'hierarchy')}

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
document_version_-- relationship to document_version (as related)	PATH			(product_definition_formation_relationship.name = 'sequence') (product_definition_formation_relationship.name = 'supplied document') product_definition_formation_relationship product_definition_formation_related_product_definition_formation -> product_definition_formation
document_version_-- relationship to document_version (as relating)	PATH			product_definition_formation_relationship product_definition_formation_relatng_product_definition_formation -> product_definition_formation
EXTERNAL_FILE_ID_-- AND_LOCATION	applied_external_-- identification_-- assignment	212		applied_external_identification_assignment <= external_identification_assignment {external_identification_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.name = 'external document id and location'}
external_id	identification_-- assignment_assigned_id	41		applied_external_identification_assignment <= external_identification_assignment <= identification_assignment identification_assignment_assigned_id
external_file_id_-- and_location to document_-- location_-- property (as location)	PATH			applied_external_identification_assignment <= external_identification_assignment {external_identification_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.name = 'alternative document id and location'} external_identification_assignment_source -> external_source
HARDCOPY	document_file	212	8	document_file <= [document {document_representation_types[i] -> document_representation_type document_representation_type.name = 'physical'}] [characterized_object]

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
PARTIAL_DOCUMENT- ASSIGNMENT document_portion	applied_document_usage- constraint_assignment [document_usage- constraint_subject- element] [document_usage- constraint_subject- element_value]	212 41 41		applied_document_usage_constraint_assignment <= document_usage_constraint_assignment <= applied_document_usage_constraint_assignment <= document_usage_constraint_assignment document_usage_constraint_assigned_document_usage -> document_usage_constraint_assigned_document_usage [document_usage_constraint_subject_element] [document_usage_constraint_subject_element_value]
PHYSICAL- DOCUMENT	product_definition	41	62	{product_definition product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'physical document definition'}
physical- document to hardcopy (as component)	PATH			product_definition => {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'physical document definition' product_definition_with_associated_documents.documentation_ids[i] -> product_definition_with_associated_documents.documentation_ids[i] -> document => {document_representation_types[i] -> document_representation_type document_representation_type.name = 'physical' document_file
PHYSICAL_MODEL	physically_modelled- product_definition	212	62	{[product_modelled_product_definition <= product_definition_with_associated_documents.documentation_ids[i] -> document document_representation_types[i] -> document_representation_type document_representation_type.name = 'physical' [product_definition_with_associated_documents <= product_definition product_definition.frame_of_reference -> product_definition_context <=

Table 13 – Mapping table external_reference UoF (ER1) (continued)

Application element	AIM element	Source	Rules	Reference path
				application_context_element application_context_element.name = 'physical model occurrence']}]
RECTANGULAR_SIZE #1: If no density is specified for the rectangular_size. #2: If a density is specified for the rectangular_size. #3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally. #4: If the value_with_unit is a value_range. #5: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally. #6: If the rectangular_size is a named_size. #7: If the rectangular_size is not a named_size.	#1: (#6: ([planar_extent] [descriptive_representation_item]) #2: (#6: ([planar_extent] [measure_representation_item]) #7: ([planar_extent] [descriptive_representation_item]) #7: ([planar_extent] [measure_representation_item]))	46 45 46 46 45 43 46 45		{#1: (#6: ([planar_extent <= geometric_representation_item <=] [descriptive_representation_item <=] #7: ([planar_extent <= geometric_representation_item <=]) #2: (#6: ([planar_extent <= geometric_representation_item <=] [descriptive_representation_item <=] [measure_representation_item <=] #7: ([planar_extent <= geometric_representation_item <=] [measure_representation_item <=]) representation_item representation_item.name = 'size format'})
density	#3: (measure_representation_item) #4: (value_range) #5: (value_representation_item)	45 212 43		#3: ({measure_representation_item <= representation_item representation_item.name = 'size format'}) #4: ({value_range <= compound_representation_item <= representation_item representation_item.name = 'size format'}) #5: ({value_representation_item <= representation_item representation_item.name = 'size format'})

Table 13 – Mapping table external reference UoF (ER1) (continued)

Application element	AMM element	Source	Rules	Reference path
height	planar_extent.size_in_y	46		planar_extent planar_extent.size_in_y
width	planar_extent.size_in_x	46		planar_extent planar_extent.size_in_x
SPECIFIC DOCUMENT CLASSIFICATION	product_related_product_category	41		
classification name	product_category.name	41		product_related_product_category <= product_category product_category.name {(product_category.name (product_category.name = 'catalogue') (product_category.name = 'manual') (product_category.name = 'specification'))}
description	product_category.description	41		product_related_product_category <= product_category product_category.description
specific document classification to document (as associated document)	PATH			product_related_product_category.products[] -> product <- {product_related_product_category.products[] product_related_product_category <= product_category product_category.name = 'document'}
SPECIFIC DOCUMENT CLASSIFICATION HIERARCHY	product_category.relationship	41		{product_category.relationship product_category.relationship.name = 'hierarchy'}

Table 13 – Mapping table external_reference UoF (ER.1) (concluded)

Application element	AIM element	Source	Rules	Reference path
specific.- document.- classification.- hierarchy to specific.- document.- classification (as sub.- classification)	PATH			product_category_relationship product_category_relationship.sub_category -> product_category => product_related_product_category
specific.- document.- classification.- hierarchy to specific.- document.- classification (as super.- classification)	PATH			product_category_relationship product_category_relationship.category -> product_category => product_related_product_category

Table 14 – Mapping table function_structure UoF (F1)

Application element	AIM element	Source	Rules	Reference path
COMPOSITION- RELATIONSHIP #1: If composition- relationship is not used in the context of UoF CF1. #2: If composition- relationship is used in the context of UoF CF1.	assembly_component_- usage	44		
composition_- relationship to function_- definition (as composed_- function)	PATH			assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relating_product_definition -> product_definition
composition_- relationship to function_unit (as functional_- component)	#2: (PATH) #1: (IDENTICAL MAPPING)		62,65	#2: (assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relating_product_definition -> product_definition <- {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'functional definition'} product_definition_relationship_relating_product_definition product_definition_relationship {product_definition_relationship.name = 'definition usage'} product_definition_relating_product_definition ->] [assembly_component_usage <- product_definition_occurrence_relationship.occurrence_usage product_definition_occurrence_relationship product_definition_occurrence_relationship.occurrence ->] product_definition)
FUNCTIONALITY	product	41	4,66,67, 93	{product <- product_relating_product_category.products[i] product_relating_product_category <=

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
				product_category
description	product.description	41		product_category.name = 'functionality' }
id	product.id	41		
name	product.name	41		
FUNCTION_- DEFINITION	product_definition	41	62	{product_definition product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'functional_definition' }
id	product_definition.id	41		
name	product_definition. description	41		
function_- definition to application_- context (as additional_- context)	PATH		63	product_definition <- product_definition_context.association.definition product_definition_context.association {product_definition_context.association.role -> product_definition_context.role product_definition_context.name = 'application context' } product_definition_context.association.frame_of_reference -> product_definition_context
function_- definition to application_- context (as initial_- context)	PATH			product_definition product_definition.frame_of_reference -> product_definition_context
function_- definition to function_version (as version)	PATH			product_definition product_definition.formation -> product_definition_formation
FUNCTION_- DEFINITION_- RELATIONSHIP	product_definition_- relationship	41		

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
description	product_definition_- relationship. description	41		
relation_type	product_definition_- relationship.name	41		{product_definition_relationship.name} (product_definition_relationship.name = 'alternate') (product_definition_relationship.name = 'derivation') (product_definition_relationship.name = 'substitution')}
function_- definition_- relationship to function_- definition (as related)	PATH			product_definition_relationship.related_product_definition -> product_definition
function_- definition_- relationship to function_- definition (as relating)	PATH			product_definition_relationship product_definition.relationship.relatng_product_definition -> product_definition
FUNCTIONUNIT #1: If function_unit is not used in the context of UoF CF1. #2: If function_unit is used in the context of UoF CF1. #3: If function_unit is referenced by a composition_relationship as related. #4: If function_unit is not referenced by a composition_relationship as related.	#1: (assembly_- component_usage) #2: (product_- definition)	44 41	62,65	#2: ({product_definition.frame_of_reference -> product_definition_context <= application_context_element [product_definition <- product_definition_occurrence.relationship.occurrence] application_context_element.name = 'functional occurrence'] #3: ({product_definition_occurrence.relationship.occurrence product_definition_occurrence.relationship.occurrence.usage -> [product_definition_relationship.related_product_definition product_definition_relationship {product_definition_relationship.name = 'definition usage'} product_definition_relationship.relatng_product_definition -> product_definition <- product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'functional definition']})

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> product_definition_relationship.related_product_definition product_definition_usage => assembly_component_usage) #4: ([product_definition_relationship.related_product_definition product_definition_relationship product_definition_name = 'definition usage'] [product_definition_relationship.related_product_definition product_definition_usage => product_definition_usage])) </pre>
description	#1: (product_definition_relationship.description)	41		#1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship.description)
	#2: ([product_definition_relationship.description]	41		#2: (product_definition_occurrence_relationship.product_definition_usage <= assembly_component_usage <= product_definition_usage <= product_definition_relationship.description))
	#4: (product_definition_relationship.description)	41		
	#1: (product_definition_relationship.id)	41		#1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship.id)
id	#1: (product_definition_relationship.id)	41		#1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship.id)
	#2: ([product_definition_relationship.id]	41		#2: (product_definition_occurrence_relationship.product_definition_usage <= assembly_component_usage <= product_definition_usage <= product_definition_relationship.id))
	#4: (product_definition_relationship.id)	41		
	#1: (product_definition_relationship.id)	41		#1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship.id))

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
function_unit to object_reference_designation (as extended_designation)	PATH		7,25,62,65	<pre> item_designation_item = product_definition #1: (assembly_component_usage item_designation_item = assembly_component_usage) item_designation_item <- item_designation_assignment.items[1] item_designation_assignment => {item_designation_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.description = 'primary'} object_reference_designation_assignment #1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_related_product_definition ->) #2: (product_definition <- product_definition_relationship.related_product_definition product_definition_relationship {product_definition_relationship.name = 'definition_usage'}) product_definition_relationship.related_product_definition ->) product_definition #1: (1) #2: (product_definition [configuration_design_item = product_definition configuration_design_item <- configuration_design.design configuration_design configuration_design.name = 'occurrence usage definition'} configuration_design.configuration ->] [product_definition_formation -> product_definition_formation {product_definition_formation.of_product -> product <- product_related_product_category.products[j] </pre>
function_unit to function_definition (as instantiated_function)	PATH		62,65	
function_unit to product_identification (as instantiated_function)	PATH		10,62	

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>FUNCTION_UNIT- RELATIONSHIP #1: If function_unit- relationship is not of type 'substitution', #2: If function_unit- relationship is of type 'substitution', #3: If the related function_unit is replaced in the context of an composition_relationship. #4: If the related function_unit is replaced in the context of a product_structure- relationship. #5: If function_unit is not used in the context of UoF CFI. #6: If function_unit is used in the context of UoF CFI.</p>	<p>#6: (#1: (product- definition- relationship) #2: (product- definition- substitute)) #5: (property- definition- relationship)</p>	<p>41 41 45</p>		<pre> product_related_product_category <= product_category product_category.name = 'part' configuration_design_item = product_definition_formation configuration_design_item <- configuration_design configuration_design {configuration_design.name = 'product design'} configuration_design.configuration ->] configuration_item => product_identification </pre>

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
description	#6: (#1: (product_-definition_-relationship_-description) #2: (product_-definition_-substitute_-description)) #5: (property_-definition_-relationship_-description)	41		
relation_type	#6: (#1: (product_-definition_-relationship_name) #2: (IDENTICAL MAPPING)) #5: (property_-definition_-relationship_name)	41		#6: (#1: ((product_definition_relationship_name) (product_definition_relationship_name = 'derivation') (product_definition_relationship_name = 'implementation') (product_definition_relationship_name = 'redundancy') (product_definition_relationship_name = 'specialization')))) #5: ((property_definition_relationship_name) (property_definition_relationship_name = 'derivation') (property_definition_relationship_name = 'implementation') (property_definition_relationship_name = 'redundancy') (property_definition_relationship_name = 'specialization'))))
function_unit_-relationship_to_function_unit (as related)	PATH			#6: (#1: (product_definition_relationship product_definition_relationship.related_product_definition ->) #2: (product_definition_substitute product_definition) #5: (property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage =>)

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
function_unit_- relationship to function_unit (as relating)	PATH			assembly_component_usage #6: (#1: (product_definition_relationship product_definition_relationship.relying_product_definition ->) product_definition #2: (product_definition_substitute product_definition_substitute.context_relationship -> #3: (product_definition_relationship <- {product_definition_relationship => product_definition_usage => assembly_component_usage} product_definition_occurrence_relationship_usage product_definition_occurrence_relationship product_definition_occurrence_relationship.occurrence ->) #4: (product_definition_relationship product_definition_relationship.related_product_definition ->)) product_definition #5: (property_definition_relationship property_definition_relationship.relying_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)
FUNCTION_VERSION	product_definition_- formation	41		
description	product_definition_- formation.description	41		
version_id	product_definition_- formation.id	41		

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
function_version to functionality (as base-function)	PATH		67	product_definition_formation_of_product -> product
FUNCTION_VERSION_RELATIONSHIP description	product_definition_formation_relationship	41		
relation_type	product_definition_formation_relationship.description	41		{(product_definition_formation_relationship.name) (product_definition_formation_relationship.name = 'derivation') (product_definition_formation_relationship.name = 'hierarchy') (product_definition_formation_relationship.name = 'sequence') (product_definition_formation_relationship.name = 'supplied function')}
function_version relationship to function_version (as related)	PATH			product_definition_formation_relationship.related_product_definition_formation -> product_definition_formation
function_version relationship to function_version (as relating)	PATH			product_definition_formation_relationship.relatng_product_definition_formation -> product_definition_formation
SINGLE_FUNCTION_UNIT #1: If single_function_unit is not used in the context of UoF CF1. #2: If single_function_unit is used in the context of UoF CF1.	#1: (assembly_component_usage) #2: (product_definition)	44 41	62,65	[product_definition.name = 'single instance'] [product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'functional occurrence']}]

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>SPECIFIED_- FUNCTION_UNIT #1: If specified_function_- unit is not used in the context of UoF CF1. #2: If specified_function_- unit is used in the context of UoF CF1.</p>	<p>#1: (specified_higher_- usage_occurrence) #2: (product_- definition)</p>	<p>44 41</p>	<p>62,65</p>	<pre> #2: ({product_definition [product_definition.name = 'specified instance'] [product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'functional occurrence'] [product_definition <- product_definition_occurrence_relationship product_definition_occurrence_relationship product_definition_occurrence_relationship.related_product_definition product_definition_relationship product_definition_relationship.name = 'definition usage']} product_definition_relationship.related_product_definition -> product_definition <- product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'functional definition')} application_context_element.name = 'functional definition'} product_definition_relationship.related_product_definition product_definition_relationship.name = 'definition usage'} product_definition_relationship.related_product_definition -> product_definition <- product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'functional definition')} product_definition_relationship.related_product_definition product_definition_relationship.name = 'definition usage'} product_definition_relationship.related_product_definition -> product_definition <- product_definition.frame_of_reference -> product_definition.context <= assembly_component_usage => specified_higher_usage_occurrence]]) </pre>
<p>specified_- function_unit to function_- definition (as functional_- context)</p>	<p>PATH</p>			<pre> #1: (specified_higher_usage_occurrence <= assembly_component_usage <=) #2: (product_definition <- product_definition_occurrence_relationship_occurrence product_definition_occurrence_relationship_occurrence.relationship product_definition_occurrence_relationship_occurrence_usage -> assembly_component_usage <= {assembly_component_usage => specified_higher_usage_occurrence}) </pre>

Table 14 – Mapping table function_structure UoF (F1) (continued)

Application element	AIM element	Source	Rules	Reference path
specified_-function_unit to function_unit (as related_-function_unit)	PATH			<pre> product_definition_usage <= product_definition_relationship product_definition_relatiing_product_definition -> product_definition #1: (specified_higher_usage_occurrence specified_higher_usage_occurrence.next_usage -> next_assembly_usage_occurrence <= assembly_component_usage) #2: (product_definition <- product_definition_usage_relationship.occurrence product_definition_usage_relationship product_definition_usage -> assembly_component_usage => specified_higher_usage_occurrence specified_higher_usage_occurrence.next_usage -> next_assembly_usage_occurrence <= assembly_component_usage <- product_definition_usage_relationship.occurrence_usage product_definition_usage_relationship product_definition_usage -> product_definition) </pre>
specified_-function_unit to function_unit (as upper_usage)	PATH			<pre> #1: (specified_higher_usage_occurrence specified_higher_usage_occurrence.next_usage -> next_assembly_usage_occurrence <= assembly_component_usage) #2: (product_definition <- product_definition_usage_relationship.occurrence product_definition_usage_relationship product_definition_usage -> assembly_component_usage => specified_higher_usage_occurrence specified_higher_usage_occurrence.upper_usage -> assembly_component_usage <- product_definition_usage_relationship.occurrence_usage product_definition_usage_relationship product_definition_usage -> product_definition) </pre>

NOTE - The following note numbers correspond to the footnotemarks listed in the table above:

- 1 The use of this mapping alternative is not applicable.

Table 15 – Mapping table functional_connectivity UoF (FC1)

Application element	AIM element	Source	Rules	Reference path
FUNCTIONAL_- CONNECTIVITY_- DEFINITION description	connectivity_- definition	212	105	connectivity_definition <= shape_aspect
id	shape_aspect. description	41		connectivity_definition <= shape_aspect shape_aspect.description
version_id	shape_aspect.name	41		connectivity_definition <= shape_aspect
functional_- connectivity_- definition to function_- definition (as connectivity_- of)	identification_- assignment.assigned_id	41	25,53	shape_aspect.name connectivity_definition identification_item = connectivity_definition identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id
	PATH			connectivity_definition <= shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition
FUNCTIONAL_- CONNECTIVITY_- DEFINITION_- RELATIONSHIP description	shape_aspect_- relationship	41		
	shape_aspect_- relationship.	41		

Table 15 – Mapping table functional_connectivity UoF (FC1) (continued)

Application element	AIM element	Source	Rules	Reference path
relation_type	shape_aspect_- relationship.name	41		{(shape_aspect_relationship.name (shape_aspect_relationship.name = 'alternate') (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'derivation') (shape_aspect_relationship.name = 'redundancy') (shape_aspect_relationship.name = 'substitution') (shape_aspect_relationship.name = 'version hierarchy') (shape_aspect_relationship.name = 'version sequence'))}
functional_- connectivity_- definition_- relationship to functional_- connectivity_- definition (as related)	PATH			shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> connectivity_definition
functional_- connectivity_- definition_- relationship to functional_- connectivity_- definition (as relating)	PATH			shape_aspect_relationship shape_aspect_relationship.relatng_shape_aspect -> shape_aspect ==> connectivity_definition
FUNCTION_- INTERFACE description	interface shape_aspect. description	212 41	105	interface <= shape_aspect interface <= shape_aspect shape_aspect.description interface <= shape_aspect shape_aspect.name
id	shape_aspect.name	41		

Table 15 – Mapping table functional_connectivity UoF (FC1) (continued)

Application element	AIM element	Source	Rules	Reference path
function_- interface to interface_port (as external_ access)	PATH		104	interface <= shape_aspect <- shape_aspect_relati.onship_relati.onship_shape_aspect shape_aspect_relati.onship {shape_aspect_relati.onship.name = 'external_access'} shape_aspect_relati.onship_relati.onship_shape_aspect -> terminal
function_- interface to function_- definition (as interface_- of)	PATH			interface <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
INTERFACE_PORT	terminal	212	105	terminal <= shape_aspect
description	shape_aspect. description	41		terminal <= shape_aspect shape_aspect.description
id	shape_aspect.name	41		terminal <= shape_aspect shape_aspect.name
interface_port to function_- definition (as interface_- port_of)	PATH			terminal <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition

Table 15 – Mapping table functional_connectivity UoF (FC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				characterized_product_definition = product_definition product_definition
INTERFACE_PORT_- CONNECTIVITY	connectivity_- definition PATH	212	104,105	connectivity_definition <= shape_aspect
interface_port_- connectivity to interface_port (as connected_- interface_port)			104	connectivity_definition <= shape_aspect <- shape_aspect_relating_shape_aspect shape_aspect_relating_shape_aspect {shape_aspect_relating_shape_aspect.name = 'connectivity'} shape_aspect_relating_shape_aspect -> shape_aspect => terminal
INTERFACE_PORT_- RELATIONSHIP	shape_aspect_- relationship	41		
description	shape_aspect_- relationship. description	41		
relation_type	shape_aspect_- relationship.name	41		{(shape_aspect_relating_shape_aspect.name) (shape_aspect_relating_shape_aspect.name = 'decomposition') (shape_aspect_relating_shape_aspect.name = 'derivation')}
interface_port_- relationship to interface_port (as related)	PATH			shape_aspect_relating_shape_aspect shape_aspect_relating_shape_aspect -> shape_aspect => terminal
interface_port_- relationship to interface_port (as relating)	PATH			shape_aspect_relating_shape_aspect shape_aspect_relating_shape_aspect -> shape_aspect => terminal
NETWORK	connectivity_- definition PATH	212	104,105	connectivity_definition <= shape_aspect
network to port (as connected_- port)			104	connectivity_definition <= shape_aspect <- shape_aspect_relating_shape_aspect shape_aspect_relating_shape_aspect {shape_aspect_relating_shape_aspect.name = 'connectivity'} shape_aspect_relating_shape_aspect -> shape_aspect =>

Table 15 – Mapping table functional_connectivity UoF (FC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				shape_aspect => terminal
PORT #1: If single_function_-unit is not used in the context of UoF CF1. #2: If single_function_-unit is used in the context of UoF CF1.	terminal	212	105	terminal <= shape_aspect
description	shape_aspect.description	41		terminal <= shape_aspect shape_aspect.description
id	shape_aspect.name	41		terminal <= shape_aspect shape_aspect.name
port to interface_port (as associated_interface_port)	PATH		104	terminal <= shape_aspect <= shape_aspect.relationship.related_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'definition usage'} shape_aspect.relationship.related_shape_aspect -> shape_aspect => terminal
port to terminal_designation (as extended_designation)	PATH		25	terminal item_designation_item = terminal item_designation_item <= item_designation_assignment.items[1] {item_designation_assignment => item_designation_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.description = 'primary'} terminal_designation_assignment

Table 15 – Mapping table functional_connectivity UoF (FC1) (continued)

Application element	AIM element	Source	Rules	Reference path
port to single- function_unit (as port_of)	PATH			terminal <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_definition_product_definition characterized_product_definition #1: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #2: (characterized_product_definition = product_definition product_definition)
PORT_ASSOCIATION	shape_aspect_- relationship PATH	41	104	{shape_aspect_relationship shape_aspect_relationship.name = 'correspondence'}
port_association to interface_- port (as associated_- interface_port)	PATH			shape_aspect_relationship.relatng_shape_aspect -> shape_aspect => terminal
port_association to port (as associated_- port)	PATH			shape_aspect_relationship shape_aspect_relationship.relatng_shape_aspect -> shape_aspect => terminal
PORT_- RELATIONSHIP description	shape_aspect_- relationship shape_aspect_- relationship. description	41		
relation_type	shape_aspect_- relationship.name	41		{(shape_aspect_relationship.name) (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'redundancy')}

Table 15 – Mapping table functional_connectivity UoF (FC1) (concluded)

Application element	AIM element	Source	Rules	Reference path
port_- relationship to port (as related)	PATH			shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> terminal
port_- relationship to port (as relating)	PATH			shape_aspect_relationship shape_aspect_relationship.relatng_shape_aspect -> shape_aspect ==> terminal

Table 16 – Mapping table installation UoF (IN1)

Application element	AIM element	Source	Rules	Reference path
CABLE_PULL_INFORMATION description	representation description_attribute_value	43 41	72	{ representation representation.name = 'cable pull information' } representation description_attribute_select = representation description_attribute_select <- description_attribute_described_item description_attribute description_attribute_value
id	id_attribute_attribute_value	41		representation id_attribute_select = representation id_attribute_select <- id_attribute_identified_item id_attribute id_attribute_value
version_id	identification_assignment_assigned_id	41	25,53	representation identification_item = representation identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment { identification_assignment.role -> identification_role identification_role.name = 'version' } identification_assignment.assigned_id
cable_pull_information to routed_object (as associated_object)	PATH		104	representation <- property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
FREESEGMENT	free_segment	212	105	shape_aspect.relationship free_segment <= installation_segment <= shape_aspect
description	shape_aspect.description	41		free_segment <= installation_segment <= shape_aspect shape_aspect.description
id	shape_aspect.name	41		free_segment <= installation_segment <= shape_aspect shape_aspect.name
free_segment to node (as ends_at)	PATH		104	free_segment <= installation_segment <= shape_aspect <- shape_aspect.relationship shape_aspect.relationship.name = 'segment termination' {shape_aspect.relationship.related_shape_aspect -> shape_aspect => installation_node
ROUTE #1: If device is not used in the context of UoF CFL. #2: If device is used in the context of UoF CFL. #3: If function_unit is not used in the context of UoF CFL. #4: If function_unit is used in the context of UoF CFL.	installation_route	212	105	installation_route <= shape_aspect
description	shape_aspect.description	41		installation_route <= shape_aspect shape_aspect.description

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
id	shape_aspect.name	41		installation_route <= shape_aspect shape_aspect.name
version_id	identification_- assignment.assigned_id	41	25,53	installation_route identification_item = installation_route identification_item <= applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id
route to node (as course)	PATH		104	installation_route <= shape_aspect <= shape_aspect.relationship.relation_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'route course sequence'} shape_aspect.relationship.related_shape_aspect -> shape_aspect => installation_node
route to section (as course)	PATH		104	installation_route <= shape_aspect <= shape_aspect.relationship.relation_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'route course sequence'} shape_aspect.relationship.related_shape_aspect -> shape_aspect => installation_section
route to section_- interface (as course)	PATH		104	installation_route <= shape_aspect <= shape_aspect.relationship.relation_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'route course sequence'} shape_aspect.relationship.related_shape_aspect -> shape_aspect =>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
route to connectivity_-definition (as encountered_-object)	PATH		69	<pre> installation_section_interface installation_route <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition property_definition <- property_definition <- {property_definition.name = 'route requirements'} property_definition.relation.relatng_property_definition property_definition.relationship {property_definition.relation.name = 'encountered object sequence'} property_definition.relation.related_property_definition -> property_definition {property_definition.name = 'route characteristics'} property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition </pre>
route to device (as encountered_-object)	PATH		69	<pre> installation_route <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- {property_definition.name = 'route requirements'} property_definition.relation.relatng_property_definition property_definition.relationship {property_definition.relation.name = 'encountered object sequence'} </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
route to function_unit (as encountered_-object)	PATH		69	<pre> property_definition {property_definition.name = 'route characteristics'} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition #2: (characterized_product_definition = product_definition product_definition) #1: (characterized_product_definition = product_definition_relationship product_definition_relationship = product_definition_relationship product_definition_usage => assembly_component_usage) installation_route <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition.definition <- property_definition.definition {property_definition.name = 'route requirements'} property_definition.relationship.relation.property_definition property_definition.relationship property_definition.relationship.name = 'encountered object sequence'} property_definition.relationship.related_property_definition -> property_definition {property_definition.name = 'route characteristics'} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition #4: (characterized_product_definition = product_definition product_definition) #34: (characterized_product_definition = product_definition_relationship product_definition_relationship = product_definition_relationship product_definition_usage => product_definition_usage => </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
route to functional connectivity definition (as encountered object)	PATH		69	<pre> assembly_component_usage installation_route <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition property_definition <- property_definition <- {property_definition.name = 'route requirements'} property_definition.relationship.relatng_property_definition property_definition.relationship {property_definition.relationship.name = 'encountered object sequence'} property_definition.relationship.related_property_definition -> property_definition {property_definition.name = 'route characteristics'} property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition installation_route <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- {property_definition.name = 'route requirements'} property_definition.relationship.relatng_property_definition property_definition.relationship {property_definition.relationship.name = 'encountered object sequence'} property_definition.relationship.related_property_definition -> property_definition </pre>
route to location (as encountered object)	PATH		69	<pre> assembly_component_usage installation_route <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition property_definition <- property_definition <- {property_definition.name = 'route requirements'} property_definition.relationship.relatng_property_definition property_definition.relationship {property_definition.relationship.name = 'encountered object sequence'} property_definition.relationship.related_property_definition -> property_definition {property_definition.name = 'route characteristics'} property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition installation_route <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- {property_definition.name = 'route requirements'} property_definition.relationship.relatng_property_definition property_definition.relationship {property_definition.relationship.name = 'encountered object sequence'} property_definition.relationship.related_property_definition -> property_definition </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> property_definition property_definition.name = 'route characteristics' property_definition.definition -> characterized_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_location installation_location <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- {property_definition.name = 'route requirements'} property_definition.relationship.relation.property_definition property_definition.relationship {property_definition.relationship.name = 'encountered object sequence'} property_definition.relationship.related_property_definition -> property_definition property_definition.name = 'route characteristics' property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition installation_route <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- </pre>
route to physical instance (as encountered object)	PATH		69	
route to product component (as encountered object)	PATH		69	

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
route to signal (as encountered object)	PATH		69	<pre> property_definition.definition property_definition.name = 'route requirements' property_definition.relationship.relation.property_definition property_definition.relationship property_definition.relationship.name = 'encountered object sequence' property_definition.relationship.related_property_definition -> property_definition property_definition.name = 'route characteristics' property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition {product_definition.frame_of_reference -> product_definition.context <= application_context.element product_definition.name = 'conceptual definition' } application_context.element.name = 'conceptual definition' product_definition.formatation -> product_definition.formatation installation_route <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition <- property_definition.definition <- property_definition.name = 'route requirements' property_definition.relationship.relation.property_definition property_definition.relationship property_definition.name = 'encountered object sequence' property_definition.relationship.related_property_definition -> property_definition property_definition.name = 'route characteristics' } </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal </pre>
<p>ROUTED_OBJECT #1: If device is used in the context of UoF CFL. #2: If device is not used in the context of UoF CFL. #3: If function_unit is used in the context of UoF CFL. #4: If function_unit is not used in the context of UoF CFL.</p>	<pre> shape_aspect_- relationship </pre>	41	104	<pre> {shape_aspect_relationship shape_aspect_relationship.name = 'arrangement sequence'} </pre>
<p>routedObject to free_segment (as arrangement)</p>	PATH			<pre> shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_segment => free_segment </pre>
<p>routedObject to routed_segment (as arrangement)</p>	PATH			<pre> shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_segment => routed_segment </pre>
<p>routedObject to connectivity_- definition (as associated_- object)</p>	PATH			<pre> shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => connectivity_definition </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
routed_object to device (as associated-object)	PATH			shape_aspect.relationship shape_aspect.relationship.relatng_shape_aspect -> shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #1: (characterized_product_definition = product_definition product_definition) #2: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) shape_aspect.relationship shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #3: (characterized_product_definition = product_definition product_definition) #4: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)
routed_object to function_unit (as associated-object)	PATH			shape_aspect.relationship shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #3: (characterized_product_definition = product_definition product_definition) #4: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
routed_object to functional_-connectivity_-definition (as associated_-object)	PATH			shape_aspect.relationship shape_aspect.relationship.relation_shape_aspect -> shape_aspect => connectivity_definition
routed_object to physical_-instance (as associated_-object)	PATH			shape_aspect.relationship shape_aspect.relationship.relation_shape_aspect -> shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
routed_object to product_-component (as associated_-object)	PATH			shape_aspect.relationship shape_aspect.relationship.relation_shape_aspect -> shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition.name = 'conceptual definition'} product_definition.formation -> product_definition_formation

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
ROUTED_SEGMENT	routed_segment	212	105	routed_segment <= installation_segment <= shape_aspect
description	shape_aspect. description	41		routed_segment <= installation_segment <= shape_aspect shape_aspect.description
id	shape_aspect.name	41		routed_segment <= installation_segment <= shape_aspect shape_aspect.name
routed_segment to node (as course)	PATH		104	routed_segment <= installation_segment <= shape_aspect <- shape_aspect.relationship.relationing_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'course sequence'} shape_aspect.relationship.related_shape_aspect -> shape_aspect => installation_node
routed_segment to route (as course)	PATH		104	routed_segment <= installation_segment <= shape_aspect <- shape_aspect.relationship.relationing_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'course sequence'} shape_aspect.relationship.related_shape_aspect -> shape_aspect => installation_route
routed_segment to section (as course)	PATH		104	routed_segment <= installation_segment <= shape_aspect <- shape_aspect.relationship.relationing_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'course sequence'} shape_aspect.relationship.related_shape_aspect ->

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
routed_segment to section_- interface (as course)	PATH		104	<pre> shape_aspect => installation_section routed_segment <= installation_section <- shape_aspect <- shape_aspect_relying_relying_shape_aspect shape_aspect_relying_relying_shape_aspect {shape_aspect_relying_relying.name = 'course sequence'} shape_aspect_relying_relying_relying_shape_aspect -> shape_aspect => installation_section_interface </pre>
ROUTE_- RELATIONSHIP description	shape_aspect_- relationship	41		
relation_type	shape_aspect_- relationship. description	41		
route_- relationship to route (as related)	shape_aspect_- relationship.name	41		<pre> {(shape_aspect_relying_relying.name) (shape_aspect_relying_relying.name = 'alternate')} (shape_aspect_relying_relying.name = 'decomposition') (shape_aspect_relying_relying.name = 'derivation') (shape_aspect_relying_relying.name = 'substitution')}} </pre>
route_- relationship to route (as relating)	PATH			<pre> shape_aspect_relying_relying shape_aspect_relying_relying_relying_shape_aspect -> shape_aspect => installation_route </pre>
route_- relationship to route (as relating)	PATH			<pre> shape_aspect_relying_relying_relying_shape_aspect -> shape_aspect => installation_route </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>SECTION</p> <p>#1: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#2: If the value_with_unit is a value_range.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If device is used in the context of UoF CF1.</p> <p>#8: If device is not used in the context of UoF CF1.</p>	<p>installation_section</p>	<p>212</p>	<p>105</p>	<p>installation_section <= shape_aspect</p>
<p>description</p>	<p>shape_aspect. description</p>	<p>41</p>		<p>installation_section <= shape_aspect shape_aspect.description</p>
<p>id</p>	<p>shape_aspect.name</p>	<p>41</p>		<p>installation_section <= shape_aspect shape_aspect.name</p>
<p>version_id</p>	<p>identification_assignment.assigned_id</p>	<p>41</p>	<p>25,53</p>	<p>installation_section identification_item = installation_section identification_item <= applied_identification_assignment.items[1]</p>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
section to value- with_unit (as bending- radius)	PATH		72	<pre> applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role } identification_role.name = 'version' identification_assignment.assigned_id installation_section <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'section parameters' representation.items[] -> representation_item => {representation_item.name = 'bending radius' #1: (measure_representation_item <= measure_with_unit {measure_with_unit => length_measure_with_unit}) #2: (compound_representation_item => {compound_representation_item.item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item set_representation_item[] -> representation_item => measure_representation_item <= </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
section to path (as course)	PATH			<pre> measure_with_unit => length_measure_with_unit { value_range) installation_section <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation {property_definition.representation => shape_definition.representation} property_definition.representation.used_representation -> representation {[representation => shape_representation] [representation.context_of_items -> representation.context => geometric_representation.context representation.context.coordinate_space_dimension = 3]} representation.items[] -> representation_item => topological_representation_item => path </pre>
section to cross-section (as cross-sectional_area)	PATH		72	<pre> installation_section <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'section parameters' } representation.items[] -> representation_item => {representation_item.name = 'cross section area' } #3: (#5: (measure_representation_item) #6: ([measure_representation_item] [qualified_representation_item]) {measure_representation_item <= measure_with_unit => area_measure_with_unit } #4: (#5: (value_range) #6: ([value_range] [qualified_representation_item]) {value_range <= compound_representation_item compound_representation_item.item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item set_representation_item[] -> representation_item => measure_representation_item <= measure_with_unit measure_with_unit => length_measure_with_unit }) </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
section to device (as implemented-by)	PATH			<pre> installation_section <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- {property_definition.name = 'section requirements'} property_definition.relation.relation.property_definition property_definition.relation.relation.relation.property_definition -> property_definition property_definition.name = 'section characteristics'} characterized_definition #7: (characterized_product_definition = product_definition product_definition) #8: (characterized_product_definition = product_definition.relation.relation product_definition.relation.relation.relation.relation.relation.relation product_definition.usage => assembly_component_usage) </pre>
section to value_-with_unit (as length_of_-section)	PATH		72	<pre> installation_section <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition property_definition.representation.definition property_definition.representation property_definition.representation.used_representation -> </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
section to value_- with_unit (as space_- factor)	PATH		72	<pre> representation {representation.name = 'section parameters'} representation.items[] -> representation.item => {representation.item.name = 'section length'} #1: (measure_representation_item <= measure_with_unit {measure_with_unit => length_measure_with_unit}) #2: (compound_representation_item => {compound_representation_item.item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item representation_item[] -> representation_item => measure_representation_item <= measure_with_unit {measure_with_unit => length_measure_with_unit} value_range) installation_section <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'section parameters'} </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation.items[] -> representation_item => {representation_item.name = 'space factor'} #1: (measure_representation_item <= measure_with_unit {measure_with_unit => length_measure_with_unit}) #2: (compound_representation_item => {compound_representation_item.element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item set_representation_item[] -> representation_item => measure_representation_item <= measure_with_unit measure_with_unit => length_measure_with_unit value_range) </pre>
SECTION_END	installation_section_end	212	105	installation_section_end <=
id	shape_aspect.name	41		<pre> shape_aspect installation_section_end <= shape_aspect.name </pre>
kind	shape_aspect.description	41		<pre> shape_aspect installation_section_end <= shape_aspect shape_aspect.description {(shape_aspect.description (shape_aspect.description = 'flat oval') (shape_aspect.description = 'round') (shape_aspect.description = 'u shape'))} </pre>
section_end to node (as located_at)	PATH		104	<pre> installation_section_end <= shape_aspect <- shape_aspect.relationship.relation_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'section end residence'} </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
section_end to (as of_section)	PATH		104	<pre> shape_aspect.relationship.related_shape_aspect -> shape_aspect => installation_node installation_section_end <= shape_aspect <- shape_aspect.relationship.relatng_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'section_termination'} shape_aspect.relationship.related_shape_aspect -> shape_aspect => installation_section </pre>
SECTION_- INTERFACE #1: If the value_with_- unit is a numerical_value or a value_limit, and the unit is not assigned globally. #2: If the value_with_- unit is a value_range. #3: If no significant digits are given for the value_with_unit. #4: If significant digits are given for the value_- with_unit. #5: If device is used in the context of UoF CF1. #6: If device is not used in the context of UoF CF1.	installation_section_- interface	212	105	<pre> installation_section_interface <= shape_aspect </pre>
description	shape_aspect. description	41		<pre> installation_section_interface <= shape_aspect shape_aspect.description </pre>
id	shape_aspect.name	41		<pre> installation_section_interface <= shape_aspect </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
version_id	identification_- assignment_assigned_id	41	25,53	<pre> shape_aspect.name installation_section_interface identification_item = installation_section_interface identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= {identification_assignment identification_role -> identification_role identification_role.name = 'version'} identification_assignment_assigned_id </pre>
section_- interface to cross_section (as cross_- sectional_area)	PATH		72,74	<pre> shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'section interface parameters'} representation.items[] -> representation_item => {representation_item.name = 'cross section area'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item]) {measure_representation_item <= measure_with_unit => area_measure_with_unit}) #2: (#3: (value_range) #4: ([value_range]) </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
section_- interface to device (as implemented_- by)	PATH			<pre> [qualified_representation_item] {value_range <= compound_representation_item compound_representation_item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item set_representation_item[i] -> representation_item => measure_representation_item <= measure_with_unit measure_with_unit => length_measure_with_unit} installation_section_interface <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- property_definition.name = 'section interface requirements'} property_definition.relationship.relation.property_definition property_definition.relationship property_definition.relationship.related_property_definition -> property_definition {property_definition.name = 'section interface characteristics'} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #5: (characterized_product_definition = product_definition product_definition) #6: (characterized_product_definition = product_definition.relationship product_definition.relationship => product_definition_usage => assembly_component_usage) </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
section_- interface to section_end (as joins)	PATH		104	<pre> installation_section_interface <= shape_aspect <- shape_aspect_relying_relying_shape_aspect shape_aspect_relying_relying_shape_aspect {shape_aspect_relying_relying_shape_aspect = 'section join'} shape_aspect_relying_relying_shape_aspect -> shape_aspect => installation_section_end </pre>
section_- interface to node (as located_at)	PATH		104	<pre> installation_section_interface <= shape_aspect <- shape_aspect_relying_relying_shape_aspect shape_aspect_relying_relying_shape_aspect {shape_aspect_relying_relying_shape_aspect = 'section interface residence'} shape_aspect_relying_relying_shape_aspect -> shape_aspect => installation_node </pre>
section_- interface to single_value (as space_- factor)	PATH		72,74	<pre> installation_section_interface <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition property_definition <- property_definition represented_definition = property_definition represented_definition <- property_definition_relying_relying_definition property_definition_relying_relying_definition property_definition_relying_relying_definition representation {representation.name = 'section interface parameters'} representation.items[] -> representation_item => {representation_item.name = 'space factor'} #1: (measure_representation_item <= measure_with_unit {measure_with_unit => </pre>

Table 16 – Mapping table installation UoF (IN1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> length_measure_with_unit } #2: (compound_representation_item => {compound_representation_item.item_element -> compound_item_definition set_representation_item set_representation_item[i] -> representation_item => measure_representation_item <= measure_with_unit measure_with_unit => length_measure_with_unit } value_range) </pre>
SECTION_- INTERFACE_- RELATIONSHIP description	shape_aspect_- relationship	41		
relation_type	shape_aspect_- relationship. description shape_aspect_- relationship.name	41		<pre> {(shape_aspect_relationship.name (shape_aspect_relationship.name = 'alternate') (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'substitution') (shape_aspect_relationship.name = 'version_hierarchy')) shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_section_interface </pre>
section_- interface_- relationship to section_- interface (as related)	PATH			

Table 16 – Mapping table installation UoF (IN1) (concluded)

Application element	AIM element	Source	Rules	Reference path
section_- interface_- relationship to section_- interface (as relating)	PATH			shape_aspect_relationship shape_aspect_relationship.relatng_shape_aspect -> shape_aspect => installation_section_interface
SECTION_- RELATIONSHIP description	shape_aspect_- relationship	41		
relation_type	shape_aspect_- relationship. description	41		
	shape_aspect_- relationship.name	41		{{(shape_aspect_relationship.name) (shape_aspect_relationship.name = 'alternate') (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'derivation') (shape_aspect_relationship.name = 'substitution') (shape_aspect_relationship.name = 'version hierarchy') (shape_aspect_relationship.name = 'version sequence')}}
section_- relationship to section (as related)	PATH			shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_section
section_- relationship to section (as relating)	PATH			shape_aspect_relationship shape_aspect_relationship.relatng_shape_aspect -> shape_aspect => installation_section

Table 17 – Mapping table messages UoF (M1)

Application element	AM element	Source	Rules	Reference path
NOTIFICATION	notification	212	8	notification <= characterized_object
description	characterized_object. description	41		notification <= characterized_object characterized_object.description
id	characterized_object. name	41		notification <= characterized_object characterized_object.name
text_of_message	descriptive- representation_item. description	45	72,74	notification <= characterized_object characterized_object characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'notification message'} representation.items[] -> representation_item = > {representation_item.name = 'message text'} descriptive_representation_item descriptive_representation_item.description
version_id	identification- assignment.assigned_id	41	25,53	notification identification_item = notification identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
notification to language (as language_-- specification)	PATH			notification language_item = notification language_item <- language_assignment.items[] language_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'language'} classification_assignment.assigned_class -> group => language
notification to process_variable (as trigger)	PATH			notification <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition property_definition <- property_definition.relation.relation.property_definition property_definition.relation.relation {property_definition.relation.name = 'trigger'} property_definition.relation.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => process_variable
notification to signal (as trigger)	PATH			notification <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition property_definition <- property_definition.relation.relation.property_definition property_definition.relation.relation

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
notification to signal_value (as trigger)	PATH		70	<pre> {property_definition.relationship.name = 'trigger'} property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal notification <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation {name_attribute.select = property_definition.representation name_attribute.select <- name_attribute.named_item name_attribute name_attribute.attribute_value = 'trigger'} property_definition.representation.used_representation -> representation </pre>
NOTIFICATION-RELATIONSHIP	characterized_object-relationship	41		
description	characterized_object-relationship.description	41		
relation_type	characterized_object-relationship.name	41		<pre> {(characterized_object_relationship.name (characterized_object_relationship.name = 'alternate') (characterized_object_relationship.name = 'decomposition') (characterized_object_relationship.name = 'derivation') (characterized_object_relationship.name = 'substitution') (characterized_object_relationship.name = 'translation'))} </pre>

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
notification_- relationship to notification (as related)	PATH			characterized_object_relationship characterized_object_relationship.related_object -> characterized_object => notification
notification_- relationship to notification (as relating)	PATH			characterized_object_relationship characterized_object_relationship.relatng_object -> characterized_object => notification
PREFERRED_- EQUIPMENT_- ASSIGNMENT #1: If product_class is used without UoF CFl. #2: If product_class is used with UoF CFl.	property_definition_- relationship	45		{property_definition_relationship property_definition_relationship.name = 'preferred equipment' }
preferred_- equipment_- assignment to design_- discipline_item_- definition (as preferred_- equipment)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
preferred_- equipment_- function_- definition (as preferred_- equipment)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
preferred- equipment- assignment to signal (as related- signal)	PATH			<pre> property_definition.relationship property_definition.relatng_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal </pre>
preferred- equipment- assignment to organization (as valid- context)	PATH			<pre> organization_item = property_definition.relationship organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'validity context'} organization_assignment.assigned_organization -> organization </pre>
preferred- equipment- assignment to product_class (as valid- context)				<pre> #1: () property_definition.relationship property_definition.related_property_definition -> property_definition <- property_definition.relationship {property_definition.relationship.name = 'validity context'} property_definition.relationship.relatng_property_definition -> property_definition property_definition.definition characterized_definition characterized_definition = characterized_object characterized_object <= product_class </pre>

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>PROCESS_VARIABLE</p> <p>#1: If data_element_value is an aggregated_value.</p> <p>#2: If data_element_value is a single_value with value of binary_value, logical_value, or string_value.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>process_variable</p>	212	8	<p>process_variable <= characterized_object</p>
<p>description</p>	<p>characterized_object.description</p>	41		<p>process_variable <= characterized_object</p> <p>characterized_object.description</p>
<p>id</p>	<p>characterized_object.name</p>	41		<p>process_variable <= characterized_object</p> <p>characterized_object.name</p>
<p>process_variable to data_element_value (as associated_value)</p>	<p>PATH</p>		74	<p>process_variable <= characterized_object</p> <p>characterized_definition = characterized_object</p> <p>characterized_definition <- property_definition</p> <p>property_definition</p> <p>represented_definition = property_definition</p> <p>represented_definition <- property_definition</p> <p>property_definition.representation</p> <p>property_definition.representation.used_representation -> representation</p>

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation.items[] -> representation_item => #1: (compound_representation_item) #2: (descriptive_representation_item) #3: (measure_representation_item) #4: (value_representation_item) </pre>
PROCESS_VARIABLE_- RELATIONSHIP description	characterized_object_- relationship	41		
	characterized_object_- relationship. description	41		
relation_type	characterized_object_- relationship.name	41		<pre> {(characterized_object_relationship.name) (characterized_object_relationship.name = 'alternate')} (characterized_object_relationship.name = 'decomposition')} (characterized_object_relationship.name = 'substitution')} </pre>
process_variable_- relationship to process_variable (as related)	PATH			<pre> characterized_object_relationship.related_object -> characterized_object => process_variable </pre>
process_variable_- relationship to process_variable (as relating)	PATH			<pre> characterized_object_relationship characterized_object_relatng_object -> characterized_object => process_variable </pre>

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>PROCESS_VARIABLE_- SYSTEM_- ASSIGNMENT #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1. #3: If function_unit is not used in the context of UoF CF1. #4: If function_unit is used in the context of UoF CF1.</p>	<p>property_definition_- relationship</p>	45		
<p>description</p>	<p>property_definition_- relationship. description</p>	41		
<p>role</p>	<p>property_definition_- relationship.name</p>	41	<pre>{(property_definition_relationship.name = 'amplifier') (property_definition_relationship.name = 'monitor') (property_definition_relationship.name = 'source') (property_definition_relationship.name = 'target') (property_definition_relationship.name = 'transmitter')}</pre>	
<p>process_variable_- system_- assignment to process_variable_- (as associated_- process_- variable)</p>	<p>PATH</p>		<pre>property_definition_relationship property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object process_variable =></pre>	

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
process_variable_- system_- assignment to connectivity_- definition (as associated_- system)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect shape_definition = shape_aspect shape_aspect => connectivity_definition
process_variable_- system_- assignment to design_- discipline_item_- definition (as associated_- system)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition
process_variable_- system_- assignment to device (as associated_- system)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition_relationship => product_definition_usage => assembly_component_usage #1: (characterized_product_definition = product_definition_relationship #2: (characterized_product_definition = product_definition product_definition)

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
process_variable_- system_- assignment to function_- definition (as associated_- system)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
process_variable_- system_- assignment to function_unit (as associated_- system)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition_relationship #3: (characterized_product_definition = product_definition_relationship product_definition_usage => assembly_component_usage) #4: (characterized_product_definition = product_definition product_definition)
process_variable_- system_- assignment to functional_- connectivity_- definition (as associated_- system)	PATH			property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
process.variable_- system_- assignment to physical_- instance (as associated_- system)	PATH			property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
process.variable_- system_- assignment to port (as associated_- system)				property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
process.variable_- system_- assignment to technical_system (as associated_- system)	PATH			property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formation -> product_definition_formation

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
process_variable_- system_- assignment to terminal (as associated_- system)				property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
SIGNAL	signal	212	8	signal <= characterized_object
description	characterized_object. description	41		characterized_object characterized_object.description
id	characterized_object. name	41	25	signal <= characterized_object characterized_object.name
signal_level_- indicator	descriptive_- representation_item. description	45	72,74	signal <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition.definition property_definition represented_definition <- represented_definition = property_definition property_definition.definition <- property_definition.representation.definition property_definition.representation.used_representation -> representation {representation.name = 'signal characteristics'} representation.items[] -> representation_item => {representation_item.name = 'signal level indicator'} descriptive_representation_item descriptive_representation_item.description

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
version_id	identification_- assignment_assigned_id	41	25,53	<pre> signal identification_item = signal identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id </pre>
signal to process_variable (as associated_ parameter)	PATH			<pre> signal <= characterized_object characterized_definition = characterized_object characterized_definition <- property_definition.definition property_definition <- property_definition.relation.relation.property_definition property_definition.relation.relation.relationship {property_definition.relationship.name = 'parameter association'} property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => process_variable </pre>
signal to signal_ designation (as extended_ designation)	PATH		25	<pre> signal item_designation_item = signal item_designation_item <- item_designation_assignment.items[1] item_designation_assignment => {item_designation_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.description = 'primary'} </pre>

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
SIGNAL_- RELATIONSHIP description	characterized_object_- relationship	41		signal_designation_assignment
relation_type	characterized_object_- relationship. description	41		
signal_- relationship to signal (as related)	characterized_object_- relationship.name	41		{(characterized_object_relationship.name) (characterized_object_relationship.name = 'alternate') (characterized_object_relationship.name = 'decomposition') (characterized_object_relationship.name = 'derivation') (characterized_object_relationship.name = 'redundancy') (characterized_object_relationship.name = 'substitution') (characterized_object_relationship.name = 'version hierarchy')}
signal_- relationship to signal (as relating)	PATH			characterized_object_relationship characterized_object_relat -> signal
SIGNAL_SYSTEM_- ASSIGNMENT #1: If device is not used in the context of UoF CFI. #2: If device is used in the context of UoF CFI. #3: If function_unit is not used in the context of UoF CFI. #4: If function_unit is used in the context of UoF CFI.	PATH			characterized_object_relationship characterized_object_relat -> signal
description	property_definition_- relationship	45		
	property_definition_- relationship.	41		

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element description	Source	Rules	Reference path
role	property_definition_- relationship.name	41		{(property_definition_relationship.name = 'amplifier') (property_definition_relationship.name = 'monitor') (property_definition_relationship.name = 'source') (property_definition_relationship.name = 'target') (property_definition_relationship.name = 'transmitter')}} property_definition_relationship property_definition_relatng_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal
signal_system_- assignment to signal (as associated_- signal)	PATH			property_definition_relationship property_definition_relatng_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal
signal_system_- assignment to connectivity_- definition (as associated_- system)	PATH			property_definition_relationship property_definition_relatng_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition
signal_system_- assignment to design_- discipline_item_- definition (as associated_- system)	PATH			property_definition_relationship property_definition_relatng_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
signal_system_- assignment to device (as associated_ system)	PATH			property_definition_relationship property_definition.related_property_definition -> property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage #2: (characterized_product_definition = product_definition product_definition)
signal_system_- assignment to function_ definition (as associated_ system)	PATH			property_definition_relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition characterized_product_definition = product_definition product_definition
signal_system_- assignment to function_unit (as associated_ system)	PATH			property_definition_relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage #3: (characterized_product_definition = product_definition product_definition) #4: (characterized_product_definition = product_definition product_definition)

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
signal_system.- assignment to functional.- connectivity.- definition (as associated.- system)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition
signal_system.- assignment to physical.- instance (as associated.- system)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
signal_system.- assignment to port (as associated.- system)				property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
signal_system.- assignment to technical_system (as associated.- system)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
signal_system.- assignment to terminal (as associated.- system)				characterized_product_definition = product_definition product_definition product_definition.formation -> product_definition_formation property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
SIGNAL_VALUE #1: If data_element_value is an aggregated_value. #2: If data_element_value is a single_value with value of binary_value, logical_value, or string- value. #3: If the value_with_- unit is a numerical_value or a value_limit, and the unit is not assigned globally. #4: If the value_with_- unit is a numerical_value or a value_limit, and the unit is assigned globally.	representation	43	72	{ representation representation.name = 'signal value' }
characteristic	description_attribute. attribute_value	41		representation <- property_definition_representation.used_representation property_definition_representation {[name_attribute_select = property_definition_representation

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> name_attribute_select <- name_attribute_named_item name_attribute name_attribute.value = 'parameter association' [property_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => process_variable]} description_attribute_select = property_definition_representation description_attribute_select <- description_attribute_described_item description_attribute description_attribute.attribute_value {(description_attribute.attribute_value) (description_attribute.attribute_value = 'linear')}} </pre>
description	description_attribute. attribute_value	41		<pre> representation description_attribute_select = representation description_attribute_select <- description_attribute_described_item description_attribute description_attribute.attribute_value representation </pre>
id	id_attribute.attribute.- value	41		<pre> id_attribute_select = representation id_attribute_select <- id_attribute_identified_item id_attribute id_attribute.attribute_value </pre>

Table 17 – Mapping table messages UoF (M1) (continued)

Application element	AIM element	Source	Rules	Reference path
signal_value to signal (as associated_- signal)	PATH			<pre> property_definition.representation.used_representation property_definition.representation property_definition.representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal </pre>
signal_value to data_element_- value (as value_of_- signal)	PATH		74	<pre> representation representation.items[1] -> representation_item => #1: (compound_representation_item) #2: (descriptive_representation_item) #3: (measure_representation_item) #4: (value_representation_item) </pre>
signal_value to process_variable (as valued_- parameter)	PATH			<pre> property_definition.representation.used_representation property_definition.representation {name_attribute_select = property_definition.representation name_attribute_select <- name_attribute.named_item name_attribute name_attribute.value = 'parameter association'} property_definition.representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => process_variable </pre>

NOTE - The following note numbers correspond to the footnotemarks listed in the table above:

- 1 The use of this mapping alternative is not applicable.

Table 18 – Mapping table network_allocation UoF (NA1)

Application element	AIM element	Source	Rules	Reference path
<p>CONNECTIVITY_- ALLOCATION</p> <p>#1: If the connectivity_- allocation references a connectivity_-definition. #2: If the connectivity_- allocation references a device, function_unit, or a physical_instance. #3: If device is not used in the context of UoF_CFL. #4: If device is used in the context of UoF_CFL. #5: If function_unit is not used in the context of UoF_CFL. #6: If function_unit is used in the context of UoF CFL.</p>	<p>#2: (property_- definition_- relationship) #1: (shape_aspect_- relationship)</p>	<p>45 41</p>	<p>69,104</p>	<pre> property_definition.relationship {#2: (property_definition.relationship #1: (shape_aspect_relationship shape_aspect_relationship.name = 'connectivity_allocation')}} </pre>
<p>description</p>	<p>#2: (property_- definition_- relationship. description) #1: (shape_aspect_- relationship. description) PATH</p>	<p>45 41</p>		
<p>connectivity_- allocation to functional_- connectivity_- definition (as allocated_- connectivity_- definition)</p>				<pre> #2: (property_definition.relationship property_definition property_definition.definition -> characterized_definition = shape_definition shape_definition shape_definition = shape_aspect) #1: (shape_aspect_relationship </pre>

Table 18 – Mapping table network_allocation UoF (NA1) (continued)

Application element	AIM element	Source	Rules	Reference path
connectivity- allocation to connectivity- definition (as connectivity- implementation)	PATH			shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> connectivity_definition
connectivity- allocation to device (as connectivity- implementation)	PATH			shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> connectivity_definition
connectivity- allocation to function_unit (as connectivity- implementation)	PATH			property_definition_relationship property_definition.related_property_definition -> property_definition characterized_definition -> characterized_definition = characterized_product_definition characterized_product_definition product_definition_relationship product_definition_usage ==> product_definition_usage ==> assembly_component_usage product_definition_usage = product_definition product_definition
				property_definition_relationship property_definition.related_property_definition -> property_definition characterized_definition -> characterized_definition = characterized_product_definition characterized_product_definition product_definition_relationship product_definition_usage ==> product_definition_usage ==> assembly_component_usage product_definition_usage = product_definition product_definition

Table 18 – Mapping table network_allocation UoF (NA1) (continued)

Application element	AIM element	Source	Rules	Reference path
connectivity_- allocation to physical_- instance (as connectivity_- implementation)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
PORT_ALLOCATION #1: If the function_unit_- allocation is used in the context of CFI. #2: If the function_unit_- allocation is not used in the context of CFI.	shape_aspect_- relationship	41	104	{shape_aspect_relationship shape_aspect_relationship.name = 'terminal allocation' }
description	shape_aspect_- relationship. description PATH	41		
port_allocation to port (as allocated_- port)	PATH			shape_aspect_relationship shape_aspect_relationship.relation_shape_aspect -> shape_aspect => terminal
port_allocation to functional_- unit_allocation (as item_- allocation)	PATH		69	#1: (shape_aspect_relationship shape_definition = shape_aspect_relationship shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- property_definition.relationship.related_property_definition property_definition.relationship.name = 'item allocation') property_definition.relationship.relation_shape_aspect -> property_definition

Table 18 – Mapping table network_allocation UoF (NA1) (continued)

Application element	AIM element	Source	Rules	Reference path
port_allocation to terminal (as port_implementation)	PATH			<pre> property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition.relationship #2: (shape_aspect_relationship represented_definition = shape_aspect_relationship represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation <- property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition_relationship property_definition_relationship) shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> terminal </pre>
PREFERRED_ITEM_TERMINAL_ALLOCATION description	shape_aspect_ relationship shape_aspect_ relationship.description PATH	41 41	104	<pre> shape_aspect_relationship.name = 'preferred item terminal allocation' </pre>
preferredItem_allocation to port (as functional_definition)				<pre> shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> terminal </pre>

Table 18 – Mapping table network_allocation UoF (NA1) (concluded)

Application element	AIM element	Source	Rules	Reference path
preferred_item_- terminal_- allocation to preferred_item_- allocation (as item_- allocation)	PATH		69	<pre> shape_aspect_relationship shape_definition = shape_aspect_relationship shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- property_definition.relationship.related_property_definition property_definition.relationship.related_property_definition {property_definition.relationship.name = 'item allocation'} property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition.relationship product_definition.relationship shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> terminal </pre>
preferred_item_- terminal_- allocation to interface_port (as preferred_- node)	PATH			<pre> shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> terminal </pre>
preferredItem_- terminal_- allocation to interface_- terminal (as preferred_- node)	PATH			<pre> shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect ==> terminal </pre>

Table 19 – Mapping table organizational_data UoF (OD1)

Application element	AIM element	Source	Rules	Reference path
ADDRESS	address	41	12	
country	address.country	41		
email_address	address.electronic_- mail_address	41		
fax_number	address.facsimile_- number	41		
internal_- location	address.internal_- location	41		
postal_box	address.postal_box	41		
postal_code	address.postal_code	41		
region	address.region	41		
street	address.street	41		
street_number	address.street_number	41		
telephone_number	address.telephone_- number	41		
telex_number	address.telex_number	41		
town	address.town	41		

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>APPROVAL</p> <p>#1: If only a certain day is known.</p> <p>#2: If a certain day and the time of day is known.</p> <p>#3: If device is used in the context of UoF CF1.</p> <p>#4: If device is used in the context of UoF CF1.</p> <p>#5: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#6: If data_element is associated to activity or work_order.</p> <p>#7: If data_element is associated to cable_pull_information, device_relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node.</p> <p>#8: If used for a person as member of an organization.</p> <p>#9: If used for an organization.</p> <p>#10: If product_class is used with UoF EF1.</p> <p>#11: If product_class is used with UoF CF1.</p> <p>#12: If specification_category.implicit_</p>	approval	41	6	<pre> approval <- {approval approval_assignment.assigned_approval applied_approval_assignment} </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>exclusive_condition is FALSE. #13: If specification_category.implicit_exclusive_condition is TRUE. #14: If the document_representation is not a physical_model. #15: If the document_representation is a physical_model. #16: If the connectivity_allocation references a connectivity_definition. #17: If the connectivity_allocation references a device, function_unit, or a physical_instance. #18: If function_unit is used in the context of UoF CF1. #19: If function_unit is not used in the context of UoF CF1. #20: If the function_unit_allocation is used in the context of CF1. #21: If the function_unit_allocation is not used in the context of CF1. #22: If product_identification is used with UoF EF1. #23: If product_identification is used</p>				

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
with UoF CF1. #24: If device-- relationship is not of type 'substitution'. #25: If device-- relationship is of type 'substitution'. #26: If function_unit-- relationship is not of type 'substitution'. #27: If function_unit-- relationship is of type 'substitution'.				
level	approval.level	41		{(approval.level = 'disposition') (approval.level = 'equipment order') (approval.level = 'planning')}
approval to date-- time (as actual_date)	PATH		28,77	approval <- approval_date.time.dated_approval approval_date.time {role_select = approval_date.time role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'actual'} approval_date.time.date_time -> date_time.select #1: (date_time.select = date date => calendar.date) #2: (date_time.select = date.and_time date.and_time)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to activity (as is_applied_-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = action action => executed_action
approval to activity_element (as is_applied_-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = applied_action_assignment applied_action_assignment
approval to activity_method_assignment (as is_applied_-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = action_request_solution action_request_solution
approval to activity_relationship (as is_applied_-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = action_relationship action_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to alternate_item_ relationship (as is_applied_ to)	PATH			approval <- approval_assignment.assigned_approval applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = alternate_product_relationship alternate_product_relationship
approval to assembly_ component_ relationship (as is_applied_ to)	PATH			approval <- approval_assignment.assigned_approval applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = assembly_component_usage assembly_component_usage
approval to cable_pull_ information (as is_applied_ to)	PATH			approval <- approval_assignment.assigned_approval applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = representation representation
approval to class_category_ association (as is_applied_ to)	PATH			approval <- approval_assignment.assigned_approval applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_concept_feature_category_usage product_concept_feature_category_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to class_condition-association (as is_applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_concept_feature_association product_concept_feature_association
approval to class_inclusion-association (as is_applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_concept_feature_association product_concept_feature_association
approval to class_specification-association (as is_applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_concept_feature_association product_concept_feature_association
approval to classification_system (as is_applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_concept_feature_association product_concept_feature_association approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = class_system class_system

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to complex_product_--relationship (as is_applied_--to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation product_definition_formation
approval to complex_product_--relationship (as is_applied_--to)				approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation_relationship product_definition_formation_relationship
approval to composition_--relationship (as is_applied_--to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = assembly_component_usage assembly_component_usage
approval to configuration (as is_applied_--to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = configured_effectivity_assignment configured_effectivity_assignment
approval to connectivity_--allocation (as is_applied_--to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item #16: (approval_item = property_definition_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				property_definition_relationship #17: (approval_item = shape_aspect_relationship shape_aspect_relationship)
approval to connectivity-definition (as is applied to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = connectivity_definition connectivity_definition
approval to connectivity-definition-relationship (as is applied to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to contract (as is applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = contract contract
approval to data-element (as is applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to data.- element.- association (as is.applied.- to)	PATH			approval <- approvalAssignment.assignedApproval approvalAssignment => appliedApprovalAssignment appliedApprovalAssignment.items[i] -> approvalItem #5: (approvalItem = property_definition property_definition) #6: (approvalItem = action_property action_property) #7: (approvalItem = representation_relationship representation_relationship)
approval to data.- element.- definition (as is.applied.- to)	PATH			approval <- approvalAssignment.assignedApproval approvalAssignment => appliedApprovalAssignment appliedApprovalAssignment.items[i] -> approvalItem approvalItem = general_property general_property
approval to data.- element.- relationship (as is.applied.- to)	PATH			approval <- approvalAssignment.assignedApproval approvalAssignment => appliedApprovalAssignment appliedApprovalAssignment.items[i] -> approvalItem approvalItem = representation_relationship representation_relationship
approval to design.- discipline_item.- definition (as is.applied.- to)	PATH			approval <- approvalAssignment.assignedApproval approvalAssignment => appliedApprovalAssignment appliedApprovalAssignment.items[i] -> approvalItem approvalItem = product_definition product_definition

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to device (as is applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item #3: (approval_item = product_definition product_definition) #4: (approval_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)
approval to device relationship (as is applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item #3: (#24: (approval_item = product_definition_relationship product_definition_relationship) #25: (approval_item = product_definition_substitute product_definition_substitute)) #4: (approval_item = property_definition_relationship property_definition_relationship)
approval to document (as is applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product product

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to document_file (as is, applied, to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = document_file document_file
approval to document_file_relationship (as is, applied, to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = document_relationship document_relationship
approval to document_representation (as is, applied, to)				approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item #14: (approval_item = product_definition product_definition) #15: (approval_item = product_definition product_definition => product_definition_with_associated_documents => physically_modelled_product_definition) approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation product_definition_formation
approval to document_version (as is, applied, to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to document_version_relationship (as is_applied_to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_definition_formation_relationship product_definition_formation_relationship
approval to drawing (as is_applied_to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = drawing_revision drawing_revision
approval to drawing_sequence (as is_applied_to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = drawing_revision_sequence drawing_revision_sequence
approval to drawing_sheet (as is_applied_to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = drawing_sheet_revision drawing_sheet_revision

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to drawing_sheet relationship (as is_applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = representation_relationship representation_relationship
approval to function_definition (as is_applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_definition product_definition
approval to function_definition_relationship (as is_applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_definition_relationship product_definition_relationship
approval to function_interface (as is_applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = interface interface

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to function_unit (as is_applied_- to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item #18: (approval_item = product_definition product_definition) #19: (approval_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)
approval to function_unit_ relationship (as is_applied_- to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item #18: (#26: (approval_item = product_definition_relationship product_definition_relationship) #27: (approval_item = product_definition_substitute product_definition_substitute)) #19: (approval_item = property_definition_relationship property_definition_relationship)
approval to function_version (as is_applied_- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation product_definition_formation
approval to function_version_ relationship (as is_applied_- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation_relationship product_definition_formation_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to functional-connection definition (as is applied-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = connectivity_definition connectivity_definition
approval to functional-connection definition relationship (as is applied-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to functional_unit_allocation (as is applied-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item #20: (approval_item = product_definition_relationship product_definition_relationship) #21: (approval_item = property_definition_relationship property_definition_relationship)
approval to generic_note (as is applied-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = note_representation note_representation
approval to interface (as is applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = interface

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to interface.port (as is.applied.- to)	PATH			interface approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = terminal terminal
approval to interface.-terminal (as is.applied.- to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = terminal terminal
approval to item.-definition.-relationship (as is.applied.- to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_relationship product_definition_relationship
approval to item.-version (as is.applied.- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to item_-- version_-- relationship (as is_applied_-- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation_relationship product_definition_formation_relationship
approval to location (as is_applied_-- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = installation_location installation_location
approval to location_-- relationship (as is_applied_-- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to manufacturing_-- configuration (as is_applied_-- to)	PATH			approval <- approval_assignment_assigned_approval approval_assignment = > applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = configuration_effectivity configuration_effectivity
approval to marking (as is_applied_-- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = equipment_marking equipment_marking

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to material (as is applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = descriptive_representation_item descriptive_representation_item
approval to node (as is applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = installation_node installation_node
approval to node, relationship (as is applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to notification (as is applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = notification notification
approval to notification, relationship (as is applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = characterized_object_relationship characterized_object_relationship
approval to offered_function_allocation (as is applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_relationship product_definition_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to path- (as is-applied- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = path path
approval to path- node (as is-applied- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = vertex vertex
approval to path- node- relationship (as is-applied- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = representation_item_relationship representation_item_relationship
approval to path- relationship (as is-applied- to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = representation_item_relationship representation_item_relationship
approval to physical- assembly- relationship (as is-applied- to)	PATH			approval <- approval_assignment approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_relationship product_definition_relationship => product_definition_relationship.name = 'physical occurrence usage' assembly_component_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to physical-instance (as is applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_definition product_definition
approval to port (as is applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = terminal terminal
approval to port-allocation (as is applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to preferred_item-allocation (as is applied-to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_definition_relationship product_definition_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to preferred_item-terminal_allocation (as is applied, to)	PATH			approval <- approval_assignment.assigned_approval applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to process_variable (as is applied, to)	PATH			approval <- approval_assignment.assigned_approval applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = process_variable process_variable
approval to process_variable-relationship (as is applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[j] -> approval_item = characterized_object_relationship characterized_object_relationship
approval to product_class (as is applied, to)	PATH			approval <- approval_assignment.assigned_approval applied_approval_assignment applied_approval_assignment.items[j] -> approval_item = product_concept product_concept => product_class

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to product_ identification (as is_applied_ to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = configuration_item configuration_item #22: (configuration_item) #23: (configuration_item => product_identification)
approval to product_ structure_ relationship (as is_applied_ to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_definition_relationship product_definition_relationship => product_definition_usage
approval to project (as is_applied_ to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = organizational_project organizational_project
approval to requirement (as is_applied_ to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[j] -> approval_item approval_item = product_definition_formation product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to route (as is, applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = installation_route installation_route
approval to route, relationship (as is, applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to section (as is, applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = installation_section installation_section
approval to section, end (as is, applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = installation_section_end installation_section_end
approval to section, interface (as is, applied, to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = installation_section_interface installation_section_interface

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to section,-interface,-relationship (as is applied,-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to section,-relationship (as is applied,-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = shape_aspect_relationship shape_aspect_relationship
approval to security,-classification (as is applied,-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = security_classification security_classification
approval to signal (as is applied,-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = signal signal
approval to signal,-relationship (as is applied,-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = characterized_object_relationship characterized_object_relationship
approval to signal,value (as is applied,-to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = representation representation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to specification (as is, applied, to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_concept_feature product_concept_feature
approval to specification, category (as is, applied, to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_concept_feature_category #12: (product_concept_feature_category) #13: (product_concept_feature_category => exclusive_product_concept_feature_category)
approval to specification, expression (as is, applied, to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_concept_feature product_concept_feature => conditional_concept_feature
approval to specification, inclusion (as is, applied, to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_concept_feature product_concept_feature => conditional_concept_feature

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to technical_system (as is_applied to)	PATH			inclusion_product_concept_feature approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation product_definition_formation
approval to technical_system_relationship (as is_applied to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = product_definition_formation_relationship product_definition_formation_relationship
approval to terminal (as is_applied to)	PATH			approval <- applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = terminal terminal
approval to work_order (as is_applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = action_directive action_directive
approval to work_request (as is_applied to)	PATH			approval <- approval_assignment.assigned_approval approval_assignment => applied_approval_assignment applied_approval_assignment.items[i] -> approval_item approval_item = versioned_action_request

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval to date,- and_person_or,- organization (as is approved,- by)	PATH		5,13,18, 19	<pre> versioned_action_request approval <- approval_person_organization.authorized_approval approval_person_organization {#2: (date_and_time_item = approval_person_organization date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= date_and_time_assignment date_and_time_assignment.role -> date_time_role date_time_role.name = 'sign off') #1: (date_item = approval_person_organization date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment date_assignment.role -> date_role date_role.name = 'sign off')}} approval_person_organization.person_organization -> person_organization_select #8: (person_organization_select = person_and_organization person_and_organization) #9: (person_organization_select = organization organization) approval <- approval_date_time.dated_approval approval_date_time {role_select = approval_date_time role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'planned'}</pre>
approval to date,- time (as planned,- date)	PATH		28,77	

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				approval_date.time.date.time -> date.time.select #1: (date.time.select = date date => calendar_date) #2: (date.time.select = date.and.time date.and.time)
approval to organization (as scope)	PATH			approval organization_item = approval organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'scope'} organization_assignment.assigned_organization -> organization
approval to approval_status (as status)	PATH			approval approval_status -> approval_status
APPROVAL- RELATIONSHIP description	approval_relationship description	41		
relation_type	approval_relationship. name	41		{(approval_relationship.name) (approval_relationship.name = 'decomposition') (approval_relationship.name = 'precedence') (approval_relationship.name = 'sequence')}}
approval- relationship to approval (as related)	PATH			approval_relationship approval_relationship.related_approval -> approval

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
approval- relationship to approval (as relating)	PATH			approval_relationship. approval
APPROVALSTATUS	approval_status	41	14	
status_name	approval_status.name	41		{approval_status.name} (approval_status.name = 'approved') (approval_status.name = 'disapproved') (approval_status.name = 'withdrawn')}
approval_status to classification_- system (as used_- classification_- system)	PATH			approval_status classification_item = approval_status classification_item <- applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'class system membership'} classification_assignment.assigned_classification -> group => class_system
CERTIFICATION #1: If device is not used in the context of UoF CFL. #2: If device is used in the context of UoF CFL.	certification	41		
certification_- type	certification_type. description	41		certification certification.kind -> certification_type certification_type.description
name	certification.name	41		
purpose	certification.purpose	41		

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
certification to device (as is_applied_-to)	PATH			certification <- certification_assignment.assigned_certification certification_assignment => applied_certification_assignment applied_certification_assignment.items[i] -> certification_item #1: (certification_item = product_definition product_definition) #2: (certification_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) certification <- certification_assignment.assigned_certification certification_assignment => applied_certification_assignment applied_certification_assignment.items[i] -> certification_item certification_item = product_definition_formation product_definition_formation
certification to item_version_- (as is_applied_-to)	PATH			certification <- certification_assignment.assigned_certification certification_assignment => applied_certification_assignment applied_certification_assignment.items[i] -> certification_item certification_item = product_definition_formation product_definition_formation
certification to item_version_- relationship (as is_applied_-to)	PATH			certification <- certification_assignment.assigned_certification certification_assignment => applied_certification_assignment applied_certification_assignment.items[i] -> certification_item certification_item = product_definition_formation product_definition_formation
certification to supplier_- solution (as is_applied_-to)	PATH			certification <- certification_assignment.assigned_certification certification_assignment => applied_certification_assignment applied_certification_assignment.items[i] -> certification_item certification_item = product_definition_formation product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DATEAND_PERSON_- ASSIGNMENT</p> <p>#1: If used for a person as member of an organization.</p> <p>#2: If used for an organization.</p> <p>#3: If device is used in the context of UoF CFI.</p> <p>#4: If device is not used in the context of UoF CFI.</p> <p>#5: If device_- relationship is not of type 'substitution'.</p> <p>#6: If device_- relationship is of type 'substitution'.</p> <p>#7: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#8: If data_element is associated to activity or work_order.</p> <p>#9: If data_element is associated to cable_pull_information, device_- relationship used with UoF CFI, drawing_sheet, generic_note, path, or path_node.</p> <p>#10: If specification_category.implicit_- exclusive_condition is</p>	<p>#1: (applied_person_- and_organization_- assignment)</p> <p>#2: (applied_organization_- assignment)</p>	<p>212</p> <p>212</p>	<p>84,85</p>	<p>#1: (applied_person_and_organization_assignment <= person_and_organization_assignment)</p> <p>#2: (applied_organization_assignment <= organization_assignment)</p>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>FALSE. #11: If specification- category.implicit- exclusive-condition is TRUE. #12: If the document- representation is not a physical_model. #13: If the document- representation is a physical_model. #14: If product- identification is not used in the context of UoF CF1. #15: If product- identification is used in the context of UoF CF1. #16: If product_class is used with UoF EF1. #17: If product_class is used with UoF CF1. #18: If the connectivity- allocation references a connectivity_definition. #19: If the connectivity- allocation references a device, function_unit, or a physical_instance. #20: If function_unit is used in the context of UoF CF1. #21: If function_unit is not used in the context of UoF CF1. #22: If the function_unit- allocation is used in the</p>				

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
context of CFL. #23: If the function_unit_- allocation is not used in the context of CFL. #24: If the requirement_- document_assignment assigns a complete document. #25: If the requirement_- document_assignment assigns a partial document. #26: If function_unit_- relationship is not of type 'substitution'. #27: If function_unit_- relationship is of type 'substitution'.				
description	description_attribute_value	41		#2: (applied_organization_assignment <= organization_assignment organization_assignment.role -> organization_role description_attribute_select = organization_role) #1: (applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_role -> person_and_organization_role) description_attribute_select <- description_attribute_described_item description_attribute_value
role	#2: (organization_role.name) #1: (person_and_	41 41	29,31	#2: (applied_organization_assignment <= organization_assignment organization_assignment.role ->

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element organization_role. name)	Source	Rules	Reference path
date_and_person_- assignment to date_and_person_- or_organization (as assigned_- date_and_person)	PATH		18,19,84, 85	organization_role organization_role.name {(organization_role.name = 'creation') (organization_role.name = 'update')}} #1: (applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_role -> person_and_organization_role {(person_and_organization_role.name (person_and_organization_role.name = 'creation') (person_and_organization_role.name = 'update')}}) #1: (applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization -> person_and_organization_assignment organization_assignment organization_assignment.assigned_person_and_organization -> person_and_organization)
date_and_person_- assignment to activity (as is_applied_- to)	PATH			#2: (applied_organization_assignment <= organization_assignment organization_assignment.assigned_organization -> organization) #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = action) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = action) action => executed_action

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to activity_element (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = applied_action_assignment) applied_action_assignment {applied_action_assignment <= action_assignment action_assignment.role -> object_role object_role.name = 'activity element'}
date_and_person_- assignment to activity_method_- assignment (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = action_request_solution) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = action_request_solution) action_request_solution
date_and_person_- assignment to activity_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = action_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = action_relationship) action_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to alternate_item_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = alternate_product_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = alternate_product_relationship) alternate_product_relationship
date_and_person_- assignment to assembly_- component_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage
date_and_person_- assignment to assembly_- substitute_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = assembly_component_usage_substitute) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = assembly_component_usage_substitute)
date_and_person_- assignment to cable_pull_- information (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to class_category_- association (as is_applied_- to)	PATH			organization_item = representation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_category_usage #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature_category_usage product_concept_feature_category_usage #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_usage #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature_usage product_concept_feature_usage #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_usage #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature_usage product_concept_feature_usage #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_usage #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature_usage product_concept_feature_usage
date_and_person_- assignment to class_condition_- association (as is_applied_- to)	PATH			
date_and_person_- assignment to class_inclusion_- association (as is_applied_- to)	PATH			

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to class_- specification_- association (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_association) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature_association) product_concept_feature_association
date_and_person_- assignment to classification_- association (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = applied_classification_assignment) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = applied_classification_assignment) applied_classification_assignment <=
date_and_person_- assignment to classification_- attribute (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = property_definition) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = property_definition) property_definition
date_and_person_- assignment to classification_- system (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item = class_system) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = class_system)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to complex_product_- (as is_applied_- to)	PATH			class_system #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation) product_definition_formation
date_and_person_- assignment to complex_product_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship) product_definition_formation_relationship
date_and_person_- assignment to composition_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage
date_and_person_- assignment to configuration (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = configured_effectivity_assignment) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to connectivity_- allocation (as is_applied_- to)	PATH			organization_item = configured_effectivity_assignment) configured_effectivity_assignment #18: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = property_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = property_definition_relationship) property_definition_relationship) #19: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship)
date_and_person_- assignment to connectivity_- definition (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = connectivity_definition) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = connectivity_definition) connectivity_definition)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to connectivity_- definition_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship shape_aspect_relationship)
date_and_person_- assignment to contract (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = contract) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = contract)
date_and_person_- assignment to data_element (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = representation)
date_and_person_- assignment to data_element_- association (as is_applied_- to)				#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #7: (person_and_organization_item = property_definition property_definition) #8: (person_and_organization_item = action_property action_property) #9: (person_and_organization_item = representation_relationship representation_relationship))

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to data_element_- definition (as is applied_- to)	PATH			#2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item #7: (organization_item = property_definition property_definition) #8: (organization_item = action_property action_property) #9: (organization_item = representation_relationship representation_relationship))
date_and_person_- assignment to data_element_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = general_property) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = general_property)
date_and_person_- assignment to data_element_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = representation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation_relationship)
date_and_person_- assignment to data_element_- specification (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to design_- discipline_item_- definition (as is applied_- to)	PATH			representation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition) product_definition
date_and_person_- assignment to device (as is applied_- to)	PATH			#3: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition) product_definition) #4: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to device_- relationship (as is_applied_- to)	PATH			#3: (#5: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_relationship) product_definition_relationship) #6: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_substitute) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_substitute) product_definition_substitute))
date_and_person_- assignment to document (as is_applied_- to)	PATH			#4: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = property_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = property_definition_relationship) property_definition_relationship) #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to document_file (as is_applied_- to)				organization_item = product product #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = document_file) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = document_file) document_file
date_and_person_- assignment to document_file_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = document_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = document_relationship) document_relationship
date_and_person_- assignment to document_- representation (as is_applied_- to)				#12: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition) product_definition #13: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[j] ->

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to document_version_- (as is_applied_- to)	PATH			<pre> organization_item product_definition => product_definition_with_associated_documents => physically_modelled_product_definition #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = product_definition_formation) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = product_definition_formation) product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = product_definition_formation) product_definition_formation </pre>
date_and_person_- assignment to document_version_- relationship (as is_applied_- to)	PATH			<pre> organization_item product_definition_formation_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = product_definition_formation) product_definition_formation_relationship </pre>
date_and_person_- assignment to drawing (as is_applied_- to)	PATH			<pre> organization_item drawing_revision #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = drawing_revision) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = drawing_revision) drawing_revision </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to drawing_sequence (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = drawing_revision_sequence) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = drawing_revision_sequence) drawing_revision_sequence
date_and_person_- assignment to drawing_sheet (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = drawing_sheet_revision) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = drawing_sheet_revision) drawing_sheet_revision
date_and_person_- assignment to drawing_sheet_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = representation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = representation_relationship) representation_relationship
date_and_person_- assignment to free_segment (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = installation_segment) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = installation_segment) installation_segment =>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to function_- definition (as is applied_- to)	PATH			free_segment #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition) product_definition
date_and_person_- assignment to function_- definition_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship
date_and_person_- assignment to function_- interface (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = interface) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = interface) interface
date_and_person_- assignment to function_unit (as is applied_- to)	PATH			#20: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition) product_definition)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_assignment to function_unit_relationship (as is applied to)	PATH			product_definition #21: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage) #20: (#26: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) organization_item = product_definition_relationship) product_definition_usage => organization_item = product_definition_relationship) #27: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_substitute) product_definition_substitute) #4: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to function_version (as is_applied_- to)	PATH			<pre> person_and_organization_item = property_definition_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = property_definition_relationship property_definition_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship product_definition_formation_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = connectivity_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = connectivity_definition connectivity_definition </pre>
date_and_person_- assignment to function_version_- relationship (as is_applied_- to)	PATH			<pre> person_and_organization_item = product_definition_formation #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship product_definition_formation_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = connectivity_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = connectivity_definition connectivity_definition </pre>
date_and_person_- assignment to functional_- connectivity_- definition (as is_applied_- to)	PATH			<pre> person_and_organization_item = product_definition_formation #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship product_definition_formation_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = connectivity_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = connectivity_definition connectivity_definition </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to functional_- connectivity_- definition_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
date_and_person_- assignment to functional_unit_- allocation (as is applied_- to)	PATH			#22: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship)
date_and_person_- assignment to functionality (as is applied_- to)	PATH			#23: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = property_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = property_definition_relationship) property_definition_relationship) #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to general_- classification (as is applied_- to)	PATH			product #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = class) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = class)
date_and_person_- assignment to generic_note (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = note_representation) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = note_representation note_representation)
date_and_person_- assignment to interface (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = interface) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = interface) interface
date_and_person_- assignment to interface_port (as is applied_- to)				#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = terminal) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = terminal)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AMM element	Source	Rules	Reference path
date_and_person_- assignment to interface_- terminal (as is applied_- to)				terminal #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = terminal) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = terminal) terminal
date_and_person_- assignment to item (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product) product
date_and_person_- assignment to item_definition_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship
date_and_person_- assignment to item_version (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation) product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to item_version_- relationship (as is_applied_- to)	PATH			product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship) product_definition_formation_relationship
date_and_person_- assignment to location (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = installation_location) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = installation_location) installation_location
date_and_person_- assignment to location_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
date_and_person_- assignment to marking (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = shape_aspect_relationship)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to material (as is_applied_- to)				shape_aspect_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = descriptive_representation_item) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = descriptive_representation_item) descriptive_representation_item
date_and_person_- assignment to node (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = installation_node) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = installation_node) installation_node
date_and_person_- assignment to node_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
date_and_person_- assignment to notification (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = notification) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = notification)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to notification_- relationship (as is_applied_- to)	PATH			notification #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = characterized_object_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = characterized_object_relationship) characterized_object_relationship
date_and_person_- assignment to offered_function_- allocation (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship
date_and_person_- assignment to path (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = path) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = path) path
date_and_person_- assignment to path_node (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = vertex) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = vertex)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path vertex
date_and_person_- assignment to path_node_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation_item_relationship) representation_item_relationship
date_and_person_- assignment to path_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation_item_relationship) representation_item_relationship
date_and_person_- assignment to physical_- assembly_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_relationship.name = 'physical occurrence usage' product_definition_usage => assembly_component_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to physical_- instance (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition product_definition)
date_and_person_- assignment to port (as is_applied_- to)				#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = terminal) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = terminal) terminal)
date_and_person_- assignment to port_allocation (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship)
date_and_person_- assignment to port_association (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to preferred_item_- allocation (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship
date_and_person_- assignment to preferred_item_- terminal_- allocation (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
date_and_person_- assignment to process_variable (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = process_variable) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = process_variable) process_variable

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date-and-person-assignment to process-variable-relationship (as is applied-to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = characterized_object_relationship characterized_object_relationship)
date-and-person-assignment to product_class (as is applied-to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = product_concept) #18: (product_concept) #19: (product_concept => product_class)
date-and-person-assignment to product_identification (as is applied-to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = configuration_item) #14: (configuration_item) #15: (configuration_item => product_identification)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to product_- structure_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage
date_and_person_- assignment to project (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = organizational_project) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = organizational_project) organizational_project
date_and_person_- assignment to requirement (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation) product_definition_formation
date_and_person_- assignment to requirement_- document_- assignment (as is_applied_- to)	PATH			#24: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = applied_document_reference) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = applied_document_reference)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				applied_document_reference #25: (#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = applied_presented_item) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = applied_presented_item) applied_presented_item)
date_and_person_- assignment to route_- (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = installation_route) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = installation_route) installation_route)
date_and_person_- assignment to route_- relationship (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship) #1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = installation_segment) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = installation_segment)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to section (as is applied_- to)	PATH			installation_segment => routed_segment #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = installation_section) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = installation_section) installation_section
date_and_person_- assignment to section_end (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = installation_section_end) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = installation_section_end) installation_section_end
date_and_person_- assignment to section_- interface (as is applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = installation_section_interface) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = installation_section_interface) installation_section_interface

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_assignment_to_section_interface_relationship (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
date_and_person_assignment_to_section_relationship (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
date_and_person_assignment_to_security_classification (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = security_classification) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = security_classification) security_classification
date_and_person_assignment_to_security_level (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = security_classification_level) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = security_classification_level) security_classification_level

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to signal (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = signal) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = signal) signal
date_and_person_- assignment to signal_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = characterized_object_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = characterized_object_relationship) characterized_object_relationship
date_and_person_- assignment to signal_value (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation) representation
date_and_person_- assignment to specification (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature) product_concept_feature

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_assignment_to_specification_category (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = product_concept_feature_category) #10: (product_concept_feature_category => exclusive_product_concept_feature_category)
date_and_person_assignment_to_specification_expression (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_concept_feature) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_concept_feature)
date_and_person_assignment_to_specification_inclusion (as is applied to)	PATH			product_concept_feature => conditional_concept_feature #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_concept_feature) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_concept_feature) product_concept_feature => conditional_concept_feature => inclusion_product_concept_feature

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to technical_system_- (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation)
date_and_person_- assignment to technical_system_- relationship (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship)
date_and_person_- assignment to terminal (as is_applied_- to)				#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = terminal)
date_and_person_- assignment to work_order (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = action_directive)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_and_person_- assignment to work_request (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = versioned_action_request) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = versioned_action_request) versioned_action_request
DATE_AND_PERSON_- OR_ORGANIZATION #1: If used for a person as member of an organization. #2: If used for an organization. #3: If date_and_person_- organization is not referenced by an approval. #4: If date_and_person_- organization is referenced by an approval. #5: If a certain day and the time of day is known. #6: If only a certain day is known.	#1: (person_and_- organization) #2: (organization)	41 41	5,18,19, 84,85	
date_and_person_- or_organization to date_time (as associated_- date)	PATH		5	#1: (#3: (person_and_organization <- person_and_organization_assigned_person_and_organization person_and_organization_assignment #5: (date_and_time_item = person_and_organization_assignment date_and_time_item <- applied_date_and_time_assignment.items[] applied_date_and_time_assignment <= date_and_time_assignment {date_and_time_assignment.role ->

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> date_time_role date_time_role.name = 'actual' date_and_time_assignment.assigned_date_and_time -> date_and_time #6: (date_item = person_and_organization_assignment date_item <- applied_date_assignment.items[i] applied_date_assignment <= {date_assignment date_role date_role.name = 'actual' date_assignment.assigned_date -> date => calendar_date)) #4: (person_and_organization person_organization_select = person_and_organization person_organization_select <- approval_person_organization.person_organization approval_person_organization #5: (date_and_time_item = person_and_organization_assignment date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= {date_and_time_assignment date_time_role date_time_role.name = 'sign off' date_and_time_assignment.assigned_date_and_time -> date_and_time #6: (date_item = person_and_organization_assignment date_item <- applied_date_assignment.items[i] applied_date_assignment <= {date_assignment date_role date_role.name = 'actual' date_assignment.assigned_date -> date => calendar_date)) #4: (person_and_organization person_organization_select = person_and_organization person_organization_select <- approval_person_organization.person_organization approval_person_organization #5: (date_and_time_item = person_and_organization_assignment date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= {date_and_time_assignment date_time_role date_time_role.name = 'sign off' date_and_time_assignment.assigned_date_and_time -> date_and_time #6: (date_item = person_and_organization_assignment date_item <- applied_date_assignment.items[i] applied_date_assignment <= {date_assignment date_role date_role.name = 'actual' date_assignment.assigned_date -> date => calendar_date)) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> date_role date_role.name = 'sign off' date_assignment.assigned_date -> date => calendar_date))) #2: (organization <- organization_assignment.assigned_organization organization_assignment #5: (date_and_time_item = organization_assignment date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= date_and_time_assignment {date_and_time_assignment.role -> date_time_role date_time_role.name = 'actual'} date_and_time_assignment.assigned_date_and_time -> date_and_time) #6: (date_item = organization_assignment date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment {date_assignment.role -> date_role date_role.name = 'actual'} date_assignment.assigned_date -> date => calendar_date)) #4: (organization person_organization_select = organization person_organization_select <- approval_person_organization.person_organization approval_person_organization #5: (date_and_time_item = organization_assignment </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AM element	Source	Rules	Reference path
date_and_person_- or_ organization to organization (as person_or_- organization)	#1: (PATH) #2: (IDENTICAL MAPPING)			<pre> date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= {date_and_time_assignment date_time_role date_time_role.name = 'sign off'} date_and_time_assignment.assigned_date_and_time -> date_and_time #6: (date_item = organization_assignment date_item <- applied_date_assignment.items[i] applied_date_assignment <= {date_assignment date_role date_role.name = 'sign off'} date_assignment.assigned_date -> date => calendar.date))) </pre>
date_and_person_- or_ organization to person_in_- organization (as person_or_- organization)	#1: (IDENTICAL MAPPING) #2: (PATH)			<pre> #1: (person_and_organization person_and_organization.the_organization -> organization) #2: (organization <- person_and_organization person_and_organization) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
DATE_TIME #1: If only a certain day is known. #2: If a certain day and the time of day is known.	#1: (calendar.date) #2: (date.and.time)	41 41	I6,17, 112	
date	#1: (IDENTICAL MAPPING) #2: (calendar.date)	41	112	#2: (date.and.time date.and.time.date_component -> date => calendar.date)
time	local_time	41		date.and.time.time_component -> local_time

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DATE_TIME_ASSIGNMENT</p> <p>#1: If only a certain day is known.</p> <p>#2: If a certain day and the time of day is known.</p> <p>#3: If device is used in the context of UoF CF1.</p> <p>#4: If device is not used in the context of UoF CF1.</p> <p>#5: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#6: If data_element is associated to activity or work_order.</p> <p>#7: If data_element is associated to cable_pull_information, device_relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node.</p> <p>#8: If device_relationship is not of type 'substitution'.</p> <p>#9: If device_relationship is of type 'substitution'.</p> <p>#10: If function_unit_relationship is not of type 'substitution'.</p> <p>#11: If function_unit_</p>	<p>#1: (applied_date_assignment)</p> <p>#2: (applied_date_and_time_assignment)</p>	<p>212</p> <p>212</p>		<p>#1: (applied_date_assignment <= date_assignment)</p> <p>#2: (applied_date_and_time_assignment <= date_and_time_assignment)</p>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>relationship is of type 'substitution'. #12: If specification_category.implicit_exclusive_condition is FALSE. #13: If specification_category.implicit_exclusive_condition is TRUE. #14: If the document_representation is not a physical_model. #15: If the document_representation is a physical_model. #16: If product_identification is not used in the context of UoF CF1. #17: If product_identification is used in the context of UoF CF1. #18: If product_class is used with UoF EF1. #19: If product_class is used with UoF CF1. #20: If the connectivity_allocation references a connectivity_definition. #21: If the connectivity_allocation references a device_function_unit, or a physical_instance. #22: If function_unit is used in the context of UoF CF1.</p>				

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>#23: If function_unit is not used in the context of UoF CF1.</p> <p>#24: If the function_unit_allocation is used in the context of CF1.</p> <p>#25: If the function_unit_allocation is not used in the context of CF1.</p> <p>#26: If the requirement_document_assignment assigns a complete document.</p> <p>#27: If the requirement_document_assignment assigns a partial document.</p>				
description	description_attribute_value	41		<p>#1: (applied_date_assignment <= date_assignment date_role -> description_attribute_select = date_role)</p> <p>#2: (applied_date_and_time_assignment <= date_and_time_assignment date_role -> date_time_role)</p> <p>description_attribute_select = date_time_role)</p> <p>description_attribute_select < description_attribute_described_item</p> <p>description_attribute</p> <p>description_attribute_value</p>
role	#1: (date_role.name) #2: (date_time_role.name)	41 41	18,19	<p>#1: (applied_date_assignment <= date_assignment date_role -> date_role)</p>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> date_role.name {(date_role.name = 'classification date') (date_role.name = 'creation') (date_role.name = 'installation') (date_role.name = 'production') (date_role.name = 'registration') (date_role.name = 'update')}} #2: (applied_date_and_time_assignment <= date_and_time_assignment date_time_role date_time_role.name {(date_time_role.name = 'classification date') (date_time_role.name = 'creation') (date_time_role.name = 'installation') (date_time_role.name = 'production') (date_time_role.name = 'registration') (date_time_role.name = 'update')}} #1: (applied_date_assignment <= date_assignment date_assignment.assigned_date -> date => calendar_date) #2: (applied_date_and_time_assignment <= date_and_time_assignment date_and_time_assignment.assigned_date_and_time -> date_and_time) #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = action) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item </pre>
date_time_- assignment to date_time (as assigned_- date_time)	PATH		112	
date_time_- assignment to activity (as is_applied_- to)	PATH			

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to activity_element (as is_applied_- to)	PATH			date_and_time_item = action) action ==> executed_action #1: (applied_date_assignment applied_date_assignment.items[i] -> date_item date_item = applied_action_assignment) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[i] -> date_and_time_item date_and_time_item = applied_action_assignment) applied_action_assignment {applied_action_assignment <= action_assignment action_assignment.role -> object_role object_role.name = 'activity element'}
date_time_- assignment to activity_method_- assignment (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[i] -> date_item date_item = action_request_solution) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[i] -> date_and_time_item date_and_time_item = action_request_solution) action_request_solution
date_time_- assignment to activity_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[i] -> date_item date_item = action_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[i] -> date_and_time_item date_and_time_item = action_relationship) action_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to alternate_item-- relationship (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = alternate_product_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = alternate_product_relationship) alternate_product_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage
date_time-- assignment to assembly-- component-- relationship (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = assembly_component_usage_substitute) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = assembly_component_usage_substitute) assembly_component_usage_substitute #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = representation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to class_category-- association (as is_applied-- to)	PATH			date_and_time_item = representation #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature_category_usage) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_concept_feature_category_usage) product_concept_feature_category_usage
date_time-- assignment to class_condition-- association (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature_association) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_concept_feature_association) product_concept_feature_association
date_time-- assignment to class_inclusion-- association (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature_association) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_concept_feature_association) product_concept_feature_association

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to class-- specification-- association (as is, applied,-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature_association) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_concept_feature_association) product_concept_feature_association #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = applied_classification_assignment) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = applied_classification_assignment)
date_time-- assignment to classification-- association (as is, applied,-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = property_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = property_definition) property_definition #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = class_system) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = class_system)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to complex_product (as is_applied_- to)	PATH			class.system #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_formation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation) product_definition_formation #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_formation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation_relationship) product_definition_formation_relationship
date_time_- assignment to complex_product_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_formation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation_relationship) product_definition_formation_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = configured_effectivity_assignment) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] ->
date_time_- assignment to composition_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = configured_effectivity_assignment) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] ->
date_time_- assignment to configuration (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = configured_effectivity_assignment) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] ->

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_-- assignment to connectivity_-- allocation (as is, applied_-- to)	PATH			date_and_time_item = configured_effectivity_assignment) configured_effectivity_assignment #20: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = property_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = property_definition_relationship) property_definition_relationship #21: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship
date_time_-- assignment to connectivity_-- definition (as is, applied_-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = connectivity_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = connectivity_definition) connectivity_definition

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to connectivity-- definition-- relationship (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship
date_time-- assignment to contract (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = contract) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = contract) contract
date_time-- assignment to data_element (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = representation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = representation) representation
date_time-- assignment to data_element-- association (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item #5: (date_item = property_definition property_definition) #6: (date_item = action_property action_property) #7: (date_item = representation_relationship representation_relationship))

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				#2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item #5: (date_and_time_item = property_definition property_definition) #6: (date_and_time_item = action_property action_property) #7: (date_and_time_item = representation_relationship representation_relationship)
date_time_- assignment to data_element_- definition (as is applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = general_property) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = general_property)
date_time_- assignment to data_element_- relationship (as is applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = representation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = representation_relationship)
date_time_- assignment to data_element_- specification (as is applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = representation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = representation)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path representation
date_time_- assignment to design_- discipline_item_- definition (as is applied_- to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition) product_definition #3: (#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition) product_definition) #4: (#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage) </pre>
date_time_- assignment to device (as is applied_- to)	PATH			

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to device-- relationship (as is applied_ to)	PATH			<pre> #3: (#8: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship) #9: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_substitute) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_substitute) product_definition_substitute) #4: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = property_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = property_definition_relationship) property_definition_relationship) #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product) product </pre>
date_time-- assignment to document (as is applied_ to)	PATH			

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to document_file (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = document_file) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = document_file) document_file
date_time-- assignment to document_file-- relationship (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = document_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = document_relationship) document_relationship
date_time-- assignment to document_- representation (as is_applied-- to)	PATH			#14: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition) product_definition) #15: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to document_version (as is applied_- to)	PATH			product_definition => product_definition_with_associated_documents => physically_modelled_product_definition #1: (applied_date_assignment date_item applied_date_assignment.items[] -> date_item date_item = product_definition_formation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation) product_definition_formation #1: (applied_date_assignment date_item applied_date_assignment.items[] -> date_item date_item = product_definition_formation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation_relationship) product_definition_formation_relationship #1: (applied_date_assignment date_item date_item = drawing_revision) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = drawing_revision) drawing_revision #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = drawing_revision_sequence) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] ->
date_time_- assignment to document_version_- relationship (as is applied_- to)	PATH			
date_time_- assignment to drawing (as is applied_- to)	PATH			
date_time_- assignment to drawing_sequence (as is applied_- to)	PATH			

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_assignment to drawing_sheet (as is applied to)	PATH			date_and_time_item = drawing_revision_sequence) drawing_revision_sequence #1: (applied_date_assignment date_item date_item = drawing_sheet_revision) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = drawing_sheet_revision) drawing_sheet_revision
date_time_assignment to drawing_sheet_relationship (as is applied to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = representation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = representation_relationship) representation_relationship
date_time_assignment to free_segment (as is applied to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_segment) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_segment) installation_segment => free_segment

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to function_- definition (as is applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition) product_definition
date_time_- assignment to function_- definition_- relationship (as is applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship
date_time_- assignment to function_- interface (as is applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = interface) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = interface) interface
date_time_- assignment to function_unit (as is applied_- to)	PATH			#22: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition) product_definition)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_-_assignment_to_function_unit_-_relationship (as is applied to)	PATH			<pre> #23: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage) #22: (#10: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship) #11: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_substitute) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_substitute) product_definition_substitute) #23: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = property_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to function_version_- (as is_applied_- to)	PATH			date_and_time_item = property_definition_relationship) property_definition_relationship) #1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = product_definition_formation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition_formation) product_definition_formation
date_time_- assignment to function_version_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = product_definition_formation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition_formation_relationship) product_definition_formation_relationship
date_time_- assignment to functional_- connectivity_- definition (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = connectivity_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = connectivity_definition) connectivity_definition

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to functional-- connectivity-- definition-- relationship (as is_applied_ to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship </pre>
date_time-- assignment to functional_unit-- allocation (as is_applied_ to)	PATH			<pre> #24: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship </pre>
date_time-- assignment to functionality (as is_applied_ to)	PATH			<pre> #25: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = property_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = property_definition_relationship) property_definition_relationship </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to general_- classification (as is_applied_- to)	PATH			product #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = class) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = class)
date_time_- assignment to generic_note (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = note_representation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = note_representation)
date_time_- assignment to interface (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = interface) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = interface)
date_time_- assignment to interface_port (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = terminal) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = terminal)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to interface_- terminal (as is_applied_- to)	PATH			terminal #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = terminal) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = terminal) terminal
date_time_- assignment to item (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product) product
date_time_- assignment to item_definition_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship
date_time_- assignment to item_version (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_formation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to item_version_- relationship (as is_applied_- to)	PATH			product_definition_formation #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_formation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation_relationship) product_definition_formation_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_location) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_location)
date_time_- assignment to location (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_location) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_location)
date_time_- assignment to location_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship)
date_time_- assignment to marking (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to material (as is_applied_- to)	PATH			shape_aspect_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = descriptive_representation_item) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = descriptive_representation_item) descriptive_representation_item
date_time_- assignment to node (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_node) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_node)
date_time_- assignment to node_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship)
date_time_- assignment to notification (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = notification) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = notification)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to notification_- relationship (as is_applied_- to)	PATH			notification #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = characterized_object_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = characterized_object_relationship) characterized_object_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = path) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = path)
date_time_- assignment to offered_function_- allocation (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = path) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = path)
date_time_- assignment to path (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = path) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = path)
date_time_- assignment to path_node (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = vertex) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = vertex)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to path_node_- relationship (as is_applied_- to)	PATH			vertex #1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = representation_item_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = representation_item_relationship) representation_item_relationship
date_time_- assignment to path_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = representation_item_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = representation_item_relationship) representation_item_relationship
date_time_- assignment to physical_- assembly_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_relationship => product_definition_usage => product_definition_usage = 'physical occurrence usage' assembly_component_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to physical-- instance (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition) product_definition
date_time-- assignment to port (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = terminal) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = terminal) terminal
date_time-- assignment to port_allocation (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship
date_time-- assignment to port_association (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to preferred_item_- allocation (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = product_definition_relationship applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition_relationship #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = product_definition_relationship product_definition_relationship
date_time_- assignment to preferred_item_- terminal_- allocation (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = shape_aspect_relationship #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = shape_aspect_relationship shape_aspect_relationship
date_time_- assignment to process_variable_- (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[j] -> date_item date_item = process_variable #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[j] -> date_and_time_item date_and_time_item = process_variable

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to process_variable-- relationship (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = characterized_object_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = characterized_object_relationship) characterized_object_relationship #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item = product_concept) #20: (product_concept) #21: (product_concept => product_class)
date_time-- assignment to product_class (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = configuration_item) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = configuration_item) #16: (configuration_item) #17: (configuration_item => product_identification)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to product_- structure_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_relationship) product_definition_usage => product_definition_usage
date_time_- assignment to project (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = organizational_project) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = organizational_project)
date_time_- assignment to requirement (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition) product_definition
date_time_- assignment to requirement_- document_- assignment (as is_applied_- to)	PATH			#26: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = applied_document_reference) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = applied_document_reference)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> applied_document_reference #27: (#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = applied_presented_item) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = applied_presented_item) applied_presented_item) </pre>
date_time_- assignment to route (as is_applied_- to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_route) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_route) installation_route </pre>
date_time_- assignment to route_- relationship (as is_applied_- to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship </pre>
date_time_- assignment to routed_segment (as is_applied_- to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_segment) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_segment) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_assignment to section (as is applied to)	PATH			installation_segment => routed_segment #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_section) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_section) installation_section
date_time_assignment to section_end (as is applied to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_section_end) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_section_end) installation_section_end
date_time_assignment to section_interface (as is applied to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = installation_section_interface) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = installation_section_interface) installation_section_interface

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to section-- interface-- relationship (as is_applied_ to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship
date_time-- assignment to section-- relationship (as is_applied_ to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = shape_aspect_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = shape_aspect_relationship) shape_aspect_relationship
date_time-- assignment to security-- classification (as is_applied_ to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = security_classification) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = security_classification) security_classification
date_time-- assignment to security_level (as is_applied_ to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = security_classification_level) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = security_classification_level) security_classification_level

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_- assignment to signal (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = signal) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = signal) signal
date_time_- assignment to signal_- relationship (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = characterized_object_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = characterized_object_relationship)
date_time_- assignment to signal_value (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = representation) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = representation) representation
date_time_- assignment to specification (as is_applied_- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_concept_feature) product_concept_feature

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to specification-- category (as is_applied-- to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature_category) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item = product_concept_feature_category) #12: (product_concept_feature_category) #13: (product_concept_feature_category => exclusive_product_concept_feature_category) </pre>
date_time-- assignment to specification-- expression (as is_applied-- to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_concept_feature) </pre>
date_time-- assignment to specification-- inclusion (as is_applied-- to)	PATH			<pre> product_concept_feature => conditional_concept_feature #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_concept_feature) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_concept_feature) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- assignment to technical_system (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = class_system) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = class_system) product_definition_formation #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = product_definition_formation_relationship) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = product_definition_formation_relationship)
date_time-- assignment to technical_system-- relationship (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = terminal) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = terminal) terminal
date_time-- assignment to work_order (as is_applied-- to)	PATH			#1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = action_directive) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = action_directive) action_directive

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-assignment to work_request (as is_applied-to)	PATH			<pre> #1: (applied_date_assignment applied_date_assignment.items[] -> date_item date_item = versioned_action_request) #2: (applied_date_and_time_assignment applied_date_and_time_assignment.items[] -> date_and_time_item date_and_time_item = versioned_action_request) versioned_action_request </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DATE_TIME_INTERVAL_ASSIGNMENT</p> <p>#1: If device is used in the context of UoF CF1.</p> <p>#2: If device is not used in the context of UoF CF1.</p> <p>#3: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#4: If data_element is associated to activity or work_order.</p> <p>#5: If data_element is associated to cable_pull_information, device_relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node.</p> <p>#6: If device_relationship is not of type 'substitution'.</p> <p>#7: If device_relationship is of type 'substitution'.</p> <p>#8: If function_unit_relationship is not of type 'substitution'.</p> <p>#9: If function_unit_relationship is of type 'substitution'.</p> <p>#10: If specification-</p>	<p>applied_time_interval_assignment</p>	<p>212</p>		<p>applied_time_interval_assignment <= time_interval_assignment</p>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>category.implicit.- exclusive_condition is FALSE. #11: If specification.- category.implicit.- exclusive_condition is TRUE. #12: If the document.- representation is not a physical_model. #13: If the document.- representation is a physical_model. #14: If product.- identification is not used in the context of UoF CF1. #15: If product.- identification is used in the context of UoF CF1. #16: If product_class is used with UoF EF1. #17: If product_class is used with UoF CF1. #18: If the connectivity.- allocation references a connectivity_definition. #19: If the connectivity.- allocation references a device, function_unit, or a physical_instance. #20: If function_unit is used in the context of UoF CF1. #21: If function_unit is not used in the context of UoF CF1.</p>				

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
#22: If the function_unit allocation is used in the context of CF1. #23: If the function_unit allocation is not used in the context of CF1. #24: If the requirement_document_assignment assigns a complete document. #25: If the requirement_document_assignment assigns a partial document.				
description	time_interval.role.description	41		applied_time_interval_assignment <= time_interval_assignment time_interval_assignment.role -> time_interval_role time_interval_role.description
role	time_interval.role.name	41		applied_time_interval_assignment <= time_interval_assignment time_interval_assignment.role -> time_interval_role time_interval_role.name
date_time_interval_assignment to interval_of_time (as assigned_time_interval)	PATH			applied_time_interval_assignment <= time_interval_assignment time_interval_assignment.assigned_time_interval time_interval => time_interval.with_bounds

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_activity (as is_applied_to)	PATH			applied_time_interval_assignment time_interval_assignment.items[i] -> time_interval_item time_interval_item = action action => executed_action
date_time_interval_assignment_to_activity_element (as is_applied_to)	PATH			applied_time_interval_assignment time_interval_assignment.items[i] -> time_interval_item time_interval_item = applied_action_assignment applied_action_assignment
date_time_interval_assignment_to_activity_method_assignment (as is_applied_to)	PATH			applied_time_interval_assignment time_interval_assignment.items[i] -> time_interval_item time_interval_item = action_request_solution action_request_solution
date_time_interval_assignment_to_activity_relationship (as is_applied_to)	PATH			applied_time_interval_assignment time_interval_assignment.items[i] -> time_interval_item time_interval_item = action_relationship action_relationship
date_time_interval_assignment_to_alternate_item_relationship (as is_applied_to)	PATH			applied_time_interval_assignment time_interval_assignment.items[i] -> time_interval_item time_interval_item = alternate_product_relationship alternate_product_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_assembly_component_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage
date_time_interval_assignment_to_assembly_substitute_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = assembly_component_usage_substitute assembly_component_usage_substitute
date_time_interval_assignment_to_cable_pull_information (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = representation representation
date_time_interval_assignment_to_class_category_association (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = product_concept_feature_category_usage product_concept_feature_category_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_class_condition_association (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item product_concept_feature_association </pre>
date_time_interval_assignment_to_class_inclusion_association (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item product_concept_feature_association </pre>
date_time_interval_assignment_to_class_specification_association (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item product_concept_feature_association </pre>
date_time_interval_assignment_to_classification_association (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item applied_classification_assignment classification_assignment </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment to classification_attribute (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = property_definition property_definition
date_time_interval_assignment to classification_system (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = class_system class_system
date_time_interval_assignment to complex_product (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation product_definition_formation
date_time_interval_assignment to complex_product_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation_relationship product_definition_formation_relationship
date_time_interval_assignment to composition_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_configuration (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = configured_effectivity_assignment configured_effectivity_assignment
date_time_interval_assignment_to_allocation (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item #18: (time_interval_item = property_definition_relationship property_definition_relationship) #19: (time_interval_item = shape_aspect_relationship shape_aspect_relationship)
date_time_interval_assignment_to_definition (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = connectivity_definition connectivity_definition
date_time_interval_assignment_to_definition_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship
date_time_interval_assignment_to_contract (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = contract contract

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_data_element (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = representation representation
date_time_interval_assignment_to_data_element_association (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item #3: (time_interval_item = property_definition property_definition) #4: (time_interval_item = action_property action_property) #5: (time_interval_item = representation_relationship representation_relationship)
date_time_interval_assignment_to_data_element_definition (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = general_property general_property
date_time_interval_assignment_to_data_element_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = representation_relationship representation_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_data_element_specification (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = representation representation </pre>
date_time_interval_assignment_to_design_discipline_item_definition (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition product_definition </pre>
date_time_interval_assignment_to_device (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item #1: (time_interval_item = product_definition product_definition) #2: (time_interval_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) </pre>
date_time_interval_assignment_to_device_relationship (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item #1: (#6: (time_interval_item = product_definition_relationship product_definition_relationship) #7: (time_interval_item = product_definition_substitute product_definition_substitute)) #2: (time_interval_item = property_definition_relationship property_definition_relationship) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_document (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product product
date_time_interval_assignment_to_document_file (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = document_file document_file
date_time_interval_assignment_to_document_file_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = document_relationship document_relationship
date_time_interval_assignment_to_document_representation (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition #12: (product_definition) #13: (product_definition => product_definition_with_associated_documents => physically_modelled_product_definition)
date_time_interval_assignment_to_document_version (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_document_version_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation_relationship product_definition_formation_relationship
date_time_interval_assignment_to_drawing (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = drawing_revision drawing_revision
date_time_interval_assignment_to_drawing_sequence (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = drawing_revision_sequence drawing_revision_sequence
date_time_interval_assignment_to_drawing_sheet (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = drawing_sheet_revision drawing_sheet_revision
date_time_interval_assignment_to_drawing_sheet_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = representation_relationship representation_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment to free_segment (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_segment installation_segment => free_segment
date_time_interval_assignment to function_definition (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition product_definition
date_time_interval_assignment to function_definition_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship
date_time_interval_assignment to function_interface (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = interface interface
date_time_interval_assignment to function_unit (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item #20: (time_interval_item = product_definition product_definition) #21: (time_interval_item = product_definition_relationship product_definition_relationship => product_definition_usage =>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_function_unit_relationship (as is applied to)	PATH			assembly_component_usage applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item #22: (time_interval_item = product_definition_relationship product_definition_relationship) #9: (time_interval_item = product_definition_substitute product_definition_substitute) #23: (time_interval_item = property_definition_relationship property_definition_relationship)
date_time_interval_assignment_to_function_version (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation product_definition_formation
date_time_interval_assignment_to_function_version_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation_relationship product_definition_formation_relationship
date_time_interval_assignment_to_functional_connectivity_definition (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = connectivity_definition connectivity_definition

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_functional_connectivity_definition_relationship (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship </pre>
date_time_interval_assignment_to_functional_unit_allocation (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item #22: (time_interval_item = product_definition_relationship product_definition_relationship) #23: (time_interval_item = property_definition_relationship property_definition_relationship) </pre>
date_time_interval_assignment_to_functionality (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item time_interval_item = product product </pre>
date_time_interval_assignment_to_general_classification (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = class class </pre>
date_time_interval_assignment_to_generic_note (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = note_representation note_representation </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- interval-- assignment to interface (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = interface interface
date_time-- interval-- assignment to interface.port (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = terminal terminal
date_time-- interval-- assignment to interface-- terminal (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = terminal terminal
date_time-- interval-- assignment to item (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product product
date_time-- interval-- assignment to item.definition-- relationship (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_item_version (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item product_definition_formation product_definition_formation
date_time_interval_assignment_to_item_version_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation_relationship product_definition_formation_relationship
date_time_interval_assignment_to_location (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_location installation_location
date_time_interval_assignment_to_location_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship
date_time_interval_assignment_to_marking (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time-- interval-- assignment to material (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = descriptive_representation_item descriptive_representation_item
date_time-- interval-- assignment to node (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_node installation_node
date_time-- interval-- assignment to node-- relationship (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship
date_time-- interval-- assignment to notification (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = notification notification
date_time-- interval-- assignment to notification-- relationship (as is_applied-- to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = characterized_object_relationship characterized_object_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_offered_function_allocation (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship
date_time_interval_assignment_to_path (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = path path
date_time_interval_assignment_to_path_node (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = vertex vertex
date_time_interval_assignment_to_path_node_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = representation_item_relationship representation_item_relationship
date_time_interval_assignment_to_path_node_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = representation_item_relationship representation_item_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_physical_assembly_relationship (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship => product_definition_name = 'physical occurrence usage' assembly_component_usage => </pre>
date_time_interval_assignment_physical_instance (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item time_interval_item = product_definition product_definition </pre>
date_time_interval_assignment_port (as is applied to)	PATH			<pre> applied_time_interval_assignment time_interval_item time_interval_item = terminal terminal </pre>
date_time_interval_assignment_port_allocation (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship </pre>
date_time_interval_assignment_port_association (as is applied to)	PATH			<pre> applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_preferred_item_allocation (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship
date_time_interval_assignment_preferred_item_allocation (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship
date_time_interval_assignment_to_process_variable (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = process_variable process_variable
date_time_interval_assignment_to_process_variable_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = characterized_object_relationship characterized_object_relationship
date_time_interval_assignment_to_product_class (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = product_concept #16: (product_concept) #17: (product_concept => product_class)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_product_identification (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = configuration_item #16: (configuration_item) #17: (configuration_item => product_identification)
date_time_interval_assignment_to_product_structure_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = product_definition_relationship product_definition_relationship => product_definition_usage
date_time_interval_assignment_to_project (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = organizational_project organizational_project
date_time_interval_assignment_to_requirement_document_assignment (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item time_interval_item = product_definition product_definition
date_time_interval_assignment_to_requirement_document_assignment (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[] -> time_interval_item #24: (time_interval_item = applied_document_reference applied_document_reference) #25: (time_interval_item = applied_presented_item applied_presented_item)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_route (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_route installation_route
date_time_interval_assignment_to_route_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship
date_time_interval_assignment_to_routed_segment (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_segment installation_segment => routed_segment
date_time_interval_assignment_to_section (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_section installation_section
date_time_interval_assignment_to_section_end (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_section_end installation_section_end

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_section_interface (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = installation_section_interface installation_section_interface
date_time_interval_assignment_to_section_interface relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship
date_time_interval_assignment_to_section_relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = shape_aspect_relationship shape_aspect_relationship
date_time_interval_assignment_to_security_classification (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = security_classification security_classification
date_time_interval_assignment_to_security_level (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = security_classification_level security_classification_level

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment to signal (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = signal signal
date_time_interval_assignment to signal relationship (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = characterized_object_relationship characterized_object_relationship
date_time_interval_assignment to signal_value (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = representation representation
date_time_interval_assignment to specification (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_concept_feature product_concept_feature
date_time_interval_assignment to specification_category (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_concept_feature_category #10: (product_concept_feature_category) #11: (product_concept_feature_category => exclusive_product_concept_feature_category)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_specification_expression (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_concept_feature product_concept_feature => conditional_concept_feature
date_time_interval_assignment_to_specification_inclusion (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_concept_feature product_concept_feature => conditional_concept_feature => inclusion_product_concept_feature
date_time_interval_assignment_to_technical_system (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = class_system product_definition_formation
date_time_interval_assignment_to_technical_system_relationship (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = product_definition_formation_relationship product_definition_formation_relationship
date_time_interval_assignment_to_terminal (as is_applied_to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = terminal terminal

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
date_time_interval_assignment_to_work_order (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = action_directive action_directive
date_time_interval_assignment_to_work_request (as is applied to)	PATH			applied_time_interval_assignment applied_time_interval_assignment.items[i] -> time_interval_item time_interval_item = versioned_action_request versioned_action_request
DURATION		41		
time	time_measure_with_unit time_measure	41		time_measure_with_unit <= measure_with_unit measure_with_unit.value_component -> measure_value measure_value = time_measure time_measure
time_unit	time_unit	41		time_measure_with_unit <= measure_with_unit measure_with_unit.component -> unit unit = named_unit named_unit => time_unit

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AM element	Source	Rules	Reference path
<p>INTERVAL_OF_TIME</p> <p>#1: If only a certain day is known.</p> <p>#2: If a certain day and the time of day is known.</p> <p>#3: If event_reference_offset is not instantiated.</p> <p>#4: If event_reference_offset is instantiated.</p>	<p>time_interval_with_bounds</p>	41		
<p>interval_of_time to date_time (as end_-definition)</p>	PATH			<p>time_interval_with_bounds</p> <p>time_interval_with_bounds.secondary_bound -> date_time_or_event_occurrence = date_time_select</p> <p>#1: (date_time_select = date date => calendar_date)</p> <p>#2: (date_time_select = date_and_time date_and_time)</p>
<p>interval_of_time to duration (as end_-definition)</p> <p>interval_of_time to event_-reference (as end_-definition)</p>	PATH			<p>time_interval_with_bounds</p> <p>time_interval_with_bounds.duration -> time_measure_with_unit</p>
<p>interval_of_time to event_-reference (as end_-definition)</p>	PATH			<p>time_interval_with_bounds</p> <p>time_interval_with_bounds.secondary_bound -> date_time_or_event_occurrence</p> <p>date_time_or_event_occurrence = event_occurrence</p> <p>#3: (event_occurrence)</p> <p>#4: (event_occurrence => relative_event_occurrence)</p>
<p>interval_of_time to date_time (as start_-definition)</p>	PATH			<p>time_interval_with_bounds</p> <p>time_interval_with_bounds.primary_bound -> date_time_or_event_occurrence = date_time_select</p> <p>#1: (date_time_select = date date => calendar_date)</p>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
interval_of_time to event_-- reference (as start_-- definition)	PATH			#2: (date.time.select = date.and.time date.and.time) time_interval_with_bounds date_time_or_event_occurrence date_time_or_event_occurrence = event_occurrence #3: (event_occurrence) #4: (event_occurrence => relative_event_occurrence)
ORGANIZATION				
id	organization	41		
name	organization.id organization.name	41 41		
organization_-- type	organization. description	41		{(organization.description) (organization.description = 'company') (organization.description = 'department') (organization.description = 'plant')}
organization to address (as delivery_-- address)	PATH			organization <- organizational_address.organizations[i] organizational_address <= {organizational_address organizational_address.description = 'delivery address'}
organization to address (as postal_-- address)	PATH			organization <- organizational_address.organizations[i] organizational_address <= {organizational_address organizational_address.description = 'postal address'}
organization to address (as visitor_-- address)	PATH			organization <- organizational_address.organizations[i] organizational_address <= {organizational_address organizational_address.description = 'visitor address'}

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
ORGANIZATION- RELATIONSHIP description	organization- relationship- relationship- description	41		
relation-type	organization- relationship.name	41		{(organization-relationship.name) (organization-relationship.name = 'hierarchy') (organization-relationship.name = 'legal succession') (organization-relationship.name = 'reorganization')}
organization- relationship to organization (as related)	PATH			organization-relationship organization-relationship.related-organization -> organization
organization- relationship to organization (as relating)	PATH			organization-relationship organization-relationship.relatng-organization -> organization
PERSON	person	41	30,55	{person <- person_and_organization.the_person person_and_organization}
first_name	person.first_name	41		
last_name	person.last_name	41		
middle_names	person.middle_names	41		
prefix_titles	person.prefix_titles	41		
suffix_titles	person.suffix_titles	41		
person to address (as preferred_- business_- address)	PATH			person <- personal_address.people[j] personal_address <= address
PERSON_IN_- ORGANIZATION id	person_and_- organization identification_- assignment_assigned_id	41		person_and_organization identification_item = person_and_organization identification_item <- applied_identification_assignment.items[j]

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AMM element	Source	Rules	Reference path
role	name.attribute. attribute_value	41		<pre> applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'id'} identification_assignment.assigned_id </pre>
person_in- organization to organization (as associated- organization)	PATH			<pre> person_and_organization name_attribute_select <- name_attribute_named_item name_attribute name_attribute.attribute_value </pre>
person_in- organization to person (as associated- person)	PATH			<pre> person_and_organization.the_organization -> organization </pre>
person_in- organization to address (as location)	PATH			<pre> person_and_organization person_and_organization.the_person -> person </pre>
				<pre> person_and_organization [person_and_organization.the_person -> person <- personal_address.people[1] personal_address <= {personal_address => person_and_organization.address}] [person_and_organization.the_organization -> organization <- organizational_address.organizations[1] organizational_address <= {organizational_address => person_and_organization.address}] </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
PERSON_IN_ORGANIZATION_RELATIONSHIP description	applied_person_and_organization_assignment person_and_organization_role description	212 41		applied_person_and_organization_assignment <= person_and_organization_assignment applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_role -> person_and_organization_role person_and_organization_role.description
relation_type	person_and_organization_role.name	41		applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_role -> person_and_organization_role person_and_organization_role.name {(person_and_organization_role.name (person_and_organization_role.name = 'successor'))}
person_in_organization_relationship_to_person_in_organization (as related) person_in_organization_relationship_to_person_in_organization (as relating)	PATH PATH			applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_assignment.assigned_person_and_organization -> person_and_organization applied_person_and_organization_assignment applied_person_and_organization_assignment.items[1] -> person_and_organization_item person_and_organization_item = person_and_organization person_and_organization

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>PERSON_- ORGANIZATION_- ASSIGNMENT</p> <p>#1: If used for a person as member of an organization.</p> <p>#2: If used for an organization.</p> <p>#3: If device is used in the context of UoF CF1.</p> <p>#4: If device is not used in the context of UoF CF1.</p> <p>#5: If device_- relationship is not of type 'substitution'.</p> <p>#6: If device_- relationship is of type 'substitution'.</p> <p>#7: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#8: If data_element is associated to activity or work_order.</p> <p>#9: If data_element is associated to cable_pull_information, device_- relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node.</p> <p>#10: If specification_-category.implicit_-</p>	<p>#1: (applied_person_-and_organization_-assignment)</p> <p>#2: (applied_organization_-assignment)</p>	<p>212</p> <p>212</p>		<p>#1: (applied_person_and_organization_assignment <= person_and_organization_assignment)</p> <p>#2: (applied_organization_assignment <= organization_assignment)</p>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>exclusive_condition is FALSE.</p> <p>#11: If specification_category.implicit_exclusive_condition is TRUE.</p> <p>#12: If the document_representation is not a physical_model.</p> <p>#13: If the document_representation is a physical_model.</p> <p>#14: If product_identification is not used in the context of UoF CF1.</p> <p>#15: If product_identification is used in the context of UoF CF1.</p> <p>#16: If product_class is used with UoF EF1.</p> <p>#17: If product_class is used with UoF CF1.</p> <p>#18: If the connectivity_allocation references a connectivity_definition.</p> <p>#19: If the connectivity_allocation references a device, function_unit, or a physical_instance.</p> <p>#20: If function_unit is used in the context of UoF CF1.</p> <p>#21: If function_unit is not used in the context of UoF CF1.</p> <p>#22: If the function_unit-</p>				

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>allocation is used in the context of CFL.</p> <p>#23: If the function_unit_allocation is not used in the context of CFL.</p> <p>#24: If the requirement_document_assignment assigns a complete document.</p> <p>#25: If the requirement_document_assignment assigns a partial document.</p> <p>#26: If function_unit_relationship is not of type 'substitution'.</p> <p>#27: If function_unit_relationship is of type 'substitution'.</p>				
<p>description</p>	<p>description_attribute.attribute_value</p>	41	<p>#1: (applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_role -> person_and_organization_role)</p> <p>description_attribute_select = person_and_organization_role</p> <p>#2: (applied_organization_assignment <= organization_assignment organization_role -> organization_role)</p> <p>description_attribute_select = organization_role</p> <p>description_attribute_select < description_attribute_described_item</p> <p>description_attribute</p>	
<p>role</p>	<p>#1: (person_and_organization_role)</p>	41	29,31	<p>#1: (applied_person_and_organization_assignment <= person_and_organization_assignment)</p>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
	#2: (organization-role.name)	41		<pre> person_and_organization_assignment.role -> person_and_organization_role {(person_and_organization_role.name (person_and_organization_role.name = 'author') (person_and_organization_role.name = 'classification officer') (person_and_organization_role.name = 'creator') (person_and_organization_role.name = 'custodian') (person_and_organization_role.name = 'customer') (person_and_organization_role.name = 'design supplier') (person_and_organization_role.name = 'editor') (person_and_organization_role.name = 'id owner') (person_and_organization_role.name = 'inspector') (person_and_organization_role.name = 'local representative') (person_and_organization_role.name = 'location') (person_and_organization_role.name = 'manufacturer') (person_and_organization_role.name = 'operator') (person_and_organization_role.name = 'owner') (organization_role.name = 'scope') (person_and_organization_role.name = 'supplier') (person_and_organization_role.name = 'wholesaler')}} #2: (applied_organization_assignment <= organization_assignment organization_assignment.role -> organization_role { (organization_role.name = 'author') (organization_role.name = 'classification officer') (organization_role.name = 'creator') (organization_role.name = 'custodian') (organization_role.name = 'customer') (organization_role.name = 'design supplier') (organization_role.name = 'editor') (organization_role.name = 'id owner') (organization_role.name = 'inspector') }) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				(person_and_organization_role.name = 'local representative') (organization_role.name = 'location') (organization_role.name = 'manufacturer') (person_and_organization_role.name = 'operator') (organization_role.name = 'owner') (organization_role.name = 'scope') (organization_role.name = 'supplier') (organization_role.name = 'wholesaler')}} applied_organization_assignment <=
person_- organization_- assignment to organization (as assigned_- person_or_- organization)	PATH			organization_assignment organization_assignment_assigned_organization -> organization
person_- organization_- assignment to person_in_- organization (as assigned_- person_or_- organization)	PATH			applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_assignment_assigned_person_and_organization -> person_and_organization
person_- organization_- assignment to activity (as is_applied_- to)	PATH			#1: (applied_person_and_organization_assignment person_and_organization_item person_and_organization_item = action) #2: (applied_organization_assignment applied_organization_assignment_items[] -> organization_item organization_item = action) action => executed_action

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to activity_element (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = applied_action_assignment applied_action_assignment {applied_action_assignment <= action_assignment action_assignment.role -> object_role object_role.name = 'activity element'}
person_ organization_ assignment to activity_method_ assignment (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = action_request_solution action_request_solution
person_ organization_ assignment to activity_ relationship (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = action_relationship action_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to alternate_item_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item alternate_product_relationship) alternate_product_relationship
person_ organization_ assignment to assembly_ component_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage
person_ organization_ assignment to assembly_ substitute_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = assembly_component_usage_substitute) organization_item = assembly_component_usage_substitute

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to cable_pull_ information (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = representation) representation
person_ organization_ assignment to class_category_ association (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_category_usage) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = product_concept_feature_category_usage) product_concept_feature_category_usage
person_ organization_ assignment to class_condition_ association (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_association) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = product_concept_feature_association) product_concept_feature_association
person_ organization_ assignment to class_inclusion_ association (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature_association) #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = product_concept_feature_association) product_concept_feature_association

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to class_ specification_ association (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = product_concept_feature_association applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature_association product_concept_feature_association)
person_ organization_ assignment to classification_ association (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = applied_classification_assignment applied_organization_assignment.items[i] -> organization_item organization_item = applied_classification_assignment applied_classification_assignment <= classification_assignment)
person_ organization_ assignment to classification_ attribute (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = property_definition applied_organization_assignment.items[i] -> organization_item organization_item = property_definition property_definition)
person_ organization_ assignment to classification_ system (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = class_system applied_organization_assignment.items[i] -> organization_item organization_item = class_system)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_organizational_assignment_to_complex_product (as is_applied_to)	PATH			class-system #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_formation) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_formation product_definition_formation)
person_organizational_assignment_to_complex_product_relationship (as is_applied_to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_formation product_definition_formation_relationship)
person_organizational_assignment_to_composition_relationship (as is_applied_to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_formation_relationship product_definition_formation_relationship) #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_formation_relationship product_definition_formation_relationship => product_definition_usage => assembly_component_usage)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to configuration (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = configured_effectivity_assignment configured_effectivity_assignment
person_ organization_ assignment to connectivity_ allocation (as is applied_ to)	PATH			#20: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = property_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = property_definition_relationship) property_definition_relationship #21: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship)
person_ organization_ assignment to connectivity_ definition (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = connectivity_definition) connectivity_definition

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to connectivity_ definition_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship)
person_ organization_ assignment to contract (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = contract) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = contract)
person_ organization_ assignment to data_element (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = representation)
person_ organization_ assignment to data_element_ association (as is applied_ to)	P			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = property_definition) #7: (person_and_organization_item = action_property) #8: (person_and_organization_item = action_property action_property) #9: (person_and_organization_item = representation_relationship representation_relationship)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to data_element_ definition (as is applied_ to)	PATH			#2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item #7: (organization_item = property_definition property_definition) #8: (organization_item = action_property action_property) #9: (organization_item = representation_relationship representation_relationship))
person_ organization_ assignment to data_element_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = general_property) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = general_property)
person_ organization_ assignment to data_element_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = representation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation_relationship)
person_ organization_ assignment to data_element_ specification (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = representation)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_organizational_assignment_to_design_discipline_item_definition (as is applied to)	PATH			<pre> representation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = product_definition product_definition </pre>
person_organizational_assignment_to_device (as is applied to)	PATH			<pre> #3: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition product_definition #4: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to device_ relationship (as is_applied_ to)	PATH			#3: (#5: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_relationship) product_definition_relationship) #6: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_substitute) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_substitute))
person_ organization_ assignment to document (as is_applied_ to)	PATH			#4: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = property_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = property_definition_relationship) property_definition_relationship) #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_-- organization_-- assignment to document_file_-- (as is_applied_-- to)				organization_item = product product #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = document_file) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = document_file) document_file
person_-- organization_-- assignment to document_file_-- relationship (as is_applied_-- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = document_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = document_relationship) document_relationship
person_-- organization_-- assignment to document_-- representation (as is_applied_-- to)	P			#12: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition) product_definition) #13: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[j] ->

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to document_ version (as is_ applied_ to)	PATH			<pre> organization_item = product_definition product_definition => product_definition_with_associated_documents => physically_modelled_product_definition #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = product_definition_formation) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = product_definition_formation) product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = product_definition_formation) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = product_definition_formation) product_definition_formation </pre>
person_ organization_ assignment to document_ version_ relationship (as is_ applied_ to)	PATH			<pre> organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = product_definition_formation) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = product_definition_formation) product_definition_formation </pre>
person_ organization_ assignment to drawing (as is_ applied_ to)	PATH			<pre> organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[] -> person_and_organization_item person_and_organization_item = drawing_revision) #2: (applied_organization_assignment applied_organization_assignment.items[] -> organization_item organization_item = drawing_revision) drawing_revision </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to drawing_sequence (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = drawing_revision_sequence) applied_organization_assignment.items[i] -> organization_item organization_item = drawing_revision_sequence drawing_revision_sequence
person_ organization_ assignment to drawing_sheet (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = drawing_sheet_revision) applied_organization_assignment.items[i] -> organization_item organization_item = drawing_sheet_revision drawing_sheet_revision
person_ organization_ assignment to drawing_sheet_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = representation_relationship) applied_organization_assignment.items[i] -> organization_item organization_item = representation_relationship representation_relationship
person_ organization_ assignment to free_segment (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = installation_segment) applied_organization_assignment.items[i] -> organization_item organization_item = installation_segment installation_segment =>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to function_ definition (as is applied_ to)	PATH			free_segment #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition product_definition)
person_ organization_ assignment to function_ definition_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship product_definition_relationship)
person_ organization_ assignment to function_ interface (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = interface) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = interface)
person_ organization_ assignment to function_ unit (as is applied_ to)	PATH			#20: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition))

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_organizational_assignment_to_function_unit_relationship (as is applied to)	PATH			product_definition #21: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage => assembly_component_usage)
				#20: (#26: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) organization_item = product_definition_relationship) product_definition_relationship)
				#27: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_substitute) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_substitute) product_definition_substitute)
				#4: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to function_ version (as is_ applied_ to)	PATH			person_and_organization_item = property_definition_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = property_definition_relationship property_definition_relationship #1: (applied_person_and_organization_assignment person_and_organization_item person_and_organization_item = product_definition_formation #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = product_definition_formation #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = product_definition_formation_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship product_definition_formation_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = connectivity_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = connectivity_definition connectivity_definition
person_ organization_ assignment to functional_ connectivity_ definition (as is_ applied_ to)	PATH			person_and_organization_item = property_definition_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = property_definition_relationship property_definition_relationship #1: (applied_person_and_organization_assignment person_and_organization_item person_and_organization_item = product_definition_formation #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = product_definition_formation_relationship #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship product_definition_formation_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = connectivity_definition #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = connectivity_definition connectivity_definition

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to functional_ connectivity_ definition_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = shape_aspect_relationship) applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship)
person_ organization_ assignment to functional_unit_ allocation (as is applied_ to)	PATH			#22: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = product_definition_relationship) applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_relationship) product_definition_relationship)
person_ organization_ assignment to functionality (as is applied_ to)	PATH			#23: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_item = property_definition_relationship) applied_organization_assignment.items[j] -> organization_item organization_item = property_definition_relationship) property_definition_relationship) #1: (applied_person_and_organization_assignment.items[i] -> applied_person_and_organization_item person_and_organization_item = product) #2: (applied_organization_assignment.items[j] -> organization_item organization_item = product)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AM element	Source	Rules	Reference path
person_ organization_ assignment to general_ classification (as is applied_ to)	PATH			product #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = class) organization_item = class
person_ organization_ assignment to generic_note (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = note_representation) organization_item = note_representation
person_ organization_ assignment to interface (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item = interface) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = interface) organization_item = interface
person_ organization_ assignment to interface_port (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item = terminal) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = terminal) organization_item = terminal

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to interface_ terminal (as is applied_ to)	PATH			terminal #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = terminal) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = terminal) terminal
person_ organization_ assignment to item (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product) product
person_ organization_ assignment to item_definition_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship
person_ organization_ assignment to item_version (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation) product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AMM element	Source	Rules	Reference path
person_ organization_ assignment to item_ version_ relationship (as is applied_ to)	PATH			product_definition_formation #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_formation_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation_relationship) product_definition_formation_relationship
person_ organization_ assignment to location (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = installation_location) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = installation_location) installation_location
person_ organization_ assignment to location_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
person_ organization_ assignment to marking (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = shape_aspect_relationship)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AMM element	Source	Rules	Reference path
person_ organization_ assignment to material (as is applied_ to)	PATH			shape_aspect_relationship #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item descriptive_representation_item)
person_ organization_ assignment to node (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item installation_node)
person_ organization_ assignment to node_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item shape_aspect_relationship)
person_ organization_ assignment to notification (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item notification)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to notification_ relationship (as is applied_ to)	PATH			notification #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = characterized_object_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = characterized_object_relationship) characterized_object_relationship
person_ organization_ assignment to offered_function_ allocation (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship
person_ organization_ assignment to path (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = path) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = path) path
person_ organization_ assignment to path_node (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = vertex) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = vertex) organization_item = vertex

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_organizational_assignment_to_path_node_relationship (as is applied to)	PATH			vertex #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = representation_item_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation_item_relationship) representation_item_relationship
person_organizational_assignment_to_path_relationship (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = representation_item_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation_item_relationship) representation_item_relationship
person_organizational_assignment_to_physical_assembly_relationship (as is applied to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_relationship.name = 'physical occurrence usage' product_definition_usage => assembly_component_usage

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to physical_ instance (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = product_definition product_definition
person_ organization_ assignment to port (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = terminal) organization_item = terminal)
person_ organization_ assignment to port_allocation (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = shape_aspect_relationship) organization_item = shape_aspect_relationship)
person_ organization_ assignment to port_association (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = shape_aspect_relationship) organization_item = shape_aspect_relationship)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_organizational_data UoF (OD1) (continued)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_definition_relationship applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = product_definition_relationship) product_definition_relationship
person_organizational_data UoF (OD1) (continued)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship
person_organizational_data UoF (OD1) (continued)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item = process_variable) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = process_variable) process_variable

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_-- organization_-- assignment to process_variable_-- relationship (as is_applied_-- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = characterized_object_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = characterized_object_relationship) characterized_object_relationship
person_-- organization_-- assignment to product_class (as is_applied_-- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = product_concept) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = product_concept) #18: (product_concept) #19: (product_concept => product_class)
person_-- organization_-- assignment to product_-- identification (as is_applied_-- to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = configuration_item) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item = configuration_item) #14: (configuration_item) #15: (configuration_item => product_identification)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to product_ structure_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_relationship) product_definition_relationship => product_definition_usage
person_ organization_ assignment to project (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = organizational_project) organizational_project
person_ organization_ assignment to requirement (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_definition_formation) product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to requirement_ document_ assignment (as is applied_ to)	PATH			#24: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment applied_document_reference) organization_item = applied_document_reference) #25: (#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item #2: (applied_organization_assignment organization_item = applied_presented_item) organization_item = applied_presented_item)
person_ organization_ assignment to route (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item = installation_route) #2: (applied_organization_assignment organization_item = installation_route) organization_item = installation_route
person_ organization_ assignment to route_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item = shape_aspect_relationship) #2: (applied_organization_assignment applied_organization_item = organization_item organization_item = shape_aspect_relationship) shape_aspect_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to routed_segment (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = installation_segment #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = installation_segment installation_segment => routed_segment
person_ organization_ assignment to section (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = installation_section #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = installation_section installation_section
person_ organization_ assignment to section_end (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = installation_section_end #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = installation_section_end installation_section_end
person_ organization_ assignment to section_ interface (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item person_and_organization_item = installation_section_interface #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item organization_item = installation_section_interface)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to section_ interface_ relationship (as is, applied_ to)	PATH			installation_section_interface #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item shape_aspect_relationship) shape_aspect_relationship)
person_ organization_ assignment to section_ relationship (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item shape_aspect_relationship) shape_aspect_relationship)
person_ organization_ assignment to security_ classification (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item = security_classification) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = security_classification) security_classification)
person_ organization_ assignment to security_level (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item = security_classification_level) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = security_classification_level) security_classification_level)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AMM element	Source	Rules	Reference path
person_ organization_ assignment to signal (as is applied_ to)	PATH			security_classification_level #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = signal) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = signal) signal
person_ organization_ assignment to signal_ relationship (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = characterized_object_relationship) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = characterized_object_relationship) characterized_object_relationship
person_ organization_ assignment to signal_value (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = representation) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = representation) representation
person_ organization_ assignment to specification (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to specification_ category (as is, applied_ to)	PATH			product_concept_feature #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature.category) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item = product_concept_feature.category) #10: (product_concept_feature_category => #11: (product_concept_feature_category => exclusive_product_concept_feature_category)
person_ organization_ assignment to specification_ expression (as is, applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_item person_and_organization_item = product_concept_feature) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature)
person_ organization_ assignment to specification_ inclusion (as is, applied_ to)	PATH			product_concept_feature => conditional_concept_feature #1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[i] -> person_and_organization_item person_and_organization_item = product_concept_feature) #2: (applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = product_concept_feature) product_concept_feature => conditional_concept_feature => inclusion_product_concept_feature

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to technical_system_ (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item = product_definition_formation) organization_item = product_definition_formation)
person_ organization_ assignment to technical_system_ relationship (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item = product_definition_formation) person_and_organization_item = product_definition_formation_relationship organization_item = product_definition_formation_relationship)
person_ organization_ assignment to terminal (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item = terminal #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item = terminal) organization_item = terminal)
person_ organization_ assignment to work_order (as is_applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_items[i] -> person_and_organization_item = action_directive #2: (applied_organization_assignment applied_organization_assignment_items[i] -> organization_item = action_directive) organization_item = action_directive)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
person_ organization_ assignment to work_request (as is applied_ to)	PATH			#1: (applied_person_and_organization_assignment applied_person_and_organization_assignment.items[j] -> person_and_organization_item person_and_organization_item = versioned_action_request) #2: (applied_organization_assignment applied_organization_assignment.items[j] -> organization_item organization_item = versioned_action_request) versioned_action_request

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>SECURITY_- CLASSIFICATION</p> <p>#1: If device is used in the context of UoF CFI.</p> <p>#2: If device is not used in the context of UoF CFI.</p> <p>#3: If device_- relationship is not of type 'substitution'.</p> <p>#4: If device_- relationship is of type 'substitution'.</p> <p>#5: If function_unit_- relationship is not of type 'substitution'.</p> <p>#6: If function_unit_- relationship is of type 'substitution'.</p> <p>#7: If product_class is used with UoF EFL.</p> <p>#8: If product_class is used with UoF CFI.</p> <p>#9: If specification_- category.implicit_- exclusive_condition is FALSE.</p> <p>#10: If specification_- category.implicit_- exclusive_condition is TRUE.</p> <p>#11: If the document_- representation is not a physical_model.</p> <p>#12: If the document_- representation is a physical_model.</p>	<p>security_- classification</p>	41	103	

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
#13: If the connectivity_- allocation references a connectivity_definition. #14: If the connectivity_- allocation references a device, function_unit, or a physical_instance. #15: If function_unit is not used in the context of UoF CF1. #16: If function_unit is used in the context of UoF CF1. #17: If the function_unit_- allocation is used in the context of CF1. #18: If the function_unit_- allocation is not used in the context of CF1. #19: If product_- identification is used with UoF EF1. #20: If product_- identification is used with UoF CF1.				
name	security_- classification.name	41		
purpose	security_- classification.purpose	41		
security_- classification to activity (as is_applied_- to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification.assigned => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification to activity_- element (as is.applied_- to)	PATH			security_classification_item = action action => executed_action security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_assignment applied_action_assignment
security_- classification to activity_- method_- assignment (as is.applied_- to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = action_request_solution action_request_solution
security_- classification to activity_- relationship (as is.applied_- to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = action_relationship action_relationship
security_- classification to alternate_- item_- relationship (as is.applied_- to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = alternate_product_relationship alternate_product_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to assembly_component_relationship (as is_applied_to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = assembly_component_usage assembly_component_usage
security_classification to cable_pull_information (as is_applied_to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = representation representation
security_classification to complex_product (as is_applied_to)				security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition_formation product_definition_formation
security_classification to complex_product_relationship (as is_applied_to)				security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition_formation product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to composition_relationship (as is_applied_to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification.assigned_security_classification => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = assembly_component_usage assembly_component_usage
security_classification to configuration (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = configured_effectivity_assignment configured_effectivity_assignment
security_classification to connectivity_allocation (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item #13: (security_classification_item = property_definition_relationship property_definition_relationship) #14: (security_classification_item = shape_aspect_relationship shape_aspect_relationship)
security_classification to connectivity_definition (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = connectivity_definition connectivity_definition

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification to connectivity_- definition_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = shape_aspect_relationship shape_aspect_relationship
security_- classification to contract (as is_applied_- to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = contract contract
security_- classification to data_element (as is_applied_- to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = representation representation
security_- classification to data_element_- definition (as is_applied_- to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = general_property general_property

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to data_element_relationship (as is_applied_to)	PATH			security_classification.assigned_security_classification security_classification.assigned_security_classification => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = representation_relationship representation_relationship
security_classification to design_discipline_item_definition (as is_applied_to)	PATH			security_classification.assigned_security_classification security_classification.assigned_security_classification => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition product_definition
security_classification to device (as is_applied_to)	PATH			security_classification.assigned_security_classification security_classification.assigned_security_classification => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item #1: (security_classification_item = product_definition product_definition) #2: (security_classification_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) security_classification.assigned_security_classification
security_classification to device_relationship (as is_applied_to)	PATH			security_classification.assigned_security_classification security_classification.assigned_security_classification => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item #1: (security_classification_item = product_definition_relationship product_definition_relationship)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_-- classification to document (as is_applied_-- to)	PATH			#4: (security_classification_item = product_definition_substitute product_definition_substitute) #2: (security_classification_item = property_definition_relationship property_definition_relationship) security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product product
security_-- classification to document_file (as is_applied_-- to)				security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = document_file document_file
security_-- classification to document_file_-- relationship (as is_applied_-- to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = document_relationship document_relationship security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = document_relationship document_relationship
security_-- classification to document_-- representation (as is_applied_-- to)				security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item #11: (security_classification_item = product_definition product_definition)

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification_- to document_- version_- (as is, applied_- to)	PATH			#12: (security_classification_item = product_definition product_definition => product_definition_with_associated_documents => physically_modelled_product_definition) security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition_formation product_definition_formation security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition_formation product_definition_formation
security_- classification_- to document_- version_- relationship_- (as is, applied_- to)	PATH			security_classification_assignment.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition_formation_relationship product_definition_formation_relationship
security_- classification_- to drawing_- (as is, applied_- to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = drawing_revision drawing_revision
security_- classification_- to drawing_- sequence_- (as is, applied_- to)	PATH			security_classification_assignment.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = drawing_revision_sequence drawing_revision_sequence

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to drawing_sheet (as is_applied to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = drawing_sheet_revision drawing_sheet_revision
security_classification to drawing_sheet_relationship (as is_applied to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = representation_relationship representation_relationship
security_classification to function_definition (as is_applied to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition product_definition
security_classification to function_definition_relationship (as is_applied to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition_relationship product_definition_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to function_interface (as is applied to)	PATH			<pre> security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = interface interface </pre>
security_classification to function_unit (as is applied to)	PATH			<pre> security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item product_definition #15: (security_classification_item = product_definition product_definition) #16: (security_classification_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) </pre>
security_classification to function_unit_relationship (as is applied to)	PATH			<pre> security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment security_classification_item #15: (security_classification_item = product_definition_relationship product_definition_relationship) #6: (security_classification_item = product_definition_substitute product_definition_substitute) #16: (security_classification_item = property_definition_relationship property_definition_relationship) </pre>

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to functional_version (as is applied to)	PATH			security_classification <- applied_security_classification_assignment security_classification_assignment.items[i] -> security_classification_item product_definition_formation product_definition_formation
security_classification to functional_version_relationship (as is applied to)	PATH			security_classification <- applied_security_classification_assignment security_classification_assignment.items[i] -> security_classification_item product_definition_formation_relationship product_definition_formation_relationship
security_classification to functional_connectivity_definition (as is applied to)	PATH			security_classification <- applied_security_classification_assignment security_classification_assignment.items[i] -> security_classification_item security_classification_item = connectivity_definition connectivity_definition
security_classification to functional_connectivity_definition_relationship (as is applied to)	PATH			security_classification <- applied_security_classification_assignment security_classification_assignment.items[i] -> security_classification_item security_classification_item = shape_aspect_relationship shape_aspect_relationship
security_classification to functional_unit_allocation (as is applied to)	PATH			security_classification <- applied_security_classification_assignment security_classification_assignment.items[i] -> security_classification_item #17: (security_classification_item = product_definition_relationship product_definition_relationship {product_definition_relationship.name = 'functional unit allocation'})

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to generic_note (as is_applied_to)	PATH			#18: (security_classification_item = property_definition_relationship property_definition_relationship {property_definition_relationship.name = 'functional unit allocation'}) security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = note_representation note_representation
security_classification to interface (as is_applied_to)	PATH			security_classification <- security_classification_assignment.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = interface interface
security_classification to interface_port (as is_applied_to)				security_classification <- security_classification_assignment.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = terminal terminal
security_classification to interface_terminal (as is_applied_to)				security_classification <- security_classification_assignment.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = terminal terminal

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to item_definition_relationship (as is applied to)	PATH			security_classification <- security_assignment.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition_relationship product_definition_relationship
security_classification to item_version (as is applied to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition_formation product_definition_formation
security_classification to item_version_relationship (as is applied to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition_formation product_definition_formation
security_classification to location (as is applied to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = installation_location installation_location
security_classification to location_relationship (as is applied to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = shape_aspect_relationship shape_aspect_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification to marking (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = equipment_marking equipment_marking
security_- classification to node (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = installation_node installation_node
security_- classification to node_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = shape_aspect_relationship shape_aspect_relationship
security_- classification to notification (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = notification notification
security_- classification to notification_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = characterized_object_relationship characterized_object_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to offered_function_allocation (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item product_definition_relationship
security_classification to path (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item security_classification_item = path
security_classification to path_node (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item security_classification_item = vertex
security_classification to path_node_relationship (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item representation_item_relationship
security_classification to path_relationship (as is_applied_to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item representation_item_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification to physical_- assembly_- relationship (as is_applied_- to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item product_definition_relationship => product_definition_relationship.name = 'physical occurrence usage' {product_definition_relationship.name = 'physical occurrence usage' product_definition_usage => assembly_component_usage => security_classification <- security_classification_assignment.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition product_definition
security_- classification to physical_- instance (as is_applied_- to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition product_definition
security_- classification to port (as is_applied_- to)				security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = terminal terminal
security_- classification to port_- allocation (as is_applied_- to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = shape_aspect_relationship shape_aspect_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to preferred_item_allocation (as is applied to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition_relationship product_definition_relationship
security_classification to preferred_item_allocation (as is applied to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = shape_aspect_relationship shape_aspect_relationship
security_classification to process_variable (as is applied to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = process_variable process_variable
security_classification to process_variable relationship (as is applied to)	PATH			security_classification <- security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = characterized_object_relationship characterized_object_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to product_class (as is_applied_ to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_concept #7: (product_concept) #8: (product_concept => product_class)
security_classification to product_identification (as is_applied_ to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = configuration_item configuration_item #19: (configuration_item) #20: (configuration_item => product_identification)
security_classification to product_structure_relationship (as is_applied_ to)				security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_definition_relationship product_definition_relationship product_definition_usage security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item
security_classification to project (as is_applied_ to)	PATH			security_classification <- security_classification.assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification to requirement (as is_applied_- to)	PATH			security_classification_item = organizational_project organizational_project security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition product_definition
security_- classification to route (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = installation_route installation_route
security_- classification to route_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = shape_aspect_relationship shape_aspect_relationship
security_- classification to section (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = installation_section installation_section
security_- classification to section_end (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = installation_section_end installation_section_end

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification to section_- interface (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item installation_section_interface
security_- classification to section_- interface_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item shape_aspect_relationship
security_- classification to section_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item shape_aspect_relationship
security_- classification to signal (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item signal
security_- classification to signal_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment security_classification_item characterized_object_relationship

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_classification to signal_value (as is_applied_ to)	PATH			security_classification <- applied_security_classification_assignment security_classification_assignment.items[i] -> security_classification_item security_classification_item = representation representation
security_classification to specification (as is_applied_ to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_concept_feature product_concept_feature
security_classification to specification_ category (as is_applied_ to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => security_classification_assignment applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = product_concept_feature_category #9: (product_concept_feature_category => #10: (product_concept_feature_category => exclusive_product_concept_feature_category)
security_classification to technical_system (as is_applied_ to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[j] -> security_classification_item security_classification_item = product_definition_formation product_definition_formation

Table 19 – Mapping table organizational_data UoF (OD1) (continued)

Application element	AIM element	Source	Rules	Reference path
security_- classification to technical_- system_- relationship (as is_applied_- to)	PATH			security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item product_definition_relationship
security_- classification to terminal (as is_applied_- to)				security_classification <- applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = terminal terminal
security_- classification to work_order (as is_applied_- to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = action_directive action_directive
security_- classification to work_request (as is_applied_- to)	PATH			security_classification <- security_classification_assigned_security_classification security_classification_assignment => applied_security_classification_assignment applied_security_classification_assignment.items[i] -> security_classification_item security_classification_item = versioned_action_request versioned_action_request

Table 19 – Mapping table organizational_data UoF (OD1) (concluded)

Application element	AIM element	Source	Rules	Reference path
security_- classification to security_- level (as security_- classification_- level)	PATH			security_classification security_classification.security_level -> security_classification_level
SECURITY_LEVEL	security_- classification_level	41	32	
level_name	security_- classification_level. name PATH	41		
security_level to classification_- system (as used_- classification_- system)				security_classification_level classification_item = security_classification_level classification_item <- applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment { classification_assignment.role -> classification_role classification_role.name = 'class system membership' } classification_assignment.assigned_classification -> group => class_system

Table 20 – Mapping table physical_connectivity UoF (PC1)

Application element	AIM element	Source	Rules	Reference path
CONNECTION	connectivity_- definition	212	104,105	connectivity_definition <= shape_aspect
connection to terminal (as connected- terminal)	PATH		104	connectivity_definition <= shape_aspect <- shape_aspect_relating_shape_aspect shape_aspect_relationship {shape_aspect_relationship.name = 'connectivity'} shape_aspect_relationship.related_shape_aspect -> shape_aspect => terminal
CONNECTIVITY_- DEFINITION #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1.	connectivity_- definition	212	105	connectivity_definition <= shape_aspect
description	shape_aspect. description	41		connectivity_definition <= shape_aspect
id	shape_aspect.name	41		connectivity_definition <= shape_aspect.description connectivity_definition <= shape_aspect
version_id	identification_- assignment.assigned_id	41	25,53	shape_aspect.name connectivity_definition identification_item = connectivity_definition identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
connectivity-- definition to assembly-- definition (as connectivity-- of)	PATH			connectivity_definition <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
connectivity-- definition to device (as implemented-- by)	PATH			connectivity_definition <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- {property_definition.name = 'connectivity requirements'} property_definition.relationship.relation.property_definition property_definition.relationship property_definition.relationship.related_property_definition -> property_definition {property_definition.name = 'connectivity characteristics'} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #1: (characterized_product_definition = product_definition.relationship product_definition.relationship => product_definition_usage => assembly_component_usage) #2: (characterized_product_definition = product_definition product_definition)

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
connectivity_- definition to physical_- instance (as implemented_- by)	PATH			<pre> connectivity_definition <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition <- property_definition <- {property_definition.name = 'connectivity requirements'} property_definition.relation.relation_requiring_property_definition property_definition.relation.relation_requiring_property_definition -> property_definition {property_definition.name = 'connectivity characteristics'} characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition </pre>
CONNECTIVITY_- DEFINITION_- RELATIONSHIP description	shape_aspect_- relationship	41		
	shape_aspect_- relationship. description	41		
relation_type	shape_aspect_- relationship.name	41		<pre> {(shape_aspect_relationship.name (shape_aspect_relationship.name = 'alternate') (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'derivation') (shape_aspect_relationship.name = 'redundancy') (shape_aspect_relationship.name = 'substitution') (shape_aspect_relationship.name = 'version hierarchy'))} </pre>

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
connectivity- definition- relationship to connectivity- definition (as related)	PATH			shape_aspect.relationship shape_aspect.relationship.related_shape_aspect -> shape_aspect => connectivity_definition
connectivity- definition- relationship to connectivity- definition (as relating)	PATH			shape_aspect.relationship shape_aspect.relationship.relatng_shape_aspect -> shape_aspect => connectivity_definition
INTERFACE	interface	212	105	interface <= shape_aspect
description	shape_aspect. description	41		interface <= shape_aspect shape_aspect.description
id	shape_aspect.name	41		interface <= shape_aspect shape_aspect.name
interface to interface- terminal (as external- access)	PATH		104	interface <= shape_aspect <- shape_aspect.relationship.relatng_shape_aspect shape_aspect.relationship {shape_aspect.relationship.name = 'external access'} shape_aspect.relationship.related_shape_aspect -> shape_aspect => terminal
interface to design- discipline_item- definition (as interface- of)	PATH			interface <= shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				characterized_product_definition characterized_product_definition = product_definition product_definition
INTERFACE- TERMINAL description	terminal	212	105	terminal <= shape_aspect
	shape_aspect. description	41		terminal <= shape_aspect shape_aspect.description
id	shape_aspect.name	41		terminal <= shape_aspect shape_aspect.name
maximum_number_- of_conductors	measure_representation_- item	45	74	terminal <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.definition property_definition.definition property_definition.representation.definition property_definition.representation property_definition.representation.used_representation -> representation representation.items[] -> representation_item => {representation_item.name = 'maximum number of conductors'} measure_representation_item {measure_representation_item <= measure_with_unit measure_with_unit.value.component -> measure_value measure_value = count_measure}

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
interface_- terminal to design_- discipline_item_- definition (as interface_- terminal_of)	PATH			terminal <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
interface_- terminal to terminal (as uses)	PATH		104	terminal <= shape_aspect <- shape_aspect_relationship.relatng_shape_aspect shape_aspect_relationship {shape_aspect_relationship.name = 'correspondence'} shape_aspect_relationship.related_shape_aspect -> shape_aspect => terminal
INTERFACE_- TERMINAL_- CONNECTION	connectivity_- definition	212	104,105	connectivity_definition <= shape_aspect
interface_- terminal_- connection to interface_- terminal (as connected_- interface_- terminal)	PATH		104	connectivity_definition <= shape_aspect <- shape_aspect_relationship.relatng_shape_aspect shape_aspect_relationship {shape_aspect_relationship.name = 'connectivity'} shape_aspect_relationship.related_shape_aspect -> shape_aspect => terminal
INTERFACE_- TERMINAL_- RELATIONSHIP	shape_aspect_- relationship	41		
description	shape_aspect_- relationship. description	41		

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
relation_type	shape_aspect_-- relationship.name	41		{(shape_aspect_relationship.name) (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'derivation')}}
interface_-- terminal_-- relationship to interface_-- terminal (as related)	PATH			shape_aspect_relationship shape_aspect.related_shape_aspect -> shape_aspect => terminal
interface_-- terminal_-- relationship to interface_-- terminal (as relating)	PATH			shape_aspect_relationship shape_aspect.relationship.relatng_shape_aspect -> shape_aspect => terminal
PREDEFINED_-- CONNECTION	predefined_-- connectivity_-- definition	212	104,105	predefined_connectivity_definition <= connectivity_definition <= shape_aspect
TERMINAL #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1. #3: If single_device is not used in the context of UoF CF1. #4: If single_device is used in the context of UoF CF1.	terminal	212	105	terminal <= shape_aspect
description	shape_aspect. description	41		terminal <= shape_aspect shape_aspect.description
id	shape_aspect.name	41		terminal <= shape_aspect shape_aspect.name

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
terminal to interface.- terminal (as associated.- interface.- terminal)	PATH		104	terminal <= shape_aspect <- shape_aspect_relationship.related_shape_aspect shape_aspect_relationship {shape_aspect_relationship.name = 'definition usage'} shape_aspect_relationship.related_shape_aspect -> terminal
terminal to terminal.- designation (as extended.- designation)	PATH		25	terminal item_designation_item = terminal item_designation_item <- item_designation_assignment.items[1] {item_designation_assignment => item_designation_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.description = 'primary'} terminal_designation_assignment terminal <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- {property_definition.name = 'terminal requirements'} property_definition.relationship.related_property_definition property_definition.relationship property_definition.relationship.related_property_definition -> property_definition {property_definition.name = 'terminal characteristics'} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition
terminal to device (as implemented.- by)	PATH			

Table 20 – Mapping table physical_connectivity UoF (PC1) (continued)

Application element	AIM element	Source	Rules	Reference path
terminal to physical instance (as implemented by)	PATH			<pre> #1: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #2: (characterized_product_definition = product_definition product_definition) terminal <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition <- property_definition.name = 'terminal requirements' property_definition.relationship.relatng_property_definition property_definition.relationship property_definition.related_property_definition -> property_definition {property_definition.name = 'terminal characteristics'} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition </pre>
terminal to single_device (as terminal_of)	PATH			<pre> terminal <= shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship => </pre>

Table 20 – Mapping table physical_connectivity UoF (PC1) (concluded)

Application element	AIM element	Source	Rules	Reference path
				product_definition_usage => assembly_component_usage #4: (characterized-product_definition = product_definition product_definition)
TERMINAL_- RELATIONSHIP description	shape_aspect_- relationship	41		
	shape_aspect_- relationship. description	41		
relation_type	shape_aspect_- relationship.name	41	{(shape_aspect_relationship.name (shape_aspect_relationship.name = 'decomposition') (shape_aspect_relationship.name = 'redundancy'))}	
terminal_- relationship to terminal (as related)	PATH			shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => terminal
terminal_- relationship to terminal (as relating)	PATH			shape_aspect_relationship shape_aspect_relationship.relatng_shape_aspect -> shape_aspect => terminal

Table 21 – Mapping table product_structure UoF (PD1)

Application element	AIM element	Source	Rules	Reference path
<p>ALIAS-</p> <p>DESIGNATION</p> <p>#1: If device is used in the context of UoF CF1.</p> <p>#2: If device is not used in the context of UoF CF1.</p> <p>#3: If the document_-representation is not a physical_model.</p> <p>#4: If the document_-representation is a physical_model.</p> <p>#5: If function_unit is used in the context of UoF CF1.</p> <p>#6: If function_unit is not used in the context of UoF CF1.</p>	<p>item_designation_-assignment</p>	212	25,53	<p>item_designation_-assignment <=</p> <p>{item_designation_-assignment</p> <p>identification_-assignment</p> <p>identification_-assignment_role -></p> <p>identification_role</p> <p>identification_role.name = 'alias'}</p>
<p>description</p>	<p>identification_role.description</p>	41	25	<p>item_designation_-assignment <=</p> <p>identification_-assignment</p> <p>identification_-assignment_role -></p> <p>identification_role</p> <p>identification_role.description</p>
<p>alias_-</p> <p>designation to</p> <p>object_-</p> <p>designation</p> <p>(as alias_-</p> <p>extended_-</p> <p>designation)</p> <p>alias_-</p> <p>designation to</p> <p>organization</p> <p>(as alias_scope)</p>	<p>IDENTICAL MAPPING</p> <p>PATH</p>			<p>item_designation_-assignment</p> <p>organization_item = item_designation_-assignment</p> <p>organization_item <</p> <p>applied_organization_assignment.items[i]</p> <p>applied_organization_assignment <=</p>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'alias scope'} organization_assignment_assigned_organization -> organization </pre>
alias- designa- tion to device (as is applied- to)	PATH			<pre> item_designation_assignment identification_item #1: (identification_item = product_definition product_definition product_definition_relationship product_definition_usage => assembly_component_usage) </pre>
alias- designa- tion to document- representation (as is applied- to)	PATH			<pre> item_designation_assignment item_designation_item #3: (item_designation_item = product_definition product_definition) #4: (item_designation_item = product_definition product_definition => product_definition_with_associated_documents => physically_modelled_product_definition) </pre>
alias- designa- tion to drawing (as is applied- to)	PATH			<pre> item_designation_assignment item_designation_item item_designation_item = drawing_revision drawing_revision </pre>
alias- designa- tion to drawing_sheet (as is applied- to)	PATH			<pre> item_designation_assignment item_designation_item item_designation_item = drawing_sheet_revision drawing_sheet_revision </pre>

Table 21 – Mapping table product_structure UoF (PDI) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- designation to function_unit (as is_applied_- to)	PATH			item_designation_assignment item_designation_assignment.items[1] -> identification_item #5: (identification_item = product_definition product_definition) product_definition_item = product_definition product_definition_relationship => product_definition_usage => assembly_component_usage)
alias- designation to location (as is_applied_- to)	PATH			item_designation_assignment item_designation_assignment.items[1] -> item_designation_item item_designation_item = installation_location installation_location
alias- designation to port (as is_applied_- to)				item_designation_assignment item_designation_assignment.items[1] -> item_designation_item item_designation_item = terminal terminal
alias- designation to product_- component (as is_applied_- to)	PATH			item_designation_assignment item_designation_assignment.items[1] -> item_designation_item item_designation_item = product_definition_formation product_definition_formation
alias- designation to signal (as is_applied_- to)	PATH			item_designation_assignment item_designation_assignment.items[1] -> item_designation_item item_designation_item = signal signal
alias- designation to technical_system (as is_applied_- to)	PATH			item_designation_assignment item_designation_assignment.items[1] -> item_designation_item item_designation_item = product_definition_formation product_definition_formation

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- designation to terminal (as is, applied, - to)	PATH			item_designation_assignment item_designation_assignment.items[] -> item_designation_item item_designation_item = terminal terminal

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>ALIAS_-IDENTIFICATION #1: If device is used in the context of UoF CFI. #2: If device is not used in the context of UoF CFI. #3: If the document_-representation is not a physical_model. #4: If the document_-representation is a physical_model. #5: If specification_-category.implicit_-exclusive_condition is FALSE. #6: If specification_-category.implicit_-exclusive_condition is TRUE. #7: If product_class is used with UoF EFL. #8: If product_class is used with UoF CFI. #9: If function_unit is used in the context of UoF CFI. #10: If function_unit is not used in the context of UoF CFI. #11: If product_-identification is used with UoF EFL. #12: If product_-identification is used with UoF CFI.</p>	<p>applied_identification_-assignment</p>	<p>212</p>	<p>25,53</p>	<p>applied_identification_assignment <= {identification_assignment identification_assignment.role -> identification_role = 'alias'}</p>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
alias_id	identification_- assignment.assigned_id	41		applied_identification_assignment <= identification_assignment identification_assignment.assigned_id
description	identification_role. description	41	25	applied_identification_assignment <= identification_assignment identification_role -> identification_role.description
alias_ identification to organization (as alias_scope)	PATH		29	applied_identification_assignment organization_item = applied_identification_assignment organization_item <- organization_item <- applied_organization_assignment.items[] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'alias_scope'} organization_assignment.assigned_organization -> organization
alias_ identification to approval_ status (as is_applied_ to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = approval_status approval_status
alias_ identification to classification_ attribute (as is_applied_ to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = property_definition property_definition

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to classification- system (as is_applied- to)	PATH			applied_identification_assignment identification_items[1] -> identification_item identification_item = class_system class_system
alias- identification to complex- product (as is_applied- to)	PATH			applied_identification_assignment identification_items[1] -> identification_item identification_item = product_definition_formation product_definition_formation
alias- identification to component- colour (as is_applied- to)	PATH			applied_identification_assignment identification_items[1] -> identification_item identification_item = colour_representation_item colour_representation_item
alias- identification to connectivity- definition (as is_applied- to)	PATH			applied_identification_assignment identification_items[1] -> identification_item identification_item = connectivity_definition connectivity_definition
alias- identification to data_element- definition (as is_applied- to)	PATH			applied_identification_assignment identification_items[1] -> identification_item identification_item = general_property general_property

Table 21 – Mapping table product_structure UoF (PDI) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to design- discipline_item_ definition (as is_applied_ to)	PATH			<pre> applied_identification_assignment applied_identification_assignment.items[] -> identification_item identification_item = product_definition product_definition </pre>
alias- identification to device (as is_applied_ to)	PATH			<pre> applied_identification_assignment applied_identification_assignment.items[] -> identification_item #1: (identification_item = product_definition product_definition) #2: (identification_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) </pre>
alias- identification to document (as is_applied_ to)	PATH			<pre> applied_identification_assignment applied_identification_assignment.items[] -> identification_item identification_item = product product </pre>
alias- identification to document_ representation (as is_applied_ to)	PATH			<pre> applied_identification_assignment applied_identification_assignment.items[] -> identification_item #3: (identification_item = product_definition product_definition) #4: (identification_item = product_definition product_definition => product_definition_with_associated_documents => physically_modelled_product_definition) </pre>

Table 21 – Mapping table product_structure UoF (PDI) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to document_type- property (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[j] -> identification_item identification_item = document_type document_type
alias- identification to document_- version (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[j] -> identification_item identification_item = product_definition_formation product_definition_formation
alias- identification to drawing (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[j] -> identification_item identification_item = drawing_revision drawing_revision
alias- identification to drawing_sheet (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[j] -> identification_item identification_item = drawing_sheet_revision drawing_sheet_revision
alias- identification to function_- definition (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = product_definition product_definition
alias- identification to function_unit (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[j] -> identification_item #9: (identification_item = product_definition product_definition) #10: (identification_item = assembly_component_usage assembly_component_usage)

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to functional- connectivity- definition (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = connectivity_definition connectivity_definition
alias- identification to functionality (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = product product
alias- identification to general- classification (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[i] -> identification_item identification_item = class class
alias- identification to interface- port (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[i] -> identification_item identification_item = terminal terminal
alias- identification to interface- terminal (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[i] -> identification_item identification_item = terminal terminal
alias- identification to item (as is_applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = product product

Table 21 – Mapping table product_structure UoF (PDI) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to item_version (as is_applied_- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item product_definition_formation
alias- identification to location (as is_applied_- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = installation_location installation_location
alias- identification to node (as is_applied_- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = installation_node installation_node
alias- identification to notification (as is_applied_- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = notification notification
alias- identification to organization (as is_applied_- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = organization organization
alias- identification to path (as is_applied_- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = path path
alias- identification to path_node (as is_applied_- to)	PATH			applied_identification_assignment applied_identification_assignment.items[1] -> identification_item identification_item = vertex vertex

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to physical- instance (as is_applied- to)	PATH			applied_identification_assignment applied_identification_items[i] -> identification_item identification_item = product_definition product_definition
alias- identification to port (as is_applied- to)	PATH			applied_identification_assignment applied_identification_items[i] -> identification_item identification_item = terminal terminal
alias- identification to process- variable (as is_applied- to)	PATH			applied_identification_assignment applied_identification_items[1] -> identification_item identification_item = process_variable process_variable
alias- identification to product_class (as is_applied- to)	PATH			applied_identification_assignment applied_identification_items[i] -> identification_item identification_item = product_concept #7: (product_concept) #8: (product_concept => product_class)
alias- identification to product- identification (as is_applied- to)	PATH			applied_identification_assignment applied_identification_items[1] -> identification_item identification_item = configuration_item #11: (configuration_item) #12: (configuration_item => product_identification)

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to requirement (as is_applied_- to)	PATH			applied_identification_assignment identification_item -> applied_identification_assignment_items[1] -> identification_item product_definition_formation identification_item = product_definition_formation
alias- identification to route (as is_applied_- to)	PATH			applied_identification_assignment identification_item -> applied_identification_assignment_items[1] -> identification_item identification_item = installation_route installation_route
alias- identification to section (as is_applied_- to)	PATH			applied_identification_assignment identification_item -> applied_identification_assignment_items[1] -> identification_item identification_item = installation_section installation_section
alias- identification to section_- interface (as is_applied_- to)	PATH			applied_identification_assignment identification_item -> applied_identification_assignment_items[1] -> identification_item identification_item = installation_section_interface installation_section_interface
alias- identification to security_- level (as is_applied_- to)	PATH			applied_identification_assignment identification_item -> applied_identification_assignment_items[1] -> identification_item identification_item = security_classification_level security_classification_level
alias- identification to signal (as is_applied_- to)	PATH			applied_identification_assignment identification_item -> applied_identification_assignment_items[1] -> identification_item identification_item = signal signal

Table 21 – Mapping table product_structure UoF (PDI) (continued)

Application element	AIM element	Source	Rules	Reference path
alias- identification to specification (as is-applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[i] -> identification_item identification_item = product_feature product_concept_feature
alias- identification to specification- category (as is-applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[i] -> identification_item identification_item = product_concept_feature_category #5: (product_concept_feature_category => exclusive_product_concept_feature_category)
alias- identification to technical- system (as is-applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[i] -> identification_item identification_item = product_definition_formation product_definition_formation
alias- identification to terminal (as is-applied- to)	PATH			applied_identification_assignment applied_identification_assignment.items[i] -> identification_item identification_item = terminal terminal
ALIAS_VERSION	applied_identification_- assignment	212	25,53	applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} applied_identification_assignment <= identification_assignment identification_assignment.assigned_id
version_id	identification_- assignment.assigned_id	41		

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
alias-version to alias- designation (as associated- alias_id)	PATH		25	<pre> applied_identification_assignment applied_identification_assignment.items[1] identification_item <- identification_item = identification_assignment identification_assignment => {identification_assignment.role -> identification_role identification_role.description = 'alias'} item_designation_assignment </pre>
alias-version to alias- identification (as associated- alias_id)	PATH		25	<pre> applied_identification_assignment applied_identification_assignment.items[1] identification_item <- identification_item = identification_assignment identification_assignment => {identification_assignment.role -> identification_role identification_role.name = 'alias'} applied_identification_assignment </pre>
ALTERNATE_ITEM_- RELATIONSHIP	alternate-product_- relationship	44		
fulfilled_- requirements	alternate-product_- relationship.basis	44		
alternate_item_- relationship to item (as alternate)	PATH			<pre> alternate_product_relationship alternate_product_relationship.alternate -> product </pre>
alternate_item_- relationship to item (as base)	PATH			<pre> alternate_product_relationship alternate_product_relationship.base -> product </pre>
APPLICATION_- CONTEXT	product_definition_- context	41	4	
application_- domain	application_context. application	41		<pre> product_definition_context <= application_context_element application_context_element.frame_of_reference -> application_context </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
description	description_attribute. attribute_value	41		application_context.application product_definition_context <= application_context_element application_element.frame_of_reference -> application_context description_attribute_select = application_context description_attribute_select <- description_attribute_described_item description_attribute description_attribute.attribute_value
life_cycle_stage	product_definition_- context.life_cycle_- stage	41		
ASSEMBLY_- COMPONENT_- RELATIONSHIP #1: If assembly_component_- relationship is not used in the context of UoF CF1. #2: If assembly_component_- relationship is used in the context of UoF CF1.	assembly_component_- usage	44		
placement	([mapped_item.mapping_- target] [representation_map. mapping_origin]) (item_defined_- transformation) (functionally_defined_- transformation)	43 43 43 43		assembly_component_usage <= product_definition_usage <= product_definition_relationship ([product_definition_relationship.related_product_definition -> product_definition characterized_product_definition = product_definition characterized_product_definition characterized_definition = characterized_product_definition property_definition <- property_definition represented_definition = property_definition

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> represented_definition <- property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.used_representation -> representation <- {representation => shape_representation} representation_map_mapped_representation representation_map representation_map.mapping_origin {representation_map.mapping_origin -> representation_item => geometric_representation_item => placement => axis2_placement_3d}} [product_definition.relationship.relying_product_definition -> product_definition characterized_product_definition = product_definition characterized_product_definition characterized_definition = characterized_product_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.used_representation -> representation {representation => shape_representation} </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation.items[] -> representation_item => mapped_item mapped_item.mapping_target -> representation_item => geometric_representation_item => (placement => axis2_placement_3d) (cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} cartesian_transformation_operator_3d)) </pre> <pre> ([product_definition_relationship.related_product_definition -> product_definition characterized_product_definition = product_definition characterized_product_definition characterized_definition = characterized_product_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation {property_definition.representation => shape_definition.representation} property_definition.representation.used_representation -> representation <- {representation => shape_representation} representation_relationship.rep_2] [product_definition_relationship.relatng_product_definition -> product_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> characterized_product_definition = product_definition characterized_product_definition characterized_definition = characterized_product_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation {property_definition.representation => shape_definition.representation} property_definition.representation.used_representation -> representation <- {representation => shape_representation} representation_relationship.rep_1[] representation_relationship => {representation_relationship => shape_representation_relationship} representation_relationship_with_transformation representation_relationship_with_transformation_transformation_operator -> transformation (transformation = item_defined_transformation item_defined_transformation {[item_defined_transformation.item_1 -> representation_item => geometric_representation_item => placement => axis2_placement_3d]} [item_defined_transformation.item_2 -> representation_item => geometric_representation_item => (placement => axis2_placement_3d)] </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
assembly-- component-- relationship to device (as related)	#2: (PATH) #1: (IDENTICAL MAPPING)		62,65	<pre> (cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} cartesian_transformation_operator.3d)}) (transformation = functionally_defined_transformation functionally_defined_transformation => {functionally_defined_transformation => cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} cartesian_transformation_operator.3d)}) #2: (assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_related_product_definition -> product_definition < {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'part definition'} product_definition_relationship.relatng_product_definition product_definition_relationship.name = 'definition usage'}) product_definition_relationship.related_product_definition ->] [assembly_component_usage < product_definition_occurrence_relationship product_definition_occurrence_relationship product_definition_occurrence_relationship.occurrence ->] product_definition) assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relatng_product_definition -> product_definition </pre>
assembly-- component-- relationship to assembly-- definition (as relating)	PATH			
ASSEMBLY-- DEFINITION	product_definition	41	62,63,64	<pre> product_definition < product_definition_context.association.definition product_definition_context_association </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				[product_definition_context.association.frame_of_reference -> product_definition_context <= application_context_element [product_definition_context.association.role -> product_definition_context_role product_definition_context_role.name = 'part definition type']}]
assembly_type	product_definition_name	41		
ASSEMBLY_- SUBSTITUTE_- RELATIONSHIP description	assembly_component_- usage_substitute	44		
assembly_- substitute_- relationship to assembly_- component_- relationship (as base)	assembly_component_- usage_substitute_- definition PATH	44		assembly_component_usage_substitute assembly_component_usage_substitute.base -> assembly_component_usage
assembly_- substitute_- relationship to assembly_- component_- relationship (as substitute)	PATH			assembly_component_usage_substitute assembly_component_usage_substitute.substitute -> assembly_component_usage
DESIGN_- DISCIPLINE_ITEM_- DEFINITION	product_definition	41	62	{product_definition product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'part definition' }
id	product_definition_id	41		

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
name	product_definition. description	41		
design_- discipline_item_- definition to application_- context (as additional_- context)	PATH		63	product_definition <- product_definition_context_association.definition product_definition_context_association {product_definition_context_association.role -> product_definition_context_role product_definition_context_role.name = 'application context.' product_definition_context_association.frame_of_reference -> product_definition_context
design_- discipline_item_- definition to item_version (as associated_- item_version)	PATH			product_definition product_definition.formation -> product_definition_formation
design_- discipline_item_- definition to application_- context (as initial_- context)	PATH			product_definition product_definition.frame_of_reference -> product_definition_context

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DEVICE</p> <p>#1: If device is not used in the context of UoF CF1.</p> <p>#2: If device is used in the context of UoF CF1.</p> <p>#3: If device is referenced by an assembly-component_relationship as related.</p> <p>#4: If device is not referenced by an assembly-component_relationship as related.</p>	<p>#1: (assembly-component_usage)</p> <p>#2: (product-definition)</p>	<p>44</p> <p>41</p>	<p>62.65</p>	<pre>#2: ([product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'part occurrence'] [product_definition <- product_definition_occurrence_relationship_occurrence product_definition_occurrence_relationship product_definition_occurrence_relationship_usage ->] [product_definition_relationship.related.product_definition product_definition_relationship {product_definition_relationship.name = 'definition usage'} product_definition_relationship.related.product_definition -> product_definition <- product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'part definition'} product_definition_relationship.related.product_definition product_definition_relationship =>] product_definition_usage =>] assembly_component_usage) #4: ([product_definition_relationship.related.product_definition product_definition_relationship.name = 'definition usage'] [product_definition_relationship.related.product_definition product_definition_relationship => product_definition_usage])</pre>
<p>description</p>	<p>#1: (product-definition.relationship.description)</p> <p>#2: ([product-definition.description]</p> <p>[product_definition-relationship.</p>	<p>41</p> <p>41</p> <p>41</p>		<pre>#1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relationship.description) #2: ([product_definition <- product_definition_occurrence_relationship_occurrence product_definition_occurrence_relationship product_definition_usage <= assembly_component_usage])</pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
	#4: (product_-- definition, description))	41		product_definition_usage <= product_definition_relationship product_definition_relationship.description))
id	#1: (product_-- definition_-- relationship.id) #2: (#3: ([product_-- definition.id] [product_definition_-- relationship.id]) #4: (product_-- definition.id))	41 41 41 41		#1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relationship.id) #2: (product_definition <- product_definition_occurrence_relationship.occurrence product_definition_occurrence_relationship.occurrence_usage -> assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relationship.id))
device to design_-- discipline_item_-- definition (as definition)	PATH		62,65	#1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relationship.related_product_definition ->). #2: (product_definition <- product_definition_relationship.related_product_definition product_definition_relationship.name = 'definition usage') product_definition_relationship.relatng-product_definition -> product_definition
device to product_-- identification (as definition)	PATH		10,62	#1: () #2: (product_definition [configuration_design_item = product_definition configuration_design_item <- configuration_design configuration_design configuration_design.name = 'occurrence usage definition'] configuration_design.configuration ->] [product_definition.formation -> product_definition_formation

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	ALM element	Source	Rules	Reference path
device to object- reference- designation (as extended- designation)	PATH		7,25,62, 65	<pre> {product_definition_formation_of_product -> product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'part'} configuration_design_item = product_definition_formation configuration_design_item <- configuration_design configuration_design {configuration_design.name = 'product design'} configuration_design.configuration ->} configuration_item => product_identification) item_designation_item = product_definition #2: (product_definition #1: (assembly_component_usage) item_designation_item <- item_designation_assignment.items[1] item_designation_assignment => {item_designation_assignment <= identification_assignment identification_assignment.role -> identification_role.description = 'primary'}} object_reference_designation_assignment </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DEVICE- RELATIONSHIP #1: If device- relationship is not of type 'substitution', #2: If device- relationship is of type 'substitution', #3: If the related device is replaced in the context of an assembly_component- relationship, #4: If the related device is replaced in the context of a product_structure- relationship, #5: If device is not used in the context of UoF CFL, #6: If device is used in the context of UoF CFL.</p>	<p>#6: (#1: (product_- definition_- relationship) #2: (product_- definition_- substitute)) #5: (property_- definition_- relationship)</p>	<p>41 41 45</p>		
<p>description</p>	<p>#6: (#1: (product_- definition_- relationship, description) #2: (product_- definition_substitute, description)) #5: (property_- definition_- relationship, description)</p>	<p>41 41</p>		
<p>relation_type</p>	<p>#6: (#1: (product_- definition_- relationship.name) #2: (IDENTICAL</p>	<p>41</p>	<p>#6: (#1: ((product_definition_relationship.name) (product_definition_relationship.name = 'associated equipment') (product_definition_relationship.name = 'derivation') (product_definition_relationship.name = 'envelope')</p>	

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
device- relationship to device (as related)	MAPPING)) #5: (property- definition_- relationship.name)	41		(product_definition_relationship.name = 'redundancy') (product_definition_relationship.name = 'shield')) #5: ({(property_definition_relationship.name) (product_definition_relationship.name = 'associated equipment') (product_definition_relationship.name = 'derivation') (product_definition_relationship.name = 'envelope') (product_definition_relationship.name = 'redundancy') (product_definition_relationship.name = 'shield'))})
device- relationship to device (as related)	PATH			#6: (#1: (product_definition_relationship product_definition_relationship.related_product_definition ->) #2: (product_definition_substitute product_definition_substitute.substitute_definition ->) product_definition) #5: (property_definition_relationship property_definition_relationship.related_property_definition -> property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)
device- relationship to device (as relating)	PATH			#6: (#1: (product_definition_relationship product_definition_relationship.related_product_definition ->) product_definition #2: (product_definition_substitute product_definition_substitute.context_relationship -> #3: (product_definition_relationship <- {product_definition_relationship => product_definition_usage => assembly_component_usage} product_definition_occurrence_relationship.usage product_definition_occurrence_relationship product_definition_occurrence_relationship ->)

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> #4: (product_definition.relationship product_definition.relationship.related_product_definition ->)) product_definition #5: (property_definition.relationship property_definition.relationship.relatng_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition.relationship product_definition.relationship => product_definition.usage => assembly_component_usage) </pre>
ITEM	product	41	4,66,67, 93	<pre> product_related_product_category.products[i] product_related_product_category <= product_category (product_category.name = 'accessory') (product_category.name = 'part') (product_category.name = 'software')}} </pre>
description	product.description	41		
id	product.id	41		
name	product.name	41		
item to item identification (as extended designation)	PATH	41	25,53,88	<pre> product identification_item = product identification_item <- applied_identification_assignment.items[1] applied_identification_assignment </pre>
ITEM_DEFINITION_RELATIONSHIP	product_definition-relationship	41		
description	product_definition-relationship.description	41		
relation-type	product_definition-relationship.name	41		<pre> {(product_definition_relationship.name) (product_definition_relationship.name = 'alternate')} </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_definition_- relationship to design_- discipline_item_- definition (as related)	PATH			(product_definition_relationship.name = 'derivation') (product_definition_relationship.name = 'substitution') product_definition_relationship product_definition.related_product_definition -> product_definition
item_definition_- relationship to design_- discipline_item_- definition (as relating)	PATH			product_definition_relationship product_definition.relation_relatng_product_definition -> product_definition
ITEM_- IDENTIFICATION	applied_identification_- assignment	212	25,53,88	applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'id'} applied_identification_assignment <= identification_assignment identification_assignment.assigned_id
id	identification_- assignment.assigned_id	41		applied_identification_assignment identification_assignment
item_- identification to classification_- system (as coding_type)	PATH		9,15	applied_identification_assignment classification_item = applied_identification_assignment classification_item <- classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'class system membership'} classification_assignment.assigned_classification -> group => class_system
ITEM_VERSION	product_definition_- formation	41		{product_definition_formation ==> product_definition_formation_with_specified_source ² }

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
description	product_definition_formation.description	41		
version_id	product_definition_formation.id	41		
item_version_to_item (as associated-item)	PATH		67	product_definition_formation_of_product -> product
ITEM_VERSION_RELATIONSHIP	product_definition_formation_relationship.description	41		
description	product_definition_formation_relationship.description	41		
relation_type	product_definition_formation_relationship.name	41		{product_definition_formation_relationship (product_definition_formation_relationship.name = 'derivation') (product_definition_formation_relationship.name = 'hierarchy') (product_definition_formation_relationship.name = 'sequence') (product_definition_formation_relationship.name = 'supplied item')}
item_version_to_item (as related)	PATH			product_definition_formation_relationship.related_product_definition_formation -> product_definition_formation
item_version_to_item (as relating)	PATH			product_definition_formation_relating_product_definition_formation -> product_definition_formation
MAKE_FROM_RELATIONSHIP	make_from_usage_option	44		
NEXT_HIGHER_ASSEMBLY	next_assembly_usage_occurrence	44		
PHYSICAL_ASSEMBLY_RELATIONSHIP	assembly_component_usage	44	65	{assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relationship.name = 'physical occurrence usage'}

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
physical_ assembly_ relationship to device (as is- realization-of)	PATH		65	<pre> assembly_component_usage <= product_definition_usage <= product_definition_relationship {product_definition_relationship.name = 'physical occurrence usage'} product_definition_relationship.related_product_definition -> product_definition <- {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'physical occurrence'} product_definition_relationship.related_product_definition product_definition_relationship {product_definition_relationship.name = 'physical realization'} product_definition_relationship.related_product_definition -> product_definition </pre>
physical_ assembly_ relationship to physical_ instance (as physical_ assembly)	PATH			<pre> assembly_component_usage <= product_definition_usage <= product_definition_relationship {product_definition_relationship.name = 'physical occurrence usage'} product_definition_relationship.related_product_definition -> product_definition </pre>
physical_ assembly_ relationship to physical_ instance (as physical_ component)	PATH			<pre> assembly_component_usage <= product_definition_usage <= product_definition_relationship {product_definition_relationship.name = 'physical occurrence usage'} product_definition_relationship.related_product_definition -> product_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>PHYSICAL_INSTANCE #1: If physical_instance is not used in the context of UoF CF1. #2: If physical_instance is used in the context of UoF CF1.</p>	product_definition	41	62	<pre> {product_definition.frame_of_reference -> product_definition_context <= application_context_element [product_definition_element.name = 'physical occurrence'] product_definition_formation -> product_definition_formation product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'physically realized product'}} product_definition product_definition_formation -> product_definition_formation product_definition_formation_of_product -> product product.description product_definition product_definition_formation -> product_definition_formation product_definition_formation_of_product -> product identification_item = product identification_item <- applied_identification_assignment.items[i] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'inventory number'} identification_assignment.assigned_id product_definition product_definition_formation -> product_definition_formation </pre>
description	product.description	41		
inventory_number	identification.-assignment.assigned_id	41	25,53,62	
lot_id	identification.-assignment.assigned_id	41	25,53,62	

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> product_definition_formation.of_product -> product identification_item = product identification_item <- applied_identification_assignment.items[i] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'lot context'} identification_assignment.assigned_id </pre>
serial_number	product.id	41		<pre> product_definition product_definition.formation -> product_definition_formation product_definition_formation.of_product -> product product.id </pre>
physical_instance_to_design_discipline_item_definition (as is- realization_of)	PATH		62,65	<pre> product_definition <- product_definition.related_product_definition product_definition.relationship {product_definition.relationship.name = 'physical realization'} product_definition.relationship.relatng_product_definition -> product_definition </pre>
physical_instance_to_product_identification (as is- realization_of)	PATH		10,62	<pre> #1: (3) configuration_design_item = product_definition configuration_design_item <- configuration_design.design configuration_design {configuration_design.name = 'physical instance basis'} configuration_design.configuration -> configuration_item => product_identification </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>PRODUCT_-CONSTITUENT #1: If product_-constituent is not used in the context of UoF CF1. #2: If product_-constituent is used in the context of UoF CF1. #3: If product_-constituent is not a product_-component. #4: If product_-constituent is a product_-component.</p>	<p>#1: (assembly_-component_usage) #2: (#3: (product_-definition) #4: (product_-definition_formation))</p>	<p>44 41 41</p>		
<p>PROMISSORY_USAGE</p>	<p>promissory_usage_-occurrence</p>	<p>44</p>		
<p>QUANTIFIED_-DEVICE #1: If quantified_device is not used in the context of UoF CF1. #2: If quantified_device is used in the context of UoF CF1. #3: If quantified_device is referenced by an assembly_-component_-relationship as related. #4: If quantified_device is not referenced by an assembly_-component_-relationship as related.</p>	<p>#1: (quantified_-assembly_-component_-usage) #2: (product_-definition)</p>	<p>44 41</p>	<p>62,65</p>	<pre> {product_definition [product_definition.frame_of_reference -> product_definition.context <= application_context_element [product_definition.name = 'part occurrence'] [#3: (product_definition <- product_definition.relationship_occurrence product_definition.relationship product_definition.relationship.related.product_definition product_definition.relationship.related.product_definition) {product_definition.relationship.name = 'definition usage'} product_definition.relationship.related.product_definition -> product_definition <- product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'part_definition'} </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
quantified_ device to numerical_value (as quantity)	PATH		72	<pre> product_definition.related_product_definition product_definition.relationship => product_definition_usage => assembly_component_usage => quantified_assembly_component_usage) #4: (product_definition <- product_definition.relationship.related_product_definition product_definition_relationship product_definition_relationship.name = 'definition usage'] [product_definition_relationship.related_product_definition product_definition_relationship => product_definition_usage]]} #1: (quantified_assembly_component_usage.quantity -> measure_with_unit) #2: (product_definition #3: ([product_definition <- product_definition_occurrence_relationship_occurrence product_definition_occurrence_relationship product_definition_occurrence_relationship_usage assembly_component_usage => quantified_assembly_component_usage measure_with_unit =>]) [characterized_product_definition = product_definition characterized_definition = characterized_product_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'occurrence quantity'} represented_definition = property_definition represented_definition <- property_definition.definition property_definition_representation property_definition_representation property_definition_representation.used_representation -> representation </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> {representation.name = 'quantity'} representation.items[] -> representation_item => {representation_item.name = 'quantity measure'} measure_representation_item[] </pre> <p>#4: (characterized_product_definition = product_definition characterized_definition = characterized_product_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'occurrence quantity'} represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'quantity'} representation.items[] -> representation_item => {representation_item.name = 'quantity measure'} measure_representation_item))</p>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>SELECTED_DEVICE</p> <p>#1: If selected_device is not used in the context of UoF CF1.</p> <p>#2: If selected_device is used in the context of UoF CF1.</p> <p>#3: If selected_device is referenced by an assembly-component_relationship as related.</p> <p>#4: If selected_device is not referenced by an assembly_component_relationship as related.</p> <p>#5: If selected_device.selected_quantity is a value_limit.</p> <p>#6: If selected_device.selected_quantity is a value_range.</p>	<p>#1: (assembly_component_usage)</p> <p>#2: (product_definition)</p>	<p>44</p> <p>41</p>	<p>62,65</p>	<pre> #1: ({assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relationship.name = 'selected instance usage'}) #2: ({product_definition [product_definition.name = 'selected instance'] [product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'part occurrence'] product_definition <- #3: ({product_definition_occurrence_relationship,occurrence product_definition_occurrence_relationship product_definition_occurrence_relationship.related_product_definition product_definition_relationship.related_product_definition product_definition_relationship.name = 'definition usage'}) product_definition_relationship.related_product_definition -> product_definition <- {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'part definition'} product_definition_relationship.related_product_definition product_definition_relationship.name => product_definition_usage => assembly_component_usage <= product_definition_usage <= product_definition_relationship product_definition_relationship.name = 'selected instance usage'}) #4: ({product_definition_relationship.related_product_definition product_definition_relationship.name = 'definition usage'} [product_definition <- product_definition_relationship.related_product_definition product_definition_relationship.name => </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
selection_-control	descriptive_-representation_item_description	45	72	<pre> product_definition_usage}} #1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship characterized_product_definition = product_definition_relationship) #2: (product_definition [product_definition <- product_definition_occurrence_relationship.occurrence product_definition_occurrence_relationship product_definition_occurrence_relationship.occurrence_usage -> assembly_component_usage <= product_definition_usage <= product_definition_relationship {product_definition_relationship.name = 'selected instance usage'} characterized_product_definition = product_definition_relationship)) #3: (product_definition characterized_product_definition = product_definition)) #4: (product_definition characterized_product_definition = product_definition characterized_definition = characterized_product_definition characterized_definition <- property_definition property_definition {property_definition.name = 'occurrence selection'} represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'selection criteria'} representation.items[] -> representation_item => {representation_item.name = 'selection control'}} </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
selected_device to value_with_- unit (as selected_- quantity)	PATH		72	<pre> descriptive_representation_item descriptive_representation_item.description #1: (assembly_component_usage <= product_definition_usage <= product_definition_relationship characterized_product_definition = product_definition_relationship) #2: (product_definition [product_definition <- product_definition_relationship.occurrence product_definition_occurrence_relationship product_definition_occurrence_usage -> assembly_component_usage <= product_definition_usage <= product_definition_relationship {product_definition_relationship.name = 'selected_instance_usage'} characterized_product_definition = product_definition_relationship) #4: (product_definition characterized_product_definition = product_definition)) characterized_definition = characterized_product_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'occurrence_selection'} represented_definition = property_definition represented_definition <- property_definition.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'selection_criteria'} representation.items[] -> representation_item => {representation_item.name = 'selection_quantity'}</pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				#5: (measure_representation_item) #6: (compound_representation_item)
SHAPE id	shape_representation id_attribute.attribute_value	41 41		shape_representation <= representation id_attribute.select = representation id_attribute.select <- id_attribute.identified_item id_attribute id_attribute.attribute_value
SHAPE_ASSIGNMENT #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1. #3: If function_unit is not used in the context of UoF CF1. #4: If function_unit is used in the context of UoF CF1.	shape_definition_representation	41		
description	description_attribute.attribute_value	41		shape_definition_representation <= property_definition_representation description_attribute.select = property_definition_representation description_attribute.described_item description_attribute description_attribute.attribute_value
role	name_attribute.attribute_value	41		shape_definition_representation <= property_definition_representation name_attribute.select = property_definition_representation name_attribute.named_item name_attribute name_attribute.attribute_value

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
shape_assignment to shape (as assigned_shape)	PATH			<pre> {(name_attribute.attribute_value = 'body shape') (name_attribute.attribute_value = 'mounting space')} (name_attribute.attribute_value = 'safety space')}} shape_definition.representation <= property_definition.representation property_definition.representation.used_representation -> representation => shape_representation </pre>
shape_assignment to connectivity_definition (as associated_item)	PATH			<pre> shape_definition.representation <= property_definition.representation property_definition.representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition </pre>
shape_assignment to design_discipline_item_definition (as associated_item)	PATH			<pre> shape_definition.representation <= property_definition.representation property_definition.representation.definition -> represented_definition represented_definition = property_definition property_definition property_definition.definition -> characterized_definition characterized_definition = product_definition product_definition product_definition = product_definition product_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
shape_assignment to device (as associated_ item)	PATH			shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition = property_definition property_definition => {property_definition_shape} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition
shape_assignment to function_ definition (as associated_ item)	PATH		#1: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #2: (characterized_product_definition = product_definition product_definition)	shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition = property_definition {property_definition_shape} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
shape_assignment to function_unit (as associated_ item)	PATH			<pre> shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition {property_definition => product_definition_shape} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition </pre>
shape_assignment to functional_ connectivity_ definition (as associated_ item)	PATH		<pre> #3: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #4: (characterized_product_definition = product_definition product_definition) </pre>	<pre> shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition characterized_definition characterized_definition = shape_definition shape_definition shape_aspect shape_aspect => connectivity_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
shape_assignment to interface_- port (as associated_- item)	PATH			shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
shape_assignment to interface_- terminal (as associated_- item)	PATH			shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
shape_assignment to location (as associated_- item)	PATH			shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
shape_assignment to physical_ instance (as associated_ item)	PATH			<pre> shape_definition = shape_aspect shape_aspect => installation_location shape_definition_representation <= property_definition_representation -> property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition {property_definition => product_definition_shape} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition </pre>
shape_assignment to port (as associated_ item)	PATH			<pre> shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal </pre>
shape_assignment to product_ component (as associated_ item)	PATH			<pre> shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> {property_definition => product_definition_shape} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition_formation -> product_definition_formation} </pre>
shape_assignment to section (as associated_ item)	PATH			<pre> shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section </pre>
shape_assignment to section_ interface (as associated_ item)	PATH			<pre> shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
shape_assignment to technical_ system (as associated_ item)	PATH			shape_definition shape_aspect => installation_section_interface shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition {property_definition => product_definition_shape} property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_formation product_definition_formation
shape_assignment to terminal (as associated_ item)				shape_definition_representation <= property_definition_representation property_definition_representation.definition -> represented_definition property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect terminal

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
SINGLEDEVICE #1: If single_device is not used in the context of UoF CF1. #2: If single_device is used in the context of UoF CF1.	#1: (assembly_-component_usage) #2: (product_-definition)	44 41	62,65	#2: ({product_definition [product_definition.name = 'single instance'] [product_definition.frame_of_reference -> product_definition.context <= application_context_element application_context_element.name = 'part occurrence']})
SPECIFICITEM-CLASSIFICATION classification_-name	product_related_-product_category product_category.name	41		product_related_product_category <= product_category {(product_category.name (product_category.name = 'accessory') (product_category.name = 'application control') (product_category.name = 'assembly') (product_category.name = 'collection') (product_category.name = 'completely knocked down') (product_category.name = 'detail') (product_category.name = 'in process') (product_category.name = 'part') (product_category.name = 'prototype') (product_category.name = 'raw material') (product_category.name = 'regulated') (product_category.name = 'safety') (product_category.name = 'service') (product_category.name = 'software') (product_category.name = 'tool')}}
description	product_category.description	41		product_related_product_category <= product_category product_category.description

Table 21 – Mapping table product_structure UoF (PDI) (continued)

Application element	AIM element	Source	Rules	Reference path
specific_item_classification to item (as associated_item)	PATH			product_related_product_category.products[i] -> product
SPECIFIC_ITEM_CLASSIFICATION_HIERARCHY	product_category_relationship	41		{product_category_relationship.name = 'hierarchy'}
specific_item_classification hierarchy to specific_item_classification (as sub_classification)	PATH			product_category_relationship product_category_relationship.sub_category -> product_category => product_related_product_category
specific_item_classification hierarchy to specific_item_classification (as super_classification)	PATH			product_category_relationship product_category_relationship.category -> product_category => product_related_product_category
SPECIFIED_DEVICE #1: If specified_device is not used in the context of UoF CF1. #2: If specified_device is used in the context of UoF CF1.	#1: (specified_higher_usage_occurrence) #2: (product_definition)	44 41	62,65	#2: ({product_definition [product_definition.name = 'specified instance'] [product_definition.frame_of_reference -> product_definition.context <= application_context_element [product_definition <- product_definition_occurrence_relationship product_definition_occurrence_relationship.usage ->] [product_definition_relationship.related_product_definition product_definition_relationship {product_definition_relationship.name = 'definition usage'} product_definition_relationship.related_product_definition ->

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
specified_device to assembly_- definition (as assembly_- context)	PATH			<pre> product_definition <- {product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition_relatived_product_definition} product_definition_relatived_product_definition product_definition_relatived_product_definition product_definition_usage => assembly_component_usage => specified_higher_usage_occurrence]]) </pre>
specified_device to device (as related_ device)	PATH			<pre> #1: (specified_higher_usage_occurrence <= assembly_component_usage <=) #2: (product_definition <- product_definition_usage_relatived_product_definition product_definition_usage_relatived_product_definition product_definition_usage_relatived_product_definition assembly_component_usage <= {assembly_component_usage => specified_higher_usage_occurrence}) product_definition_usage <= product_definition_relatived_product_definition -> product_definition_relatived_product_definition #1: (specified_higher_usage_occurrence specified_higher_usage_occurrence.next_usage -> next_assembly_usage_occurrence <= assembly_component_usage) #2: (product_definition <- product_definition_usage_relatived_product_definition product_definition_usage_relatived_product_definition product_definition_usage_relatived_product_definition product_definition_usage_relatived_product_definition assembly_component_usage => specified_higher_usage_occurrence </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
specified_device to device (as upper_usage)	PATH			<pre> specified_higher_usage_occurrence.next_usage -> next_assembly_usage_occurrence <= assembly_component_usage <- product_definition_occurrence_relationship_usage product_definition_occurrence_relationship product_definition_occurrence_relationship_occurrence -> product_definition) #1: (specified_higher_usage_occurrence specified_higher_usage_occurrence.next_usage -> next_assembly_usage_occurrence <= assembly_component_usage) #2: (product_definition <- product_definition_occurrence_relationship_usage product_definition_occurrence_relationship product_definition_occurrence_relationship_usage -> assembly_component_usage => specified_higher_usage_occurrence specified_higher_usage_occurrence.upper_usage -> assembly_component_usage <- product_definition_occurrence_relationship_usage product_definition_occurrence_relationship product_definition_occurrence_relationship_usage -> product_definition) </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>TECHNICALSYSTEM</p> <p>#1: If device is not used in the context of UoF CF1.</p> <p>#2: If device is used in the context of UoF CF1.</p> <p>#3: If the document_-representation is not a physical_model.</p> <p>#4: If the document_-representation is a physical_model.</p> <p>#5: If function_unit is not used in the context of UoF CF1.</p> <p>#6: If function_unit is used in the context of UoF CF1.</p>	product_definition_formation	41	62	<pre> [[product_definition_formation.of_product -> product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'technical system'] [[product_definition_formation <- product_definition.formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group {group.name = 'system group'}] [[product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'system definition']] </pre>
description	product_definition_formation.description	41		
id	product_id		25	<pre> product_definition_formation product product_id </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
version_id	product_definition_formation_id	41	9,15	
technical_system to classification_ system (as contains)	PATH			<pre> product_definition_formation <- product_definition.formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[f] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[f] -> group_item group_item = class_system </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
technical_system to device (as contains)	PATH			<pre> product_definition_formation <- product_definition_formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #1: (group_item = product_definition #2: (group_item = product_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
technical_system to document_- representation (as contains)	PATH			<pre> product_definition.formatation <- product_definition.formatation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition #3: (product_definition) #4: (product_definition => product_definition_with_associated_documents => physically_modelled_product_definition) </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
technical_system to function_unit (as contains)	PATH			<pre> product_definition_formation <- product_definition_formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[i] -> group_item #5: (group_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #6: (group_item = product_definition product_definition) </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
technical_system to notification (as contains)	PATH			<pre> product_definition_formation <- product_definition_formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = notification notification </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
technical_system to physical_instance (as contains)	PATH			<pre> product_definition_formation <- product_definition_formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = product_definition product_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
technical_system to process- variable (as contains)	PATH			<pre> product_definition_formation <- product_definition_formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = process_variable process_variable </pre>
technical_system to requirement (as contains)	PATH			<pre> product_definition_formation <- product_definition_formation product_definition group_item = product_definition </pre>

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role } object_role.name = 'system definition' group_assignment.assigned_group -> group <- {group.name = 'system group' group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role } object_role.name = 'system composition' applied_group_assignment applied_group_assignment.items[i] -> group_item } group_item = product_definition_formation product_definition_formation product_definition_formation <- product_definition.formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[i] applied_group_assignment <= group_assignment </pre>
technical_system to route (as contains)	PATH			

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system definition'} group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition'} applied_group_assignment applied_group_assignment.items[] -> group_item group_item = installation_route installation_route product_definition_formation <- product_definition_formation product_definition group_item = product_definition group_item <- applied_group_assignment.items[] applied_group_assignment <= group_assignment {role_select = group_assignment role_select <- role_association.item_with_role role_association </pre>
technical_system to signal (as contains)	PATH			

Table 21 – Mapping table product_structure UoF (PD1) (continued)

Application element	AIM element	Source	Rules	Reference path
technical_system to object_- reference_- designation (as extended_- designation)	PATH			<pre> role_association.role -> object_role object_role.name = 'system definition' group_assignment.assigned_group -> group <- {group.name = 'system group'} group_assignment.assigned_group group_assignment => {role_select = group_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name = 'system composition' applied_group_assignment applied_group_assignment.items[i] -> group_item group_item = signal signal product_definition_formation item_designation_item = product_definition_formation item_designation_item <- item_designation_assignment.items[1] item_designation_assignment => {item_designation_assignment <= identification_assignment identification_assignment.role -> identification_role identification_role.description = 'primary'} identification_role.description = 'primary'} object_reference_designation_assignment </pre>
TECHNICAL_SYSTEM_- RELATIONSHIP description	product_definition_- formation_relationship product_definition_- formation_relationship. description	41		

Table 21 – Mapping table product_structure UoF (PD1) (concluded)

Application element	AIM element	Source	Rules	Reference path
relation_type	product_definition_formation_relationship_name	41		{(product_definition_formation_relationship_name = 'alternate') (product_definition_formation_relationship_name = 'decomposition') (product_definition_formation_relationship_name = 'derivation') (product_definition_formation_relationship_name = 'redundancy') (product_definition_formation_relationship_name = 'substitution')}}
technical_system_formation_relationship_to_technical_system (as related)	PATH			product_definition_formation_relationship product_definition_formation.related_product_definition_formation -> product_definition_formation
technical_system_formation_relationship_to_technical_system (as relating)	PATH			product_definition_formation_relationship product_definition_formation.related_product_definition_formation -> product_definition_formation

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NOTE - The following note numbers correspond to the footnotemarks listed in the table above:

- 1 The use of this mapping alternative is not applicable.
- 2 The use of the subtype `product_definition_formation_with_specified_source` is not recommended in the general case. If compatibility with AP203 is required for a postprocessor, the postprocessor should at a minimum process the information from the supertype entity `product_definition_formation`.
- 3 The use of this mapping alternative is not applicable.

Table 22 – Mapping table properties UoF (PR1)

Application element	AIM element	Source	Rules	Reference path
<p>AGGREGATED_VALUE</p> <p>#1: If member.-definition[j] is an aggregated_value.</p> <p>#2: If member.-definition[j] is a single-value with value of binary.-value, logical_value, or string_value.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>compound.-representation_item</p>	43	74	
<p>aggregated_value to data_element_value (as member.-definition)</p>	<p>PATH</p>		74	<p>compound_representation_item</p> <p>compound_representation_item.item_element -></p> <p>compound_item_definition</p> <p>compound_item_definition = list_representation_item</p> <p>list_representation_item[j] -></p> <p>representation_item =></p> <p>#1: (compound_representation_item)</p> <p>#2: (descriptive_representation_item)</p> <p>#3: (#5: (measure_representation_item))</p>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> #6: ([measure_representation_item] [qualified_representation_item]) #4: (#5: (compound_representation_item => value_range) #6: ([compound_representation_item => value_range] [qualified_representation_item])) #7: (#5: (value_representation_item) #6: ([value_representation_item] [qualified_representation_item])) </pre>
BINARY_VALUE	descriptive- representation_item	45	74	<pre> representation_item => qualified_representation_item qualified_representation_item.qualifiers[1] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name = 'binary' </pre>
value_of_binary- value	descriptive- representation_item. description	45		

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>BODY_BREADTH</p> <p>#1: If predefined_data_element is referenced by a data_element_association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element_association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: (measure_representation_item)</p> <p>#6: (measure_representation_item [qualified_representation_item])</p> <p>#4: (value_range)</p> <p>#6: (value_range [qualified_representation_item])</p> <p>#7: (value_representation_item)</p> <p>#6: (value_representation_item [qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item <- [representation_item <- representation_items[1] representation <-</p> <p>#1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition represented_definition = property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association.base_definition -> general_property)</p> <p>#2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property.name = 'body breadth') [representation_item.name = 'body breadth']} {(#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item compound_representation_item.definition -> compound_item_definition = set_representation_item</p>
<p>body_breadth to value_with_unit (as value_of_body_breadth)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> set_representation_item set_representation_item[i] -> representation_item => measure_representation_item <=) measure_with_unit => length_measure_with_unit #7: (value_representation_item <= representation_item <- representation_items[i] representation representation.context_of_items[i] -> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => length_unit)) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>BODY_HEIGHT</p> <p>#1: If predefined_data_element is referenced by a data_element.association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element.association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_representation_item])</p> <p>#6: ([measure_representation_item])</p> <p>[qualified_representation_item])</p> <p>#4: ([value_range])</p> <p>#6: ([value_range])</p> <p>[qualified_representation_item])</p> <p>#7: ([value_representation_item])</p> <p>#6: ([value_representation_item])</p> <p>[qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item <= [representation_items[1] representation <=</p> <p>#1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_select = property_definition derived_property_select <= general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property)</p> <p>#2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property.name = 'body height' [representation_item.name = 'body height'])</p> <p>{(#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) compound_item_definition compound_item_definition = set_representation_item set_representation_item</p>
<p>body_height to value_with_unit (as value_of_body_height)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> set_representation_item[i] -> representation_item => measure_representation_item <= length_measure_with_unit #7: (value_representation_item <= representation_item <- representation_items[i] representation representation_context_of_items[i] -> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit = named_unit named_unit => length_unit)} </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>BODY_LENGTH</p> <p>#1: If predefined_data_element is referenced by a data_element.association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element.association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_representation_item])</p> <p>#6: ([measure_representation_item] [qualified_representation_item])</p> <p>#4: ([value_range])</p> <p>#6: ([value_range] [qualified_representation_item])</p> <p>#7: ([value_representation_item])</p> <p>#6: ([value_representation_item] [qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item <= [representation_items[1] representation <=</p> <p>#1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_definition derived_property_select <= general_property_association.derived_definition general_property_association base_definition -> general_property)</p> <p>#2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property.name = 'body length' [representation_item.name = 'body length'])</p> <p>{(#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item compound_item_definition compound_item_definition = set_representation_item set_representation_item</p>
<p>body_length to value_with_unit (as value_of_body_length)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> set_representation_item[] -> representation_item => measure_representation_item <=> measure_with_unit => length_measure_with_unit) #7: (value_representation_item <= representation_item <- representation_items[] representation representation_context_of_items[] -> representation_context => global_unit_assigned_context global_unit_assigned_context_units[] -> unit = named_unit named_unit => length_unit) </pre>
<p>COMPONENT_COLOUR</p> <p>#1: If predefined_data_element is referenced by a data_element_association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element_association or by a classification_attribute.</p>	<p>colour_representation_item</p>	212	47,73,74	<pre> colour_representation_item <= descriptive_representation_item <= {descriptive_representation_item <= representation_item [representation_item <- representation_items[]] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> #2: (property_definition.representation.used.representation property_definition.representation property_definition.representation.definition -> represented_definition represented_definition = general_property general_property) general_property.name = 'component colour' [representation_item.name = 'component colour']] </pre>
colour_id	descriptive- representation_item. description	45		<pre> colour_representation_item <= descriptive_representation_item descriptive_representation_item.description </pre>
component_colour to classification- system (as coding- system)	PATH		15	<pre> colour_representation_item classification_item = colour_representation_item classification_item <- applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment { classification_assignment.role -> classification_role classification_role.name = 'class system membership' } classification_assignment.assigned_classification -> group => class_system </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>CROSS_SECTION</p> <p>#1: If predefined_data_element is referenced by a data_element.association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element.association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_representation_item])</p> <p>#6: ([measure_representation_item] [qualified_representation_item])</p> <p>#4: ([#5: (value_range)])</p> <p>#6: ([value_range] [qualified_representation_item])</p> <p>#7: ([#5: (value_representation_item)] [value_representation_item] [qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=#4: (value_range <= compound_representation_item) #7: (value_representation_item <=# representation_item <-[representation_items[1] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property general_property.name = 'cross section area') [representation_item.name = 'cross section area']) {#3: (measure_representation_item <=#4: (value_range <= compound_representation_item compound_item_definition compound_item_definition = set_representation_item set_representation_item</p>
<p>cross_section to value_with_unit (as value_of_cross_section)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> set_representation_item[i] -> representation_item => measure_with_unit => area_measure_with_unit #7: (value_representation_item <= representation_item <- representation.items[i] representation representation.context_of_items[i] -> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit = named_unit named_unit => area_unit) </pre>
DATA_ELEMENT #1: If the unit has a commonly used descriptor. #2: If the unit descriptor is constructed of more than one unit name.	representation	43	72	
description	description_attribute. attribute_value	41		<pre> representation description_attribute.select = representation description_attribute.select <- description_attribute.described_item description_attribute description_attribute.attribute_value representation representation.context_of_items -> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit </pre>
global_unit	PATH			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
qualifier	type-qualifier.name	45		<pre> #1: (unit = named_unit named_unit) #2: (unit = derived_unit derived_unit) representation representation.items[i] -> representation_item => {representation_item.name = 'qualifier'} qualified_representation_item qualified_representation_item.qualifiers[i] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name {(type_qualifier.name = 'nominal') (type_qualifier.name = 'specified') (type_qualifier.name = 'typical')} </pre>
value-determination	type-qualifier.name	45		<pre> representation representation.items[i] -> representation_item => {representation_item.name = 'value_interpretation'} qualified_representation_item qualified_representation_item.qualifiers[i] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name {(type_qualifier.name = 'calculated') (type_qualifier.name = 'designed') (type_qualifier.name = 'estimated') (type_qualifier.name = 'measured') (type_qualifier.name = 'required') (type_qualifier.name = 'set point')} </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DATA_ELEMENT-ASSOCIATION</p> <p>#1: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#2: If data_element is associated to activity or work_order.</p> <p>#3: If data_element is associated to cable_pull_information, device_relationship used with UoF CFI, drawing_sheet, generic_note, path, or path_node.</p> <p>#4: If data_element is not associated to cable_pull_information, drawing_sheet, generic_note, path, or path_node.</p> <p>#5: If product_class is used without UoF CFI.</p> <p>#6: If product_class is used with UoF CFI.</p> <p>#7: If item_property-association.functional is TRUE.</p> <p>#8: If item_property-association.functional is FALSE.</p> <p>#9: If item_property-association.functional is not instantiated.</p>	<p>#1: (property_definition)</p> <p>#2: (action_property)</p> <p>#3: (representation_relationship)</p>	<p>41</p> <p>49</p> <p>43</p>	<p>72</p>	

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>#10: If device is used in the context of UoF CF1. #11: If device is not used in the context of UoF CF1. #12: If function_unit is not used in the context of UoF CF1. #13: If function_unit is used in the context of UoF CF1. #14: If device_ relationship is not of type 'substitution'. #15: If device_ relationship is of type 'substitution'. #16: If product_class is used with UoF EF1. #17: If product_class is used with UoF CF1. #18: If product_ identification is used with UoF EF1. #19: If product_ identification is used with UoF CF1.</p>	<p>#4: (general_property_ association.name) #3: (representation_ relationship.name)</p>	<p>41 41</p>		
<p>definitional</p>				<p>#4: (#2: (action_property derived_property_select = action_property) #1: (property_definition derived_property_select = property_definition) derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.name</p>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre>{#7: (general_property_association.name = 'definitional') #8: (general_property_association.name = 'non-definitional') #9: (general_property_association.name = ")}}</pre> <pre>#3: (representation_relationship representation_relationship.name representation_relationship.name = 'definitional') #8: (representation_relationship.name = 'non-definitional') #9: (representation_relationship.name = ")}}</pre>
description	<pre>#1: (property_- definition. description) #2: (action_property. description) #3: (representation_- relationship. description) PATH</pre>	41 49 43	72	
data_element_- association to data_element (as associated_- data_element)				<pre>#1: (property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation ->) #2: (action_property <- action_property_representation.property action_property_representation action_property_representation.representation ->) #3: (representation_relationship representation_relationship.rep_1 ->) representation</pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element-- association to activity (as associated_ item)	PATH			action_property action_property.definition -> characterized_action_definition characterized_action_definition = action action
data_element-- association to assembly-- component-- relationship (as associated_ item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage representation_relationship representation_relationship.rep_2 -> representation
data_element-- association to cable_pull-- information (as associated_ item)	PATH			
data_element-- association to complex_product (as associated_ item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formations -> product_definition_formation product_definition_formation property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition = product_definition_relationship product_definition_relationship
data_element-- association to complex_product-- relationship (as associated_ item)	PATH			[product_definition_relationship.relatiing_product_definition ->

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				product_definition product_definition.formation -> product_definition_formation <- product_definition_formation.relation.relation.related_product_definition_formation [product_definition_rerelationship.related_product_definition -> product_definition product_definition.formation -> product_definition_formation <- product_definition_formation.relation.related_product_definition_formation] product_definition_formation.relation.rerelationship
data_element.- association to composition.- relationship.- (as associated.- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_rerelationship product_definition_rerelationship => product_definition_usage => assembly_component_usage
data_element.- association to connectivity.- allocation (as associated.- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_rerelationship shape_aspect_rerelationship
data_element.- association to connectivity.- definition (as associated.- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => product_definition_shape <= connectivity_definition

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data.element.- association to connectivity.- definition.- relationship (as associated- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship shape_aspect_relationship
data.element.- association to design.- discipline.item.- definition (as associated- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition
data.element.- association to device (as associated- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #10: (characterized_product_definition = product_definition product_definition)
data.element.- association to device.- relationship (as associated- item)	PATH (see NOTE 1)			#11: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #10: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition_relationship #15: (see NOTE 1)) #11: (representation_relationship

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to document (as associated_- item)	PATH			representation_relationship.rep_2 -> representation <- property_definition.used_representation property_definition_representation property_definition_representation_definition -> representation_representation_definition representation_definition = property_definition_relationship property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition product_definition_formation -> product_definition_formation product_definition_formation_of_product -> product
data_element_- association to document_file (as associated_- item)	PATH			property_definition property_definition_definition -> property_definition_definition characterized_definition = characterized_object characterized_object => document_file property_definition property_definition_definition -> characterized_definition
data_element_- association to document_- representation (as associated_- item)	PATH			property_definition property_definition_definition -> characterized_definition characterized_product_definition #14: (characterized_product_definition = product_definition product_definition) #15: (characterized_product_definition = physically_modelled_product_definition physically_modelled_product_definition)

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to document_version (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formation -> product_definition_formation representation_relationship representation_relationship.rep_2 -> representation => presentation_representation => presentation_area => drawing_sheet_revision
data_element_- association to drawing_sheet (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_segment => free_segment
data_element_- association to function_definition (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to function_- definition_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition.relationship property_definition
data_element_- association to function_- interface (as associated_- item)	PATH			property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => interface property_definition
data_element_- association to function_unit_- (as associated_- item)	PATH			property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition 12(characterized_product_definition = product_definition product_definition) 13(characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition.relationship

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to function_version (as associated_ item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formatation -> product_definition.formatation
data_element_- association to functional_ connectivity_ definition (as associated_ item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition
data_element_- association to functional_ connectivity_ definition_ relationship (as associated_ item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship shape_aspect_relationship
data_element_- association to functional_unit_ allocation (as associated_ item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition.relationship

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to functionality (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formatation -> product_definition.formatation product_definition.formatation.of_product -> product
data_element_- association to generic.note (as associated_- item)	PATH			representation_relationship representation_relationship.rep_2 -> representation ==> note_representation
data_element_- association to interface (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect ==> interface
data_element_- association to interface_port (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect shape_aspect ==> terminal

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to interface_- terminal (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
data_element_- association to item (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formations -> product_definition.formations product_definition.formations.of_product -> product
data_element_- association to item_definition_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship
data_element_- association to item_version (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formations -> product_definition.formations

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to location (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_location
data_element_- association to location_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship shape_aspect_relationship
data_element_- association to marking (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => equipment_marking
data_element_- association to node (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_node

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to node_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship shape_aspect_relationship
data_element_- association to notification (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => notification
data_element_- association to offered_function_- allocation (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship
data_element_- association to path (as associated_- item)	PATH			representation_relationship representation_relationship.rep_2 -> representation representation.items[] -> representation_item => topological_representation_item => path
data_element_- association to path_node (as associated_- item)	PATH			representation_relationship representation_relationship.rep_2 -> representation representation.items[] -> representation_item => topological_representation_item => vertex

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to physical_- assembly_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition.relationship => assembly_component_usage
data_element_- association to physical_- instance (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition
data_element_- association to port (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
data_element_- association to port_allocation (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition.relationship shape_aspect_relationship
data_element_- association to port_association (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to preferred_item_- allocation (as associated_- item)	PATH			shape_aspect_relationship property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_definition = product_definition_relationship product_definition_relationship
data_element_- association to preferred_item_- terminal_- allocation (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship shape_aspect_relationship
data_element_- association to process_variable (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => process_variable
data_element_- association to product_class (as associated_- item)	PATH (see NOTE 1)			#16: (see NOTE 1 ²) #17: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => product_class)
data_element_- association to product_- identification (as associated_- item)	PATH (see NOTE 1)			#18: (see NOTE 1 ³) #19: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => product_identification)

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to product_- structure_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition.relationship => product_definition.usage
data_element_- association to requirement (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
data_element_- association to route (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_route
data_element_- association to route_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect.relationship shape_aspect.relationship
data_element_- association to routed_segment (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to section (as associated_- item)	PATH			shape_aspect => installation_segment => routed_segment property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section property_definition
data_element_- association to section_end (as associated_- item)	PATH			property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section_end property_definition
data_element_- association to section_- interface (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section_interface property_definition
data_element_- association to section_- interface_- relationship (as associated_- item)	PATH			property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section_interface property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_section_interface property_definition

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to section_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship shape_aspect_relationship
data_element_- association to signal (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => signal
data_element_- association to signal_value (as associated_- item)	PATH			representation_relationship representation_relationship.rep_2 -> representation
data_element_- association to technical_system (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition {product_definition.frame_of_reference -> product_definition.context <= application_context_element product_definition.name = 'system definition'}

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to technical_system_- relationship (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition product_definition = product_definition_relationship product_definition_relationship [product_definition_relationship.relatiing_product_definition -> product_definition product_definition.formation -> product_definition_formation -> product_definition_formation <- product_definition_formation.relatiing_product_definition_formation] [product_definition_relationship.related_product_definition -> product_definition product_definition.formation -> product_definition_formation -> product_definition_formation <- product_definition_formation.relatiing_product_definition_formation] product_definition_formation.relationship
data_element_- association to terminal (as associated_- item)	PATH			property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
data_element_- association to work_order (as associated_- item)	PATH			action_property action_property.definition -> characterized_action_definition characterized_action_definition = action action

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- association to organization (as data_element_- context)	PATH		29	<pre> #1: (property_definition organization_item = property_definition) #2: (action_property organization_item = action_property) #3: (representation_relationship organization_item = representation_relationship) organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'validity context'} organization_assignment.assigned_organization -> organization </pre>
data_element_- association to product_class (as data_element_- context)	PATH (see NOTE 1)			<pre> #5: (1) #6: (property_definition <- property_definition_relationship.related_property_definition property_definition_relationship {property_definition_relationship.name = 'validity context'}) property_definition_relationship.related_property_definition -> property_definition property_definition.definition characterized_definition characterized_definition = characterized_object characterized_object <= product_class) </pre>
data_element_- association to technical_system (as data_element_- context)	PATH			<pre> property_definition <- property_definition_relationship.related_property_definition property_definition_relationship {property_definition_relationship.name = 'validity context'} property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> characterized_product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element product_definition_formation} </pre>
<p>DATA ELEMENT:- DEFINITION #1: If the value_with_- unit is a numerical_value or a value_limit, and the unit is assigned globally. #2: If the unit has a commonly used descriptor.</p>	general_property	41		
admitted- qualifier	type_qualifier.name	45	72	<pre> general_property represented_definition = general_property represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'admitted qualifier'} representation.items[1] -> representation_item ==> qualified_representation_item qualified_representation_item.qualifiers[i] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name {(type_qualifier.name = 'nominal') (type_qualifier.name = 'specified')} </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
allowed_unit	#1: (named_unit) #2: (derived_unit)	41 41	20,27,72	(type_qualifier.name = 'typical') general_property represented_definition = general_property represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.name = 'allowed units'} representation.context_of_items -> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit #1: (unit = named_unit named_unit) #2: (unit = derived_unit derived_unit)
description	general_property. description	41		
id	general_property.id	41		
version_id	identification. assignment_assigned_id	41	25,53, 100	general_property identification_item = general_property identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment. role -> identification_role identification_role.name = 'version'} identification_assignment_assigned_id

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- definition to external_library_- reference (as source)	IDENTICAL MAPPING		46	{general_property => externally_defined_general_property}
data_element_- definition to property_- reference (as source)	IDENTICAL MAPPING		46,54	{general_property => externally_defined_general_property}
DATA_ELEMENT_- DEFINITION_- RELATIONSHIP description	general_property_- relationship	41		
relation_type	general_property_- relationship. description	41		
	general_property_- relationship.name	41		{general_property_relationship.name (general_property_relationship.name = 'decomposition') (general_property_relationship.name = 'dependency') (general_property_relationship.name = 'substitution') (general_property_relationship.name = 'value domain')}
data_element_- definition_- relationship to data_element_- definition (as related)	PATH			general_property_relationship general_property_relationship.related_property -> general_property
data_element_- definition_- relationship to data_element_- definition (as relating)	PATH			general_property_relationship general_property_relationship.relationing_property -> general_property

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
DATA_ELEMENT_- RELATIONSHIP description	representation_- relationship	43		
	representation_- relationship. description	43		
relation_type	representation_- relationship.name	43		{(representation_relationship.name (representation_relationship.name = 'decomposition') (representation_relationship.name = 'dependency') (representation_relationship.name = 'equivalence') (representation_relationship.name = 'substitution') (representation_relationship.name = 'tolerancing information'))}
data_element_- relationship to data_element (as related)	PATH			representation_relationship representation_relationship.rep-2 -> representation
data_element_- relationship to data_element (as relating)	PATH			representation_relationship representation_relationship.rep-1 -> representation
DATA_ELEMENT_- SPECIFICATION definition	representation descriptive_- representation_item. description	43	72	{ representation representation.name = 'property specification'} representation representation_items[] -> representation_item => {representation_item.name = 'definition'} descriptive_representation_item descriptive_representation_item.description representation representation_items[] -> representation_item => {representation_item.name = 'note'} descriptive_representation_item descriptive_representation_item.description representation representation_items[] -> representation_item =>
note	descriptive_- representation_item. description	45		
remark	descriptive_- representation_item. description	45		

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
data_element_- specification to language (as language_- specification)	PATH			<pre> {representation_item.name = 'remark'} descriptive_representation_item descriptive_representation_item.description representation language_item = representation language_item <- language_assignment.items[] language_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'language'} classification_assignment.assigned_class -> group => language </pre>
data_element_- specification to data_element_- definition (as specification_- of)	PATH			<pre> representation <- property_definition.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = general_property general_property </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>DATA-ELEMENT_- VALUE</p> <p>#1: If data_element_value is an aggregated_value. #2: If data_element_value is a single_value with value of binary_value, logical_value, or string_value. #3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally. #4: If the value_with_unit is a value_range. #5: If no significant digits are given for the value_with_unit. #6: If significant digits are given for the value_with_unit. #7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#1: (compound_representation_item) #2: (descriptive_representation_item) #3: (#5: (measure_representation_item)) #6: ([measure_representation_item]) [qualified_representation_item]) #4: (#5: (value_range)) #6: ([value_range]) [qualified_representation_item]) #7: (#5: (value_representation_item)) #6: ([value_representation_item]) [qualified_representation_item])</p>	<p>43 45 45 45 45 212 212 45 43 43 45</p>	<p>74</p>	<p>#2: (descriptive_representation_item <= representation_item => qualified_representation_item qualified_representation_item.qualifiers[1] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name (type_qualifier.name = 'binary') (type_qualifier.name = 'logical') (type_qualifier.name = 'string')) #4: (#5: (value_range <= compound_representation_item)) #6: ([value_range <= compound_representation_item]) [qualified_representation_item])</p>
<p>name</p>	<p>representation_item.name</p>	<p>43</p>		<p>#1: (compound_representation_item <=) #2: (descriptive_representation_item <=) #3: (measure_representation_item <=) #4: (value_range <= compound_representation_item <=) #7: (value_representation_item <=) representation_item representation_item.name</p>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
EXTERNAL_LIBRARY_- REFERENCE #1: If external_library_- reference is referenced by a general_classification_- as the classification_- source. #2: If external_library_- reference is referenced by a data_element_definition_- as the source.	#1: (externally_- defined_class) #2: (externally_- defined_general_- property)	212 212	46,51	#1: (externally_defined_class <= [class <= group] [externally_defined_item]) #2: (externally_defined_general_property <= [general_property] [externally_defined_item])
description	description_attribute. attribute_value	41		#1: (externally_defined_class <= externally_defined_item external_source -> description_attribute.select = external_source description_attribute.select <- description_attribute.described_item description_attribute description_attribute.attribute_value #2: (externally_defined_general_property <= externally_defined_item externally_defined_item.source -> description_attribute.select = external_source description_attribute.select <- description_attribute.described_item description_attribute description_attribute.attribute_value
external_id	externally_defined_- item.item_id	41		#1: (externally_defined_class <= externally_defined_item externally_defined_item.item_id #2: (externally_defined_general_property <= externally_defined_item externally_defined_item.source -> external_source.source_id {external_source.source_id -> source_item = identifier identifier})
library_type	external_source.source_- id	41		#1: (externally_defined_class <= externally_defined_item externally_defined_item.source -> external_source external_source.source_id {external_source.source_id -> source_item = identifier identifier})

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AM element	Source	Rules	Reference path
FORMAT_OF_VALUE	representation	43	72	{ representation representation.name = 'property value format' }
source_document	descriptive- representation_item. description	45		representation representation.items[] -> representation_item => {representation_item.name = 'source document' descriptive_representation_item descriptive_representation_item.description {(descriptive_representation_item.description (descriptive_representation_item.description = 'iec 61360'))}}
value_format	descriptive- representation_item. description	45		representation representation.items[] -> representation_item => {representation_item.name = 'value format' descriptive_representation_item descriptive_representation_item.description representation <- representation.items[] -> representation_item => {representation_item.name = 'value format' descriptive_representation_item descriptive_representation_item.description
format_of_value to data_element- definition (as associated- definition)	PATH		94	property_definition_representation.used_representation property_definition_representation. property_definition_representation.definition -> represented_definition represented_definition = general_property general_property representation language_item = representation language_item <- language_assignment.items[] language_assignment <= classification_assignment {classification_assignment.role -> classification_role [classification_role.name = 'language'] [classification_role.description = 'default']} classification_assignment.assigned_classification -> group => language
format_of_value to language (as default- language- specification)	PATH			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
LOGICAL_VALUE	descriptive- representation_item	45	74	{descriptive-representation_item <= representation_item => qualified-representation_item value_qualifier value_qualifier = type_qualifier type_qualifier.name type_qualifier.name = 'logical'}
value_of_logical_value	descriptive- representation_item. description	45		

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>MASS</p> <p>#1: If predefined_data_-element is referenced by a data_element_association or by a classification_-attribute.</p> <p>#2: If predefined_data_-element is not referenced by a data_element_-association or by a classification_attribute.</p> <p>#3: If the value_with_-unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_-unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_-unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_-representation_item])</p> <p>#6: ([measure_-representation_item][qualified_-representation_item])</p> <p>#4: ([#5: (value_-range)])</p> <p>#6: ([value_range][qualified_-representation_item])</p> <p>#7: ([#5: (value_-representation_item)#6: ([value_-representation_item][qualified_-representation_item])])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item <-[representation_item <- representation_items[1] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition represented_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property.name = 'mass')[representation_item.name = 'mass']}</p> <p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item compound_item_definition compound_item_definition = set_representation_item set_representation_item)</p>
<p>mass to value_-with_unit (as value_of_-mass)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> set_representation_item[] -> representation_item => measure_representation_item <=> measure_with_unit => mass_measure_with_unit #7: (value_representation_item <= representation_item <- representation_items[] representation representation_context_of_items[] -> representation_context => global_unit_assigned_context global_unit_assigned_context_units[] -> unit = named_unit named_unit => mass_unit) </pre>
<p>MATERIAL</p> <p>#1: If predefined_data_element is referenced by a data_element_association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element_association or by a classification_attribute.</p>	<pre> descriptive_ representation_item </pre>	45	47,73,74	<pre> {descriptive_representation_item <= representation_item [representation_item <- representation_items[] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> property_definition.representation.definition -> represented_definition general_property [representation_item.name = 'material specification'] </pre>
substance	descriptive- representation_item. description	45		
MOUNTING- FEATURES #1: If predefined_data- element is referenced by a data_element_association or by a classification_ attribute. #2: If predefined_data- element is not referenced by a data_element_ association or by a classification_attribute.	descriptive- representation_item	45	47,73,74	<pre> {descriptive_representation_item <= representation_item [representation_item <- representation_items[1] representation <- #1: (property_definition.representation.used_representation property_definition.representation represented_definition property_definition = property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition.representation.used_representation property_definition.representation property_definition.representation.definition -> represented_definition represented_definition = general_property general_property) general_property.name = 'mounting features specification'] [representation_item.name = 'mounting features specification']} </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
fixture	descriptive- representation_item. description	45		
NUMERICAL_VALUE #1: If significant digits are given for the value_-with_unit. #2: If no significant digits are given for the value_-with_unit. #3: If the unit is not assigned globally. #4: If the unit is assigned globally.	#3: ([measure_- representation_item] [qualified_- representation_item]) #2: (measure_- representation_item) #4: (#1: ([value_- representation_item] [qualified_- representation_item]) #2: (value_- representation_item))	45 45 45 43 45 43	26,74	
value_component	#3: (measure_with_- unit.value_component) #4: (value_- representation_item. value_component)	41 43	20,27,74	#3: ({measure_representation_item <= measure_with_unit {(measure_with_unit) (measure_with_unit => (amount_of_substance_measure_with_unit) (area_measure_with_unit) (celsius_temperature_measure_with_unit) (electric_current_measure_with_unit) (length_measure_with_unit) (luminous_intensity_measure_with_unit) (mass_measure_with_unit) (plane_angle_measure_with_unit) (ratio_measure_with_unit) (solid_angle_measure_with_unit) (thermodynamic_temperature_measure_with_unit) (time_measure_with_unit) (volume_measure_with_unit))} measure_with_unit.value_component measure_value (measure_value = area_measure

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				area_measure (measure_value = amount_of_substance_measure amount_of_substance_measure) (measure_value = celsius_temperature_measure celsius_temperature_measure) (measure_value = length_measure length_measure) (measure_value = electric_current_measure electric_current_measure) (measure_value = plane_angle_measure plane_angle_measure) (measure_value = ratio_measure ratio_measure) (measure_value = parameter_value parameter_value) (measure_value = descriptive_measure descriptive_measure) (measure_value = positive_plane_angle_measure positive_plane_angle_measure) (measure_value = count_measure count_measure) (measure_value = mass_measure mass_measure) (measure_value = time_measure time_measure) (measure_value = thermodynamic_temperature_measure thermodynamic_temperature_measure) (measure_value = luminous_intensity_measure luminous_intensity_measure) (measure_value = solid_angle_measure solid_angle_measure) (measure_value = volume_measure volume_measure) (measure_value = numeric_measure numeric_measure) (measure_value = context_dependent_measure context_dependent_measure)

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> context_dependent_measure (measure_value = positive_length_measure positive_length_measure) (measure_value = positive_ratio_measure positive_ratio_measure)}} #4: (value_representation_item value_representation_item.value_component) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>OPERATING- TEMPERATURE</p> <p>#1: If predefined_data- element is referenced by a data_element_association or by a classification- attribute.</p> <p>#2: If predefined_data- element is not referenced by a data_element- association or by a classification-attribute.</p> <p>#3: If the value_with- unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with- unit is a value_range. #5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value- with_unit.</p> <p>#7: If the value_with- unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure- representation_item]) #6: ([measure- representation_item] [qualified- representation_item]) #4: ([#5: (value- range) #6: ([value_range] [qualified- representation_item])]) #7: ([#5: (value- representation_item) #6: ([value- representation_item] [qualified- representation_item])])</p>	<p>45 45 45 212 212 45 43 43 45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item [representation_item <- representation_items[1] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = general_property general_property [general_property.name = 'operating temperature'] [representation_item.name = 'operating temperature']] #3: (measure_representation_item <=) #4: (value_range <= compound_representation_item compound_representation_item.element -> compound_item_definition compound_item_definition = set_representation_item</p>
<p>operating- temperature to value_with_unit (as temperature)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> set_representation_item representation_item => measure_representation_item <= measure_with_unit => thermodynamic_temperature_measure_with_unit #7: (value_representation_item <= representation_item <- representation_items[] representation representation_context_of_items[i] -> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit = named_unit named_unit => thermodynamic_temperature_unit)} </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>OUTSIDE_DIAMETER</p> <p>#1: If predefined_data_element is referenced by a data_element.association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element.association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_representation_item])</p> <p>#6: ([measure_representation_item])</p> <p>[qualified_representation_item])</p> <p>#4: ([value_range])</p> <p>#6: ([value_range])</p> <p>[qualified_representation_item])</p> <p>#7: ([value_representation_item])</p> <p>#6: ([value_representation_item])</p> <p>[qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <=) compound_representation_item) #7: (value_representation_item <=) representation_item [representation_item <= representation_items[1] representation <=</p> <p>#1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_definition derived_property_select <= general_property_association.derived_definition general_property_association base_definition -> general_property)</p> <p>#2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property.name = 'outside diameter') [representation_item.name = 'outside diameter']</p> <p>{(#3: (measure_representation_item <=) #4: (value_range <=) compound_representation_item compound_item_definition compound_item_definition = set_representation_item set_representation_item</p>
<p>outside_diameter to value_with_unit (as value_of_outside_diameter)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>PREDEFINED_DATA_ELEMENT</p> <p>#1: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#2: If the value_with_unit is a value_range.</p> <p>#3: If no significant digits are given for the value_with_unit.</p> <p>#4: If significant digits are given for the value_with_unit.</p>	representation	43	72	<pre> set_representation_item[i] -> representation_item => measure_representation_item <=> length_measure_with_unit) #7: (value_representation_item <= representation_item <- representation_items[i] representation representation_context_of_items[i] -> representation_context => global_unit_assigned_context global_unit_assigned_context_units[i] -> unit = named_unit named_unit => length_unit)} </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
predefined_data_- element to body_- breadth (as data)	PATH			<pre> representation representation_items[] -> representation_item => {representation_item.name = 'body breadth'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item])) #2: (#3: (compound_representation_item => value_range) value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item])) </pre>
predefined_data_- element to body_- height (as data)	PATH			<pre> representation representation_items[] -> representation_item => {representation_item.name = 'body height'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item])) #2: (#3: (compound_representation_item => value_range) value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item])) </pre>
predefined_data_- element to body_- length (as data)	PATH			<pre> representation representation_items[] -> representation_item => {representation_item.name = 'body length'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item])) #2: (#3: (compound_representation_item => value_range) value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item])) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
predefined_data_- element to component_colour (as data)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'component colour'} descriptive_representation_item => colour_representation_item </pre>
predefined_data_- element to cross_- section (as data)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'cross section area'} #1: (#3: (measure_representation_item) #4: ([qualified_representation_item]) [qualified_representation_item]) #2: (#3: (compound_representation_item => value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item])) </pre>
predefined_data_- element to mass (as data)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'mass'} #1: (#3: (measure_representation_item) #4: ([qualified_representation_item]) [qualified_representation_item]) #2: (#3: (compound_representation_item => value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item])) </pre>
predefined_data_- element to material (as data)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'material specification'} descriptive_representation_item </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
predefined_data_- element to mounting_- features (as data)	PATH			representation representation.items[] -> representation_item => {representation_item.name = 'mounting features specification'} descriptive_representation_item
predefined_data_- element to operating_- temperature (as data)	PATH			representation representation.items[] -> representation_item => {representation_item.name = 'operating temperature'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item])) #2: (#3: (compound_representation_item => value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item]))
predefined_data_- element to outside_diameter (as data)	PATH			representation representation.items[] -> representation_item => {representation_item.name = 'outside diameter'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item])) #2: (#3: (compound_representation_item => value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item]))
predefined_data_- element to rated_- current (as data)	PATH			representation representation.items[] -> representation_item => {representation_item.name = 'rated current'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item]))

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
predefined_data_- element to rated_ power (as data)	PATH			<pre>#2: (#3: (compound_representation_item => value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item])) representation representation.items[] -> representation_item => {representation_item.name = 'rated power'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item])) #2: (#3: (compound_representation_item => value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item]))</pre>
predefined_data_- element to rated_ voltage (as data)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'rated voltage'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item])) #2: (#3: (compound_representation_item => value_range) #4: ([compound_representation_item => value_range] [qualified_representation_item]))</pre>
predefined_data_- element to storage_ temperature (as data)	PATH			<pre> representation representation.items[] -> representation_item => {representation_item.name = 'storage temperature'} #1: (#3: (measure_representation_item) #4: ([measure_representation_item] [qualified_representation_item]))</pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre>#2: (#3: (compound_representation_item => value_range) #4: ((compound_representation_item => value_range) [qualified_representation_item])) externally_defined_general_property <= [general_property] [externally_defined_item] externally_defined_general_property <= externally_defined_item externally_defined_item_id externally_defined_general_property {externally_defined_general_property <= externally_defined_item externally_defined_item.source -> external_source => known_source <= pre_defined_item pre_defined_item.name = 'ISO 13584 library'} external_identification_item = externally_defined_general_property external_identification_item <- applied_external_identification_assignment.items[i] applied_external_identification_assignment <= external_identification_assignment {external_identification_assignment external_identification_assignment.source -> external_source => known_source <= pre_defined_item pre_defined_item.name = 'ISO 13584 library'} identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id</pre>
PROPERTY- REFERENCE	externally_defined- general_property	212	46	
code	externally_defined- item.item_id	41		
version	identification.- assignment.assigned_id	41	25.53	

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
property- reference to class_reference (as name_scope)	PATH		45,46	<pre> externally_defined_general_property <= externally_defined_item <- {externally_defined_item.source -> external_source => known_source <= pre_defined_item pre_defined_item.name = 'ISO 13584 library'} externally_defined_item.relationship.relatiing_item externally_defined_item.relationship {externally_defined_item.relationship.name = 'name scope'} externally_defined_item.relationship.related_item -> externally_defined_item => {externally_defined_item.source -> external_source => known_source <= pre_defined_item pre_defined_item.name = 'ISO 13584 library'} externally_defined_class </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>RATED_CURRENT</p> <p>#1: If predefined_data_element is referenced by a data_element.association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element.association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_representation_item])</p> <p>#6: ([measure_representation_item])</p> <p>[qualified_representation_item])</p> <p>#4: ([value_range])</p> <p>#6: ([value_range])</p> <p>[qualified_representation_item])</p> <p>#7: ([value_representation_item])</p> <p>#6: ([value_representation_item])</p> <p>[qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <=) compound_representation_item) #7: (value_representation_item <=) representation_item [representation_item <- representation_items[1] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_definition = property_definition derived_property_select <- derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property_name = 'rated current'] [representation_item.name = 'rated current']] {#3: (measure_representation_item <= representation_item =>) #4: (compound_representation_item compound_item_definition compound_item_definition = set_representation_item set_representation_item</p>
<p>type_of_rated_current</p>	<p>type_qualifier_name</p>	<p>45</p>		

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
rated_current to value_with_unit (as value_of_ rated_current)	IDENTICAL MAPPING			<pre> set_representation_item[i] -> representation_item => #7: (value_representation_item <=) qualified_representation_item value_qualifier = type_qualifier type_qualifier type_qualifier.name {(type_qualifier.name = 'ac 3 phases') (type_qualifier.name = 'ac 5 phases') (type_qualifier.name = 'ac single phase') (type_qualifier.name = 'dc')} } {#3: (measure_representation_item <=) #4: (value_range <=) compound_representation_item compound_representation_item.item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item set_representation_item[i] -> representation_item => representation_item <=) measure_with_unit measure_with_unit.unit_component -> unit unit = named_unit named_unit => si_unit si_unit.name = 'ampere') #7: (value_representation_item <=) representation_items[i] representation representation.context_of_items[i] -> </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => si_unit si_unit.name = 'ampere' </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>RATED_POWER</p> <p>#1: If predefined_data_element is referenced by a data_element_association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element_association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_representation_item])</p> <p>#6: ([measure_representation_item][qualified_representation_item])</p> <p>#4: ([#5: (value_range)])</p> <p>#6: ([value_range][qualified_representation_item])</p> <p>#7: ([#5: (value_representation_item)])</p> <p>#6: ([value_representation_item][qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item <-[representation_item <- representation_items[1] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition represented_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property represented_definition = general_property general_property.name = 'rated power')[representation_item.name = 'rated power']}{#3: (measure_representation_item <= representation_item =>) #4: (compound_representation_item compound_item_definition compound_item_definition = set_representation_item set_representation_item</p>
<p>type_of_rated_power</p>	<p>type_qualifier.name</p>	<p>45</p>		

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
rated_power_to_value_with_unit (as value_of_rated_power)	IDENTICAL MAPPING			<pre> set_representation_item[] -> representation_item => #7: (value_representation_item <=) qualified_representation_item value_qualifier = type_qualifier type_qualifier type_qualifier.name {(type_qualifier.name = 'apparent power') (type_qualifier.name = 'reactive power') (type_qualifier.name = 'true power')}} {(#3: (measure_representation_item <=) #4: (value_range <=) compound_representation_item compound_item_definition compound_item_definition = set_representation_item set_representation_item[] -> representation_item => measure_representation_item <=) measure_with_unit unit = named_unit named_unit => si_unit si_unit.name = 'watt') representation_item <=) representation_items[] representation representation.context_of_items[] -> representation_context => </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> global_unit_assigned_context global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => si_unit si_unit.name = 'watt' </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>RATED_VOLTAGE</p> <p>#1: If predefined_data_element is referenced by a data_element_association or by a classification_attribute.</p> <p>#2: If predefined_data_element is not referenced by a data_element_association or by a classification_attribute.</p> <p>#3: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_with_unit.</p> <p>#7: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_representation_item])</p> <p>#6: ([measure_representation_item])</p> <p>[qualified_representation_item])</p> <p>#4: ([value_range])</p> <p>#6: ([value_range])</p> <p>[qualified_representation_item])</p> <p>#7: ([value_representation_item])</p> <p>#6: ([value_representation_item])</p> <p>[qualified_representation_item])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item <-[representation_item <- representation_items[1] representation <- #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_definition = property_definition derived_property_select <- derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property general_property_name = 'rated voltage') [representation_item.name = 'rated voltage']} {#3: (measure_representation_item <= representation_item =>) #4: (compound_representation_item compound_representation_item.definition compound_item_definition = set_representation_item set_representation_item</p>
<p>type_of_rated_voltage</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
rated_voltage_to_value_with_unit (as value_of_rated_voltage)	IDENTICAL MAPPING			<pre> set_representation_item[i] -> representation_item => #7: (value_representation_item <=) qualified_representation_item value_qualifier = type_qualifier type_qualifier type_qualifier.name {(type_qualifier.name = 'ac 3 phases') (type_qualifier.name = 'ac 5 phases') (type_qualifier.name = 'ac single phase') (type_qualifier.name = 'dc')} } {#3: (measure_representation_item <=) #4: (value_range <=) compound_representation_item compound_representation_item.item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item set_representation_item[i] -> representation_item => representation_item <=) measure_with_unit measure_with_unit.unit_component -> unit unit = named_unit named_unit => si_unit si_unit.name = 'volt') #7: (value_representation_item <=) representation_item <- representation_items[i] representation representation.context_of_items[i] -> </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => si_unit si_unit.name = 'volt' } </pre>
<p>SINGLE_VALUE</p> <p>#1: If value of single_value is a binary_value, logical_value, or string_value.</p> <p>#2: If the value_with_unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#3: If the value_with_unit is a value_range.</p> <p>#4: If no significant digits are given for the value_with_unit.</p> <p>#5: If significant digits are given for the value_with_unit.</p> <p>#6: If the value_with_unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#1: (descriptive_representation_item)</p> <p>#2: (#4: (measure_representation_item)</p> <p>#5: ([measure_representation_item]</p> <p>[qualified_</p> <p>#3: (#4: (value_range)</p> <p>#5: ([value_range]</p> <p>[qualified_</p> <p>#6: (#4: (value_representation_item)</p> <p>#5: ([value_representation_item]</p> <p>[qualified_</p>	<p>45</p> <p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>74</p>	<pre> #1: (descriptive_representation_item {descriptive_representation_item <= representation_item => qualified_representation_item qualified_representation_item.qualifiers[1] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name (type_qualifier.name = 'binary') (type_qualifier.name = 'logical') (type_qualifier.name = 'string')} #3: (#4: (value_range <= compound_representation_item) #5: ([value_range <= compound_representation_item] [qualified_representation_item])) </pre>
<p>single_value to binary_value (as value_of_single_value)</p>	IDENTICAL MAPPING			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
single_value to logical_value (as value_of_-single_value)	IDENTICAL MAPPING			
single_value to string_value (as value_of_-single_value)	IDENTICAL MAPPING			
single_value to value_with_unit (as value_of_-single_value)	IDENTICAL MAPPING			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>STORAGE_- TEMPERATURE</p> <p>#1: If predefined_data_- element is referenced by a data_element_association_- or by a classification_- attribute.</p> <p>#2: If predefined_data_- element is not referenced by a data_element_- association or by a classification_attribute.</p> <p>#3: If the value_with_- unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_- unit is a value_range.</p> <p>#5: If no significant digits are given for the value_with_unit.</p> <p>#6: If significant digits are given for the value_- with_unit.</p> <p>#7: If the value_with_- unit is a numerical_value or a value_limit, and the unit is assigned globally.</p>	<p>#3: ([measure_- representation_item])</p> <p>#6: ([measure_- representation_item] [qualified_- representation_item])</p> <p>#4: ([#5: (value_- range) #6: ([value_range] [qualified_- representation_item])])</p> <p>#7: ([#5: (value_- representation_item) #6: ([value_- representation_item] [qualified_- representation_item])])</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>47,73,74</p>	<p>{#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item) #7: (value_representation_item <=) representation_item [representation_item <= representation_items[1] representation <= #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_select = property_definition derived_property_select <= general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition general_property represented_definition = general_property general_property [general_property.name = 'storage temperature'] [representation_item.name = 'storage temperature']])</p> <p>{(#3: (measure_representation_item <=) #4: (value_range <= compound_representation_item compound_representation_item.element -> compound_item_definition compound_item_definition = set_representation_item</p>
<p>storage_- temperature to value_with_unit (as temperature)</p>	<p>IDENTICAL MAPPING</p>			

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> set_representation_item set_representation_item[i] -> representation_item => measure_representation_item <=> measure_with_unit => thermodynamic_temperature_measure_with_unit #: (value_representation_item <=> representation_item <- representation_items[i] representation representation_context_of_items[i] -> representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit = named_unit named_unit => thermodynamic_temperature_unit)} </pre>
STRING_VALUE	descriptive- representation_item	45	74	<pre> {descriptive_representation_item <=> representation_item => qualified_representation_item qualified_representation_item.qualifiers[1] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name type_qualifier.name = 'string' } </pre>
value_of_string- value	descriptive- representation_item. description	45		

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element representation	Source	Rules	Reference path
<p>USER_DEFINED_- DATA_ELEMENT</p> <p>#1: If user_defined_data_- element is referenced by a data_element_association or by a classification_- attribute.</p> <p>#2: If user_defined_data_- element is not referenced by a data_element_- association or by a classification_attribute.</p> <p>#3: If the value_with_- unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#4: If the value_with_- unit is a value_range.</p> <p>#5: If the value_of_data_- element is a binary_value, logical_value, or a string_- value.</p> <p>#6: If no significant digits are given for the value_with_unit.</p> <p>#7: If significant digits are given for the value_- with_unit.</p> <p>#8: If the value_with_- unit is a numerical_value or a value_limit, and the unit is assigned globally.</p> <p>#9: If the value_of_data_- element is an aggregated_- value.</p>		43	72	

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
user_defined_data_element_definition (as definition)	PATH			<pre> representation <- property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = property_definition property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property general_property #1: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition property_definition derived_property_select = property_definition derived_property_select <- general_property_association.derived_definition general_property_association general_property_association.base_definition -> general_property) #2: (property_definition_representation.used_representation property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = general_property general_property) </pre>
user_defined_data_element_value (as value_of_data_element)	PATH		74	<pre> representation representation.items[] -> representation_item => #5: (descriptive_representation_item {descriptive_representation_item <= representation_item => qualified_representation_item qualified_representation_item.qualifiers[] -> value_qualifier value_qualifier = type_qualifier type_qualifier type_qualifier.name (type_qualifier.name = 'binary') (type_qualifier.name = 'logical') (type_qualifier.name = 'string')}) #3: (#6: (measure_representation_item) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>VALUELIMIT</p> <p>#1: If no significant digits are given for the value_with_unit.</p> <p>#2: If significant digits are given for the value_with_unit.</p> <p>#3: If the limit is an upper bound.</p> <p>#4: If the limit is a lower bound.</p> <p>#5: If the unit is assigned globally.</p> <p>#6: If the unit is not assigned globally.</p>	<p>#6: (#1: (measure_-representation_item) #2: ([qualified_-representation_item] [measure_-representation_item]))</p> <p>#5: (#1: (value_-representation_item) #2: ([value_-representation_item] [qualified_-representation_item]))</p>	<p>45</p> <p>45</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>	<p>#7: ([measure_representation_item] [qualified_representation_item])</p> <p>#4: (#6: (compound_representation_item => value_range) #7: ([compound_representation_item => value_range] [qualified_representation_item]))</p> <p>#8: (#6: (value_representation_item) [qualified_representation_item])</p> <p>#7: ([value_representation_item] [qualified_representation_item])</p> <p>#9: (compound_representation_item)</p>	<p>#7: ([measure_representation_item] [qualified_representation_item])</p> <p>#4: (#6: (compound_representation_item => value_range) #7: ([compound_representation_item => value_range] [qualified_representation_item]))</p> <p>#8: (#6: (value_representation_item) [qualified_representation_item])</p> <p>#7: ([value_representation_item] [qualified_representation_item])</p> <p>#9: (compound_representation_item)</p>
<p>limit</p>	<p>#5: (value_-representation_item.value_component)</p> <p>#6: (measure_with_unit.value_component)</p>	<p>43</p> <p>41</p>	<p>#5: (value_representation_item.value_representation_item.value_component)</p> <p>#6: ({measure_representation_item <= measure_with_unit} ([measure_with_unit] (measure_with_unit => (amount_of_substance_measure_with_unit) (area_measure_with_unit) (electric_current_measure_with_unit)))</p>	<p>#5: (value_representation_item.value_representation_item.value_component)</p> <p>#6: ({measure_representation_item <= measure_with_unit} ([measure_with_unit] (measure_with_unit => (amount_of_substance_measure_with_unit) (area_measure_with_unit) (electric_current_measure_with_unit)))</p>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> (length_measure_with_unit) (luminous_intensity_measure_with_unit) (mass_measure_with_unit) (plane_angle_measure_with_unit) (ratio_measure_with_unit) (solid_angle_measure_with_unit) (thermodynamic_temperature_measure_with_unit) (time_measure_with_unit) (volume_measure_with_unit) } measure_with_unit.value_component -> measure_value (measure_value = area_measure area_measure) (measure_value = amount_of_substance_measure amount_of_substance_measure) (measure_value = length_measure length_measure) (measure_value = electric_current_measure electric_current_measure) (measure_value = plane_angle_measure plane_angle_measure) (measure_value = ratio_measure ratio_measure) (measure_value = parameter_value parameter_value) (measure_value = descriptive_measure descriptive_measure) (measure_value = positive_plane_angle_measure positive_plane_angle_measure) (measure_value = count_measure count_measure) (measure_value = mass_measure mass_measure) (measure_value = time_measure time_measure) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre>(measure_value = thermodynamic_temperature_measure thermodynamic_temperature_measure) (measure_value = luminous_intensity_measure luminous_intensity_measure) (measure_value = solid_angle_measure solid_angle_measure) (measure_value = volume_measure volume_measure) (measure_value = numeric_measure numeric_measure) (measure_value = context_dependent_measure context_dependent_measure) (measure_value = positive_length_measure positive_length_measure) (measure_value = positive_ratio_measure positive_ratio_measure)}}}</pre>
limit_qualifier	type_qualifier.name	45		<pre>qualified_representation_item value_qualifier = type_qualifier type_qualifier {#3: (type_qualifier.name = 'maximum')} {#4: (type_qualifier.name = 'minimum')}}}</pre>
VALUERANGE #1: If no significant digits are given for the value_with_unit. #2: If significant digits are given for the value_with_unit. #3: If the unit is not assigned globally. #4: If the unit is assigned globally.	#1: (value_range) #2: ([value_range] [qualified_representation_item])	212 212 45		<pre>compound_representation_item {value_range <=</pre>
lower_limit	#3: (measure_with_unit.value_component)	41		<pre>value_range <= compound_representation_item</pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
	#4: (value- representation_item. value_component)	43		<pre> compound_representation_item.item_element -> set_representation_item #3: (set_representation_item[]) -> representation_item => {representation_item.name = 'lower limit'} measure_representation_item measure_with_unit {([measure_with_unit]) (measure_with_unit => (amount_of_substance_measure_with_unit) (area_measure_with_unit) (electric_current_measure_with_unit) (length_measure_with_unit) (luminous_intensity_measure_with_unit) (mass_measure_with_unit) (plane_angle_measure_with_unit) (ratio_measure_with_unit) (solid_angle_measure_with_unit) (thermodynamic_temperature_measure_with_unit) (time_measure_with_unit) (volume_measure_with_unit))} measure_with_unit.value_component {measure_with_unit.value_component -> measure_value (measure_value = area_measure area_measure) (measure_value = amount_of_substance_measure amount_of_substance_measure) (measure_value = length_measure length_measure) (measure_value = electric_current_measure electric_current_measure) (measure_value = plane_angle_measure plane_angle_measure) (measure_value = ratio_measure ratio_measure) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> ratio_measure (measure_value = parameter_value parameter_value) (measure_value = descriptive_measure descriptive_measure) (measure_value = positive_plane_angle_measure positive_plane_angle_measure) (measure_value = count_measure count_measure) (measure_value = mass_measure mass_measure) (measure_value = time_measure time_measure) (measure_value = thermodynamic_temperature_measure thermodynamic_temperature_measure) (measure_value = luminous_intensity_measure luminous_intensity_measure) (measure_value = solid_angle_measure solid_angle_measure) (measure_value = volume_measure volume_measure) (measure_value = numeric_measure numeric_measure) (measure_value = context_dependent_measure context_dependent_measure) (measure_value = positive_length_measure positive_length_measure) (measure_value = positive_ratio_measure positive_ratio_measure)) #4: (set_representation_item[] -> representation_item => {representation_item.name = 'lower limit'} value_representation_item.value.component) value_range <= compound_representation_item </pre>
upper_limit	#3: (measure_with_- unit.value_component)	41		

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
	#4: (value- representation_item. value_component)	43		<pre> compound_representation_item.item_element -> set_representation_item #3: (set_representation_item[i] -> representation_item => {representation_item.name = 'lower limit'} measure_representation_item measure_with_unit {(measure_with_unit) (measure_with_unit => (amount_of_substance_measure_with_unit) (area_measure_with_unit) (electric_current_measure_with_unit) (length_measure_with_unit) (luminous_intensity_measure_with_unit) (mass_measure_with_unit) (plane_angle_measure_with_unit) (ratio_measure_with_unit) (solid_angle_measure_with_unit) (thermodynamic_temperature_measure_with_unit) (time_measure_with_unit) (volume_measure_with_unit))} measure_with_unit.value_component {measure_with_unit.value_component -> measure_value = area_measure area_measure) (measure_value = amount_of_substance_measure amount_of_substance_measure) (measure_value = length_measure length_measure) (measure_value = electric_current_measure electric_current_measure) (measure_value = plane_angle_measure plane_angle_measure) (measure_value = ratio_measure ratio_measure) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> ratio_measure (measure_value = parameter_value parameter_value) (measure_value = descriptive_measure descriptive_measure) (measure_value = positive_plane_angle_measure positive_plane_angle_measure) (measure_value = count_measure count_measure) (measure_value = mass_measure mass_measure) (measure_value = time_measure time_measure) (measure_value = thermodynamic_temperature_measure thermodynamic_temperature_measure) (measure_value = luminous_intensity_measure luminous_intensity_measure) (measure_value = solid_angle_measure solid_angle_measure) (measure_value = volume_measure volume_measure) (measure_value = numeric_measure numeric_measure) (measure_value = context_dependent_measure context_dependent_measure) (measure_value = positive_length_measure positive_length_measure) (measure_value = positive_ratio_measure positive_ratio_measure)) #4: (set_representation_item[i] -> representation_item => value_representation_item value_representation_item.value_component) </pre>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>VALUE_WITH_UNIT</p> <p>#1: If the value_with_-unit is a numerical_value or a value_limit, and the unit is not assigned globally.</p> <p>#2: If the value_with_-unit is a value_range.</p> <p>#3: If no significant digits are given for the value_with_unit.</p> <p>#4: If significant digits are given for the value_with_unit.</p> <p>#5: If the value_with_-unit is a numerical_value or a value_limit, and the unit is assigned globally.</p> <p>#6: If the unit has a commonly used descriptor.</p> <p>#7: If the unit descriptor is constructed of more than one unit name.</p> <p>#8: If the unit is defined with respect to the system of units defined in ISO 10403-41.</p> <p>#9: If the unit is defined with respect to another named_unit by means of a conversion factor.</p> <p>#10: If the unit is dependent on the context of its usage.</p>	<p>#1: (#3: (measure_-representation_item) #4: ([measure_-representation_item] [qualified_-representation_item]))</p> <p>#2: (#3: (value_-range) #4: ([value_range] [qualified_-representation_item]))</p> <p>#5: (#3: (value_-representation_item) #4: ([value_-representation_item] [qualified_-representation_item]))</p>	<p>45</p> <p>45</p> <p>45</p> <p>212</p> <p>212</p> <p>45</p> <p>43</p> <p>43</p> <p>45</p>		<p>#2: ({value_range <= compound_representation_item})</p>

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>#11: In order to express a distance. #12: In order to express an amount of matter. #13: In order to express the duration of periods. #14: In order to express the movement of electrically charged particles. #15: In order to express the degree of heat of a body. #16: In order to express a quantity of substance in numbers of atoms. #17: In order to express the brightness of a body. #18: In order to express angles in planes. #19: In order to express solid angles. #20: In order to express the extent of a surface. #21: In order to express the solid content of a body. #22: In order to express the ratio between two quantities of the same kind. #23: If the named unit is represented by an explicit expression. #24: If the context dependent unit is</p>				

Table 22 – Mapping table properties UoF (PR1) (continued)

Application element	AIM element	Source	Rules	Reference path
represented by an explicit expression. #25: If the derived unit is represented by an explicit expression.				
significant_ - digits	precision_qualifier. precision_value	45	38	qualified_representation_item qualified_representation_item.qualifiers[i] -> value_qualifier value_qualifier = precision_qualifier precision_qualifier precision_qualifier.precision_value #1: (measure_representation_item <= measure_with_unit.unit_component -> unit) #2: (compound_representation_item compound_representation_item.item_element -> compound_item_definition compound_item_definition = set_representation_item set_representation_item set_representation_item[i] -> representation_item ==> representation_item ==> measure_representation_item <= measure_with_unit measure_with_unit.unit_component -> unit) #5: (value_representation_item <= representation_item <- representation_items[i] representation representation.context_of_items[i] -> representation_context ==> global_unit_assigned_context global_unit_assigned_context.units[i] -> unit)
unit_component	#6: (named_unit) #7: (derived_unit)	41 41		

Table 22 – Mapping table properties UoF (PR1) (concluded)

Application element	AIM element	Source	Rules	Reference path
				<pre> {#6: (unit = named_unit named_unit) #23: (unit = named_unit named_unit => named_unit_variable <= variable_semantics) #24: (unit = named_unit named_unit => context_dependent_unit => expression_conversion_based_unit <= variable_semantics) {named_unit => <#8: (si_unit) #9: (conversion_based_unit) #10: (context_dependent_unit) <#11: (length_unit) #12: (mass_unit) #13: (time_unit) #14: (electric_current_unit) #15: (thermodynamic_temperature_unit) #16: (amount_of_substance_unit) #17: (luminous_intensity_unit) #18: (plane_angle_unit) #19: (solid_angle_unit) #20: (area_unit) #21: (volume_unit) #22: (ratio_unit) >} #7: (unit = derived_unit derived_unit) #25: (unit = derived_unit derived_unit => derived_unit_variable <= variable_semantics)}} </pre>

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NOTE - The following note numbers correspond to the footnotemarks listed in the table above:

- 1 The use of this alternative is not applicable.
- 2 The use of this alternative is not applicable.
- 3 The use of this alternative is not applicable.
- 4 The use of this mapping alternative is not applicable.

Table 23 – Mapping table remark UoF (R1)

Application element	AIM element	Source	Rules	Reference path
<p>GENERIC_NOTE</p> <p>#1: If the generic_note is not a multi_language_note or a note with kind 'primary language dependent string' or 'additional language dependent string'.</p> <p>#2: If the generic_note is a note with kind 'primary language dependent string' or a multi_language_note referencing a note with kind 'additional language dependent string'.</p> <p>#3: If the generic_note is a note with kind 'additional language dependent string'.</p> <p>#4: If the generic_note is a multi_language_note referencing a note with kind 'additional language dependent string'.</p>	<p>#1: (note_representation)</p> <p>#2: (attribute_language_assignment)</p> <p>#3: (multi_language_attribute_assignment)</p> <p>#4: ([attribute_language_assignment]</p> <p>[multi_language_attribute_assignment])</p>	<p>212</p> <p>212</p> <p>212</p> <p>212</p> <p>212</p>	<p>76</p>	<pre> #1: (note_representation) #2: (attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'primary'}) #3: (multi_language_attribute_assignment <= attribute_value_assignment {attribute_value_assignment.role -> attribute_value_role attribute_value_role.name = 'alternate language'}) attribute_language_item = attribute_value_assignment attribute_language_item <- attribute_language_assignment.items[] attribute_language_assignment <= attribute_classification_assignment {[attribute_classification_assignment.role -> classification_role classification_role.name = 'translated']} [attribute_classification_assignment.attribute_name = 'attribute_value']) #4: ([attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'primary'}) [multi_language_attribute_assignment <= attribute_value_assignment {attribute_value_assignment.role -> attribute_value_role attribute_value_role.name = 'alternate language'} attribute_language_item = attribute_value_assignment attribute_language_item <- attribute_language_assignment.items[] attribute_language_assignment <= attribute_classification_assignment </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
description	#1: (description.- attribute.attribute.- value) #3: (see NOTE 1) #4: (see NOTE 1) #5: (see NOTE 1)	41		{[attribute_classification_assignment_role -> classification_role.name = 'translated'] [attribute_classification_assignment_attribute_name = 'attribute_value']}] #1: (note_representation <= representation description_attribute_select = representation description_attribute_select <- description_attribute_described_item description_attribute description_attribute_attribute_value) #2: (1) #3: (2) #4: (3)
id	#1: (representation. name) #3: (see NOTE 1) #4: (see NOTE 1) #5: (see NOTE 1)	43		#1: (note_representation <= representation representation.name) #2: (4) #3: (5) #4: (6)
version_id	#1: (identification.- assignment_assigned.- id) #3: (see NOTE 1) #4: (see NOTE 1) #5: (see NOTE 1)	41	25,53	#1: (note_representation <= representation identification_item = representation identification_item <- applied_identification_assignment_items[1] applied_identification_assignment <= identification_assignment {identification_assignment_role -> identification_role identification_role.name = 'version'} identification_assignment_assigned_id) #2: (7) #3: (8) #4: (9)
LANGUAGE	language	212		language <= group

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
country_code	group.description	41		language <= group
language_code	group.name	41		group.description language <= group
LINEAR_PATTERN- LOCATION	representation	43	72	group.name
				{ representation [representation.name = 'linear pattern location'] [representation.context_of_items -> representation.context => geometric_representation.context geometric_representation.context.coordinate_space_dimension = 3] [representation <- property_definition.used_representation property_definition.used_representation property_definition.representation property_definition.representation.definition -> represented_definition represented_definition = property_definition property_definition characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => equipment_marking]] representation representation.items[] -> representation_item => {representation_item.name = 'pattern location distance'} measure_representation_item <= length_measure_with_unit representation representation.items[] -> representation_item => {representation_item.name = 'pattern start location'}}
distance	length_measure_with_ unit	41		
orientation	axis2_placement_3d.ref_ direction	42		

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
linear_pattern_location to cartesian_point (as start_location)	PATH			geometric_representation_item => placement => axis2_placement_3d axis2_placement_3d.ref_direction representation representation.items[] -> representation_item => {representation_item.name = 'pattern start location'} geometric_representation_item => placement {placement => axis2_placement_3d} placement.location -> cartesian_point
MARKING #1: If the annotation element is an annotation_curve. #2: If the annotation element is a fill_area. #3: If the annotation element is an annotation_subfigure. #4: If the annotation element is an annotation_symbol. #5: If the annotation element is a text. #6: If single_device is used in the context of UoF CFI. #7: If single_device is not used in the context of UoF CFI.	equipment_marking	212	105	equipment_marking <= shape_aspect

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
character_string	shape_aspect.name	41		equipment_marking <= shape_aspect shape_aspect.name
marking to annotation_-element (as figure)	PATH			equipment_marking <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'information content'} represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation -> representation {representation.context_of_items -> representation.context => geometric_representation.context} representation.items[] -> representation.item => styled_item => annotation_occurrence => #1: (annotation_curve_occurrence) #2: (annotation_fill_area_occurrence) #3: (annotation_subfigure_occurrence) #4: (annotation_symbol_occurrence) #5: (annotation_text_occurrence)
marking to single_device (as marked_-device)	PATH			equipment_marking <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition. property_definition.definition ->

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
marking to classification-system (as marking-system)	PATH		15	<pre> characterized_definition = characterized_product_definition characterized_product_definition #6: (characterized_product_definition = product_definition product_definition) product_definition_relationship => product_definition_usage => assembly_component_usage) equipment_marking classification_item = equipment_marking classification_item <- applied_classification_assignment.items[i] applied_classification_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'class system membership'} classification_assignment.assigned_classification -> group => class_system equipment_marking <= shape_aspect shape_definition = shape_aspect characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'information content'} represented_definition = property_definition represented_definition <- property_definition.definition property_definition.representation property_definition.representation {name_attribute_select = property_definition.representation name_attribute_select <- </pre>
marking to data-element (as meaning)	PATH		68,70	

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
marking to generic.note (as meaning)	PATH		68,70	<pre> name_attribute.named_item name_attribute name_attribute.value = 'information content' property_definition.representation.used_representation -> representation equipment_marking <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition {property_definition.name = 'information content' represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation {name_attribute.select = property_definition.representation name_attribute.select <- name_attribute.named_item name_attribute name_attribute.value = 'information content' property_definition.representation.used_representation -> representation => note_representation equipment_marking <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- </pre>
marking to cartesian.point (as position)	PATH		72	<pre> equipment_marking <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
marking to linear-pattern-location (as position)	PATH		72	<pre> property_definition.representation.definition property_definition.representation property_definition.used_representation -> representation {[representation.name = 'marking location'] [representation.context_of_items -> representation.context => geometric_representation.context representation.context.coordinate_space_dimension = 3]} representation.items[] -> representation_item => geometric_representation_item => placement {placement => axis2_placement_3d} placement.location -> cartesian_point equipment_marking <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation property_definition.used_representation -> representation </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
MULTLANGUAGES; NOTE #1: If the multi_language-- note does not reference a note with kind 'additional language dependent string'. #2: If the multi_language-- note references a note with kind 'additional language dependent string'.	#1: (attribute-- language_assignment) #2: ((attribute-- language_assignment-- [multi_language-- attribute_assignment])	212 212 212	76	#1: (attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'primary'}) #2: ({attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'primary'}} [multi_language_attribute_assignment <= attribute_value_assignment {attribute_value_assignment.role -> attribute_value_role attribute_value_role.name = 'alternate language'} attribute_language_item = attribute_value_assignment attribute_language_item <- attribute_language_assignment.items[i] attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'translated'} [attribute_classification_assignment.attribute_name = 'attribute_value']])

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
NOTE #1: If the note is not referenced by a multi-language_note. #2: If the note is referenced by a multi-language_note. #3: If note.kind is 'primary language dependent string'. #4: If note.kind is 'additional language dependent string'.	#1: (note.-representation) #2: (#3: (attribute.-language.-assignment) #4: (multi_language.-attribute.-assignment))	212 212 212	76	#1: (note.-representation <= representation) #2: (#3: (attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'primary'}) #4: (multi_language_attribute_assignment <= attribute_value_assignment {attribute_value_assignment.attribute_value_role -> attribute_value_role attribute_value_role.name = 'alternate language'}) attribute_language_item = attribute_value_assignment attribute_language_item <- attribute_language_assignment.items[] attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'translated'} [attribute_classification_assignment.attribute_name = 'attribute_value']})
kind	#1: (representation.-item.name) #2: (IDENTICAL MAPPING)	43		#1: (note.-representation <= representation representation.items[] -> representation_item {representation_item => descriptive_representation_item} representation_item.name {(representation_item.name (representation_item.name = 'assembly instruction') (representation_item.name = 'explanatory note') (representation_item.name = 'installation instruction') (representation_item.name = 'manufacturing instruction') (representation_item.name = 'operating instruction'))})
text_of_note	#1: (descriptive.-representation_item.	45	74	#1: (note.-representation <= representation

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
	description) #2: (#3: (IDENTICAL MAPPING) #4: (attribute_value_- assignment_attribute_- value))	41		representation.items[] -> representation_item => descriptive_representation_item descriptive_representation_item.description) #4: (multi_language_attribute_assignment <= attribute_value_assignment attribute_value_assignment.attribute_value) #1: (note_representation <= representation representation.items[] -> representation_item => descriptive_representation_item language_item = descriptive_representation_item language_assignment <- language_assignment.items[] language_assignment <= classification_assignment {classification_assignment.role -> classification_role classification_role.name = 'language'} classification_assignment.assigned_classification -> group => language) #2: (#3: (attribute_language_assignment <= attribute_classification_assignment attribute_classification_assignment.assigned_class -> group => language) #4: (multi_language_attribute_assignment <= attribute_value_assignment attribute_language_item <- attribute_language_assignment.items[] attribute_language_assignment <= attribute_classification_assignment attribute_classification_assignment.assigned_class ->
note to language (as language_- specification)	#1: (PATH) #2: (PATH)			

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	ATM element	Source	Rules	Reference path
				group => language))

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
NOTE ASSOCIATION #1: If generic_note is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order. #2: If generic_note is associated to activity or work_order. #3: If generic_note is associated to cable_pull_information, drawing_sheet, generic_note, path, or path_node. #4: If generic_note is not associated to cable_pull_information, drawing_sheet, generic_note, path, or path_node. #5: If product_class is used without UoF CFI. #6: If product_class is used with UoF CFI. #7: If device is used in the context of UoF CFI. #8: If device is not used in the context of UoF CFI. #9: If function_unit is not used in the context of UoF CFI. #10: If function_unit is used in the context of UoF CFI. #11: If the document_representation is not a	#20: (#1: (property_definition) #2: (action_property) #3: (representation_relationship) #19: (property_definition_representation)) #21: (#22: (attribute_language_assignment) #23: ([attribute_language_assignment] [multi_language_attribute_assignment] attribute_assignment)) #21: (#22: (attribute_language_assignment) #23: ([attribute_language_assignment] [multi_language_attribute_assignment] attribute_assignment))	41 49 43 41 212 212 212		#21: (#22: (attribute_language_assignment <= attribute_classification_assignment classification_role -> {attribute_classification_assignment_role -> classification_role_name = 'primary'}) #23: ([attribute_language_assignment <= attribute_classification_assignment_role -> classification_role_name = 'primary'}) [multi_language_attribute_assignment <= attribute_value_assignment {attribute_value_assignment_role -> attribute_value_role attribute_value_name = 'alternate language'} attribute_language_item = attribute_value_assignment attribute_language_item <- attribute_language_assignment.items[] attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment_role -> classification_role_name = 'translated'} classification_role_name = 'attribute_value']]])

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>physical_model. #12: If the document_ representation is a physical_model. #13: If product_class is used with UoF EF1. #14: If product_class is used with UoF CF1. #15: If product_ identification is used with UoF EF1. #16: If product_ identification is used with UoF CF1. #17: If device_ relationship is not of type 'substitution'. #18: If device_ relationship is of type 'substitution'. #19: If generic_note is associated to general_ property. #20: If note_association. role is 'whole item'. #21: If note_association. role is 'attribute only'. #22: If the multi_ language_note does not reference a note with kind 'additional language dependent string'. #23: If the multi_ language_note references a note with kind 'additional language dependent string'.</p>				

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
applied-attribute_name	<p>#20: (NOTE 1) #21: (#22: (attribute_- classification_- assignment-attribute_- name) #23: ([attribute_- classification_- assignment-attribute_- name] [attribute_value_- assignment-attribute_- name]))</p> <p>IDENTICAL MAPPING</p>	41 41 41		<p>#20: (¹⁰) #21: (43 (attribute_language_assignment <= attribute_classification_assignment attribute_classification_assignment.attribute_name) #23: ([attribute_language_assignment <= attribute_classification_assignment attribute_classification_assignment.attribute_name] [multi_language_attribute_assignment <= attribute_value_assignment attribute_value_assignment.attribute_name]))</p>
role note-association to generic.note (as assigned- note)	<p>#20: (PATH) #21: (IDENTICAL MAPPING)</p>			<p>#20: (#1: (property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation property_definition_representation.used_representation ->) #19: (property_definition_representation property_definition_representation.used_representation ->) #2: (action_property <- action_property_representation.property action_property_representation action_property_representation_representation ->) #3: (representation_relationship representation_relationship.rep_1 ->) representation => note_representation)</p>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to activity (as associated_ item)	PATH			<pre> #20: (action_property action_property.definition -> characterized_action_definition characterized_action_definition = action) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = action) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = action] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = action])) action </pre>
note_association to assembly_ component_ relationship (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = action])) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note.association to cable_pull_ information (as associated_ item)	PATH			<pre> multi_language_attribute_item = product_definition_relationship))) product_definition_relationship => product_definition_usage => assembly_component_usage #20: (representation_relationship representation_relationship.rep-2 ->) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = representation) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = representation] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = representation])) representation #20: ()) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept_feature_category_usage) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept_feature_category_usage] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_concept_feature_category_usage])) </pre>
note.association to class_ category_ association (as associated_ item)	PATH			

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to class_- condition_- association (as associated_- item)	PATH			#20: (¹²) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept_feature_association) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept_feature_association] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_concept_feature_association]) #20: (¹³)
note_association to class_- inclusion_- association (as associated_- item)	PATH			#21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept_feature_association) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept_feature_association] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_concept_feature_association]) #20: (¹³)

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to class_-, specification_-, association (as associated_-, item)	PATH			#20: (¹⁴) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item attribute_language_item = product_concept_feature_association] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item product_concept_feature_association])
note_association to classification_-, attribute (as associated_-, item)	PATH			#20: (¹⁵) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = property_definition] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item property_definition])

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note-association to classification- system (as associated- item)	PATH			<pre> #20: (#21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = class_system) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = class_system] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = class_system] class_system) </pre>
note-association to complex- product (as associated- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formation -> #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_formation]) product_definition_formation) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to complex_ product_ relationship (as associated_ item)	PATH			<pre> #20: (#21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #23: ([attribute_language_formation_relationship] attribute_language_assignment.items[] -> attribute_language_item #24: (attribute_language_item = product_definition_formation_relationship [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item product_definition_formation_relationship]) #25: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship) #26: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #27: ([attribute_language_formation_relationship] attribute_language_item = product_definition_formation_relationship [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item product_definition_formation_relationship]) #28: (attribute_language_item = product_definition_usage => product_definition_usage =>))) </pre>
note_association to composition_ relationship (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship) #21: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #22: ([attribute_language_formation_relationship] attribute_language_item = product_definition_formation_relationship [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item product_definition_formation_relationship]) #23: (attribute_language_item = product_definition_usage => product_definition_usage =>) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to configuration (as associated_ item)	PATH			assembly_component_usage #20: (18) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = configured_effectivity_assignment) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = configured_effectivity_assignment] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = configured_effectivity_assignment]) configured_effectivity_assignment) #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) shape_aspect_relationship
note_association to connectivity_ allocation (as associated_ item)	PATH			

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to connectivity_- definition (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition shape_definition shape_definition = shape_aspect shape_aspect => product_definition_shape <=) #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = connectivity_definition) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = connectivity_definition] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = connectivity_definition]) </pre>
note_association to connectivity_- definition_- relationship (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition shape_definition shape_definition = shape_aspect_relationship) #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = shape_aspect_relationship] </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to contract (as associated_- item)	PATH			<pre>[multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship shape_aspect_relationship #20: (19) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = contract) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = contract) [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = contract]) contract) #20: (representation_relationship representation_relationship.rep_2 ->) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = representation) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = representation) [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = representation])])</pre>
note_association to data_element (as associated_- item)	PATH			

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to data_element_- association (as associated_ item)	PATH			representation #20: (²⁰) #21: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #77: (attribute_language_item = property_definition property_definition) #78: (attribute_language_item = action_property action_property) #79: (attribute_language_item = representation_relationship representation_relationship)) #45: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #77: (attribute_language_item = property_definition property_definition) #78: (attribute_language_item = action_property action_property) #79: (attribute_language_item = representation_relationship representation_relationship)]) [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item #77: (attribute_language_item = property_definition property_definition) #78: (attribute_language_item = action_property action_property) #79: (attribute_language_item = representation_relationship representation_relationship)])
note_association to data_element_- definition (as associated_ item)	PATH			#20: (property_definition_representation property_definition_representation.definition -> represented_definition represented_definition = general_property) #21: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item)

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to data_element_- specification (as associated_- item)	PATH			<pre> attribute_language_item = general_property #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = general_property] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = general_property])) </pre>
note_association to design_- discipline_item_- definition (as associated_- item)	PATH			<pre> #20: (representation_relationship representation_relationship.rep.2 ->) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = representation) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = representation] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = representation])) </pre>
				<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to device (as associated- item)	PATH			<pre> attribute_language_item = product_definition #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition]) #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #7: (characterized_product_definition = product_definition product_definition) #8: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)) #21: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #7: (attribute_language_item = product_definition product_definition) #8: (attribute_language_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)) #45: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #7: (attribute_language_item = product_definition product_definition) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note.association to device.- relationship (as associated- item)	PATH			<pre> #8: (attribute_language_item = product_definition_relationship product_definition_usage => assembly_component_usage)) [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition product_definition #7: (multi_language_attribute_item = product_definition product_definition #8: (multi_language_attribute_item = product_definition_relationship product_definition_usage => assembly_component_usage)) #20: (#7: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship product_definition_relationship #8: (see NOTE 121)) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship product_definition_relationship #17: (attribute_language_item = product_definition_relationship product_definition_relationship) #18: (attribute_language_item = product_definition_substitute)) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship product_definition_relationship) #17: (attribute_language_item = product_definition_relationship product_definition_relationship) #18: (attribute_language_item = product_definition_substitute)] [multi_language_attribute_assignment multi_language_attribute_assignment </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to document (as associated_ item)	PATH			<pre> multi_language_attribute_assignment.items[i] -> multi_language_attribute_item #17: (multi_language_attribute_item = product_definition_relationship product_definition_relationship) #18: (multi_language_attribute_item = product_definition_substitute))) property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition_formation -> product_definition_formation product_definition_formation_of_product -> #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product])) product #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> </pre>
note_association to document_file (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to document_ version (as associated_ item)	PATH			<pre> attribute_language_item = document_file) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = document_file] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = document_file])) document_file #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formation ->) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_formation])) product_definition_formation </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to drawing_sheet (as associated_ item)	PATH			<pre> #20: (representation_relationship representation_relationship.rep_2 -> representation => presentation_representation => presentation_area =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = drawing_sheet_revision) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = drawing_sheet_revision] [multi_language_attribute_assignment multi_language_attribute_assignment.items[j] -> multi_language_attribute_item multi_language_attribute_item = drawing_sheet_revision])) drawing_sheet_revision </pre>
note_association to drawing_view (as associated_ item)	PATH			<pre> #20: (representation_relationship representation_relationship.rep_2 -> representation => presentation_representation =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = presentation_view) action #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = presentation_view] [multi_language_attribute_assignment multi_language_attribute_assignment.items[j] -> multi_language_attribute_item multi_language_attribute_item = presentation_view] multi_language_attribute_item </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to free_segment (as associated_ item)	PATH			<pre> multi_language_attribute_item = presentation_view(presentation_view #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_segment =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = free_segment) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = free_segment] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = free_segment])) </pre>
note_association to function_ definition (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = product_definition characterized_product_definition characterized_product_definition = product_definition) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = free_segment])) </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to function_ definition_ relationship (as associated_ item)	PATH			<pre> attribute_language_item = product_definition [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition]] product_definition #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_relationship])) </pre>
note_association to function_ interface (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect shape_definition = shape_aspect #21: (#22: (attribute_language_assignment </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to function_unit (as associated_ item)	PATH			<pre> attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = interface #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = interface] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = interface]) </pre>
				<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #9: (characterized_product_definition = product_definition product_definition) #10: (characterized_product_definition = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item #9: (attribute_language_item = product_definition product_definition) #10: (attribute_language_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre>#9: (attribute_language_item = product_definition product_definition) #10: (attribute_language_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_assignment.items[i] -> multi_language_attribute_item #9: (multi_language_attribute_item = product_definition product_definition) #10: (multi_language_attribute_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage)) #20: (property_definition property_definition.definition -> characterized_definition characterized_product_definition characterized_product_definition characterized_product_definition) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item product_definition_relationship]))</pre>
note_association to function_unit_ relationship (as associated_ item)	PATH			

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to function_- version (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_product_definition characterized_product_definition product_definition product_definition.formation ->) #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition.formation) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition.formation] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product_definition.formation]) product_definition.formation </pre>
note_association to functional_- connectivity_- definition (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect shape_aspect =>) #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = connectivity_definition) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to functional_ connectivity_ definition_ relationship (as associated_ item)	PATH			<pre> attribute_language_item = connectivity_definition [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = connectivity_definition connectivity_definition #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship]) multi_language_attribute_item = shape_aspect_relationship </pre>
note_association to functional_ unit_allocation (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to functionality (as associated_ item)	PATH			<pre> attribute_language_item = product_definition_relationship #23: ([attribute_language_assignment attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product_definition_relationship]) product_definition_relationship #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition_formation -> product_definition_formation product_definition_formation_of_product ->) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product])) product </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to interface (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = interface) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = interface] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = interface])) </pre>
note_association to interface_ port (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = terminal) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = terminal]) </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to interface_- terminal (as associated_- item)	PATH			<pre> [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = terminal]) terminal #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = terminal) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = terminal] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = terminal])) terminal </pre>
note_association to item (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formation -> product_definition_formation </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to item_- definition_- relationship (as associated_- item)	PATH			<pre> product_definition_formation_of_product -> #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product])) product #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition.relationship) #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product_definition_relationship])) product_definition_relationship </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to item_version (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_product_definition characterized_product_definition product_definition product_definition.formation ->) #21: ([attribute_language_assignment attribute_language_items[i] -> attribute_language_item attribute_language_item = product_definition.formation) #23: ([attribute_language_assignment attribute_language_items[i] -> attribute_language_item attribute_language_item = product_definition.formation] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product_definition.formation]) product_definition.formation </pre>
note_association to location (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect shape_aspect =>) #21: ([attribute_language_assignment attribute_language_items[i] -> attribute_language_item attribute_language_item = action) #23: ([attribute_language_assignment attribute_language_items[i] -> attribute_language_item attribute_language_item = action) </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to location_ relationship (as associated_ item)	PATH			<pre> attribute_language_item = installation_location [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = installation_location]]) installation_location #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) </pre>
note_association to marking (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to material (as associated_ item)	PATH			attribute_language_item = equipment_marking #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = equipment_marking [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = equipment_marking]) equipment_marking #20: (22)
note_association to node (as associated_ item)	PATH			#21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = descriptive_representation_item) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = descriptive_representation_item] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = descriptive_representation_item]) descriptive_representation_item #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] ->

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to node_- relationship (as associated_- item)	PATH			<pre> attribute_language_item = installation_node #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = installation_node] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = installation_node])) installation_node #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = shape_aspect_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) shape_aspect_relationship </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to notification (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = notification) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = notification] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = notification])) </pre>
note_association to offered_- function_- allocation (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition_relationship) #21: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = notification])) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to path (as associated_ item)	PATH			<pre> multi_language_attribute_item product_definition_relationship #20: (representation_relationship representation representation_items[] -> representation_item => topological_representation_item =>) #21: (#22: (attribute_language_assignment attribute_language_assignment_items[] -> attribute_language_item attribute_language_item = path) #23: ([attribute_language_assignment attribute_language_assignment_items[] -> attribute_language_item attribute_language_item = path] [multi_language_attribute_assignment multi_language_attribute_assignment_items[] -> multi_language_attribute_item multi_language_attribute_item = path])) </pre>
note_association to path_node (as associated_ item)	PATH			<pre> #20: (representation_relationship representation_relationship_rep_2 -> representation representation_items[] -> representation_item => topological_representation_item =>) #21: (#22: (attribute_language_assignment attribute_language_assignment_items[] -> attribute_language_item attribute_language_item = vertex) #23: ([attribute_language_assignment attribute_language_assignment_items[] -> attribute_language_item attribute_language_item = path])) </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to physical_ assembly_ relationship (as associated_ item)	PATH			<pre> attribute_language_item = vertex [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = vertex]]) vertex #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_relationship])) product_definition_relationship => product_definition_usage => assembly_component_usage #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition) #21: (#22: (attribute_language_assignment </pre>
note_association to physical_ instance (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition) #21: (#22: (attribute_language_assignment </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to port (as associated_ item)	PATH			<pre> attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition]) product_definition #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = terminal) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = terminal] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = terminal])) terminal </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to port_- allocation (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) </pre>
note_association to preferred_- item_allocation (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_relationship])) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to preferred_ item_terminal_ allocation (as associated_ item)	PATH			<pre> multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = product_definition_relationship)) product_definition_relationship #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item [attribute_language_item = shape_aspect_relationship] multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship)) shape_aspect_relationship #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = process_variable) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item </pre>
note_association to process_ variable (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = process_variable) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to product_class (as associated_ item)	PATH			<pre> attribute_language_item = process_variable [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = process_variable]] process_variable #20: (#13: (see NOTE 1²³) #14: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => product_class)) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_concept] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_concept]) #13: (product_concept) #14: (product_concept => product_class)) #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => #21: (attribute_language_assignment </pre>
note_association to product_ specification (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object => #21: (attribute_language_assignment </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to product_- structure_- relationship (as associated_- item)	PATH			<pre> attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_specification #23: ([attribute_language_assignment attribute_language_item attribute_language_item = product_specification] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_specification]) product_specification #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition characterized_product_definition = product_definition_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_relationship]) product_definition_usage product_definition_usage => product_definition_usage </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to requirement (as associated- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition]) </pre>
note_association to route (as associated- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = installation_route) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = installation_route] [multi_language_attribute_assignment </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to route_ relationship (as associated_ item)	PATH			<pre> multi_language_attribute_assignment multi_language_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = installation_route))) installation_route #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) </pre>
note_association to routed_ segment (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_segment =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to section (as associated_ item)	PATH			<pre> attribute_language_item = routed_segment #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = routed_segment] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = routed_segment])) routed_segment #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => #21: (#22: (attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = installation_section) #23: ([attribute_language_assignment attribute_language_assignment.items[i] -> attribute_language_item attribute_language_item = installation_section] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = installation_section])) installation_section </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to section_end (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = installation_section_end) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = installation_section_end] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = installation_section_end])) </pre>
note_association to section_ interface (as associated_ item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = installation_section_interface) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = installation_section_interface] </pre>

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to section_- interface_- relationship (as associated_- item)	PATH			[multi_language_attribute_assignment multi_language_attribute_assignment multi_language_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = installation_section_interface)) installation_section_interface #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) multi_language_attribute_item = shape_aspect_relationship shape_aspect_relationship #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) multi_language_attribute_item = shape_aspect_relationship shape_aspect_relationship #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect_relationship) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship)) attribute_language_item = shape_aspect_relationship
note_association to section_- relationship (as associated_- item)	PATH			

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre>#23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = shape_aspect_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = shape_aspect_relationship])) shape_aspect_relationship #20: (property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_object characterized_object ==>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = signal) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = signal] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = signal])) signal #20: (representation_relationship representation_relationship.rep_2 ->) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = representation) #23: ([attribute_language_assignment</pre>
note_association to signal (as associated- item)	PATH			
note_association to signal_value (as associated- item)	PATH			

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to specification_ expression (as associated_ item)	PATH			<pre> attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = representation [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = representation]]) </pre>
note_association to specification_ inclusion (as associated_ item)	PATH			<pre> #20: (²⁴⁾ #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = conditional_concept_feature) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = conditional_concept_feature] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = conditional_concept_feature] conditional_concept_feature) #20: (²⁵⁾ #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = inclusion_product_concept_feature) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = inclusion_product_concept_feature] [multi_language_attribute_assignment multi_language_attribute_assignment.items[i] -> multi_language_attribute_item multi_language_attribute_item = inclusion_product_concept_feature] inclusion_product_concept_feature) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to technical_ system_ (as associated_ item)	PATH			multi_language_attribute_item = inclusion_product_concept_feature)) inclusion_product_concept_feature) #20: (²⁶⁾ #21: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_formation]) multi_language_attribute_item = product_definition_formation)
note_association to technical_ system_ relationship (as associated_ item)	PATH			#20: (²⁷⁾ #21: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation_relationship) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = product_definition_formation_relationship] [multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = product_definition_formation_relationship]) multi_language_attribute_item = product_definition_formation_relationship)

Table 23 – Mapping table remark UoF (R.1) (continued)

Application element	AIM element	Source	Rules	Reference path
note_association to terminal (as associated_- item)	PATH			<pre> #20: (property_definition property_definition.definition -> characterized_definition shape_definition shape_definition = shape_aspect shape_aspect =>) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = terminal) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = terminal] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item multi_language_attribute_item = terminal])) </pre>
note_association to work_order (as associated_- item)	PATH			<pre> #20: (action_property action_property.definition -> characterized_action_definition characterized_action_definition = action_directive) #21: (#22: (attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = action_directive) #23: ([attribute_language_assignment attribute_language_assignment.items[] -> attribute_language_item attribute_language_item = action_directive] [multi_language_attribute_assignment multi_language_attribute_assignment multi_language_attribute_assignment.items[] -> multi_language_attribute_item]) </pre>

Table 23 – Mapping table remark UoF (R1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>SET_OF_NOTES</p> <p>#1: If the set_of_notes is not a multi_language_note.</p> <p>#2: If the set_of_notes is a multi_language_note not referencing a note with kind 'additional language dependent string'.</p> <p>#3: If the set_of_notes is a multi_language_note referencing a note with kind 'additional language dependent string'.</p>	<p>#1: (note_representation)</p> <p>#2: (attribute_language_assignment)</p> <p>#3: ([attribute_language_assignment] [multi_language_attribute_assignment])</p>	<p>212</p> <p>212</p> <p>212</p> <p>212</p>	<p>76</p>	<pre> multi_language_attribute_item action_directive #1: (note_representation <= representation) #2: (attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'primary'}) #3: ([attribute_language_assignment <= attribute_classification_assignment {attribute_classification_assignment.role -> classification_role classification_role.name = 'primary'})] [multi_language_attribute_assignment <= attribute_value_assignment {attribute_value_assignment.role -> attribute_value_role attribute_value_role.name = 'alternate language'} attribute_language_item = attribute_value_assignment attribute_language_item <- attribute_language_items[] attribute_language_assignment <= attribute_classification_assignment {[attribute_classification_assignment.role -> classification_role classification_role.name = 'translated']} [attribute_classification_assignment.attribute_name = attribute_value]]) #1: (note_representation <= representation <- representation_relationship.rep_1 representation_relationship {representation_relationship.name = 'note representation set'} representation_relationship.rep_2 -> representation => </pre>
<p>set_of_notes to generic_note (as grouped_notes)</p>	<p>#1: (PATH)</p> <p>#2: (IDENTICAL MAPPING)</p> <p>#3: (IDENTICAL MAPPING)</p>		<p>75</p>	

Table 23 – Mapping table remark UoF (R.1) (concluded)

Application element	AIM element	Source	Rules	Reference path
				note_representation)

NOTE - The following note numbers correspond to the footnotemarks listed in the table above:

- 1 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 2 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 3 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 4 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 5 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 6 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 7 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 8 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 9 In the context of applying multi language capabilities to single attributes the ARM disallows instantiation of the attribute.
- 10 This attribute is not instantiated if role is whole item.
- 11 The association of a generic_note to this object as a whole is not allowed.
- 12 The association of a generic_note to this object as a whole is not allowed.
- 13 The association of a generic_note to this object as a whole is not allowed.
- 14 The association of a generic_note to this object as a whole is not allowed.
- 15 The association of a generic_note to this object as a whole is not allowed.
- 16 The association of a generic_note to this object as a whole is not allowed.
- 17 The association of a generic_note to this object as a whole is not allowed.
- 18 The association of a generic_note to this object as a whole is not allowed.
- 19 The association of a generic_note to this object as a whole is not allowed.
- 20 The association of a generic_note to this object as a whole is not allowed.
- 21 The use of this alternative is not applicable.

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- 22 The association of a generic_note to this object as a whole is not allowed.
- 23 The use of this alternative is not applicable.
- 24 The association of a generic_note to this object as a whole is not allowed.
- 25 The association of a generic_note to this object as a whole is not allowed.
- 26 The association of a generic_note to this object as a whole is not allowed.
- 27 The association of a generic_note to this object as a whole is not allowed.

Table 24 – Mapping table schematic_documentation UoF (SC1)

Application element	AIM element	Source	Rules	Reference path
CARTESIAN_ COORDINATE_SPACE_ WITH_GRID	geometric_ representation_context	504	34,72	{geometric_representation_context [geometric_representation_context <= representation_context_of_items representation_context_of_items representation_name = 'grid layout']}]
delta_x	length_measure_with_ unit	504	72	geometric_representation_context <= representation_context_of_items representation_name = 'grid layout'] {representation_name = 'grid layout'} representation_items[] -> representation_item => {representation_item_name = 'delta x'} measure_representation_item <= measure_with_unit => length_measure_with_unit
delta_y	length_measure_with_ unit	504	72	geometric_representation_context <= representation_context_of_items representation_name = 'grid layout'] representation_items[] -> representation_item => {representation_item_name = 'delta y'} measure_representation_item <= measure_with_unit => length_measure_with_unit
origin	axis2_placement_2d	504	72	geometric_representation_context <= representation_context_of_items representation_name = 'grid layout'] representation_items[] -> representation_item =>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				{representation.item.name = 'grid origin'} geometric_representation_item => placement => axis2_placement_2d
CONNECTING_LINE	connecting_line_group	212	51	connecting_line_group <= group
connecting_line to connectivity_- definition (as presents)	PATH		49	connecting_line_group <= group <- group_assignment.assigned_group group_assignment => connecting_line_group_assignment connecting_line_group_assignment.item -> connecting_line_item = connectivity_definition connectivity_definition
connecting_line to functional_- connectivity_- definition (as presents)	PATH		49	connecting_line_group <= group <- group_assignment.assigned_group group_assignment => connecting_line_group_assignment connecting_line_group_assignment.item -> connecting_line_item = connectivity_definition connectivity_definition
CONNECT_AREA #1: If the curve_2D is a composite curve. #2: If the curve_2D is a polyline. #3: If the curve_2D is a trimmed_curve.	representation	504	72	{representation.name = 'schematic node connect area'} [representation.context_of_items -> representation_context => geometric_representation_context geometric_representation_context.coordinate_space_dimension = 2]}
connect_area to curve_2d (as defined_by)	PATH			representation representation.items[] -> representation_item => geometric_representation_item => curve => bounded_curve =>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
connect_area to point_2d (as defined_by)	PATH			#1: (composite_curve) #2: (polyline) #3: (trimmed_curve) representation representation.items[] -> representation_item => geometric_representation_item => point => cartesian_point
CROSS_REFERENCE #1: If the cross-reference is a detached representation_reference. #2: If the cross-reference is a page_connector_reference. #3: If the cross-reference is a note-reference.	#1: (annotation_occurrence_relationship) #2: (page_connector_reference_group) #3: (representation_relationship)	46 212 43	51,75	#1: ({annotation_occurrence_relationship annotation_occurrence_relationship.name = 'detached representation reference'}) #2: (page_connector_reference_group) #3: ({representation_relationship representation_relationship.name = 'note presentation reference'})

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
DETACHED_- REPRESENTATION_- REFERENCE #1: If the annotation_- element is an annotation_- curve. #2: If the annotation_- element is a fill_area. #3: If the annotation_- element is an annotation_- subfigure. #4: If the annotation_- element is an annotation_- symbol. #5: If the annotation_- element is a text.	annotation_occurrence_- relationship	46		{annotation_occurrence_relationship annotation_occurrence_relationship.name = 'detached representation reference'}
detached_- representation_- reference to annotation_- element (as part_of)	PATH			annotation_occurrence_relationship annotation_occurrence_relationship.related_annotation_occurrence -> annotation_occurrence => #1: (annotation_curve_occurrence) #2: (annotation_fill_area_occurrence) #3: (annotation_subfigure_occurrence) #4: (annotation_symbol_occurrence) #5: (annotation_text_occurrence)
detached_- representation_- reference to annotation_- element (as refers_to)	PATH			annotation_occurrence_relationship annotation_occurrence_relationship.relation_annotation_occurrence -> annotation_occurrence => #1: (annotation_curve_occurrence) #2: (annotation_fill_area_occurrence) #3: (annotation_subfigure_occurrence) #4: (annotation_symbol_occurrence) #5: (annotation_text_occurrence)
DIRECTION_RANGE	representation	504	72	{ representation representation.name = 'direction range' }

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	ATM element	Source	Rules	Reference path
maximal_angle	plane_angle_measure_-with_unit	504		representation representation.items[] -> representation_item => {representation_item.name = 'maximum angle'} measure_representation_item <= measure_with_unit => plane_angle_measure_with_unit
minimal_angle	plane_angle_measure_-with_unit	504		representation representation.items[] -> representation_item => {representation_item.name = 'minimum angle'} measure_representation_item <= measure_with_unit => plane_angle_measure_with_unit
direction_range_to_connect_area (as associated_-connect_area)	PATH		75	representation <- representation_relationship.rep_1 representation_relationship {representation_relationship.name = 'connect area'} representation_relationship.rep_2 -> representation

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>ITEM_</p> <p>PRESENTATION</p> <p>#1: If the cross_</p> <p>reference is a detached_</p> <p>representation_</p> <p>reference.</p> <p>#2: If the cross_</p> <p>reference is a page_</p> <p>connector_</p> <p>reference.</p> <p>#3: If the cross_</p> <p>reference is a note_</p> <p>reference.</p> <p>#4: If device is not used</p> <p>in the context of UoF CF1.</p> <p>#5: If device is used in</p> <p>the context of UoF CF1.</p> <p>#6: If function_unit is</p> <p>not used in the context of</p> <p>UoF CF1.</p> <p>#7: If function_unit is</p> <p>used in the context of UoF</p> <p>CF1.</p> <p>#8: If the annotation_</p> <p>element is an annotation_</p> <p>curve.</p> <p>#9: If the annotation_</p> <p>element is a fill_area.</p> <p>#10: If the annotation_</p> <p>element is an annotation_</p> <p>subfigure.</p> <p>#11: If the annotation_</p> <p>element is an annotation_</p> <p>symbol.</p> <p>#12: If the annotation_</p> <p>element is a text.</p>	<p>presentation_with_</p> <p>association</p>	212	76	<p>presentation_with_association <=</p> <p>presentation_representation</p>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
id	representation.name	43		presentation_with_association <= presentation_representation <= representation representation.name
item_- presentation to activity (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_representation.select = presentation_representation presentation_item_representation.select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = action action
item_- presentation to activity_element (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_representation.select = presentation_representation presentation_item_representation.select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = applied_action_assignment applied_action_assignment

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to alias_- identification (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = applied_identification_assignment applied_identification_assignment
item_- presentation to classification_- association (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = applied_classification_assignment applied_classification_assignment
item_- presentation to classification_- attribute (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to classification_- system (as presented_- item)	PATH			associated_item property_definition presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = class_system class_system
item_- presentation to connecting_line (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = connecting_line_group connecting_line_group
item_- presentation to connectivity_- definition (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item ->

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to cross_reference (as presented_- item)	PATH			<pre> presented_item => presented_item_with_association presented_item_with_association.items[] -> associated_item associated_item = connectivity_definition connectivity_definition presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[] -> associated_item #1: (associated_item = annotation_occurrence_relationship annotation_occurrence_relationship {annotation_occurrence_relationship.name = 'detached representation reference'}) #2: (associated_item = page_connector_reference_group page_connector_reference_group) #3: (associated_item = representation_relationship representation_relationship {representation_relationship.name = 'note presentation reference'}) presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[] -> associated_item </pre>
item_- presentation to data_element (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[] -> associated_item </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to data_element_- definition (as presented_- item)	PATH			associated_item = representation representation presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = general_property general_property
item_- presentation to data_element_- specification (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = representation representation presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = representation representation presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation -> presented_item =>
item_- presentation to design_- discipline_item_- definition (as presented_- item)	PATH			presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation -> presented_item =>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item- presentation to device (as presented- item)	PATH			<pre> presented_item_with_association presented_item_with_association.items[i] -> associated_item product_definition product_definition presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_select <- presentation_representation.presentation presentation_representation.item -> presentation_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item #4: (associated_item = product_definition.relationship product_definition_usage => assembly_component_usage) #5: (associated_item = product_definition product_definition) </pre>
item- presentation to document (as presented- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_select <- presentation_representation.presentation presentation_representation.item -> presentation_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item product associated_item = product product </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to document_version (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = product_definition_formation product_definition_formation
item_- presentation to free_segment (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = installation_segment installation_segment => free_segment
item_- presentation to function_- definition (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to function_- interface (as presented_- item)	PATH			<pre> presented_item_with_association.items[i] -> associated_item associated_item = product_definition product_definition presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = interface interface presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = interface interface </pre>
item_- presentation to function_unit (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item #6: (associated_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #7: (associated_item = product_definition product_definition) </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to function_version (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = product_definition_formation product_definition_formation
item_- presentation to functional_- connectivity_- definition (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = connectivity_definition connectivity_definition
item_- presentation to functionality (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] ->

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to general_- classification (as presented_- item)	PATH			associated_item associated_item = product product presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = class class
item_- presentation to generic_note (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item note_representation
item_- presentation to interface (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item ->

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = interface interface </pre>
<pre> item_- presentation to interface_port (as presented_- item) </pre>				<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = terminal terminal </pre>
<pre> item_- presentation to interface_- terminal (as presented_- item) </pre>				<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = terminal terminal </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to item (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = product product
item_- presentation to item_- identification (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = applied_identification_assignment applied_identification_assignment
item_- presentation to item_version (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] ->

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to location (as presented_- item)	PATH			associated_item product_definition_formation presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = installation_location installation_location presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = installation_node installation_node presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = installation_node installation_node presentation_with_association <= presentation_representation presentation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = installation_node installation_node
item_- presentation to node (as presented_- item)	PATH			
item_- presentation to notification (as presented_- item)	PATH			

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<p>presented_item =></p> <p>presented_item_with_association</p> <p>presented_item_with_association.items[i] -></p> <p>associated_item</p> <p>associated_item = notification</p> <p>notification</p>
<p>item_</p> <p>presentation to</p> <p>object_</p> <p>designation</p> <p>(as presented_</p> <p>item)</p>	<p>PATH</p>			<p>presentation_with_association <=</p> <p>presentation_representation</p> <p>presentation_representation.select = presentation_representation</p> <p>presentation_representation.select <-</p> <p>presentation_representation.presentation</p> <p>presentation_representation.item -></p> <p>presented_item =></p> <p>presented_item_with_association</p> <p>presented_item_with_association.items[i] -></p> <p>associated_item</p> <p>associated_item = item_designation_assignment</p> <p>item_designation_assignment</p>
<p>item_</p> <p>presentation to</p> <p>page_connector_</p> <p>presentation</p> <p>(as presented_</p> <p>item)</p>	<p>PATH</p>			<p>presentation_with_association <=</p> <p>presentation_representation</p> <p>presentation_representation.select = presentation_representation</p> <p>presentation_representation.select <-</p> <p>presentation_representation.presentation</p> <p>presentation_representation.item -></p> <p>presented_item =></p> <p>presented_item_with_association</p> <p>presented_item_with_association.items[i] -></p> <p>associated_item</p> <p>associated_item = page_connector.presentation_group</p> <p>page_connector.presentation_group</p>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item- presentation to path (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = path path </pre>
item- presentation to path_node (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = vertex vertex </pre>
item- presentation to physical_ instance (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to port (as presented_- item)				associated_item product_definition presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = terminal terminal
item_- presentation to process_variable (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = process_variable process_variable
item_- presentation to project (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item ->

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to route (as presented_- item)	PATH			presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = organizational_project organizational_project presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presentation_representation_select <- presentation_representation.presentation presentation_item_representation presentation_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = installation_route installation_route
item_- presentation to routed_segment (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presentation_representation_select <- presentation_representation.presentation presentation_item_representation presentation_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = installation_segment installation_segment => routed_segment

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item- presentation to section (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presentation_representation.presentation presentation_item_representation presentation_item_representation.item -> presented_item => presentation_item_with_association presentation_item_with_association.items[i] -> associated_item associated_item = installation_section installation_section </pre>
item- presentation to section_end (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presentation_representation.presentation presentation_item_representation presentation_item_representation.item -> presented_item => presentation_item_with_association presentation_item_with_association.items[i] -> associated_item associated_item = installation_section_end installation_section_end </pre>
item- presentation to section_- interface (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presentation_representation.presentation presentation_item_representation presentation_item_representation.item -> presented_item => presentation_item_with_association presentation_item_with_association.items[i] -> associated_item associated_item = installation_section_end installation_section_end </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to security_- classification (as presented_- item)	PATH			associated_item installation_section_interface installation_section_interface presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = security_classification security_classification presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = security_classification_level security_classification_level presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item ->
item_- presentation to security_level (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[j] -> associated_item associated_item = security_classification_level security_classification_level presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item ->
item_- presentation to signal (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_representation_select = presentation_representation presented_item_representation_select <- presented_item_representation.presentation presented_item_representation.item ->

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = signal signal
item_- presentation to signal_value (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presentation_representation.presentation presentation_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = representation representation
item_- presentation to technical_system (as presented_- item)	PATH			presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presentation_representation.presentation presentation_representation presented_item_representation.item -> presented_item => presented_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = product_definition product_definition product_definition_formation -> product_definition_formation

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_- presentation to terminal (as presented_- item)				<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presentation_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = terminal terminal </pre>
item_- presentation to work_order (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presentation_item_with_association presented_item_with_association.items[i] -> associated_item associated_item = action_directive action_directive </pre>
item_- presentation to work_request (as presented_- item)	PATH			<pre> presentation_with_association <= presentation_representation presentation_select = presentation_representation presentation_representation_select <- presented_item_representation.presentation presented_item_representation presented_item_representation.item -> presented_item => presentation_item_with_association presented_item_with_association.items[i] -> </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
item_-- presentation to annotation_-- element (as presenting_-- item)	PATH			associated_item versioned_action_request presentation_with_association <= representation representation.items[] -> representation_item => styled_item => annotation_occurrence => #8: (annotation_curve_occurrence) #9: (annotation_fill_area_occurrence) #10: (annotation_subfigure_occurrence) #11: (annotation_symbol_occurrence) #12: (annotation_text_occurrence)
NOTE_REFERENCE	representation_-- relationship PATH	43	75	{representation_relationship representation_relationship.name = 'note presentation reference'} representation_relationship representation_relationship.rep_2 -> representation => presentation_representation => presentation_with_association representation_relationship representation_relationship.rep_1 -> representation => presentation_representation => presentation_with_association
note_reference to item_-- presentation (as note_-- presentation) note_reference to item_-- presentation (as presentation_-- of_item)	PATH			page_connector_group <= group page_connector_group <= group group.name page_connector_group <= group group.description {(group.description = 'central')}
PAGE_CONNECTOR	page_connector_group	212	51	
page_connector_-- id	group.name	41		
type_of	group.description	41		

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
page_connector to connecting--line (as part_of)	PATH		50	(group.description = 'exclusive') (group.description = 'neutral')} page_connector_group <= group <- group_relationship.related_group group_relationship {group_relationship.name = 'connecting line ownership'} group_relationship.related_group -> group =>
PAGE_CONNECTOR--PRESENTATION type_of	page_connector--presentation_group group.description	212 41	51	page_connector_presentation_group <= group page_connector_presentation_group <= group group.description
page_connector--presentation to page_connector (as of--page--connector)	PATH		50	group <- group_relationship.related_group group_relationship {group_relationship.name = 'page connector ownership'} group_relationship.related_group -> group => page_connector_group
PAGE_CONNECTOR--REFERENCE	page_connector--reference_group PATH	212	51	page_connector_reference_group <= group
page_connector--reference to page_connector--presentation (as part_of)			50	page_connector_reference_group <= group <- group_relationship.related_group group_relationship {group_relationship.name = 'page connector presentation ownership'} group_relationship.related_group -> group => page_connector_presentation_group

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
page_connector.- reference to page_connector (as refers_to)	PATH		49	<pre> page_connector.reference_group <= group <- group_assignment.assigned_group group_assignment => page_connector.reference_group_assignment page_connector.reference_group_assignment.item -> page_connector.reference_item = page_connector_group page_connector_group </pre>
page_connector.- reference to page_connector.- presentation (as refers_to)	PATH		49	<pre> page_connector.reference_group <= group <- group_assignment.assigned_group group_assignment => page_connector.reference_group_assignment page_connector.reference_item = page_connector_presentation_group page_connector_presentation_group </pre>
REFERENCE_GRID	reference_grid.- representation	212	76	reference_grid_representation <= representation
column_id	descriptive.- representation_item. description	45	74	<pre> reference_grid_representation <= representation representation.items[] -> representation_item => mapped_item mapped_item.mapping_source -> representation_map.mapped_representation -> representation {representation.name = 'reference grid column representation'} representation.items[] -> representation_item => descriptive_representation_item descriptive_representation_item.description </pre>
grid_origin	axis2_placement_2d	504	74	<pre> reference_grid_representation <= representation representation.items[] -> representation_item => </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
row_id	descriptive- representation_item. description	45	74	<pre>{representation_item.name = 'grid origin'} geometric_representation_item => placement => axis2_placement_2d reference_grid_representation <= representation representation.items[] -> representation_item => mapped_item mapped_item.mapping_source -> representation_map representation_map.mapped_representation -> representation {representation.name = 'reference grid row representation'} representation.items[] -> representation_item => descriptive_representation_item descriptive_representation_item.description {symbol_representation_map <= representation_map representation_map.mapped_representation -> representation => symbol_representation => draughting_symbol_representation => reference_grid_layout { symbol_representation_map <= representation_map representation_map.mapped_representation -> representation <- {representation => symbol_representation => draughting_symbol_representation => representation_grid_layout { representation_relationship.rep_1 representation_relationship {representation_relationship.name = 'reference grid?'} </pre>
REFERENCE_GRID_LAYOUT	symbol_representation_map	504	71	<pre>{symbol_representation_map <= representation_map representation_map.mapped_representation -> representation => symbol_representation => draughting_symbol_representation => reference_grid_layout { symbol_representation_map <= representation_map representation_map.mapped_representation -> representation <- {representation => symbol_representation => draughting_symbol_representation => representation_grid_layout { representation_relationship.rep_1 representation_relationship {representation_relationship.name = 'reference grid?'} </pre>
reference_grid_layout to reference_grid (as assigned- reference_grid)	PATH		75	<pre>{representation_relationship.name = 'reference grid?'} </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				representation_relationship.rep_2 -> representation => reference_grid_representation
SCHEMATIC_NODE				
rotation	annotation_symbol_ occurrence axis2_placement_2d.ref_ direction	504 504		annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_target -> representation_item => geometric_representation_item => symbol_target symbol_target.placement -> axis2_placement = axis2_placement_2d axis2_placement_2d axis2_placement_2d.ref_direction
scale	[symbol_target.x_ scale] [symbol_target.y_ scale]	504 504		annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item representation_item -> mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_target -> representation_item => geometric_representation_item =>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
schematic_node to user_defined_- symbol (as assigned_to)	PATH		75	<pre> symbol_target [symbol_target.x_scale] [symbol_target.y_scale] annotation_symbol_occurrence <= styled_item <= representation_item <- representation.items[] representation_relation_rep_1 representation_relation {representation_relation.name = 'schematic_node_ownership'} representation_relation_rep_2 representation representation.items[] -> representation => styled_item => annotation_symbol_occurrence annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item styled_item_item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item.mapping_source -> symbol_representation_map annotation_symbol_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence} styled_item </pre>
schematic_node to typical_- schematic_node (as definition)	PATH			
schematic_node to point_2d (as position)	PATH			

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> styled_item_item -> representation_item => mapped_item {mapped_item => annotation_symbol} mapped_item_mapping_target -> representation_item => geometric_representation_item => symbol_target symbol_target.placement -> axis2_placement = axis2_placement_2d axis2_placement_2d <= placement placement.location -> cartesian_point </pre>
SCHMATIC_TEXT	annotation_text_*	504		
schematic_text to schematic_*	occurrence PATH		75	<pre> annotation_text_occurrence <= annotation_occurrence <= styled_item <= representation_item <- representation_items[] representation <- representation_relationship.rep_1 representation_relationship {representation_relationship.name = 'schematic text ownership'} representation_relationship.rep_2 representation representation_items[] -> representation => styled_item => annotation_occurrence => annotation_symbol_occurrence </pre>

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
schematic_text to user_defined_- symbol (as assigned_to)	PATH		75	<pre> annotation_text_occurrence <= styled_item <= representation_item <- representation_items[] representation <- representation_relationship.rep_1 representation_relationship representation_name = 'schematic text ownership' {representation_relationship.rep_2 representation representation_items[] -> representation => styled_item => annotation_occurrence => annotation_symbol_occurrence } annotation_text_occurrence <= annotation_occurrence <= {annotation_occurrence => draughting_annotation_occurrence } styled_item styled_item_item -> representation_item => mapped_item {mapped_item => annotation_symbol } mapped_item_mapping_source -> symbol_representation_map </pre>
schematic_text to typical_- schematic_text (as definition)	PATH			<pre> {symbol_representation_map <= representation_map representation_map_mapped_representation -> representation => symbol_representation => draughting_symbol_representation } symbol_representation_map <= representation_map </pre>
TYPICAL_- SCHEMATIC_NODE	symbol_representation_- map	504		
id	representation_name	504		

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
typical_schematic_node to annotation_curve (as consists_of)	PATH			representation_map.mapped_representation -> representation symbol_representation_map <=> representation_map representation_map.mapped_representation -> representation representation.items[] -> representation_item => styled_item => annotation_occurrence => annotation_curve_occurrence
typical_schematic_node to fill_area (as consists_of)	PATH			symbol_representation_map <=> representation_map representation_map.mapped_representation -> representation representation.items[] -> representation_item => styled_item => annotation_occurrence => annotation_fill_area_occurrence
typical_schematic_node to text (as consists_of)	PATH			symbol_representation_map <=> representation_map representation_map.mapped_representation -> representation representation.items[] -> representation_item => styled_item => annotation_occurrence => annotation_text_occurrence

Table 24 – Mapping table schematic_documentation UoF (SC1) (continued)

Application element	AIM element	Source	Rules	Reference path
typical_-schematic_node to cartesian_-coordinate-space_-2d (as coordinate_-space)	PATH			<pre> symbol_representation_map <= representation_map.mapped_representation -> representation representation_context_of_items -> representation_context ==> geometric_representation_context symbol_representation_map <= representation_map.mapped_representation -> representation <- representation_relationship.rep_1 representation_relationship {representation_relationship.name == 'node area'} representation_relationship.rep_2 -> representation </pre>
typical_-schematic_node to connect_area (as node_area)	PATH		75	
TYPICAL_-SCHEMATIC_TEXT	symbol_representation_-map	504		<pre> {symbol_representation_map <= representation_map representation_map.mapped_representation -> representation ==> symbol_representation ==> draughting_symbol_representation} symbol_representation_map <= representation_map.mapped_representation -> representation </pre>
id	representation.name	504		<pre> representation.name </pre>
typical_-schematic_text to text (as consists_of)	PATH			<pre> symbol_representation_map <= representation_map.mapped_representation -> representation representation_items[] -> representation_item ==> styled_item ==> annotation_occurrence ==> annotation_text_occurrence </pre>

Table 25 – Mapping table site UoF (SI1)

Application element	AIM element	Source	Rules	Reference path
CARTESIAN_- COORDINATE_SPACE_- 3D	geometric_- representation_context	42	34	{geometric_representation_context geometric_representation_context.coordinate_space_dimension = 3}
length_measure_- unit	length_unit	41	27,48	geometric_representation_context <= representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => length_unit
plane_angle_- measure_unit	plane_angle_unit	41	27,48	geometric_representation_context <= representation_context => global_unit_assigned_context global_unit_assigned_context.units[i] -> unit unit = named_unit named_unit => plane_angle_unit
cartesian_- coordinate_space_- 3d to numerical_- precision (as precision)	PATH			geometric_representation_context <= representation_context => global_uncertainty_assigned_context
CARTESIAN_POINT	cartesian_point	42		{cartesian_point <= point <= geometric_representation_item geometric_representation_item.dim = 3}
coordinates	cartesian_point, coordinates	42		
GENERAL_LOCATION_- RELATIONSHIP	shape_aspect_- relationship	41		
description	shape_aspect_- relationship, description	41		

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
relation_type	shape_aspect- relationship_name	41		{(shape_aspect_relationship_name (shape_aspect_relationship_name = 'alternate') (shape_aspect_relationship_name = 'substitution') (shape_aspect_relationship_name = 'version hierarchy') (shape_aspect_relationship_name = 'version sequence'))}
GIS_POSITION	representation	43	72	{ representation representation_name = 'gis position' }
height	[measure_with_unit. value_component] [measure_with_unit. unit_component]	41 41		representation representation_items[] -> { representation_item representation_item.name = 'height' } representation_item => measure_representation_item <= measure_with_unit [measure_with_unit.value_component] [measure_with_unit.unit_component]
scale	[measure_with_unit. value_component] [measure_with_unit. unit_component]	41 41		representation representation_items[] -> { representation_item representation_item.name = 'scale' } representation_item => measure_representation_item <= measure_with_unit [measure_with_unit.value_component] [measure_with_unit.unit_component]
system	representation_context. context_type	43		representation representation_context_of_items -> representation_context { representation_context => geometric_representation_context } representation_context_type representation representation_items[] -> { representation_item representation_item.name = 'x-axis delta x' } representation_item =>
x_axis_delta_x	[measure_with_unit. value_component] [measure_with_unit. unit_component]	41 41		representation representation_items[] -> { representation_item representation_item.name = 'x-axis delta x' } representation_item =>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
x_axis_delta_y	[measure_with_unit. value_component] [measure_with_unit. unit_component]	41 41		measure_representation_item <= measure_with_unit [measure_with_unit.value_component] [measure_with_unit.unit_component] representation representation_items[] -> {representation_item {representation_item.name = 'x-axis delta, y'}} representation_item => measure_representation_item <= measure_with_unit [measure_with_unit.value_component] [measure_with_unit.unit_component]
x_coordinate	[measure_with_unit. value_component] [measure_with_unit. unit_component]	41 41		representation representation_items[] -> {representation_item {representation_item.name = 'x coordinate'}} representation_item => measure_representation_item <= measure_with_unit [measure_with_unit.value_component] [measure_with_unit.unit_component]
y_coordinate	[measure_with_unit. value_component] [measure_with_unit. unit_component]	41 41		representation representation_items[] -> {representation_item {representation_item.name = 'y coordinate'}} representation_item => measure_representation_item <= measure_with_unit [measure_with_unit.value_component] [measure_with_unit.unit_component]
zone	descriptive- representation_item. description	45		representation representation_items[] -> representation_item => {representation_item representation_item.name = 'zone'}

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
HIERARCHICAL- LOCATION- RELATIONSHIP #1: If placement is established by a geometric relationship, with transformation. #2: If placement is established by a replica. #3: If the transformation is implicitly defined by two items. #4: If the transformation is explicitly defined. #5: If the item is a placement. #6: If the item is a transformation operator.	shape_aspect_- relationship	41	104	descriptive_representation_item descriptive_representation_item.description {shape_aspect_relationship shape_aspect_relationship.name = 'decomposition hierarchy'}
description	shape_aspect_- relationship. description #2: ([mapped_item. mapping_target] [representation_map. mapping_origin]) #1: (#3: (item_- defined_- transformation) #4: (functionally_- defined_- transformation))	41		
transformation		43 43 43 43		shape_aspect_relationship #2: ([shape_aspect_relationship.related_shape_aspect -> shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <-

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.used_representation -> representation <- {representation => shape_representation} representation_map.mapped_representation representation_map {representation_map.mapping_origin -> representation_item => geometric_representation_item => placement => axis2_placement_3d}} [shape_aspect_relationship.relatng_shape_aspect -> shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.used_representation -> representation {representation => shape_representation} representation_items[] -> representation_item => </pre>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> mapped_item mapped_item.mapping_target -> {mapped_item.mapping_target -> representation_item => geometric_representation_item => #5: (placement => axis2_placement_3d) #6: (cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} cartesian_transformation_operator_3d)}} #1: ([shape_aspect.relationship.related_shape_aspect -> shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.definition property_definition.representation.definition {property_definition.representation = > shape_definition.representation} property_definition.representation.used_representation -> representation <- {representation => shape_representation} representation.relationship.rep_2] [shape_aspect.relationship.relatng_shape_aspect -> shape_aspect shape_definition = shape_aspect shape_definition </pre>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.used_representation -> representation <- {representation => shape_representation} representation_relationship.rep_1[] representation_relationship => {representation_relationship => shape_representation_relationship} representation_relationship_with_transformation representation_relationship_with_transformation.transformation_operator -> transformation #3: (transformation = item_defined_transformation item_defined_transformation {[item_defined_transformation.item_1 -> representation_item => geometric_representation_item => placement => axis2_placement_3d] [item_defined_transformation.item_2 -> representation_item => geometric_representation_item => #5: (placement => axis2_placement_3d) #6: (cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0}) </pre>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> cartesian_transformation_operator_3d))) #4: (transformation = functionally_defined_transformation functionally_defined_transformation {functionally_defined_transformation => cartesian_transformation_operator => {cartesian_transformation_operator.scl = 1.0} cartesian_transformation_operator_3d))) </pre>
LOCATION #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1.	installation_location	212	105	<pre> installation_location <= shape_aspect </pre>
description	shape_aspect.description	41		<pre> installation_location <= shape_aspect shape_aspect.description </pre>
id	shape_aspect.name	41		<pre> installation_location <= shape_aspect </pre>
version_id	identification_assignment_assigned_id	41	25,53	<pre> installation_location identification_item <- identification_item = installation_location applied_identification_assignment.items[1] applied_identification_assignment <= identification_assignment {identification_assignment.role -> identification_role identification_role.name = 'version'} identification_assignment.assigned_id </pre>
location to design_discipline_item_definition (as defining_item)	PATH			<pre> installation_location <= shape_aspect shape_aspect.of_shape -> product_definition_shape <= property_definition property_definition.definition -> characterized_definition </pre>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
location to physical-instance (as defining-item)	PATH			characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition installation_location <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
location to product-component (as defining-item)	PATH			installation_location <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition installation_location <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition_formation -> product_definition_formation installation_location <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition
location to single-device (as defining-item)	PATH			shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_definition = characterized_product_definition

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
				characterized_product_definition product_definition_relationship => product_definition_usage => assembly_component_usage #2: (characterized_product_definition = product_definition product_definition) installation_location <=
location to specified device (as defining item)	PATH			shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_product_definition characterized_product_definition #1: (characterized_product_definition = product_definition_relationship product_definition_usage => assembly_component_usage) #2: (characterized_product_definition = product_definition product_definition)
location to technical system (as defining item)	PATH			installation_location <= shape_aspect shape_aspect_of_shape -> product_definition_shape <= property_definition property_definition_definition -> characterized_definition characterized_product_definition characterized_product_definition #1: (characterized_product_definition = product_definition_relationship product_definition_usage => assembly_component_usage) #2: (characterized_product_definition = product_definition product_definition)

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
location to object_reference_- designation (as extended_- designation)	PATH		25	<pre> installation_location item_designation_item = installation_location item_designation_item <- item_designation_assignment.items[1] {item_designation_assignment => identification_assignment <= identification_assignment.role -> identification_role identification_role.description = 'primary'} object_reference_designation_assignment installation_location <= </pre>
location to cartesian_- coordinate_space_- 3d (as local_- coordinate_- space)	PATH			<pre> shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition.representation.definition property_definition.representation {property_definition.representation => shape_definition.representation} property_definition.representation.used_representation -> representation {representation => shape_representation} representation.context_of_items -> representation_context => geometric_representation_context {geometric_representation_context geometric_representation_context.coordinate_space_dimension = 3} </pre>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
location to cartesian-point (as position)	PATH			<pre> installation_location <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} property_definition_representation.used_representation -> representation {representation => shape_representation} representation.items -> representation_item => geometric_representation_item => point => cartesian_point </pre>
location to gis_position (as position)	PATH			<pre> installation_location <= shape_aspect shape_definition = shape_aspect shape_definition characterized_definition = shape_definition characterized_definition <- property_definition.definition property_definition represented_definition = property_definition represented_definition <- property_definition_representation.definition property_definition_representation {property_definition_representation => shape_definition_representation} </pre>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> property_definition.representation -> shape_definition.representation </pre>
<p>LOCATION_-ASSIGNMENT #1: If device is not used in the context of UoF CFL. #2: If device is used in the context of UoF CFL. #3: If function_unit is not used in the context of UoF CFL. #4: If function_unit is used in the context of UoF CFL.</p>	<p>property_definition_-relationship</p>	45		
<p>description</p>	<p>property_definition_-relationship_description</p>	45		
<p>role</p>	<p>property_definition_-relationship_name</p>	45		<pre> {(property_definition_relationship.name = 'accommodation')} </pre>
<p>location_-assignment to location (as assigned_-location)</p>	<p>PATH</p>			<pre> property_definition_relationship property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => installation_location </pre>

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
location_- assignment to connectivity_- definition (as associated_- item)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition
location_- assignment to design_- discipline_item_- definition (as associated_- item)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
location_- assignment to device (as associated_- item)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition.relationship product_definition.relationship => product_definition_usage => assembly_component_usage #1: (characterized_product_definition = product_definition.relationship #2: (characterized_product_definition = product_definition product_definition)

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
location_- assignment to functional_- definition (as associated_- item)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
location_- assignment to function_unit (as associated_- item)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition.relationship product_definition.relationship => product_definition.usage => assembly_component_usage) product_definition #4: (characterized_product_definition = product_definition product_definition)
location_- assignment to functional_- connectivity_- definition (as associated_- item)	PATH			property_definition.relationship property_definition.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => connectivity_definition

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
location_- assignment to physical_- instance (as associated_- item)	PATH			property_definition_relationship property_definition property_definition.relationship.related_property_definition -> property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition
location_- assignment to port (as associated_- item)	PATH			property_definition_relationship property_definition property_definition.relationship.related_property_definition -> property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
location_- assignment to product_- component (as associated_- item)	PATH			property_definition_relationship property_definition property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formations -> product_definition.formations
location_- assignment to signal (as associated_- item)	PATH			property_definition_relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = characterized_definition characterized_definition = characterized_object

Table 25 – Mapping table site UoF (SI1) (continued)

Application element	AIM element	Source	Rules	Reference path
location_- assignment to technical_system (as associated_- item)	PATH			characterized_object => signal property_definition.relationship property_definition.relationship.related_property_definition -> property_definition characterized_definition -> characterized_definition characterized_definition = characterized_product_definition characterized_product_definition = product_definition product_definition product_definition.formation -> product_definition_formation property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
location_- assignment to terminal (as associated_- item)	PATH			property_definition.relationship property_definition.relationship.related_property_definition -> property_definition property_definition.definition -> characterized_definition characterized_definition = shape_definition shape_definition shape_definition = shape_aspect shape_aspect => terminal
LOCATION_- RELATIONSHIP	shape_aspect_- relationship	41		shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_location
location_- relationship to location (as related)	PATH			shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_location
location_- relationship to location (as relating)	PATH			shape_aspect_relationship shape_aspect_relationship.related_shape_aspect -> shape_aspect => installation_location

Table 25 – Mapping table site UoF (SI1) (concluded)

Application element	AIM element	Source	Rules	Reference path
NEIGHBOURHOOD_- LOCATION_- RELATIONSHIP relation_type	shape_aspect_- relationship shape_aspect_- relationship. description	41 41	104	{shape_aspect_relationship shape_aspect_relationship.name = 'neighbourhood'} {(shape_aspect_relationship.description (shape_aspect_relationship.description = 'above') (shape_aspect_relationship.description = 'across') (shape_aspect_relationship.description = 'adjoining') (shape_aspect_relationship.description = 'around') (shape_aspect_relationship.description = 'outside'))}

Table 26 – Mapping table work_management UoF (W1)

Application element	AIM element	Source	Rules	Reference path
<p>ACTIVITY</p> <p>#1: If activity.internal is not specified. #2: If activity.internal is TRUE. #3: If activity.internal is FALSE. #4: If only a certain day is known. #5: If a certain day and the time of day is known. #6: If used for a person as member of an organization. #7: If used for an organization. #8: If the document_-representation is not a physical_model. #9: If the document_-representation is a physical_model. #10: If the activity is controlled by a work_order which resolves the work_-request. #11: If the activity is not controlled by a work_order which resolves the work_request.</p>	<p>executed_action</p>	<p>41</p>		
<p>activity_type</p>	<p>action.name</p>	<p>41</p>		<p>executed_action <= action action.name {(action.name) (action.name = 'amendment')}</p>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
				(action.name = 'analysis') (action.name = 'cancellation') (action.name = 'delivery change') (action.name = 'design') (action.name = 'design change') (action.name = 'mock-up creation') (action.name = 'order') (action.name = 'prototype creation') (action.name = 'rectification') (action.name = 'restructuring') (action.name = 'spare part creation') (action.name = 'stop notice') (action.name = 'testing') (action.name = 'work definition') executed_action <=
description	action.description	41		action action.description executed_action <=
id	id_attribute.attribute_value	41		id_attribute.select = action id_attribute.select <- id_attribute.identified_item id_attribute id_attribute.attribute_value executed_action <=
internal	action_method.purpose	41		action action.chosen_method -> action_method action_method.purpose {#1: (action_method.purpose = "} #2: (action_method.purpose = 'internal') #3: (action_method.purpose = 'external')}}
status	action_status.status	41	44	executed_action <- action_status.assigned_action action_status action_status.status

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity to date- time (as actual_end- date)	PATH		18,19,79	<pre> action {action => executed_action} (date_item = action date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment {date_assignment.role -> date_role date_role.name = 'actual end'} date_assignment.assigned_date -> date => calendar_date) (date_and_time_item = action date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= date_and_time_assignment {date_and_time_assignment.role -> date_time_role date_time_role.name = 'actual end'}} date_and_time_assignment.assigned_date_and_time -> date_and_time) </pre>
activity to date- time (as actual_start- date)	PATH		18,19,79	<pre> executed_action <= action #4: (date_item = action date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment {date_assignment.role -> date_role date_role.name = 'actual start' } </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> date_assignment.assigned_date -> date => calendar_date #5: (date_and_time_item = action date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= date_and_time_assignment {date_and_time_assignment.role -> date_time_role date_time_role.name = 'actual start'} date_and_time_assignment.assigned_date_and_time -> date_and_time) </pre>
activity to activity_method (as chosen_method)	PATH			<pre> executed_action <= action action.chosen_method -> action_method executed_action <= action </pre>
activity to organization (as concerned_organization)	PATH			<pre> organization_item = action organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'concerned organization'} organization_assignment.assigned_organization -> organization </pre>
activity to date_time (as planned_end_date)	PATH		18,19,79	<pre> executed_action <= action #4: (date_item = action date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity to duration (as planned_end_date)	PATH			<pre> {date_assignment.role -> date_role date_assignment.assigned_date -> date => calendar_date) #5: (date_and_time_item = action date_and_time_item <- applied_date_and_time_assignment.items[j] applied_date_and_time_assignment <= date_and_time_assignment {date_and_time_assignment.role -> date_time_role date_time_role.name = 'planned end'} date_and_time_assignment.assigned_date_and_time -> date_and_time) executed_action <= action characterized_action_definition = action characterized_action_definition <- action_property_definition action_property <- {action_property.name = 'duration property'} action_property_representation.property action_property_representation action_property_representation -> representation {representation.name = 'planned duration'} representation.items[l] -> representation_item => measure_representation_item <= measure_with_unit => time_measure_with_unit </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity to event_reference (as planned_end_date)	PATH		24,79	<pre> executed_action <= action event_occurrence_item = action event_occurrence_item <- applied_event_occurrence_assignment.items[i] applied_event_occurrence_assignment <= event_occurrence_assignment {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'planned end'} event_occurrence_assignment.assigned_event_occurrence -> #8: (event_occurrence) #9: (event_occurrence => relative_event_occurrence) executed_action <= action #4: (date_item = action date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment {date_assignment.role -> date_role date_role.name = 'planned start'} date_assignment.assigned_date -> date => calendar_date) #5: (date_and_time_item = action date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= date_and_time_assignment {date_and_time_assignment.role -> date_time_role date_time_role.name = 'planned start'} date_and_time_assignment.assigned_date_and_time -> </pre>
activity to date_time (as planned_start_date)	PATH		18,19,33,79	

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity to event_reference (as planned_start_date)	PATH		24,33,80	<pre> executed_action <= action event_occurrence.item = action event_occurrence.item <- applied_event_occurrence_assignment.items[i] applied_event_occurrence_assignment <= event_occurrence_assignment {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'planned start'} event_occurrence_assignment.assigned_event_occurrence -> #8: (event_occurrence) #9: (event_occurrence => relative_event_occurrence) executed_action <= action </pre>
activity to date_and_person_or_organization (as requestor)	PATH		29,31,82	<pre> #6: (person_and_organization_item = action person_and_organization_item <- applied_person_and_organization_assignment.items[i] applied_person_and_organization_assignment <= person_and_organization_assignment {person_and_organization_assignment.role -> person_and_organization_role person_and_organization_role.name = 'requestor'} person_and_organization_assignment.assigned_person_and_organization -> person_and_organization #7: (organization_item = action organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'requestor'} organization_assignment.assigned_organization -> </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity to work_-request (as resolved_-request)	PATH			<pre> organization action #10: (executed_action <= action_chosen_method -> action_method <- action_request_solution.method action_request_solution action_request_solution.request ->) #11: (executed_action ==> directed_action directed_action.directive -> action_directive action_directive.requests[i] ->) versioned_action_request executed_action <= </pre>
activity to organization (as supplying_-organization)	PATH			<pre> action organization.item = action organization.item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'supplying organization'} organization_assignment.assigned_organization -> organization </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>ACTIVITY_ELEMENT</p> <p>#1: If device is not used in the context of UoF CF1.</p> <p>#2: If device is used in the context of UoF CF1.</p> <p>#3: If device_ relationship is not of type 'substitution'.</p> <p>#4: If device_ relationship is of type 'substitution'.</p> <p>#5: If activity_element is not used in the context of UoF CF1.</p> <p>#6: If activity_element is used in the context of UoF CF1.</p> <p>#7: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order.</p> <p>#8: If data_element is associated to activity or work_order.</p> <p>#9: If data_element is associated to cable_pull_information, device_ relationship used with UoF CF1, drawing_sheet, generic_note, path, or path_node.</p> <p>#10: If specification_category.implicit_exclusive_condition is</p>	<p>applied_action_ assignment</p>	<p>212</p>	<p>28</p>	<pre> applied_action_assignment <= action_assignment {role_select = action_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.description = 'activity element'}</pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>FALSE. #11: If specification_category.implicit_exclusive_condition is TRUE. #12: If the document_representation is not a physical_model. #13: If the document_representation is a physical_model. #14: If function_unit is not used in the context of UoF CF1. #15: If function_unit is used in the context of UoF CF1.</p>				
<p>role</p>	<p>object_role.name</p>	<p>41</p>	<p>28</p>	<pre> applied_action_assignment <= action_assignment role_select = action_assignment role_select <- role_association.item_with_role role_association role_association.role -> object_role object_role.name {(object_role.name = 'control') (object_role.name = 'input') (object_role.name = 'output')} applied_action_assignment <= action_assignment action_assignment.assigned_action -> action => executed_action </pre>
<p>activity_element to activity (as associated_activity)</p>	<p>PATH</p>			

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to activity_- method (as element)	PATH			applied_action_assignment applied_assignment.items[i] -> action_item action_item = action_method action_method
activity_element to activity_- relationship (as element)	PATH			applied_action_assignment applied_assignment.items[i] -> action_item action_item = action_method action_relationship
activity_element to alternate_- item_- relationship (as element)	PATH			applied_action_assignment applied_assignment.items[i] -> action_item action_item = alternate_product_relationship alternate_product_relationship
activity_element to assembly_- component_- relationship (as element)	PATH			applied_action_assignment applied_assignment.items[i] -> action_item action_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage
activity_element to cable_pull_ information (as element)	PATH			applied_action_assignment applied_assignment.items[i] -> action_item action_item = representation representation
activity_element to class_- category_- association (as element)	PATH			applied_action_assignment applied_assignment.items[i] -> action_item action_item = product_concept_feature_category_usage product_concept_feature_category_usage

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to class_- condition_- association (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to class_- inclusion_- association (as element)	PATH			product_concept_feature_association applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to class_- specification_- association (as element)	PATH			product_concept_feature_association applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to classification_- system (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to complex_- product (as element)	PATH			action_item = product_concept_feature_association product_concept_feature_association -> applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to complex_- product_- relationship (as element)	PATH			product_definition_formation product_definition_formation -> applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to composition_- relationship (as element)	PATH			product_definition_formation_relationship product_definition_formation_relationship -> applied_action_assignment action_item -> applied_action_assignment.items[i]
				product_definition_usage => product_definition_usage =>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to configuration (as element)	PATH			assembly_component_usage applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = configured_effectivity_assignment configured_effectivity_assignment
activity_element to connectivity_- definition (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = connectivity_definition connectivity_definition
activity_element to connectivity_- definition_- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
activity_element to data_element (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
activity_element to data_element_- association (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item #7: (action_item = property_definition property_definition) #8: (action_item = action_property action_property) #9: (action_item = representation_relationship representation_relationship)
activity_element to data_element_- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = representation_relationship representation_relationship

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to design- discipline_item- definition (as element)	PATH			<pre> applied_action_assignment action_item -> action_item = product_definition product_definition </pre>
activity_element to device (as element)	PATH			<pre> applied_action_assignment action_item #1: (action_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) #2: (action_item = product_definition product_definition) </pre>
activity_element to device- relationship (as element)	PATH			<pre> applied_action_assignment action_item #3: (action_item = product_definition_relationship product_definition_relationship) #4: (action_item = product_definition_substitute product_definition_substitute) </pre>
activity_element to document (as element)	PATH			<pre> applied_action_assignment action_item -> action_item product {product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'document'} </pre>
activity_element to document_file (as element)	PATH			<pre> applied_action_assignment action_item -> action_item = document_file document_file </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to document_file_-- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = document_relationship document_relationship
activity_element to document_-- representation (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition #12: (product_definition) #13: (product_definition => product_definition_with_associated_documents => physically_modelled_product_definition)
activity_element to document_-- version (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation product_definition_formation {product_definition_formation_of_product -> product <- product_related_product_category.products[i] product_related_product_category <= product_category product_category.name = 'document'}
activity_element to document_-- version_-- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation_relationship product_definition_formation_relationship
activity_element to drawing (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = drawing_revision drawing_revision

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to drawing_- sequence (as element)	PATH			applied_action_assignment action_item action_item = drawing_revision drawing_revision
activity_element to drawing_sheet (as element)	PATH			applied_action_assignment action_item action_item = drawing_sheet_revision drawing_sheet_revision
activity_element to drawing_sheet_- relationship (as element)	PATH			applied_action_assignment action_item action_item = representation_relationship representation_relationship
activity_element to function_- definition (as element)	PATH			applied_action_assignment action_item action_item = product_definition product_definition
activity_element to function_- definition_- relationship (as element)	PATH			applied_action_assignment action_item action_item = product_definition_relationship product_definition_relationship
activity_element to function_- interface (as element)	PATH			applied_action_assignment action_item action_item = interface interface
activity_element to function_unit (as element)	PATH			applied_action_assignment action_item #14: (action_item = product_definition_relationship product_definition_relationship => product_definition_usage =>)

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to function_unit_-- relationship (as element)	PATH			assembly_component_usage #15: (action_item = product_definition product_definition) applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_relationship product_definition_relationship applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation product_definition_formation applied_action_assignment applied_action_assignment.items[i] -> action_item
activity_element to function_-- version (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation product_definition_formation applied_action_assignment applied_action_assignment.items[i] -> action_item
activity_element to function_-- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation product_definition_formation applied_action_assignment applied_action_assignment.items[i] -> action_item
activity_element to functional_-- connectivity_-- definition (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = connectivity_definition connectivity_definition applied_action_assignment applied_action_assignment.items[i] -> action_item
activity_element to functional_-- connectivity_-- definition_-- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship applied_action_assignment applied_action_assignment.items[i] -> action_item
activity_element to generic_note (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = note_representation note_representation

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to interface (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = interface interface
activity_element to interface.- port (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = terminal terminal
activity_element to interface.- terminal (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = terminal terminal
activity_element to item (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product product
activity_element to item.- definition.- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_relationship product_definition_relationship
activity_element to item.version (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation product_definition_formation
activity_element to item.version.- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition_formation_relationship product_definition_formation_relationship

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to location (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = installation_location installation_location
activity_element to location_-- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
activity_element to manufacturing_-- configuration (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = configuration_effectivity configuration_effectivity
activity_element to marking (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = equipment_marking equipment_marking
activity_element to node (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = installation_node installation_node
activity_element to node_-- relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = shape_aspect_relationship shape_aspect_relationship
activity_element to notification (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = notification notification

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to notification_- relationship (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to path (as element)	PATH			characterized_object_relationship applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to path_node (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to path_node_- relationship (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to path_- relationship (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to physical_- assembly_- relationship (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to physical_ instance (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_definition product_definition
activity_element to port (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = terminal terminal
activity_element to process_ variable (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = process_variable process_variable
activity_element to process_ variable_ relationship (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = characterized_object_relationship characterized_object_relationship
activity_element to product_class (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = product_concept #5: (product_concept) #6: (product_concept => product_class)
activity_element to product_ identification (as element)	PATH			applied_action_assignment applied_action_assignment.items[i] -> action_item action_item = configuration_item #5: (configuration_item) #6: (configuration_item => product_identification)

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to product_- structure_- relationship (as element)	PATH			applied_action_assignment action_item action_item = product_definition_relationship product_definition_usage applied_action_assignment action_item action_item = product_definition product_definition
activity_element to requirement (as element)	PATH			applied_action_assignment action_item action_item = product_definition product_definition
activity_element to route (as element)	PATH			applied_action_assignment action_item action_item = installation_route installation_route
activity_element to route_- relationship (as element)	PATH			applied_action_assignment action_item action_item = shape_aspect_relationship shape_aspect_relationship
activity_element to section (as element)	PATH			applied_action_assignment action_item action_item = installation_section installation_section
activity_element to section_end (as element)	PATH			applied_action_assignment action_item action_item = installation_section_end installation_section_end
activity_element to section_- interface (as element)	PATH			applied_action_assignment action_item action_item = installation_section_interface installation_section_interface

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to section_- interface_- relationship (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to section_- relationship (as element)	PATH			shape_aspect_relationship applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to signal (as element)	PATH			shape_aspect_relationship applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to signal_- relationship (as element)	PATH			applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to signal_value (as element)	PATH			characterized_object_relationship applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to specification (as element)	PATH			representation applied_action_assignment action_item -> applied_action_assignment.items[i]
activity_element to specification_- category (as element)	PATH			product_concept_feature applied_action_assignment action_item -> applied_action_assignment.items[i]

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_element to specification_- expression (as element)	PATH			#11: (product_concept_feature_category => exclusive_product_concept_feature_category) {applied_action_assignment action_assignment action_assignment.role -> object_role object_role.name = 'activity element'} applied_action_assignment.items[] -> action_item action_item = product_concept_feature product_concept_feature => conditional_concept_feature applied_action_assignment applied_action_assignment.items[] -> action_item product_concept_feature => conditional_concept_feature inclusion_product_concept_feature applied_action_assignment applied_action_assignment.items[] -> action_item product_concept_feature => conditional_concept_feature inclusion_product_concept_feature applied_action_assignment applied_action_assignment.items[] -> action_item product_definition_formation product_definition_formation applied_action_assignment applied_action_assignment.items[] -> action_item action_item = product_definition_relationship product_definition_relationship applied_action_assignment applied_action_assignment.items[] -> action_item action_item = terminal terminal
activity_element to specification_- inclusion (as element)	PATH			
activity_element to technical_- system (as element)	PATH			
activity_element to technical_- system_- relationship (as element)	PATH			
activity_element to terminal (as element)	PATH			

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
ACTIVITY_METHOD				
consequence	action_method.consequence	41		
description	action_method.description	41		
name	action_method.name	41		
ACTIVITY_METHOD_ASSIGNMENT				
relation_type	action_request_solution	41		
activity_method_assignment to activity_method (as assigned_method)	action_request_solution.name	41		{(action_request_solution.name = 'recommended method') (action_request_solution.name = 'non recommended method')}
activity_method_assignment to work_request (as assigned_work_request)	PATH			action_request_solution action_request_solution.method -> action_method
ACTIVITY_RELATIONSHIP				
description	action_relationship.description	41		
relation_type	action_relationship.name	41	2	{(action_relationship.name = 'alternative') (action_relationship.name = 'decomposition') (action_relationship.name = 'derivation') (action_relationship.name = 'exclusiveness') (action_relationship.name = 'precedence') (action_relationship.name = 'sequence') (action_relationship.name = 'simultaneity')}

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
activity_ relationship to activity (as related)	PATH			action_relationship.related_action -> action => executed_action
activity_ relationship to activity (as relating)	PATH			action_relationship.relatng_action -> action => executed_action
CONTRACT				
description	contract	41		
id	contract.purpose contract.name	41 41		
contract to activity (as contracted_ element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = action action => executed_action
contract to data_ element (as contracted_ element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = representation representation
contract to design_ discipline_ item_ definition (as contracted_ element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = product_definition product_definition

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
contract to device (as contracted_element)	PATH			<pre> contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item #5: (contract_item = product_definition product_definition {product_definition.frame_of_reference -> product_definition_context <= application_context_element application_context_element.name = 'part occurrence'}) #6: (contract_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) </pre>
contract to function_definition (as contracted_element)	PATH			<pre> contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = product_definition product_definition </pre>
contract to function_unit (as contracted_element)	PATH			<pre> contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item #26: (contract_item = product_definition product_definition) #27: (contract_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
contract to function_version (as contracted_element)	PATH			contract <-> contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[i] -> contract_item contract_item = product_definition_formation product_definition_formation {product_definition_formation_of_product -> product <-> product_related_product_category.products[i] product_related_product_category <=> product_category product_category.name = 'functionality'}
contract to item_version (as contracted_element)	PATH			contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[i] -> contract_item contract_item = product_definition_formation product_definition_formation
contract to location (as contracted_element)	PATH			contract <-> contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[i] -> contract_item contract_item = installation_location installation_location
contract to node (as contracted_element)	PATH			contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[i] -> contract_item

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
contract to notification (as contracted_ element)	PATH			contract_item = installation_node installation_node contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = notification notification
contract to path (as contracted_ element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = path path
contract to path_ node (as contracted_ element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item vertex
contract to physical_ instance (as contracted_ element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item product_definition

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
contract to process.variable (as contracted-element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = process.variable process_variable
contract to project (as contracted-element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = organizational_project organizational_project
contract to route (as contracted-element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = installation_route installation_route
contract to section (as contracted-element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = installation_section installation_section

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
contract to section_end (as contracted_element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = installation_section_end installation_section_end
contract to section_interface (as contracted_element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = installation_section_interface installation_section_interface
contract to signal (as contracted_element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = signal signal
contract to signal_value (as contracted_element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[j] -> contract_item contract_item = representation representation

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
contract to technical_system (as contracted_element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[i] -> contract_item contract_item = product_definition_formation product_definition_formation
contract to work_order (as contracted_element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[i] -> contract_item contract_item = action_directive action_directive
contract to work_request (as contracted_element)	PATH			contract <- contract_assignment.assigned_contract contract_assignment => applied_contract_assignment applied_contract_assignment.items[i] -> contract_item contract_item = versioned_action_request versioned_action_request
ORGANIZATION_IN_CONTRACT #1: If used for a person as member of an organization. #2: If used for an organization.	applied_organization_assignment	212	29	applied_organization_assignment <= {applied_organization_assignment applied_organization_assignment.items[i] -> organization_item organization_item = contract } organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'organization in contract' }
role_of_organization	description_attribute.attribute_value	41	29	applied_organization_assignment <= organization_assignment organization_assignment.role ->

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
organization_in-contract to contract (as contract)	PATH			<pre> organization_role description_attribute_select = organization_role description_attribute_select <- description_attribute_described_item description_attribute description_attribute_value {(description_attribute_value = 'contractee')} (description_attribute_value = 'contractor') } applied_organization_assignment organization_item -> organization_item = contract contract </pre>
organization_in-contract to organization (as contracted-organization)	PATH			<pre> applied_organization_assignment <= organization_assignment organization -> organization </pre>
organization_in-contract to date_and_person_or_organization (as signature)	PATH		29,31,84,85	<pre> applied_organization_assignment person_and_organization_item = applied_organization_assignment person_and_organization_item <- applied_person_and_organization_assignment.items[i] {applied_person_and_organization_assignment <= person_and_organization_assignment person_and_organization_role -> person_and_organization_role person_and_organization_role.name = 'signing for contract'} #2: (organization_item = applied_organization_assignment organization_item <- applied_organization_assignment.items[i] applied_organization_assignment {applied_organization_assignment <= organization_assignment organization_assignment.role -> </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
PROJECT #1: If only a certain day is known. #2: If a certain day and the time of day is known. #3: If no duration is specified as planned_end. #4: If a duration is specified as planned_end. #5: If the document_-representation is not a physical_model. #6: If the document_-representation is a physical_model.	organizational_project	41		organization_role organization_role.name = 'signing for contract' }
description	organizational_project.description	41		
id	organizational_project.name	41		
name	organizational_project.name	41		
project to date_-time (as actual_end_-date)	organizational_project.PATH	41	18,19,81	#1: (date_item = organizational_project date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment {date_assignment.role -> date_role date_role.name = 'actual end'} date_assignment.assigned_date -> date ==> calendar_date)

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
project to date- time (as actual_start- date)	PATH		18,19,81	<pre> #2: (date_and_time_item = organizational_project date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= {date_and_time_assignment date_and_time_assignment.role -> date_time_role date_time_role.name = 'actual end'}) date_and_time_assignment.assigned_date_and_time -> date_and_time #3: (#1: (date_item = organizational_project date_item <- applied_date_assignment.items[i] applied_date_assignment <= {date_assignment date_assignment.role -> date_role date_role.name = 'actual start'}) date_assignment.assigned_date -> date ==> calendar_date) #2: (date_and_time_item = organizational_project date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment <= {date_and_time_assignment date_and_time_assignment.role -> date_time_role date_time_role.name = 'actual start'}) date_and_time_assignment.assigned_date_and_time -> date_and_time #4: (time_interval_item = organizational_project time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
				<pre> time_interval_assignment time_interval_assigned_time_interval -> time_interval => time_interval_with_bounds time_interval_with_bounds.primary_bound -> date_time_or_event_occurrence = date_time_select #1: (date_time_select = date date => calendar_date) #2: (date_time_select = date_and_time date_and_time)) </pre>
<pre> project to product_class (as affected_ product_class) </pre>	PATH			<pre> organizational_project <- organizational_project_assigned_organizational_project organizational_project_assignment => {organizational_project_assignment_role -> organizational_project_role organizational_project_role.name = 'affecting project'} applied_organizational_project_assignment applied_organizational_project_assignment.items[i] -> organizational_project_item organizational_project_item = product_concept product_concept organizational_project date_item <- applied_date_assignment.items[i] applied_date_assignment <= date_assignment {date_assignment.role -> date_role date_role.name = 'planned end'} date_assignment.assigned_date -> date => calendar_date) #2: (date_and_time_item = organizational_project </pre>
<pre> project to date_ time (as planned_end_ date) </pre>	PATH		18,19,81	

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
project to duration (as planned_end_date)	PATH		48	<pre> date_and_time_item <- applied_date_and_time_assignment.items[i] applied_date_and_time_assignment {date_and_time_assignment.role -> date_time_role date_time_role.name = 'planned end'} date_and_time_assignment.assigned_date_and_time -> date_and_time </pre>
project to event reference (as planned_end_date)	PATH		24,81	<pre> organizational_project time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment {time_interval_assignment.role -> time_interval_role time_interval_role.name = 'planned period'} time_interval_assignment.assigned_time_interval -> time_interval ==> time_interval_with_bounds time_interval_with_bounds.duration -> time_measure_with_unit organizational_project event_occurrence_item = organizational_project event_occurrence_item <- applied_event_occurrence_assignment.items[i] event_occurrence_assignment {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'planned end'} event_occurrence_assignment.assigned_event_occurrence -> #5: (event_occurrence) #6: (event_occurrence ==> relative_event_occurrence) </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
project to date_- time (as planned_- start_date)	PATH		18,19,33, 81	<pre> organizational_project date_item <- #3: (#1: (date_item = organizational_project applied_date_assignment.items[j] applied_date_assignment <= date_assignment {date_assignment.role -> date_role date_role.name = 'planned start'} date_assignment.assigned_date -> date => calendar_date) date_and_time_item = organizational_project date_and_time_item <- applied_date_and_time_assignment.items[j] applied_date_and_time_assignment <= date_and_time_assignment {date_and_time_assignment.role -> date_time_role date_time_role.name = 'planned start'} date_and_time_assignment.assigned_date_and_time -> date_and_time)) #2: (time_interval_item = organizational_project time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= time_interval_assignment {time_interval_assignment.role -> time_interval_role time_interval_role.name = 'planned period'} time_interval_assignment.assigned_time_interval -> time_interval => time_interval_with_bounds time_interval_with_bounds.primary_bound -> date_time_or_event_occurrence date_time_or_event_occurrence = date_time_select </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
project to event_- reference (as planned_- start_date)	PATH		24,33,81	<pre> #1: (date_time_select = date date => calendar_date) #2: (date_time_select = date_and_time date_and_time) #3: (event_occurrence_item = organizational_project event_occurrence_item <- applied_event_occurrence_assignment.items[i] event_occurrence_assignment {event_occurrence_assignment.role -> event_occurrence_role event_occurrence_role.name = 'planned start'}) event_occurrence_assignment.assigned_event_occurrence -> #5: (event_occurrence) #6: (event_occurrence => relative_event_occurrence) #4: (time_interval_item = organizational_project time_interval_item <- applied_time_interval_assignment.items[i] applied_time_interval_assignment <= {time_interval_assignment time_interval_assignment.role -> time_interval_role time_interval_role.name = 'planned period'}) time_interval_assignment.assigned_time_interval -> time_interval => time_interval_with_bounds time_interval_with_bounds.primary_bound -> date_time_or_event_occurrence date_time_or_event_occurrence = event_occurrence #7: (event_occurrence) #8: (event_occurrence => relative_event_occurrence) </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
project to activity (as work-program)	PATH		92	<pre> organizational_project_<- organizational_project_assignment => {organizational_project_assignment.role -> organizational_project_role organizational_project_role.name = 'work program'} applied_organizational_project_assignment applied_organizational_project_assignment.items [i] -> organizational_project_item organizational_project_item = action action => executed_action </pre>
PROJECT-RELATIONSHIP description	organizational_project_-relationship	41		
relation-type	organizational_project_-relationship.description	41		<pre> {organizational_project_relationship (organizational_project_relationship.name = 'decomposition') (organizational_project_relationship.name = 'dependency') (organizational_project_relationship.name = 'sequence') (organizational_project_relationship.name = 'succession')}} </pre>
project_-relationship to project (as related)	PATH			<pre> organizational_project_relationship organizational_project_related_organizational_project -> organizational_project </pre>
project_-relationship to project (as relating)	PATH			<pre> organizational_project_relationship organizational_project_relatin_organizational_project -> organizational_project </pre>
WORK_ORDER description	action_directive	41	1	
id	action_directive.comment	41		
	action_directive.name	41		

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
version_id	identification.- assignment.assigned_id	41	25,53,96, 97	<pre> action_directive identification_item = action_directive identification_item <- applied_identification_assignment.items[1] applied_identification_assignment <= {identification_assignment identification_role -> identification_role.name = 'version'} identification_assignment.assigned_id </pre>
work_order_type	action_directive. description	41		<pre> {action_directive (action_directive.description = 'design release') (action_directive.description = 'manufacturing release') (action_directive.description = 'management resolution') (action_directive.description = 'design deviation permit')} (action_directive.description = 'production deviation permit')}} </pre>
work_order to activity (as is- controlling)	PATH		1,2	<pre> action_directive <- directed_action_directive directed_action <= executed_action </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>WORK_REQUEST #1: If device is not used in the context of UoF CF1. #2: If device is used in the context of UoF CF1. #3: If device_ relationship is not of type 'substitution'. #4: If device_ relationship is of type 'substitution'. #5: If used for a person as member of an organization. #6: If used for an organization. #7: If activity_element is not used in the context of UoF CF1. #8: If activity_element is used in the context of UoF CF1. #9: If data_element is not associated to activity, cable_pull_information, drawing_sheet, generic_note, path, path_node, or work_order. #10: If data_element is associated to activity or work_order. #11: If data_element is associated to cable_pull_information, device_ relationship used with UoF CF1, drawing_sheet,</p>	<p>versioned_action_request</p>	<p>41</p>		

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
<p>generic_note, path, or path_node. #12: If specification_category.implicit_exclusive_condition is FALSE. #13: If specification_category.implicit_exclusive_condition is TRUE. #14: If the document_representation is not a physical_model. #15: If the document_representation is a physical_model. #16: If function_unit is not used in the context of UoF CF1. #17: If function_unit is used in the context of UoF CF1.</p>				
description	versioned_action.-request.description	41		
id	versioned_action.-request.id	41		
request_type	versioned_action.-request.purpose	41		{ (versioned_action_request.purpose = 'change of standard') (versioned_action_request.purpose = 'cost reduction') (versioned_action_request.purpose = 'customer rejection') (versioned_action_request.purpose = 'customer request') (versioned_action_request.purpose = 'durability improvement') (versioned_action_request.purpose = 'government regulation') (versioned_action_request.purpose = 'procurement alignment') (versioned_action_request.purpose = 'production alignment') }

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
				(versioned_action_request.purpose = 'production relief') (versioned_action_request.purpose = 'quality improvement') (versioned_action_request.purpose = 'security reason') (versioned_action_request.purpose = 'standardization') (versioned_action_request.purpose = 'supplier request') (versioned_action_request.purpose = 'technical improvement') (versioned_action_request.purpose = 'tool improvement')
status	action_request_status. status	41	118	versioned_action_request <- action_request_status.assigned_request action_request_status
version_id	versioned_action_- request.version PATH	41		
work_request to date_and_person_- or_organization (as notified_- person_or_- organization)			29,31, 117	5(person_and_organization_item = versioned_action_request person_and_organization_item <- applied_person_and_organization_assignment.items[i] applied_person_and_organization_assignment <= person_and_organization_assignment {person_and_organization_assignment.role -> person_and_organization_role person_and_organization_role.name = 'notified person or organization'} person_and_organization_assignment.assigned_person_and_organization -> person_and_organization) #6: (organization_item = versioned_action_request organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'notified person or organization'} organization_assignment.assigned_organization -> organization)

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to date_and_person_- or_organization (as requestor)	PATH		29:31,83	<pre> versioned_action_request person_and_organization_item = versioned_action_request person_and_organization_item <- applied_person_and_organization_assignment.items[i] applied_person_and_organization_assignment <= {person_and_organization_assignment person_and_organization_role -> person_and_organization_role person_and_organization_role.name = 'requestor'} person_and_organization_assignment.assigned_person_and_organization -> person_and_organization #6: (organization_item = versioned_action_request organization_item <- applied_organization_assignment.items[i] applied_organization_assignment <= organization_assignment {organization_assignment.role -> organization_role organization_role.name = 'requestor'} organization_assignment.assigned_organization -> organization) </pre>
work_request to activity_method (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_item = action_method action_method </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to activity_- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = action_method action_relationship </pre>
work_request to alternate_item_- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = alternate_product_relationship alternate_product_relationship </pre>
work_request to assembly_- component_- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to cable_pull_information (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = representation representation </pre>
work_request to class_category_association (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_concept_feature_category_usage product_concept_feature_category_usage </pre>
work_request to class_condition_association (as scope)	PATH			<pre> action_request_assignment_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_concept_feature_association product_concept_feature_association </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to class_inclusion_- association (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_concept_feature_association product_concept_feature_association </pre>
work_request to class_- specification_- association (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_concept_feature_association product_concept_feature_association </pre>
work_request to classification_- system (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = class_system class_system </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to complex-product (as scope)	PATH			action_request_assigned_action_request <- action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition_formation product_definition_formation
work_request to complex-product relationship (as scope)	PATH			versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition_formation_relationship product_definition_formation_relationship
work_request to composition relationship (as scope)	PATH			versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition_formation_relationship product_definition_formation_relationship product_definition_usage => assembly_component_usage

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to configuration (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item action_request_item = configured_effectivity_assignment configured_effectivity_assignment </pre>
work_request to connectivity.-definition (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = connectivity_definition connectivity_definition </pre>
work_request to connectivity.-definition.-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item =shape_aspect_relationship shape_aspect_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to data_element (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = shape_aspect_relationship shape_aspect_relationship </pre>
work_request to data_element_- association (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item </pre> <p>#9: (action_request_item = property_definition property_definition) #10: (action_request_item = action_property action_property) #11: (action_request_item = representation_relationship representation_relationship)</p>
work_request to data_element_- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to design_discipline_item_definition (as scope)	PATH			<pre> action_request_item = representation_relationship representation_relationship versioned_action_request <- action_request_assignment.assigned_action_request {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition product_definition </pre>
work_request to device (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage) product_definition_item = product_definition product_definition </pre> <p>#1: (action_request_item = product_definition_relationship product_definition_usage => assembly_component_usage) #2: (action_request_item = product_definition product_definition)</p>
work_request to device_relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to document (as scope)	PATH			<pre> action_request_item product_definition_relationship product_definition_relationship product_definition_substitute product_definition_substitute versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product product </pre>
work_request to document_file (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = document_file document_file </pre>
work_request to document_file_relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to document_-representation (as scope)	PATH			action_request_item = document_relationship document_relationship versioned_action_request <- action_request_assigned_action_request {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition #14: (product_definition) #15: (product_definition => product_definition_with_associated_documents => physically_modelled_product_definition)
work_request to document_version (as scope)	PATH			versioned_action_request <- action_request_assigned_action_request {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_formation product_definition_formation
work_request to document_version-relationship (as scope)	PATH			versioned_action_request <- action_request_assigned_action_request {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_formation product_definition_formation

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to drawing (as scope)	PATH			<pre> action_request_item = product_definition_formation_relationship product_definition_formation_relationship versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = drawing_revision drawing_revision </pre>
work_request to drawing_sequence (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = drawing_revision drawing_revision </pre>
work_request to drawing_sheet (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = drawing_revision drawing_revision </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to drawing_sheet relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = representation_relationship representation_relationship </pre>
work_request to function_definition (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition product_definition </pre>
work_request to function_definition_relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_relationship product_definition_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to function_- interface (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = interface interface </pre>
work_request to function_unit (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item #16: (action_request_item = product_definition_relationship product_definition_usage => product_definition_usage) assembly_component_usage) #17: (action_request_item = product_definition product_definition) </pre>
work_request to function_unit_- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to function_version (as scope)	PATH			product_definition_relationship versioned_action_request <- action_request_assigned_action_request {action_request_assignment => object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_formation product_definition_formation
work_request to function_version_- relationship (as scope)	PATH			versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_formation_relationship product_definition_formation_relationship
work_request to functional_- connectivity_- definition (as scope)	PATH			versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = connectivity_definition connectivity_definition

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to functional- connectivity- definition- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = shape_aspect_relationship shape_aspect_relationship </pre>
work_request to generic_note (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = note_representation note_representation </pre>
work_request to interface (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = interface interface </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to interface_port (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = terminal terminal </pre>
work_request to interface_terminal (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = terminal terminal </pre>
work_request to item (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product product </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request_to_item_definition_relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_relationship product_definition_relationship </pre>
work_request_to_item_version (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_formation product_definition_formation </pre>
work_request_to_item_version_relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_formation_relationship product_definition_formation_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to location (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = installation_location installation_location </pre>
work_request to location_ relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = shape_aspect_relationship shape_aspect_relationship </pre>
work_request to manufacturing_ configuration (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = configuration_effectivity configuration_effectivity </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to marking (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = equipment_marking equipment_marking </pre>
work_request to node (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = installation_node installation_node </pre>
work_request to node-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = shape_aspect_relationship shape_aspect_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request_to_notification (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = notification notification </pre>
work_request_to_notification_relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = characterized_object_relationship characterized_object_relationship </pre>
work_request_to_path (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = path path </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to path_node (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = vertex vertex </pre>
work_request to path_node.- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = representation_item_relationship representation_item_relationship </pre>
work_request to path.- relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = representation_item_relationship representation_item_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to physical-assembly-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition_relationship product_definition_relationship => product_definition_usage => assembly_component_usage </pre>
work_request to physical-instance (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = product_definition product_definition </pre>
work_request to port (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = terminal terminal </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to process-variable (as scope)	PATH			<pre> action_request.assigned_action_request <- action_request.assigned_action_request {action_request.assigned_action_request.role -> object_role object_role.name = 'scope'} applied_action_request.assigned_action_request applied_action_request.assigned_action_request.items[i] -> action_request_item action_request_item = process_variable process_variable </pre>
work_request to process-variable-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request.assigned_action_request action_request.assigned_action_request {action_request.assigned_action_request.role -> object_role object_role.name = 'scope'} applied_action_request.assigned_action_request applied_action_request.assigned_action_request.items[i] -> action_request_item action_request_item = characterized_object_relationship characterized_object_relationship </pre>
work_request to product_class (as scope)	PATH			<pre> versioned_action_request <- action_request.assigned_action_request action_request.assigned_action_request {action_request.assigned_action_request.role -> object_role object_role.name = 'scope'} applied_action_request.assigned_action_request applied_action_request.assigned_action_request.items[i] -> action_request_item action_request_item = product_concept #7: (product_concept) #8: (product_class) </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to product identification (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item configuration_item = configuration_item #7: (configuration_item) #8: (configuration_item => product_identification) </pre>
work_request to product structure relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item product_definition_relationship product_definition_usage </pre>
work_request to requirement (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item product_definition </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to route (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = installation_route installation_route </pre>
work_request to route-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = shape_aspect_relationship shape_aspect_relationship </pre>
work_request to section (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = installation_section installation_section </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to section_end (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = installation_section_end installation_section_end </pre>
work_request to section_interface (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = installation_section_interface installation_section_interface </pre>
work_request to section_interface_relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = shape_aspect_relationship shape_aspect_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to section-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = shape_aspect_relationship shape_aspect_relationship </pre>
work_request to signal (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = signal </pre>
work_request to signal-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assignment.assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[j] -> action_request_item action_request_item = characterized_object_relationship characterized_object_relationship </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to signal_value (as scope)	PATH			<pre> action_request.assigned_action_request <- action_request.assigned_action_request {action_request.assigned_action_request.role -> object_role object_role.name = 'scope'} applied_action_request.assigned_action_request applied_action_request.assigned_action_request.items[i] -> action_request_item action_request_item = representation representation </pre>
work_request to specification (as scope)	PATH			<pre> versioned_action_request <- action_request.assigned_action_request action_request.assigned_action_request {action_request.assigned_action_request.role -> object_role object_role.name = 'scope'} applied_action_request.assigned_action_request applied_action_request.assigned_action_request.items[i] -> action_request_item action_request_item = product_concept_feature product_concept_feature </pre>
work_request to specification_category (as scope)	PATH			<pre> versioned_action_request <- action_request.assigned_action_request action_request.assigned_action_request {action_request.assigned_action_request.role -> object_role object_role.name = 'scope'} applied_action_request.assigned_action_request applied_action_request.assigned_action_request.items[i] -> action_request_item action_request_item = product_concept_feature_category product_concept_feature_category #12: (product_concept_feature_category) #13: (product_concept_feature_category => exclusive_product_concept_feature_category) </pre>

Table 26 – Mapping table work_management UoF (W1) (continued)

Application element	AIM element	Source	Rules	Reference path
work_request to specification-expression (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[] -> action_request_item action_request_item = product_concept_feature product_concept_feature => conditional_concept_feature conditional_concept_feature versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[] -> action_request_item action_request_item = product_concept_feature product_concept_feature => conditional_concept_feature inclusion_product_concept_feature </pre>
work_request to specification-inclusion (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[] -> action_request_item action_request_item = product_concept_feature product_concept_feature => conditional_concept_feature inclusion_product_concept_feature </pre>
work_request to technical_system (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[] -> action_request_item action_request_item = product_definition_formation product_definition_formation </pre>

Table 26 – Mapping table work_management UoF (W1) (concluded)

Application element	AIM element	Source	Rules	Reference path
work_request to technical_system.-relationship (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = product_definition_relationship product_definition_relationship </pre>
work_request to terminal (as scope)	PATH			<pre> versioned_action_request <- action_request_assigned_action_request action_request_assignment => {action_request_assignment.role -> object_role object_role.name = 'scope'} applied_action_request_assignment applied_action_request_assignment.items[i] -> action_request_item action_request_item = terminal terminal </pre>

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The following rules are referenced in the preceding table:

- 1 action_subtype_exclusiveness;
- 2 application_context_requires_ap_definition;
- 3 approval_person_organization_requires_date_time;
- 4 approval_requires_approval_assignment;
- 5 assembly_component_usage_reference_designation_constraint;
- 6 characterized_object_subtype_exclusiveness;
- 7 class_reference_requires_version;
- 8 classification_assignment_subtype_exclusiveness;
- 9 complex_product_requires_product_definition;
- 10 configuration_design_constraint;
- 11 curve_font_usage;
- 12 dependent_instantiable_action_directive;
- 13 dependent_instantiable_address;
- 14 dependent_instantiable_approval_role;
- 15 dependent_instantiable_approval_status;
- 16 dependent_instantiable_attribute_value_role;
- 17 dependent_instantiable_classification_role;
- 18 dependent_instantiable_colour_rgb;
- 19 dependent_instantiable_curve_style;
- 20 dependent_instantiable_date;
- 21 dependent_instantiable_date_and_time;
- 22 dependent_instantiable_date_role;
- 23 dependent_instantiable_date_time_role;
- 24 dependent_instantiable_derived_unit;
- 25 dependent_instantiable_document_usage_role;
- 26 dependent_instantiable_externally_defined_symbol;

- 27 dependent_instantiable_fill_area_style;
- 28 dependent_instantiable_fill_area_style_colour;
- 29 dependent_instantiable_identification_role;
- 30 dependent_instantiable_measure_with_unit;
- 31 dependent_instantiable_named_unit;
- 32 dependent_instantiable_object_role;
- 33 dependent_instantiable_organization_role;
- 34 dependent_instantiable_organizational_project_role;
- 35 dependent_instantiable_person;
- 36 dependent_instantiable_person_and_organization_role;
- 37 dependent_instantiable_pre_defined_colour;
- 38 dependent_instantiable_pre_defined_symbol;
- 39 dependent_instantiable_precision_qualifier;
- 40 dependent_instantiable_presentation_style_by_context;
- 41 dependent_instantiable_product_definition_context_role;
- 42 dependent_instantiable_retention;
- 43 dependent_instantiable_security_classification_level;
- 44 dependent_instantiable_symbol_colour;
- 45 dependent_instantiable_text_style;
- 46 dependent_instantiable_text_style_for_defined_font;
- 47 dependent_instantiable_time_interval_role;
- 48 dependent_instantiable_type_qualifier;
- 49 dimensionality_is_two_or_three;
- 50 draughting_model_annotation_layers;
- 51 draughting_subfigure_representation_layers;
- 52 drawing_revision_requires_document_designation;
- 53 drawing_sheet_annotation_layers;

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- 54 drawing_sheet_layout_usage;
- 55 drawing_sheet_revision_requires_document_designation;
- 56 drawing_view_annotation_layers;
- 57 effectivity_assignment_subtype_exclusiveness;
- 58 effectivity_context_assignment_subtype_exclusiveness;
- 59 event_occurrence_requires_event_occurrence_assignment;
- 60 executed_action_requires_status;
- 61 externally_defined_class_with_known_source_requirement;
- 62 externally_defined_item_relationship_constraint;
- 63 externally_defined_item_subtype_exclusiveness;
- 64 fill_area_style_tile_symbol_constraint;
- 65 general_property_constraint;
- 66 global_length_and_angle_units_d_or_d;
- 67 group_assignment_subtype_exclusiveness;
- 68 group_relationship_constraint;
- 69 group_subtype_exclusiveness;
- 70 identification_assignment_relationship_constraint;
- 71 identification_assignment_subtype_exclusiveness;
- 72 known_source_constraint;
- 73 person_requires_person_and_organization;
- 74 physical_instance_requires_product_definition;
- 75 pre_defined_item_subtype_exclusiveness;
- 76 presentation_layer_assignment_constraint_d_or_d;
- 77 presentation_size_constraint;
- 78 presentation_style_by_context_constraint;
- 79 presentation_view_presented_once;
- 80 presented_item_subtype_exclusiveness;

- 81 product_concept_feature_requires_category;
- 82 product_definition_constraint;
- 83 product_definition_context_association_constraint;
- 84 product_definition_context_constraint;
- 85 product_definition_relationship_constraint;
- 86 product_requires_category;
- 87 product_requires_person_organization;
- 88 product_requires_version;
- 89 property_definition_constraint;
- 90 property_definition_relationship_constraint;
- 91 property_definition_representation_constraint;
- 92 property_reference_requires_name_scope (plib_);
- 93 property_reference_requires_version (plib);
- 94 reference_grid_layout_usage;
- 95 representation_constraint;
- 96 representation_item_constraint;
- 97 representation_item_subtype_exclusiveness;
- 98 representation_relationship_constraint;
- 99 representation_subtype_exclusiveness;
- 100 restrict_alternative_definition;
- 101 restrict_applied_action_assignment;
- 102 restrict_applied_action_request_assignment;
- 103 restrict_applied_classification_assignment_role;
- 104 restrict_applied_event_occurrence_assignment;
- 105 restrict_applied_organizational_project_assignment;
- 106 restrict_camera_image_in_view;
- 107 restrict_class_system_assignment_for_approval_status;

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- 108 restrict_class_system_assignment_for_class;
- 109 restrict_class_system_assignment_for_document_type;
- 110 restrict_class_system_assignment_for_planar_extent;
- 111 restrict_class_system_assignment_for_security_classification_level;
- 112 restrict_concept_feature_operator;
- 113 restrict_configuration_design_for_product_class;
- 114 restrict_draughting_title_for_drawing_sheet_revision;
- 115 restrict_effectivity_assignment_for_class_category_usage;
- 116 restrict_effectivity_for_effectivity_relationship;
- 117 restrict_effectivity_usage;
- 118 restrict_group_relationship_for_general_classification_hierarchy;
- 119 restrict_group_relationship_for_specification_category;
- 120 restrict_identification_assignment_for_product;
- 121 restrict_language_assignment_for_annotation_text_occurrence;
- 122 restrict_language_assignment_for_descriptive_representation_item;
- 123 restrict_language_assignment_for_representation;
- 124 restrict_product_category_for_product;
- 125 restrict_product_definition_substitute;
- 126 restrict_properties_of_document_file;
- 127 restrict_property_value_format_for_general_property;
- 128 restrict_representation_for_document_content_property;
- 129 restrict_representation_for_document_creation_property;
- 130 restrict_representation_for_document_format_property;
- 131 restrict_representation_for_document_properties;
- 132 restrict_representation_for_document_size_property;
- 133 restrict_uncertainty_in_global_uncertainty_assigned_context;
- 134 restrict_version_assignment_for_action_directive;

- 135 restrict_version_assignment_for_applied_identification_assignment;
- 136 restrict_version_assignment_for_class;
- 137 restrict_version_assignment_for_configuration_item;
- 138 restrict_version_assignment_for_document_file;
- 139 restrict_version_assignment_for_effectivity;
- 140 restrict_version_assignment_for_general_property;
- 141 restrict_version_assignment_for_path;
- 142 restrict_version_assignment_for_product_concept;
- 143 restrict_version_assignment_for_product_concept_feature;
- 144 retention_requires_retention_assignment;
- 145 security_classification_requires_security_classification_assignment;
- 146 selected_instance_usage_requires_representation;
- 147 shape_aspect_relationship_constraint;
- 148 shape_aspect_subtype_exclusiveness;
- 149 sheets_belong_to_one_drawing;
- 150 subtype_mandatory_address;
- 151 subtype_mandatory_annotation_occurrence;
- 152 subtype_mandatory_bounded_curve;
- 153 subtype_mandatory_camera_image;
- 154 subtype_mandatory_camera_model;
- 155 subtype_mandatory_curve;
- 156 subtype_mandatory_date;
- 157 subtype_mandatory_draughting_callout;
- 158 subtype_mandatory_pre_defined_curve_font;
- 159 subtype_mandatory_pre_defined_symbol;
- 160 text_font_usage;
- 161 versioned_action_request_requires_date_person_organization;

162 versioned_action_request_requires_status.

5.2 AIM EXPRESS short listing

This clause specifies the EXPRESS schema that uses elements from the integrated resources and the AICs and contains the types, entity specializations, rules, and functions that are specific to this part of ISO 10303. This clause also specifies modifications to the text for constructs that are imported from the integrated resources and the AICs. The definitions and EXPRESS provided in the integrated resources for constructs used in the AIM may include select list items and subtypes that are not imported into the AIM. Requirements stated in the integrated resources that refer to such items and subtypes apply exclusively to those items that are imported into the AIM.

NOTE 1 The following conventions apply for the definition text:

- Terms written in boldface refer to the AIM objects, i.e., ‘**circle**’ refers to the entity as defined in ISO 10303-42;
- Terms not written in boldface refer to the concept, i.e., ‘circle’ refers to the concept of a round plane figure whose circumference is everywhere equidistant from its centre.

NOTE 2 The following short form and the long form documented in annex A correspond to conformance class CC8 of this part of ISO 10303 which includes all UoFs.

EXPRESS specification:

*)

```
SCHEMA electrotechnical_design;
```

```
USE FROM ISO13584_expressions_schema -- ISO 13584-20
(abs_function,
acos_function,
and_expression,
asin_function,
atan_function,
binary_boolean_expression,
binary_function_call,
binary_numeric_expression,
boolean_expression,
boolean_literal,
boolean_variable,
comparison_equal,
comparison_expression,
comparison_greater,
comparison_greater_equal,
comparison_less,
comparison_less_equal,
comparison_not_equal,
concat_expression,
cos_function,
div_expression,
equals_expression,
```

```

exp_function,
expression,
format_function,
index_expression,
int_literal,
int_numeric_variable,
int_value_function,
interval_expression,
length_function,
like_expression,
literal_number,
log10_function,
log2_function,
log_function,
maximum_function,
minimum_function,
minus_expression,
minus_function,
mod_expression,
mult_expression,
multiple_arity_boolean_expression,
multiple_arity_function_call,
multiple_arity_numeric_expression,
not_expression,
numeric_expression,
numeric_variable,
odd_function,
or_expression,
plus_expression,
power_expression,
real_literal,
real_numeric_variable,
simple_boolean_expression,
simple_numeric_expression,
simple_string_expression,
sin_function,
slash_expression,
square_root_function,
string_expression,
string_literal,
string_variable,
substring_expression,
tan_function,
unary_boolean_expression,
unary_function_call,
unary_numeric_expression,
value_function,
variable,
xor_expression);

```

```

REFERENCE FROM ISO13584_expressions_schema      -- ISO 13584-20
(is_SQL_mappable,
is_int_expr,
used_functions);

```

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```
USE FROM action_schema -- ISO 10303-41
  (action,
   action_directive,
   action_method,
   action_relationship,
   action_request_solution,
   action_request_status,
   action_status,
   directed_action,
   executed_action,
   versioned_action_request);

USE FROM application_context_schema -- ISO 10303-41
  (application_context,
   application_context_element,
   application_context_relationship,
   application_protocol_definition,
   product_definition_context);

USE FROM approval_schema -- ISO 10303-41
  (approval,
   approval_date_time,
   approval_person_organization,
   approval_relationship,
   approval_role,
   approval_status);

USE FROM basic_attribute_schema -- ISO 10303-41
  (description_attribute,
   id_attribute,
   name_attribute,
   object_role,
   role_association);

USE FROM certification_schema -- ISO 10303-41
  (certification,
   certification_type);

USE FROM configuration_management_schema -- ISO 10303-44
  (configurable_item,
   configuration_design,
   configuration_effectivity,
   configuration_item);

USE FROM contract_schema -- ISO 10303-41
  (contract);

USE FROM date_time_schema -- ISO 10303-41
  (calendar_date,
   date,
   date_role,
   date_and_time,
   date_time_role,
   event_occurrence,
   event_occurrence_role,
```

```

relative_event_occurrence,
time_interval_role,
time_interval_with_bounds);

USE FROM document_schema -- ISO 10303-41
(document,
document_product_association,
document_relationship,
document_representation_type,
document_type,
document_usage_constraint);

USE FROM drawing_definition_schema -- ISO 10303-101
(draughting_title,
drawing_definition,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
drawing_sheet_revision_usage);

USE FROM effectivity_schema -- ISO 10303-41
(dated_effectivity,
effectivity,
effectivity_relationship,
lot_effectivity,
serial_numbered_effectivity,
time_interval_based_effectivity);

USE FROM external_reference_schema -- ISO 10303-41
(externally_defined_item,
externally_defined_item_relationship,
external_source,
pre_defined_item);

USE FROM geometry_schema -- ISO 10303-42
(axis2_placement,
axis2_placement_2d,
axis2_placement_3d,
b_spline_curve,
b_spline_curve_with_knots,
bezier_curve,
bounded_curve,
cartesian_point,
cartesian_transformation_operator_2d,
cartesian_transformation_operator_3d,
circle,
composite_curve,
conic,
curve,
ellipse,
geometric_representation_context,
geometric_representation_item,
hyperbola,
line,
parabola,

```

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```
point,  
polyline,  
quasi_uniform_curve,  
rational_b_spline_curve,  
trimmed_curve,  
uniform_curve);  
  
USE FROM group_schema -- ISO 10303-41  
(group,  
group_relationship);  
  
USE FROM management_resources_schema -- ISO 10303-41  
(action_assignment,  
action_request_assignment,  
approval_assignment,  
attribute_classification_assignment,  
attribute_value_assignment,  
attribute_value_role,  
certification_assignment,  
classification_assignment,  
classification_role,  
contract_assignment,  
date_and_time_assignment,  
date_assignment,  
document_reference,  
document_usage_constraint_assignment,  
document_usage_role,  
effectivity_assignment,  
effectivity_context_assignment,  
effectivity_context_role,  
event_occurrence_assignment,  
external_identification_assignment,  
group_assignment,  
identification_assignment,  
identification_assignment_relationship,  
identification_role,  
organization_assignment,  
organizational_project_assignment,  
organizational_project_role,  
person_and_organization_assignment,  
security_classification_assignment,  
time_interval_assignment);  
  
USE FROM material_property_definition_schema -- ISO 10303-45  
(property_definition_relationship);  
  
USE FROM measure_schema -- ISO 10303-41  
(amount_of_substance_measure,  
amount_of_substance_measure_with_unit,  
amount_of_substance_unit,  
area_measure,  
area_measure_with_unit,  
area_unit,  
celsius_temperature_measure,  
celsius_temperature_measure_with_unit,
```

```

context_dependent_measure,
context_dependent_unit,
conversion_based_unit,
count_measure,
derived_unit,
descriptive_measure,
electric_current_measure,
electric_current_measure_with_unit,
electric_current_unit,
global_unit_assigned_context,
length_measure,
length_measure_with_unit,
length_unit,
luminous_intensity_measure,
luminous_intensity_measure_with_unit,
luminous_intensity_unit,
mass_measure,
mass_measure_with_unit,
mass_unit,
measure_with_unit,
named_unit,
numeric_measure,
parameter_value,
plane_angle_measure,
plane_angle_measure_with_unit,
plane_angle_unit,
positive_length_measure,
positive_plane_angle_measure,
positive_ratio_measure,
ratio_measure,
ratio_measure_with_unit,
ratio_unit,
si_unit,
solid_angle_measure,
solid_angle_measure_with_unit,
solid_angle_unit,
thermodynamic_temperature_measure,
thermodynamic_temperature_measure_with_unit,
thermodynamic_temperature_unit,
time_measure,
time_measure_with_unit,
time_unit,
volume_measure,
volume_measure_with_unit,
volume_unit);

```

```

USE FROM person_organization_schema -- ISO 10303-41
(address,
organization,
organization_relationship,
organization_role,
organizational_address,
organizational_project,
organizational_project_relationship,
person,

```

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```
    person_and_organization,  
    person_and_organization_role,  
    personal_address);  
  
USE FROM presentation_appearance_schema -- ISO 10303-46  
    (box_height,  
    box_rotate_angle,  
    box_slant_angle,  
    box_width,  
    context_dependent_over_riding_styled_item,  
    curve_style_font,  
    curve_style_with_ends_and_corners,  
    externally_defined_curve_font,  
    externally_defined_style,  
    invisibility,  
    pre_defined_curve_font,  
    presentation_style_assignment,  
    presentation_style_by_context,  
    styled_item);  
  
USE FROM presentation_definition_schema -- ISO 10303-46  
    (annotation_occurrence_relationship,  
    defined_character_glyph,  
    defined_symbol,  
    externally_defined_character_glyph,  
    pre_defined_symbol,  
    symbol_representation_map);  
  
USE FROM presentation_organization_schema -- ISO 10303-46  
    (area_in_set,  
    camera_image,  
    camera_model,  
    camera_model_d2,  
    camera_usage,  
    presentation_area,  
    presentation_layer_assignment,  
    presentation_representation,  
    presentation_size,  
    presentation_view,  
    presented_item,  
    presented_item_representation);  
  
USE FROM presentation_resource_schema -- ISO 10303-46  
    (externally_defined_text_font,  
    planar_box,  
    planar_extent,  
    pre_defined_colour,  
    pre_defined_text_font);  
  
USE FROM process_property_schema -- ISO 10303-49  
    (action_property);  
  
USE FROM process_property_representation_schema -- ISO 10303-49  
    (action_property_representation);
```



```

USE FROM product_concept_schema -- ISO 10303-44
  (concept_feature_operator,
   concept_feature_relationship,
   concept_feature_relationship_with_condition,
   conditional_concept_feature,
   product_concept,
   product_concept_feature,
   product_concept_feature_association,
   product_concept_relationship);

USE FROM product_definition_schema -- ISO 10303-41
  (product,
   product_category,
   product_category_relationship,
   product_definition,
   product_definition_context_association,
   product_definition_context_role,
   product_definition_effectivity,
   product_definition_formation,
   product_definition_formation_relationship,
   product_definition_formation_with_specified_source,
   product_definition_relationship,
   product_definition_substitute,
   product_definition_with_associated_documents,
   product_related_product_category);

USE FROM product_property_definition_schema -- ISO 10303-41
  (characterized_object,
   characterized_object_relationship,
   general_property,
   general_property_association,
   general_property_relationship,
   product_definition_shape,
   property_definition,
   shape_aspect,
   shape_aspect_relationship);

USE FROM product_property_representation_schema -- ISO 10303-41
  (context_dependent_shape_representation,
   property_definition_representation,
   shape_definition_representation,
   shape_representation,
   shape_representation_relationship);

USE FROM product_structure_schema -- ISO 10303-44
  (alternate_product_relationship,
   assembly_component_usage,
   assembly_component_usage_substitute,
   make_from_usage_option,
   next_assembly_usage_occurrence,
   product_definition_occurrence_relationship,
   product_definition_usage,
   promissory_usage_occurrence,
   quantified_assembly_component_usage,
   specified_higher_usage_occurrence);

```

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```
USE FROM qualified_measure_schema           -- ISO 10303-45
  (descriptive_representation_item,
   measure_representation_item,
   precision_qualifier,
   qualified_representation_item,
   type_qualifier);

USE FROM representation_schema             -- ISO 10303-43
  (compound_representation_item,
   functionally_defined_transformation,
   global_uncertainty_assigned_context,
   item_defined_transformation,
   list_representation_item,
   mapped_item,
   representation,
   representation_context,
   representation_item,
   representation_item_relationship,
   representation_map,
   representation_relationship,
   representation_relationship_with_transformation,
   set_representation_item,
   uncertainty_measure_with_unit,
   value_representation_item);

REFERENCE FROM representation_schema       -- ISO 10303-43
  (using_representations);

USE FROM security_classification_schema     -- ISO 10303-41
  (security_classification,
   security_classification_level);

USE FROM support_resource_schema           -- ISO 10303-41
  (label,
   identifier);

REFERENCE FROM support_resource_schema     -- ISO 10303-41
  (type_check_function);

USE FROM topology_schema                  -- ISO 10303-42
  (edge,
   edge_curve,
   path,
   topological_representation_item,
   vertex,
   vertex_point);

USE FROM ISO13584_generic_expressions_schema; -- ISO 13584-20

USE FROM aic_draughting_annotation;       -- ISO 10303-504
```

USE FROM aic_draughting_elements;
(*

-- ISO 10303-506

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NOTE The schemas referenced above can be found in the following parts of ISO 10303:

ISO13584_expressions_schema	ISO 13584-20
ISO13584_generic_expressions_schema	ISO 13584-20
aic_draughting_annotation	ISO 10303-504
aic_draughting_elements	ISO 10303-506
action_schema	ISO 10303-41
application_context_schema	ISO 10303-41
approval_schema	ISO 10303-41
basic_attribute_schema	ISO 10303-41
certification_schema	ISO 10303-41
configuration_management_schema	ISO 10303-44
contract_schema	ISO 10303-41
date_time_schema	ISO 10303-41
document_schema	ISO 10303-41
drawing_definition_schema	ISO 10303-101
effectivity_schema	ISO 10303-41
external_reference_schema	ISO 10303-41
geometry_schema	ISO 10303-42
group_schema	ISO 10303-41
management_resources_schema	ISO 10303-41
material_property_definition_schema	ISO 10303-45
measure_schema	ISO 10303-41
person_organization_schema	ISO 10303-41
presentation_appearance_schema	ISO 10303-46
presentation_definition_schema	ISO 10303-46
presentation_organization_schema	ISO 10303-46
presentation_resource_schema	ISO 10303-46

process_property_schema	ISO 10303-49
process_property_representation_schema	ISO 10303-49
product_concept_schema	ISO 10303-44
product_definition_schema	ISO 10303-41
product_property_definition_schema	ISO 10303-41
product_property_representation_schema	ISO 10303-41
product_structure_schema	ISO 10303-44
qualified_measure_schema	ISO 10303-45
representation_schema	ISO 10303-43
security_classification_schema	ISO 10303-41
support_ressource_schema	ISO 10303-41
topology_schema	ISO 10303-42

5.2.1 electrotechnical design types

5.2.1.1 action_item

The type **action_item** specifies those objects to which an **action** may be assigned through an **applied_action_assignment**.

EXPRESS specification:

*)

```

TYPE action_item = SELECT
  (action_directive,
   action_method,
   action_property,
   action_relationship,
   action_request_solution,
   alternate_product_relationship,
   applied_action_assignment,
   applied_classification_assignment,
   applied_document_reference,
   applied_person_and_organization_assignment,
   applied_presented_item,
   approval_status,
   assembly_component_usage_substitute,
   certification,
   characterized_object_relationship,
   class,
   class_system,
   configuration_design,
   configuration_effectivity,

```

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```
configuration_item,  
configured_effectivity_assignment,  
connectivity_definition,  
contract,  
descriptive_representation_item,  
document_file,  
document_relationship,  
drawing_revision,  
drawing_revision_sequence,  
drawing_sheet_revision,  
equipment_marking,  
executed_action,  
general_property,  
installation_location,  
installation_node,  
installation_route,  
installation_section,  
installation_section_end,  
installation_section_interface,  
installation_segment,  
interface,  
note_representation,  
notification,  
organization_relationship,  
organizational_project,  
path,  
person_and_organization,  
process_variable,  
product,  
product_concept,  
product_concept_feature,  
product_concept_feature_association,  
product_concept_feature_category,  
product_concept_feature_category_usage,  
product_definition,  
product_definition_formation,  
product_definition_formation_relationship,  
product_definition_relationship,  
product_definition_substitute,  
property_definition,  
property_definition_relationship,  
representation,  
representation_item_relationship,  
representation_relationship,  
security_classification,  
security_classification_level,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE;  
(*
```

5.2.1.2 action_request_item

The type **action_request_item** specifies those objects to which an **action_request** may be assigned through an **applied_action_request_assignment**.

EXPRESS specification:

*)

```

TYPE action_request_item = SELECT
  (action_method,
   action_property,
   alternate_product_relationship,
   assembly_component_usage_substitute,
   characterized_object_relationship,
   class_system,
   configuration_design,
   configuration_effectivity,
   configuration_item,
   configured_effectivity_assignment,
   connectivity_definition,
   document_file,
   document_relationship,
   drawing_revision,
   drawing_sheet_revision,
   equipment_marking,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   note_representation,
   notification,
   path,
   process_variable,
   product,
   product_concept,
   product_concept_feature,
   product_concept_feature_association,
   product_concept_feature_category,
   product_concept_feature_category_usage,
   product_definition,
   product_definition_formation,
   product_definition_formation_relationship,
   product_definition_relationship,
   product_definition_substitute,
   property_definition,
   representation,
   representation_item_relationship,
   representation_relationship,
   shape_aspect_relationship,
   signal,
   terminal,

```

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```
vertex);  
END_TYPE;  
(*
```

5.2.1.3 approval_item

The type **approval_item** specifies those objects to which an **approval** may be assigned through an **applied_approval_assignment**.

EXPRESS specification:

```
*)  
TYPE approval_item = SELECT  
  (action,  
   action_directive,  
   action_property,  
   action_relationship,  
   action_request_solution,  
   alternate_product_relationship,  
   applied_action_assignment,  
   applied_classification_assignment,  
   assembly_component_usage,  
   assembly_component_usage_substitute,  
   characterized_object_relationship,  
   certification,  
   class,  
   class_system,  
   configuration_design,  
   configuration_effectivity,  
   configuration_item,  
   configured_effectivity_assignment,  
   connectivity_definition,  
   contract,  
   descriptive_representation_item,  
   document_file,  
   document_relationship,  
   drawing_revision,  
   drawing_revision_sequence,  
   drawing_sheet_revision,  
   equipment_marking,  
   general_property,  
   installation_location,  
   installation_node,  
   installation_route,  
   installation_section,  
   installation_section_end,  
   installation_section_interface,  
   interface,  
   note_representation,  
   notification,  
   organizational_project,  
   path,  
   process_variable,  
   product,  
   product_concept,
```



```

product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
shape_aspect_relationship,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE;
(*

```

5.2.1.4 associated_item

The type **associated_item** specifies those objects to which a graphical annotation element may be assigned for presentation purposes.

EXPRESS specification:

```

*)
TYPE associated_item = SELECT
(action,
action_directive,
annotation_occurrence_relationship,
applied_action_assignment,
applied_classification_assignment,
applied_identification_assignment,
class,
class_system,
connecting_line_group,
connectivity_definition,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
item_designation_assignment,
note_representation,
notification,
organizational_project,

```

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```
page_connector_presentation_group,  
page_connector_reference_group,  
path,  
process_variable,  
product,  
product_definition,  
product_definition_formation,  
product_definition_relationship,  
property_definition,  
representation,  
representation_relationship,  
security_classification,  
security_classification_level,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE;  
(*
```

5.2.1.5 attribute_language_item

The type **attribute_language_item** specifies those objects to which a **language** may be assigned through an **attribute_language_assignment**.

EXPRESS specification:

```
*)  
TYPE attribute_language_item = SELECT  
  (action,  
   action_directive,  
   action_method,  
   action_property,  
   action_relationship,  
   alternate_product_relationship,  
   application_context,  
   approval_relationship,  
   assembly_component_usage_substitute,  
   attribute_value_assignment,  
   certification,  
   class_system,  
   conditional_concept_feature,  
   configuration_design,  
   configuration_item,  
   configured_effectivity_assignment,  
   connectivity_definition,  
   contract,  
   descriptive_representation_item,  
   document_file,  
   document_relationship,  
   draughting_title,  
   drawing_sheet_revision,  
   effectivity,  
   effectivity_relationship,  
   equipment_marking,
```

```

event_occurrence,
external_source,
free_segment,
general_property,
general_property_relationship,
group,
identification_role,
inclusion_product_concept_feature,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
interface,
notification,
organization_relationship,
organizational_project,
organizational_project_relationship,
path,
presentation_view,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category_usage,
product_concept_relationship,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
product_related_product_category,
product_specification,
property_definition,
representation,
representation_relationship,
routed_segment,
shape_aspect_relationship,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE;
(*

```

5.2.1.6 category_usage_item

The type **category_usage_item** specifies those objects to which a **product_concept_feature_category** may be assigned through a **product_concept_feature_category_usage**.

EXPRESS specification:

*)

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```
TYPE category_usage_item = SELECT
  (product_class);
END_TYPE;
(*
```

5.2.1.7 certification_item

The type **certification_item** specifies those objects to which a **certification** may be assigned through an **applied_certification_assignment**.

EXPRESS specification:

```
*)
TYPE certification_item = SELECT
  (product_definition,
   product_definition_formation,
   product_definition_formation_relationship,
   product_definition_relationship);
END_TYPE;
(*
```

5.2.1.8 classification_item

The type **classification_item** specifies those objects to which classification information may be assigned through an **applied_classification_assignment**.

EXPRESS specification:

```
*)
TYPE classification_item = SELECT
  (action_directive,
   action_method,
   applied_identification_assignment,
   approval,
   approval_status,
   class,
   colour_representation_item,
   configuration_item,
   connectivity_definition,
   contract,
   document_file,
   document_type,
   drawing_revision,
   drawing_sheet_revision,
   equipment_marking,
   executed_action,
   general_property,
   installation_location,
   installation_route,
   installation_section,
   installation_section_interface,
   item_designation_assignment,
   organizational_project,
   path,
```

```

    planar_extent,
    product,
    product_concept,
    product_concept_feature_category,
    product_definition,
    product_definition_formation,
    product_definition_relationship,
    property_definition,
    representation,
    security_classification_level,
    signal,
    symbol_representation_map,
    terminal,
    versioned_action_request,
    vertex);
END_TYPE;
(*)

```

5.2.1.9 class_usage_effectivity_context_item

The type **class_usage_effectivity_context_item** specifies those objects to which an **effectivity_assignment** may be assigned through a **class_usage_effectivity_context_assignment**.

EXPRESS specification:

```

*)
TYPE class_usage_effectivity_context_item = SELECT
    (product_definition);
END_TYPE;
(*)

```

5.2.1.10 configured_effectivity_context_item

The type **configured_effectivity_context_item** specifies those objects to which a configured element may be assigned through a **configured_effectivity_context_assignment** as solution.

EXPRESS specification:

```

*)
TYPE configured_effectivity_context_item = SELECT
    (product_concept_feature_association);
END_TYPE;
(*)

```

5.2.1.11 configured_effectivity_item

A **configured_effectivity_item** type specifies those objects to which a set of conditions or specifications may be assigned through a **configured_effectivity_assignment**.

EXPRESS specification:

```

*)
TYPE configured_effectivity_item = SELECT
    (connectivity_definition,

```

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```
    installation_location,  
    product_definition,  
    signal);  
END_TYPE;  
(*
```

5.2.1.12 connecting_line_item

The type **connecting_line_item** specifies those objects which may be represented by a connecting line in a schematic diagram.

EXPRESS specification:

```
*)  
TYPE connecting_line_item = SELECT  
    (connectivity_definition);  
END_TYPE;  
(*
```

5.2.1.13 contract_item

The type **contract_item** specifies those objects to which a **contract** may be assigned through an **applied_contract_assignment**.

EXPRESS specification:

```
*)  
TYPE contract_item = SELECT  
    (action_directive,  
    installation_location,  
    installation_node,  
    installation_route,  
    installation_section,  
    installation_section_end,  
    installation_section_interface,  
    notification,  
    organizational_project,  
    path,  
    process_variable,  
    product_definition,  
    product_definition_formation,  
    product_definition_relationship,  
    representation,  
    signal,  
    versioned_action_request,  
    vertex);  
END_TYPE;  
(*
```

5.2.1.14 date_and_time_item

The type **date_and_time_item** specifies those objects to which a **date_and_time** may be assigned through an **applied_date_and_time_assignment**.

EXPRESS specification:

*)

```

TYPE date_and_time_item = SELECT
  (action,
   action_directive,
   action_property,
   action_relationship,
   action_request_solution,
   alternate_product_relationship,
   applied_action_assignment,
   applied_classification_assignment,
   applied_document_reference,
   applied_organization_assignment,
   applied_person_and_organization_assignment,
   applied_presented_item,
   approval_person_organization,
   approval_status,
   assembly_component_usage_substitute,
   characterized_object_relationship,
   certification,
   class,
   class_system,
   configuration_item,
   configuration_design,
   configured_effectivity_assignment,
   connectivity_definition,
   contract,
   descriptive_representation_item,
   document_file,
   document_relationship,
   drawing_revision,
   drawing_revision_sequence,
   drawing_sheet_revision,
   effectivity,
   event_occurrence,
   executed_action,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   installation_segment,
   interface,
   note_representation,
   notification,
   organization_relationship,
   organizational_project,
   path,
   person_and_organization,
   process_variable,
   product,
   product_concept,

```

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```
product_concept_feature,  
product_concept_feature_association,  
product_concept_feature_category,  
product_concept_feature_category_usage,  
product_definition,  
product_definition_formation,  
product_definition_formation_relationship,  
product_definition_relationship,  
product_definition_substitute,  
property_definition,  
property_definition_relationship,  
representation,  
representation_item_relationship,  
representation_relationship,  
security_classification,  
security_classification_level,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE;  
(*
```

5.2.1.15 date_item

The type **date_item** specifies those objects to which a **date** may be assigned through an **applied_date_assignment**.

EXPRESS specification:

```
*)  
TYPE date_item = SELECT  
(action,  
action_directive,  
action_property,  
action_relationship,  
action_request_solution,  
alternate_product_relationship,  
applied_action_assignment,  
applied_classification_assignment,  
applied_document_reference,  
applied_organization_assignment,  
applied_person_and_organization_assignment,  
applied_presented_item,  
approval_person_organization,  
approval_status,  
assembly_component_usage_substitute,  
characterized_object_relationship,  
certification,  
class,  
class_system,  
configuration_item,  
configuration_design,  
configured_effectivity_assignment,
```



```

connectivity_definition,
contract,
descriptive_representation_item,
document_file,
document_relationship,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
effectivity,
event_occurrence,
executed_action,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
note_representation,
notification,
organization_relationship,
organizational_project,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
security_classification_level,
shape_aspect_relationship,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE;
(*

```

5.2.1.16 document_reference_item

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The type **document_reference_item** specifies those objects to which a **document_reference** or a **document_usage_constraint** may be assigned through an **applied_document_reference** or **applied_document_usage_constraint_assignment** respectively.

EXPRESS specification:

*)

```
TYPE document_reference_item = SELECT
  (action,
   action_directive,
   action_method,
   address,
   applied_action_assignment,
   applied_classification_assignment,
   applied_identification_assignment,
   approval,
   approval_status,
   certification,
   class,
   class_system,
   configuration_item,
   connectivity_definition,
   contract,
   drawing_revision,
   drawing_sheet_revision,
   equipment_marking,
   executed_action,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   item_designation_assignment,
   note_representation,
   notification,
   organization,
   organizational_project,
   path,
   person,
   presentation_view,
   process_variable,
   product,
   product_concept,
   product_concept_feature,
   product_concept_feature_association,
   product_concept_feature_category,
   product_concept_feature_category_usage,
   product_definition,
   product_definition_formation,
   product_definition_relationship,
   property_definition,
   representation,
```

```

security_classification,
security_classification_level,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE;
(*

```

5.2.1.17 draughting_group_element

The type **draughting_group_element** specifies those objects that may be associated to a **group** by a **draughting_group_elements_assignment**.

EXPRESS specification:

```

*)
TYPE draughting_group_element = SELECT
  (draughting_annotation_occurrence,
   draughting_elements);
END_TYPE;
(*

```

5.2.1.18 draughting_presented_item_select

A **draughting_presented_item_select** type specifies those objects that may be presented by a drawing.

NOTE 1 The definition of this type is identical to the definition in ISO 10303-505.

NOTE 2 This type is used in case a **product_definition_formation** is presented by a drawing.

EXPRESS specification:

```

*)
TYPE draughting_presented_item_select = SELECT
  (product_definition_formation);
END_TYPE;
(*

```

5.2.1.19 effectivity_item

The type **effectivity_item** specifies those objects to which an **effectivity** may be assigned through an **applied_effectivity_assignment**.

EXPRESS specification:

```

*)
TYPE effectivity_item = SELECT
  (action_property,
   alternate_product_relationship,
   applied_action_assignment,
   assembly_component_usage,
   assembly_component_usage_substitute,

```

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```
characterized_object_relationship,  
class_system,  
configuration_design,  
configuration_item,  
configured_effectivity_assignment,  
connectivity_definition,  
document_file,  
document_relationship,  
drawing_revision,  
drawing_revision_sequence,  
drawing_sheet_revision,  
equipment_marking,  
general_property,  
installation_location,  
installation_node,  
installation_route,  
installation_section,  
installation_section_end,  
installation_section_interface,  
interface,  
note_representation,  
notification,  
path,  
process_variable,  
product,  
product_concept,  
product_concept_feature,  
product_concept_feature_association,  
product_concept_feature_category,  
product_concept_feature_category_usage,  
product_definition,  
product_definition_formation,  
product_definition_formation_relationship,  
product_definition_relationship,  
product_definition_substitute,  
property_definition,  
representation,  
representation_item_relationship,  
representation_relationship,  
security_classification,  
shape_aspect_relationship,  
signal,  
terminal,  
vertex);
```

END_TYPE;

(*

5.2.1.20 event_occurrence_item

The type **event_item** specifies those objects to which an **event_occurrence** may be assigned through an **applied_event_occurrence_assignment**.

EXPRESS specification:

*)

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```
TYPE event_occurrence_item = SELECT
  (action,
   action_directive,
   action_property,
   action_relationship,
   action_request_solution,
   alternate_product_relationship,
   applied_action_assignment,
   applied_classification_assignment,
   applied_document_reference,
   applied_person_and_organization_assignment,
   applied_presented_item,
   approval_status,
   assembly_component_usage_substitute,
   certification,
   characterized_object_relationship,
   class,
   class_system,
   configuration_design,
   configuration_item,
   configured_effectivity_assignment,
   connectivity_definition,
   contract,
   document_file,
   document_relationship,
   drawing_revision,
   drawing_revision_sequence,
   drawing_sheet_revision,
   equipment_marking,
   executed_action,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   installation_segment,
   interface,
   note_representation,
   notification,
   organization_relationship,
   organizational_project,
   path,
   person_and_organization,
   process_variable,
   product,
   product_concept,
   product_concept_feature,
   product_concept_feature_association,
   product_concept_feature_category,
   product_concept_feature_category_usage,
   product_definition,
   product_definition_formation,
   product_definition_formation_relationship,
```

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```
product_definition_relationship,  
product_definition_substitute,  
property_definition,  
property_definition_relationship,  
representation,  
representation_item_relationship,  
representation_relationship,  
security_classification,  
security_classification_level,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE;  
(*
```

5.2.1.21 external_identification_item

The type **external_identification_item** specifies those objects to which an external identifier and an external source may be assigned through an **applied_external_identification_assignment**.

EXPRESS specification:

```
*)  
TYPE external_identification_item = SELECT  
  (document_file,  
   drawing_revision,  
   externally_defined_class,  
   externally_defined_general_property,  
   product_definition);  
END_TYPE;  
(*
```

5.2.1.22 group_item

The type **group_item** specifies those objects to which a **group** and a common characteristic may be assigned through an **applied_group_assignment**.

EXPRESS specification:

```
*)  
TYPE group_item = SELECT  
  (characterized_object,  
   class_system,  
   drawing_sheet_revision,  
   installation_route,  
   note_representation,  
   notification,  
   path,  
   presentation_view,  
   process_variable,  
   product,  
   product_class,  
   product_concept,
```

```

product_concept_feature,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
representation,
shape_aspect,
shape_aspect_relationship,
signal,
terminal,
vertex);
END_TYPE;
(*

```

5.2.1.23 identification_item

The type **identification_item** specifies those objects to which an **identifier** and its usage may be assigned through an **applied_identification_assignment**.

EXPRESS specification:

```

*)
TYPE identification_item = SELECT
(action_directive,
approval_status,
class,
class_system,
colour_representation_item,
configuration_item,
connectivity_definition,
document_file,
document_type,
drawing_revision,
drawing_sheet_revision,
effectivity,
general_property,
identification_assignment,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_interface,
notification,
organization,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_category,
product_definition,
product_definition_formation,
product_definition_relationship,

```

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```
    property_definition,  
    representation,  
    security_classification_level,  
    signal,  
    terminal,  
    vertex);  
END_TYPE;  
(*
```

5.2.1.24 item_designation_item

The type **item_designation_item** specifies those objects to which an item designation may be assigned.

EXPRESS specification:

```
*)  
TYPE item_designation_item = SELECT  
    (assembly_component_usage,  
    drawing_revision,  
    drawing_sheet_revision,  
    installation_location,  
    product,  
    product_definition,  
    product_definition_formation,  
    signal,  
    terminal);  
END_TYPE;  
(*
```

5.2.1.25 language_item

The type **language_item** specifies those objects to which a classification of a language may be assigned through a **language_assignment**.

EXPRESS specification:

```
*)  
TYPE language_item = SELECT  
    (annotation_text_occurrence,  
    descriptive_representation_item,  
    notification,  
    representation);  
END_TYPE;  
(*
```

5.2.1.26 multi_language_attribute_item

The type **multi_language_attribute_item** specifies those objects to which a label in an alternate language for an existing attribute may be assigned through a **multi_language_attribute_assignment**.

EXPRESS specification:

```
*)
```

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```

TYPE multi_language_attribute_item = SELECT
  (action,
   action_directive,
   action_method,
   action_relationship,
   alternate_product_relationship,
   application_context,
   approval_relationship,
   assembly_component_usage_substitute,
   certification,
   class_system,
   conditional_concept_feature,
   configuration_design,
   configuration_item,
   configured_effectivity_assignment,
   connectivity_definition,
   contract,
   descriptive_representation_item,
   document_file,
   drawing_sheet_revision,
   effectivity,
   effectivity_relationship,
   equipment_marking,
   event_occurrence,
   external_source,
   free_segment,
   general_property,
   general_property_relationship,
   group,
   identification_role,
   inclusion_product_concept_feature,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   notification,
   organization_relationship,
   organizational_project,
   organizational_project_relationship,
   path,
   presentation_view,
   process_variable,
   product,
   product_concept,
   product_concept_feature,
   product_concept_feature_association,
   product_concept_feature_category_usage,
   product_concept_relationship,
   product_definition,
   product_definition_formation,
   product_definition_formation_relationship,
   product_definition_relationship,

```

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```
product_definition_substitute,  
product_related_product_category,  
product_specification,  
property_definition,  
representation,  
routed_segment,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE;  
(*
```

5.2.1.27 organizational_project_item

The type **organizational_project_item** specifies those objects to which an **organizational_project** may be assigned through an **applied_organizational_project_assignment**.

EXPRESS specification:

```
*)  
TYPE organizational_project_item = SELECT  
  (action,  
   product_concept);  
END_TYPE;  
(*
```

5.2.1.28 organization_item

The type **organization_item** specifies those objects to which an **organization** may be assigned through an **applied_organization_assignment**.

EXPRESS specification:

```
*)  
TYPE organization_item = SELECT  
  (action,  
   action_directive,  
   action_property,  
   action_relationship,  
   action_request_solution,  
   alternate_product_relationship,  
   applied_action_assignment,  
   applied_classification_assignment,  
   applied_document_reference,  
   applied_identification_assignment,  
   applied_organization_assignment,  
   applied_person_and_organization_assignment,  
   applied_presented_item,  
   approval,  
   approval_status,  
   assembly_component_usage_substitute,  
   certification,
```

characterized_object_relationship,
class,
class_system,
configuration_design,
configuration_item,
configured_effectivity_assignment,
connectivity_definition,
contract,
descriptive_representation_item,
document_file,
document_relationship,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
effectivity,
event_occurrence,
executed_action,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
item_designation_assignment,
note_representation,
notification,
organization_relationship,
organizational_project,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
security_classification_level,
shape_aspect_relationship,
signal,
terminal,

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```
    versioned_action_request,  
    vertex);  
END_TYPE;  
(*
```

5.2.1.29 page_connector_reference_item

The type **page_connector_reference_item** specifies those objects to which a **page_connector_reference** may be assigned.

EXPRESS specification:

```
*)  
TYPE page_connector_reference_item = SELECT  
    (page_connector_group,  
     page_connector_presentation_group);  
END_TYPE;  
(*
```

5.2.1.30 person_and_organization_item

The type **person_and_organization_item** specifies those objects to which a **person_and_organization** may be assigned through an **applied_person_and_organization_assignment**.

EXPRESS specification:

```
*)  
TYPE person_and_organization_item = SELECT  
    (action,  
     action_directive,  
     action_property,  
     action_relationship,  
     action_request_solution,  
     alternate_product_relationship,  
     applied_action_assignment,  
     applied_classification_assignment,  
     applied_document_reference,  
     applied_organization_assignment,  
     applied_person_and_organization_assignment,  
     applied_presented_item,  
     approval_status,  
     assembly_component_usage_substitute,  
     certification,  
     characterized_object_relationship,  
     class,  
     class_system,  
     configuration_design,  
     configuration_item,  
     configured_effectivity_assignment,  
     connectivity_definition,  
     contract,  
     descriptive_representation_item,  
     document_file,
```

```

document_relationship,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
event_occurrence,
executed_action,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
note_representation,
notification,
organization_relationship,
organizational_project,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
security_classification_level,
shape_aspect_relationship,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE;
(*

```

5.2.1.31 presented_item_select

The type **presented_item_select** specifies those objects to which a **presentation_representation** or a **presentation_set** may be assigned through an **applied_presented_item**.

EXPRESS specification:

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```
*)
TYPE presented_item_select = SELECT
  (action,
   action_directive,
   address,
   applied_identification_assignment,
   approval,
   approval_status,
   assembly_component_usage,
   class,
   class_system,
   configuration_item,
   connectivity_definition,
   contract,
   equipment_marking,
   executed_action,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   item_designation_assignment,
   note_representation,
   notification,
   organization,
   organizational_project,
   path,
   person,
   process_variable,
   product,
   product_concept,
   product_concept_feature,
   product_concept_feature_association,
   product_concept_feature_category,
   product_concept_feature_category_usage,
   product_definition,
   product_definition_formation,
   property_definition,
   representation,
   security_classification,
   security_classification_level,
   signal,
   terminal,
   versioned_action_request,
   vertex);
END_TYPE;
(*
```

5.2.1.32 security_classification_item

The type **security_classification_item** specifies those objects to which a **security_classification** may be assigned through an **applied_security_classification_assignment**.

EXPRESS specification:

*)

```

TYPE security_classification_item = SELECT
  (action,
   action_directive,
   action_property,
   action_relationship,
   action_request_solution,
   alternate_product_relationship,
   applied_action_assignment,
   assembly_component_usage_substitute,
   characterized_object_relationship,
   class_system,
   configuration_design,
   configuration_effectivity,
   configuration_item,
   configured_effectivity_assignment,
   connectivity_definition,
   contract,
   document_file,
   document_relationship,
   drawing_revision,
   drawing_revision_sequence,
   drawing_sheet_revision,
   equipment_marking,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   note_representation,
   notification,
   organizational_project,
   path,
   process_variable,
   product,
   product_concept,
   product_concept_feature,
   product_concept_feature_category,
   product_definition,
   product_definition_formation,
   product_definition_formation_relationship,
   product_definition_relationship,
   product_definition_substitute,
   property_definition,
   property_definition_relationship,

```

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```
representation,  
representation_item_relationship,  
representation_relationship,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE;  
(*
```

5.2.1.33 specified_item

A **specified_item** type specifies the objects to which which a **document** representing a draughting specification may be assigned through a **draughting_specification_reference**.

NOTE The definition of this type is identical to the definition in ISO 10303-505.

EXPRESS specification:

```
*)  
TYPE specified_item = SELECT  
  (drawing_revision);  
END_TYPE;  
(*
```

5.2.1.34 time_interval_item

The type **time_interval_item** specifies those objects to which a **time_interval** may be assigned through an **applied_time_interval_assignment**.

EXPRESS specification:

```
*)  
TYPE time_interval_item = SELECT  
  (action,  
  action_directive,  
  action_property,  
  action_relationship,  
  action_request_solution,  
  alternate_product_relationship,  
  applied_action_assignment,  
  applied_classification_assignment,  
  applied_document_reference,  
  applied_person_and_organization_assignment,  
  applied_presented_item,  
  approval_status,  
  assembly_component_usage_substitute,  
  certification,  
  characterized_object_relationship,  
  class,  
  class_system,  
  configuration_design,  
  configuration_item,
```



```

configuration_item,
configured_effectivity_assignment,
connectivity_definition,
contract,
descriptive_representation_item,
document_file,
document_relationship,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
note_representation,
notification,
organization_relationship,
organizational_project,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
organizational_project,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
security_classification_level,
shape_aspect_relationship,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE;
(*

```

5.2.2 electrotechnical_design entities

5.2.2.1 electrotechnical_design entity definitions

5.2.2.1.1 annotation_occurrence_associativity

An **annotation_occurrence_associativity** is an **annotation_occurrence_relationship** that relates an element of annotation to the leader or projection curve which visually directs information in the drawing to the element or to the fill area whose boundary is derived from the element.

NOTE The definition of this entity is identical to the definition in ISO 10303-202 and ISO 10303-214.

EXPRESS specification:

```
*)
ENTITY annotation_occurrence_associativity
  SUBTYPE OF (annotation_occurrence_relationship);
WHERE
  WR1: SIZEOF(TYPEOF(SELF.related_annotation_occurrence) *
  ['ELECTROTECHNICAL_DESIGN.ANNOTATION_FILL_AREA_OCCURRENCE',
   'ELECTROTECHNICAL_DESIGN.PROJECTION_CURVE',
   'ELECTROTECHNICAL_DESIGN.LEADER_CURVE']) = 1;
END_ENTITY;
(*
```

Attribute definitions:

SELF.related_annotation_occurrence: the leader, projection curve, or fill area that is associated to the annotation.

SELF.relatng_annotation_occurrence: the **annotation_occurrence** that is to be associated with a leader, projection curve, or fill area.

Formal propositions:

WR1: the **related_annotation_occurrence** shall be a **leader_curve**, **projection_curve**, or **annotation_fill_area_occurrence**.

5.2.2.1.2 applied_action_assignment

An **applied_action_assignment** is a type of **action_assignment** that assigns an **action** to a particular piece of product data.

EXPRESS specification:

```
*)
ENTITY applied_action_assignment
  SUBTYPE OF (action_assignment);
  items : SET [1:?] OF action_item;
END_ENTITY;
```

(*

Attribute definitions:

items: the set of items to which the **action** is assigned.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_action_assignment** entity:

— restrict_applied_action_assignment (see 5.2.3.101).

5.2.2.1.3 applied_action_request_assignment

An **applied_action_request_assignment** is a type of **action_request_assignment** that assigns an **action** to a particular piece of product data.

EXPRESS specification:

```
*)
ENTITY applied_action_request_assignment
  SUBTYPE OF (action_request_assignment);
  items : SET [1:?] OF action_request_item;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the **action_request** is assigned.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_action_request_assignment** entity:

— restrict_applied_action_request_assignment (see 5.2.3.102).

5.2.2.1.4 applied_approval_assignment

An **applied_approval_assignment** is a type of **approval_assignment** that assigns an **approval** to a particular piece of product data.

EXPRESS specification:

```
*)
ENTITY applied_approval_assignment
  SUBTYPE OF (approval_assignment);
  items : SET [1:?] OF approval_item;
END_ENTITY;
(*
```

Attribute definitions:

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items: the set of items to which the **approval** is assigned.

5.2.2.1.5 applied_certification_assignment

An **applied_certification_assignment** is a type of **certification_assignment** that assigns a **certification** to a **certification_item**.

EXPRESS specification:

```
*)
ENTITY applied_certification_assignment
  SUBTYPE OF (certification_assignment);
  items : SET [1:?] OF certification_item;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of **items** to which the **certification** is assigned. An **applied_classification_assignment** is a type of **classification_assignment** that assigns classification information to a particular piece of product data.

5.2.2.1.6 applied_classification_assignment

An **applied_classification_assignment** is a type of **classification_assignment** that assigns classification information to a particular piece of product data.

EXPRESS specification:

```
*)
ENTITY applied_classification_assignment
  SUBTYPE OF (classification_assignment);
  items : SET [1:?] OF classification_item;
WHERE
  WR1: applied_classification_assignment_correlation(SELf);
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the classification information is assigned.

Formal propositions:

WR1: The **applied_classification_assignment_correlation** function that correlates the role **names** of the **assigned_group** to elements of product data shall be satisfied.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_classification_assignment** entity:

— **classification_assignment_subtype_exclusiveness** (see 5.2.3.8);

- restrict_applied_classification_assignment_role (see 5.2.3.103);
- restrict_class_system_assignment_for_approval_status (see 5.2.3.107);
- restrict_class_system_assignment_for_class (see 5.2.3.108);
- restrict_class_system_assignment_for_document_type (see 5.2.3.109);
- restrict_class_system_assignment_for_planar_extent (see 5.2.3.110);
- restrict_class_system_assignment_for_security_classification_level.

5.2.2.1.7 applied_contract_assignment

An **applied_contract_assignment** is a type of **contract_assignment** that assigns a **contract** to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY applied_contract_assignment
  SUBTYPE OF (contract_assignment);
  items : SET [1:?] OF contract_item;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the **contract** is assigned.

5.2.2.1.8 applied_date_and_time_assignment

The **applied_date_and_time_assignment** is a type of **date_and_time_assignment** that assigns a date and a time to a particular piece of product data. The date and time that are assigned specify the date and the time when an action is intended to take place or when an action took place.

EXPRESS specification:

```

*)
ENTITY applied_date_and_time_assignment
  SUBTYPE OF (date_and_time_assignment);
  items : SET [1:?] OF date_and_time_item;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the **date_and_time** is assigned.

5.2.2.1.9 applied_date_assignment

The **applied_date_assignment** is a type of **date_assignment** that assigns a date to a particular piece of product data. The date that is assigned specifies the date when an action is intended to take place or when an action took place.

EXPRESS specification:

```
*)
ENTITY applied_date_assignment
  SUBTYPE OF (date_assignment);
  items : SET [1:?] OF date_item;
WHERE
  WR1: ( NOT ( SELF.role.name = 'actual end' ) ) OR
        item_correlation ( SELF.items , ['ACTION' ,
        'ORGANIZATIONAL_PROJECT' , 'EFFECTIVITY' ] ) ;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the **date** is assigned.

Formal propositions:

WR1: If the **role** has a **name** of 'actual end', only items of type **action**, **organizational_project**, or **effectivity** shall be in the set of **items**.

5.2.2.1.10 applied_document_reference

An **applied_document_reference** is a type of **document_reference** that assigns a **document** to a particular piece of product data.

EXPRESS specification:

```
*)
ENTITY applied_document_reference
  SUBTYPE OF (document_reference);
  items : SET [1:?] OF document_reference_item;
WHERE
  WR1: applied_document_reference_correlation(SELF);
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the **document** is assigned.

Formal propositions:

WR1: The **applied_document_reference_correlation** function that correlates the role **names** of the **assigned_document** to elements of product data shall be satisfied.

5.2.2.1.11 applied_document_usage_constraint_assignment

An **applied_document_usage_constraint_assignment** is a type of **document_usage_constraint_assignment** that assigns a **document_usage_constraint** to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY applied_document_usage_constraint_assignment
  SUBTYPE OF (document_usage_constraint_assignment);
  items : SET [1:?] OF document_reference_item;
WHERE
  WR1:
  applied_document_usage_constraint_assignment_correlation(SELF);
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the **document_usage_constraint** is assigned.

Formal propositions:

WR1: The **applied_document_usage_constraint_assignment_correlation** function that correlates the role **names** of the **assigned_document_usage** to elements of product data shall be satisfied.

5.2.2.1.12 applied_effectivity_assignment

An **applied_effectivity_assignment** is a type of **effectivity_assignment** that assigns an **effectivity** to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY applied_effectivity_assignment
  SUBTYPE OF (effectivity_assignment);
  items : SET [1:?] OF effectivity_item;
WHERE
  WR1: SIZEOF ( ['ELECTROTECHNICAL_DESIGN.'+ 'LOT_EFFECTIVITY' ,
                'ELECTROTECHNICAL_DESIGN.'+ 'SERIAL_NUMBERED_EFFECTIVITY' ,
                'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION_EFFECTIVITY']*
            TYPEOF ( SELF.assigned_effectivity ) ) =0;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the **effectivity** is assigned.

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Formal propositions:

WR1: An **applied_effectivity_assignment** shall have an **assigned_effectivity** which is not of type **lot_effectivity**, **serial_numbered_effectivity**, or **product_definition_effectivity**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_effectivity_assignment** entity:

Ñ **effectivity_assignment_subtype_exclusiveness** (see 5.2.3.57);

Ñ **restrict_effectivity_assignment_for_class_category_usage** (see 5.2.3.115).

5.2.2.1.13 applied_event_occurrence_assignment

An **applied_event_occurrence_assignment** is a type of **event_occurrence_assignment** that assigns an **event_occurrence** to a particular piece of product data.

NOTE See application object definition for **Event_reference** (see 4.2.130) for more information.

EXPRESS specification:

```
* )
ENTITY applied_event_occurrence_assignment
  SUBTYPE OF (event_occurrence_assignment);
  items : SET [1:?] OF event_occurrence_item;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the **event_occurrence** is assigned.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_event_occurrence_assignment** entity:

— **restrict_applied_event_occurrence_assignment** (see 5.2.3.104).

5.2.2.1.14 applied_external_identification_assignment

An **applied_external_identification_assignment** is a type of **external_identification_assignment** that assigns an identifier from an external source to a particular piece of product data.

EXPRESS specification:

```
* )
ENTITY applied_external_identification_assignment
  SUBTYPE OF (external_identification_assignment);
  items : SET [1:?] OF external_identification_item;
WHERE
```



```

WR1: ( NOT ( SELF.role.name =
        'alternative document id and location' ) ) OR
        item_correlation ( SELF.items , ['DOCUMENT_FILE'] ) ;
WR2: ( NOT ( SELF.role.name = 'version' ) ) OR item_correlation
        ( SELF.items , ['EXTERNALLY_DEFINED_CLASS' ,
        'EXTERNALLY_DEFINED_GENERAL_PROPERTY'] ) ;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the identifier is assigned.

Formal propositions:

WR1: If the **role** has a **name** of 'alternative document id and location', only items of type **document_file** shall be in the set of **items**.

WR2: If the **role** has a **name** of 'version', only items of type **externally_defined_class**, or **externally_defined_general_property** shall be in the set of items.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_external_identification_assignment** entity:

— **identification_assignment_subtype_exclusiveness** (see 5.2.3.71).

5.2.2.1.15 **applied_group_assignment**

An **applied_group_assignment** is a type of **group_assignment** that assigns a **group** to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY applied_group_assignment
    SUBTYPE OF (group_assignment);
    items : SET [1:?] OF group_item;
WHERE
    WR1: applied_group_assignment_correlation(SELF);
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the **group** is assigned.

Formal propositions:

WR1: The **applied_group_assignment_correlation** function that correlates the role **names** of the **assigned_group** to elements of product data shall be satisfied.

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Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_group_assignment_assignment** entity:

— `group_assignment_subtype_exclusiveness` (see 5.2.3.67).

5.2.2.1.16 **applied_identification_assignment**

An **applied_identification_assignment** is a type of **identification_assignment** that assigns an identifier to a particular piece of product data.

EXPRESS specification:

```
*)
ENTITY applied_identification_assignment
  SUBTYPE OF (identification_assignment);
  items : SET [1:?] OF identification_item;
WHERE
  WR1: applied_identification_assignment_correlation(SELF);
  WR2: SIZEOF(SELF.items) = 1;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the identifier is assigned.

Formal propositions:

WR1: The **applied_identification_assignment_correlation** function that correlates the role **names** of the **assigned_id** to elements of product data shall be satisfied.

WR2: Each instance of **applied_identification_assignment** shall contain exactly one element in its set of **items**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_identification_assignment** entity:

Ñ `identification_assignment_subtype_exclusiveness` (see 5.2.3.71);

Ñ `restrict_version_assignment_for_applied_identification_assignment`.

5.2.2.1.17 **applied_ineffectivity_assignment**

An **applied_ineffectivity_assignment** is a type of **effectivity_assignment** that specifies that the associated **effectivity_items** are set ineffective.

EXPRESS specification:

```
*)
ENTITY applied_ineffectivity_assignment
```

```

SUBTYPE OF (effectivity_assignment);
items : SET [1:?] OF effectivity_item;
WHERE
WR1: SIZEOF ( ['ELECTROTECHNICAL_DESIGN.'+ 'LOT_EFFECTIVITY' ,
'ELECTROTECHNICAL_DESIGN.'+ 'SERIAL_NUMBERED_EFFECTIVITY' ,
'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION_EFFECTIVITY']*
TYPEOF ( SELF.assigned_effectivity ) ) =0;
END_ENTITY;
(*)

```

Attribute definitions:

items: the set of **items** that are set ineffective by the **applied_ineffectivity_assignment**.

Formal propositions:

WR1: An **applied_ineffectivity_assignment** shall have an **assigned_effectivity** which is not of type **lot_effectivity**, **serial_numbered_effectivity**, or **product_definition_effectivity**.

5.2.2.1.18 applied_organization_assignment

An **applied_organization_assignment** is a type of **organization_assignment** that assigns an **organization** to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY applied_organization_assignment
SUBTYPE OF (organization_assignment);
items : SET [1:?] OF organization_item;
WHERE
WR1: applied_organization_assignment_correlation(SELF);
END_ENTITY;
(*)

```

Attribute definitions:

items: the set of items to which the **organization** is assigned.

Formal propositions:

WR1: The **applied_organization_assignment_correlation** function that correlates the role **names** of the **assigned_organization** to elements of product data shall be satisfied.

5.2.2.1.19 applied_organizational_project_assignment

An **applied_organizational_project_assignment** is a type of **organizational_project_assignment** that assigns an **organizational_project** to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY applied_organizational_project_assignment
SUBTYPE OF (organizational_project_assignment);

```

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```
items : SET [1:?] OF organizational_project_item;  
END_ENTITY;  
(*
```

Attribute definitions:

items: the set of items that are assigned to the **organizational_project**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_organizational_project_assignment** entity:

— **restrict_applied_organizational_project_assignment** (see 5.2.3.105).

5.2.2.1.20 **applied_person_and_organization_assignment**

An **applied_person_and_organization_assignment** is a type of **person_and_organization_assignment** that assigns a **person_and_organization** to a particular piece of product data.

EXPRESS specification:

```
*)  
ENTITY applied_person_and_organization_assignment  
  SUBTYPE OF (person_and_organization_assignment);  
  items : SET [1:?] OF person_and_organization_item;  
WHERE  
  WR1:  
  applied_person_and_organization_assignment_correlation(SELF);  
END_ENTITY;  
(*
```

Attribute definitions:

items: the set of items to which the **person_and_organization** is assigned.

Formal propositions:

WR1: The **applied_person_and_organization_assignment_correlation** function that correlates the role **names** of the **assigned_person_and_organization** to elements of product data shall be satisfied.

5.2.2.1.21 **applied_presented_item**

An **applied_presented_item** is a type of **presented_item** that defines the presentation of a particular piece of product data on a drawing.

NOTE In case the particular piece of product data is a **product_definition_formation**, the entity **draughting_presented_item** is used instead of **applied_presented_item**.

EXPRESS specification:

```
*)  
ENTITY applied_presented_item
```

```

SUBTYPE OF (presented_item);
items : SET [1:?] OF presented_item_select;
WHERE
  WR1:  SIZEOF(QUERY(pir <* USEDIN(SELF,
                        'ELECTROTECHNICAL_DESIGN.' +
                        'PRESENTED_ITEM_REPRESENTATION.ITEM')
|
                        NOT('ELECTROTECHNICAL_DESIGN.DRAWING_REVISION'
                            IN TYPEOF(pir.presentation))
                        )) = 0;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items that are presented on a drawing.

Formal propositions:

WR1: Each **presented_item_representation** associated to an **applied_presented_item** shall have as its **presentation** a **drawing_revision**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **applied_presented_item** entity:

— **presented_item_subtype_exclusiveness** (see 5.2.3.80).

5.2.2.1.22 applied_security_classification_assignment

An **applied_security_classification_assignment** is a type of **security_classification_assignment** that relates a **security_classification** to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY applied_security_classification_assignment
  SUBTYPE OF (security_classification_assignment);
  items : SET [1:?] OF security_classification_item;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the **security_classification** is applied.

5.2.2.1.23 applied_time_interval_assignment

An **applied_time_interval_assignment** is a type of **time_interval_assignment** that assigns a **time_interval** to a particular piece of product data.

EXPRESS specification:

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```
*)
ENTITY applied_time_interval_assignment
  SUBTYPE OF (time_interval_assignment);
  items : SET [1:?] OF time_interval_item;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the **time_interval** is assigned.

5.2.2.1.24 attribute_language_assignment

A **attribute_language_assignment** is a type of **attribute_classification_assignment**. It associates the specification of a language used for a string valued attribute to the entity instance that has this attribute. The attribute value is further classified as either being specified in the original language or as a translation thereof.

EXPRESS specification:

```
*)
ENTITY attribute_language_assignment
  SUBTYPE OF (attribute_classification_assignment);
  items : SET [1:?] OF attribute_language_item;

DERIVE
language : label := SELF\attribute_classification_assignment.
              assigned_class.name;

WHERE
  WR1:SELF\attribute_classification_assignment. role.name IN
      ['primary' , 'translated'];
  WR2:'ELECTROTECHNICAL_DESIGN.'+'LANGUAGE' IN TYPEOF (
      SELF\attribute_classification_assignment. assigned_class )
      ;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of objects to which the language classification is assigned.

language: The **language** specifies the **name** of the **assigned_class** that provides an identification for the language in which an attribute value is specified.

Formal propositions:

WR1: The language used to specify the string valued attributes in the set of **items** shall be marked either as the 'primary' language or as 'translated'.

WR2: The instance referenced as **assigned_class** shall be of type **language**.

5.2.2.1.25 camera_image_2d_with_scale

A **camera_image_2d_with_scale** is a **camera_image** with a derived scale. The scale is the ratio between the size of the viewport and the size of the view window of the **camera_model**.

NOTE 1 The viewport specifies the rectangular boundary of the view as it is depicted in the drawing sheet.

NOTE 2 The definition of this entity is identical to the definition in ISO 10303-201, ISO 10303-202.

EXPRESS specification:

```

*)
ENTITY camera_image_2d_with_scale
  SUBTYPE OF (camera_image);
DERIVE
  scale : positive_ratio_measure :=
    ((SELF\mapped_item.mapping_target\planar_extent.size_in_x)
  /
    (SELF\mapped_item.mapping_source.mapping_origin\
    camera_model_d2.view_window\planar_extent.size_in_x));
WHERE
  WR1: ('ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2'
    IN TYPEOF(SELF\mapped_item.mapping_source.mapping_origin));
  WR2: aspect_ratio(SELF\mapped_item.mapping_target) =
    aspect_ratio(SELF\mapped_item.mapping_source.mapping_origin\
    camera_model_d2.view_window);
  WR3: SELF\mapped_item.mapping_source.mapping_origin\
    camera_model_d2.view_window_clipping;
END_ENTITY;
(*

```

Attribute definitions:

scale: the **positive_ratio_measure** derived from the rectangular size of the viewport and the rectangular size of the **view_window** of the **camera_model_d2**.

Formal propositions:

WR1: The source of the projection shall be a **camera_model_d2**.

WR2: The aspect ratio of the viewport shall equal the aspect ratio of the **view_window** of the **camera_model**.

WR3: The **view_window_clipping** attribute of the **camera_model_d2** shall be true.

Informal propositions:

IP1: The horizontal and vertical components of the viewport shall be parallel to the corresponding components of the **view_window** of the **camera_model**.

5.2.2.1.26 characterized_class

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A **characterized_class** is a type of **class** and **characterized_object** that represents classification information with associated characteristics.

NOTE See application object definition for `Classification_attribute` (see 4.2.47) for more information.

EXPRESS specification:

```
*)
ENTITY characterized_class
  SUBTYPE OF (characterized_object, class);
END_ENTITY;
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **signal** entity:

— `characterized_object_subtype_exclusiveness` (see 5.2.3.6).

5.2.2.1.27 class

A **class** is a type of **group** that specifies the category a thing or concept belongs to.

EXPRESS specification:

```
*)
ENTITY class
  SUBTYPE OF (group);
END_ENTITY;
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **class** entity:

— `group_subtype_exclusiveness` (see 5.2.3.69);

— `restrict_class_system_assignment_for_class` (see 5.2.3.108);

— `restrict_version_assignment_for_class` (see 5.2.3.136).

5.2.2.1.28 class_system

A **class_system** is a type of **group** that specifies the method used to classify an object.

EXPRESS specification:

```
*)
ENTITY class_system
  SUBTYPE OF (group);
END_ENTITY;
(*
```


Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **class_system** entity:

— **group_subtype_exclusiveness** (see 5.2.3.69).

5.2.2.1.29 class_usage_effectivity_context_assignment

A **class_usage_effectivity_context_assignment** is a type of **effectivity_context_assignment** that assigns an **applied_effectivity_assignment** specifying the **effectivity_items** that impact the design of a solution for an **effectivity_context_item**.

EXPRESS specification:

```

*)
ENTITY class_usage_effectivity_context_assignment
  SUBTYPE OF (effectivity_context_assignment);
  items : SET [1:?] OF class_usage_effectivity_context_item;
WHERE
  WR1:SELF.role.name = 'class usage influence' ;
  WR2: SIZEOF ( QUERY ( i <* SELF.items | NOT (
    'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION' IN TYPEOF ( i
  )
  ) ) ) =0;
  WR3: ( 'ELECTROTECHNICAL_DESIGN.'+ 'APPLIED_EFFECTIVITY_ASSIGNMENT'
  IN TYPEOF ( SELF.assigned_effectivity_assignment ) ) AND (
  SIZEOF ( TYPEOF ( SELF.assigned_effectivity_assignment.
  assigned_effectivity ) ) =1 ) AND (
  SELF.assigned_effectivity_assignment.
  assigned_effectivity.id = 'class usage' ) AND ( SIZEOF (
  QUERY ( i <* SELF.assigned_effectivity_assignment\
  applied_effectivity_assignment.items | NOT (
  'ELECTROTECHNICAL_DESIGN.'+
  'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE' IN TYPEOF ( i ) )
  ) ) =0 ) ;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of **items** for which the **applied_effectivity_assignment** identifies a design impact.

Formal propositions:

WR1: The **class_usage_effectivity_context_assignment** shall have a **role** with a **name** of 'class usage influence'.

WR2: The **class_usage_effectivity_context_assignment** shall only have **product_definitions** in its set of **items** which reference as **frame_of_reference** a **product_definition_context** with a **name** of 'conceptual definition'.

WR3: The **class_usage_effectivity_context_assignment** shall reference an **applied_effectivity_assignment** with an **assigned_effectivity** which is not of an **effectivity** subtype and which has an **id**

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of 'class usage' and which has only **product_concept_feature_category_usage** objects in the set of **items**.

5.2.2.1.30 colour_representation_item

A **colour_representation_item** is a type of **descriptive_representation_item** that represents the colour of a specific item.

EXPRESS specification:

```
*)
ENTITY colour_representation_item
  SUBTYPE OF (descriptive_representation_item);
END_ENTITY;
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **colour_representation_item** entity:

— representation_item_subtype_exclusiveness (see 5.2.3.97).

5.2.2.1.31 configured_effectivity_assignment

A **configured_effectivity_assignment** is a type of **effectivity_assignment** that assigns configuration effectivity information to a particular piece of product data.

EXPRESS specification:

```
*)
ENTITY configured_effectivity_assignment
  SUBTYPE OF (effectivity_assignment);
  items : SET [1:?] OF configured_effectivity_item;
WHERE
WR1: ( SIZEOF ( ['ELECTROTECHNICAL_DESIGN.'+ 'EFFECTIVITY']* TYPEOF
(
  SELF.assigned_effectivity ) ) =1 ) AND (
  SELF.assigned_effectivity. id = 'configuration validity' )
;
WR2: SIZEOF ( SELF.items ) =1;
WR3: SIZEOF ( QUERY ( i <* SELF.items | NOT (
  'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION' IN TYPEOF ( i
)
) OR NOT ( i\product_definition. frame_of_reference.name IN
[ 'conceptual definition' , 'part occurrence' ,
'functional definition' , 'alternative definition' ] ) ) )
=0;
WR4:SELF.role. name IN ['design' , 'usage'];
WR5: ( SELF.role. name<>'design' ) OR ( SIZEOF ( QUERY ( i <*
SELF.items | ( 'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION'
IN TYPEOF ( i ) ) AND ( i\product_definition.
frame_of_reference.name = 'part occurrence' ) ) ) =0 ) ;
WR6: ( SELF.role. name<>'usage' ) OR ( SIZEOF ( QUERY ( i <*
```

```

SELF.items | ( 'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION'
IN TYPEOF ( i ) ) AND ( i\product_definition.
frame_of_reference.name = 'conceptual definition' ) ) =0
) ;
WR7:SELF.role.description IN ['exception' , 'inherited' ,
'local'];
WR8: SIZEOF ( QUERY ( x <* USEDIN ( SELF ,
'ELECTROTECHNICAL_DESIGN.'+'EFFECTIVITY_CONTEXT_ASSIGNMENT.'+
'ASSIGNED_EFFECTIVITY_ASSIGNMENT' ) |
'ELECTROTECHNICAL_DESIGN.'+
'CONFIGURED_EFFECTIVITY_CONTEXT_ASSIGNMENT' IN TYPEOF ( x )
) ) =1;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which configuration effectivity information is assigned.

Formal Propositions:

WR1: The **configured_effectivity_assignment** shall have an **assigned_effectivity** which is not of an **effectivity** subtype and which has an **id** of 'configuration validity'.

WR2: The **configured_effectivity_assignment** shall have exactly one item in its set of **items**.

WR3: The **configured_effectivity_assignment** shall only have **product_definitions** in its set of **items** which reference as **frame_of_reference** a **product_definition_context** with a **name** of 'conceptual definition', 'part occurrence', 'functional definition', or 'alternative definition'.

WR4: The **configured_effectivity_assignment** shall have as **role** an **object_role** with a **name** of 'de-sign' or 'usage'.

WR5: If the **configured_effectivity_assignment** has as **role** an **object_role** with a **name** of 'design', it may not have **product_definitions** in its set of **items** which reference as **frame_of_reference** a **product_definition_context** with a **name** of 'part occurrence'.

WR6: If the **configured_effectivity_assignment** has as **role** an **object_role** with a **name** of 'usage', it may not have **product_definitions** in its set of **items** which reference as **frame_of_reference** a **product_definition_context** with a **name** of 'conceptual definition', or 'functional definition'.

WR7: The **configured_effectivity_assignment** shall have as **role** an **object_role** with a **description** of 'exception', 'inherited', or 'local'.

WR8: The **configured_effectivity_assignment** shall be referenced as **assigned_effectivity_assignment** by exactly one **configured_effectivity_context_assignment**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **configured_effectivity_assignment** entity:

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- effectivity_assignment_subtype_exclusiveness (see 5.2.3.57);
- restrict_effectivity_usage (see 5.2.3.117).

5.2.2.1.32 configured_effectivity_context_assignment

A **configured_effectivity_context_assignment** is a type of **effectivity_context_assignment** that specifies the context for a **configured_effectivity_assignment**.

EXPRESS specification:

```
*)
ENTITY configured_effectivity_context_assignment
  SUBTYPE OF (effectivity_context_assignment);
  items : SET [1:?] OF configured_effectivity_context_item;
WHERE
  WR1: 'ELECTROTECHNICAL DESIGN.' + 'CONFIGURED_EFFECTIVITY_ASSIGNMENT'
      IN TYPEOF ( SELF.assigned_effectivity_assignment ) ;
  WR2: SIZEOF ( SELF.items ) =1;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items which provide the context for the **configured_effectivity_assignment**.

Formal propositions:

WR1: The **configured_effectivity_context_assignment** shall reference as **assigned_effectivity_assignment** a **configured_effectivity_assignment**.

WR2: The **configured_effectivity_context_assignment** shall have exactly one item in its set of **items**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **configured_effectivity_context_assignment** entity:

- effectivity_context_assignment_subtype_exclusiveness (see 5.2.3.58).

5.2.2.1.33 connecting_line_group

A **connecting_line_group** is a type of **group** that is the representation of a connection in a schematic diagram.

EXPRESS specification:

```
*)
ENTITY connecting_line_group
  SUBTYPE OF (group);
WHERE
  WR1: SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
                    'GROUP_ASSIGNMENT.' +
```

```

'ASSIGNED_GROUP' ) ) = 1;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each **connecting_line_group** shall be referenced by exactly one **group_assignment** that is of type **connecting_line_group_assignment** as the **assigned_group**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **connecting_line_group** entity:

— group_subtype_exclusiveness (see 5.2.3.69).

5.2.2.1.34 connecting_line_group_assignment

A **connecting_line_group_assignment** is a type of **group_assignment** that relates a **connecting_line_group** to the connection to be represented in a schematic diagram.

EXPRESS specification:

```

*)
ENTITY connecting_line_group_assignment
  SUBTYPE OF (group_assignment);
  item : connecting_line_item;
END_ENTITY;
(*

```

Attribute definitions:

item: the item to which the **connecting_line_group** is assigned.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **connecting_line_group_assignment** entity:

— group_assignment_subtype_exclusiveness (see 5.2.3.67).

5.2.2.1.35 connectivity_definition

A **connectivity_definition** is a type of **shape_aspect** that represents the fact that terminals are connected with the intention to allow the flow of information, energy or matter. A **connectivity_definition** may be aggregated into a group of other **connectivity_definitions** that is used to order, group and name a collection of connections or networks for some purpose.

NOTE See application object definitions for **Connectivity_definition** (see 4.2.61) and **Functional_connectivity_definition** (see 4.2.152) for more information.

EXPRESS specification:

```

*)

```

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```
ENTITY connectivity_definition
  SUBTYPE OF (shape_aspect);
WHERE
  WR1: SELF\shape_aspect.product_definitional = UNKNOWN;
  WR2: 'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN

TYPEOF(SELF\shape_aspect.of_shape\property_definition.definition);
  WR3: SELF\shape_aspect.of_shape\property_definition.definition.
        frame_of_reference\application_context_element.name
        IN ['functional definition', 'part definition'];
  WR4: SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
        sar.name = 'connectivity') )
=
  SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
        (sar.name = 'connectivity')
        AND
        (
          (('ELECTROTECHNICAL_DESIGN.TERMINAL'
            IN TYPEOF(sar.related_shape_aspect))
            AND
            (sar.related_shape_aspect.of_shape\
              property_definition.definition.frame_of_reference\
              application_context_element.name = 'functional
definition') )
          XOR
          (('ELECTROTECHNICAL_DESIGN.TERMINAL'
            IN TYPEOF(sar.related_shape_aspect))
            AND
            (sar.related_shape_aspect.of_shape\
              property_definition.definition.frame_of_reference\
              application_context_element.name = 'functional
occurrence') )
          XOR
          (('ELECTROTECHNICAL_DESIGN.TERMINAL'
            IN TYPEOF(sar.related_shape_aspect))
            AND
            (sar.related_shape_aspect.of_shape\
              property_definition.definition.frame_of_reference\
              application_context_element.name = 'part definition') )
          XOR
          (('ELECTROTECHNICAL_DESIGN.TERMINAL'
            IN TYPEOF(sar.related_shape_aspect))
            AND
            (sar.related_shape_aspect.of_shape\
              property_definition.definition.frame_of_reference\
              application_context_element.name = 'part occurrence') )
        ) ) );
```

```

WR5:  SIZEOF(QUERY(conn_mem <* QUERY(sar <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') |
                                sar.name = 'connectivity') |
NOT(SIZEOF(QUERY(next_conn_mem <*
                                QUERY(sar <* (USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT')
                                - conn_mem) |
                                sar.name = 'connectivity') |
conn_mem.related_shape_aspect =
next_conn_mem.related_shape_aspect
                                )) = 0)
)) = 0;
WR6:  SIZEOF(QUERY(bund_mem <* QUERY(sar <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') |
                                sar.name = 'decomposition') |
NOT(SIZEOF(QUERY(next_bund_mem <*
                                QUERY(sar <* (USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT')
                                - bund_mem) |
                                sar.name = 'decomposition') |
bund_mem.related_shape_aspect =
next_bund_mem.related_shape_aspect
                                )) = 0)
)) = 0;
WR7:  SIZEOF(QUERY(sar1 <* QUERY(sar2 <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') |
                                sar2.name = 'decomposition') |
NOT(acyclic_shape_aspect_relationship(sar1, [SELF],
'ELECTROTECHNICAL_DESIGN.' +

```

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```
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATED_SHAPE_ASPECT'))
    )) = 0;
    WR8:  SIZEOF(QUERY(sar1 <* QUERY(sar2 <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') |
    sar2.name = 'decomposition') |
    NOT(acyclic_shape_aspect_relationship(sar1, [SELF],
'ELECTROTECHNICAL_DESIGN.' +
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATED_SHAPE_ASPECT'))
    )) = 0;
    WR9:  SIZEOF(QUERY(i <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
    'ITEMS') |
    i.role.name = 'version')
    ) < 2;
END_ENTITY;
(*
```

Formal propositions:

WR1: It is not known whether or not the **connectivity_definition** lies on the shape of the product.

WR2: The **connectivity_definition** shall be a **shape_aspect** of a **product_definition**.

WR3: The **product_definition** the **connectivity_definition** is a **shape_aspect** of shall have an associated **application_context_element** with a **name** of either 'functional definition' or 'part definition'.

WR4: For all **shape_aspect_relationships** with the **name** 'connectivity' the **connectivity_definition** participates in as the **relating_shape_aspect**, the **related_shape_aspects** shall be of type **terminal**. The **application_context_elements** associated to the **product_definition** each **terminal** in the role of the **related_shape_aspect** is a **shape_aspect** of shall have the same **name** which is one of either 'functional definition', 'functional occurrence', 'part definition', or 'part occurrence'.

WR5: For the same pair of a **connectivity_definition** and a **terminal** only one **shape_aspect_relationship** with the **name** 'connectivity' is allowed.

WR6: For the same pair of **connectivity_definitions** only one **shape_aspect_relationship** with the **name** 'decomposition' is allowed.

WR7: A **connectivity_definition** representing a connection bundle shall not participate in its own bundle membership definition.

WR8: Each hierarchically composed **connectivity_definition** shall not participate in its own definition.

WR9: Each instance of **connectivity_definition** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **connectivity_definition** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

Informal propositions:

IP1: A **connectivity_definition** representing representing a Connection (see 4.2.59) shall participate as the **relating_shape_aspect** in at least one **shape_aspect_relationship** with a **name** of 'connectivity' where the **related_shape_aspect** is of type **terminal**.

5.2.2.1.36 **derived_unit_variable**

A **derived_unit_variable** is a type of **derived_unit** and **variable_semantics** that represents the unit in an explicitly defined mathematical function.

EXPRESS specification:

```
*)
ENTITY derived_unit_variable
  SUBTYPE OF (derived_unit, variable_semantics);
INVERSE
  associated_variable_environment: environment FOR semantics;
END_ENTITY;
(*
```

Attribute definitions:

associated_variable_environment: the **environment** that specifies the representation for the **derived_unit**.

5.2.2.1.37 **document_designation_assignment**

A **document_designation_assignment** is a type of **item_designation_assignment** that specifies a reference designation which uniquely identifies the referenced **product_definition** representing external documentation or **drawing_revision** within its scope.

EXPRESS specification:

```
*)
ENTITY document_designation_assignment
```

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```
    SUBTYPE OF (item_designation_assignment);
WHERE
  WR1:  SIZEOF(QUERY(i <* SELF.items |
                    SIZEOF(TYPEOF(i) *
                              ['ELECTROTECHNICAL_DESIGN.' +
                               'DRAWING_REVISION',
                               'ELECTROTECHNICAL_DESIGN.' +
                               'DRAWING_SHEET_REVISION',
                               'ELECTROTECHNICAL_DESIGN.' +
                               'PRODUCT_DEFINITION']
                    ) = 0 )
        ) = 0;
  WR2:  SIZEOF(QUERY(despd <* SELF.items |
                    ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                     IN TYPEOF(despd))
                    AND
                    NOT(despd\product_definition.frame_of_reference.name
                        IN ['conceptual_definition',
                           'functional_occurrence',
                           'part_occurrence',
                           'system_definition']))
        ) = 0;
  WR3:  SIZEOF(TYPEOF(SELF) *
            ['ELECTROTECHNICAL_DESIGN.' +
             'DOCUMENT_DESIGNATION_ASSIGNMENT',
             'ELECTROTECHNICAL_DESIGN.' +
             'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
             'ELECTROTECHNICAL_DESIGN.' +
             'SIGNAL_DESIGNATION_ASSIGNMENT',
             'ELECTROTECHNICAL_DESIGN.' +
             'TERMINAL_DESIGNATION_ASSIGNMENT']
        ) = 1;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each instance of **document_designation_assignment** shall contain in its set of **items** only an instance of either **drawing_revision**, **drawing_sheet_revision**, or **product_definition**.

WR2: If an instance of **document_designation_assignment** contains an instance of **product_definition** in its set of **items** this **product_definition** shall have an associated **application_context_element** with a **name** of either 'digital document definition', 'physical document definition', or 'physical model occurrence'.

WR3: Each instance of **document_designation_assignment** shall not be an instance of any other subtype of **item_designation_assignment**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **document_designation_assignment** entity:

— identification_assignment_subtype_exclusiveness (see 5.2.3.71).

5.2.2.1.38 document_file

A **document_file** is a type of **document** and **characterized_object** that characterizes files with properties, e.g. file size, creating system, etc.

EXPRESS specification:

```
*)
ENTITY document_file
  SUBTYPE OF (document, characterized_object);
WHERE
  WR1:SELF\characterized_object.name = '';
  WR2: NOT EXISTS ( SELF\characterized_object.description ) ;
  WR3: SIZEOF ( QUERY ( drt <* SELF\document.
    representation_types | drt.name IN ['digital' ,
    'physical'] ) ) =1;
END_ENTITY;
(*
```

Formal Propositions:

WR1: The name of the **characterized_object** shall not be used, use name of document.

WR2: The description of the **characterized_object** shall not be used, use description of document.

WR3: The document shall have exactly one **document_representation_type** with a **name** of either 'digital' or 'physical'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **document_file** entity:

— characterized_object_subtype_exclusiveness (see 5.2.3.6);

— restrict_properties_for_document_file;

— restrict_version_assignment_for_document_file (see 5.2.3.138).

5.2.2.1.39 document_product_equivalence

A **document_product_equivalence** is a type of **document_product_association** that specifies the equivalence of a **product**, **product_definition_formation**, or **product_definition** instance with a **document** instance.

EXPRESS specification:

```
*)
ENTITY document_product_equivalence
  SUBTYPE OF (document_product_association);
WHERE
  WR1:SELF.name = 'equivalence';
```

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```
WR2: NOT ( 'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT' IN TYPEOF (
  SELF.related_product ) ) OR ( ( SELF.relying_document.
  kind.product_data_type =
  'configuration controlled document' ) AND ( SIZEOF ( QUERY
  ( prpc <* USEDIN ( SELF.related_product ,
  'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_RELATED_PRODUCT_CATEGORY.'+
  'PRODUCTS' ) | prpc. name ='document' ) ) =1 ) ) ;
WR3: NOT ( 'ELECTROTECHNICAL_DESIGN.'+
'PRODUCT_DEFINITION_FORMATION'
  IN TYPEOF ( SELF.related_product ) ) OR ( (
  SELF.relying_document. kind.product_data_type =
  'configuration controlled document version' ) AND ( SIZEOF
  ( QUERY ( prpc <* USEDIN (
  SELF.related_product\product_definition_formation.
  of_product ,
  'ELECTROTECHNICAL_DESIGN.PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS'
  ) | prpc. name ='document' ) ) =1 ) ) ;
WR4: NOT ( 'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION' IN
  TYPEOF
  ( SELF.related_product ) ) OR ( ( SELF.relying_document.
  kind.product_data_type =
  'configuration controlled document definition' ) AND (
  SIZEOF ( QUERY ( prpc <* USEDIN (
  SELF.related_product\product_definition.
  formation.of_product ,
  'ELECTROTECHNICAL_DESIGN.PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS'
  ) | prpc. name ='document' ) ) =1 ) ) ;
END_ENTITY;
(*
```

Formal propositions:

WR1: The **name** of the **document_product_association** shall be 'equivalence'.

WR2: If the **related_product** is a **product** then the **relating_document** shall have a **document_type** with **product_data_type** 'configuration controlled document' and there is exactly one **product_re-lated_product_category** with a **name** of 'document' for the **product**.

WR3: If the **related_product** is a **product_definition_formation** then the **relating_document** shall have a **document_type** with **product_data_type** 'configuration controlled document version' and there is exactly one **product_related_product_category** with a **name** of 'document' for the **product** of the related **product_definition_formation**.

WR4: If the **related_product** is a **product_definition** then the **relating_document** shall have a **document_type** with **product_data_type** 'configuration controlled document definition' and there is exactly one **product_related_product_category** with a **name** of 'document' for the **product** of the related **product_definition**.

5.2.2.1.40 draughting_group_elements_assignment

A **draughting_group_elements_assignment** is an assignment of one or more **annotation_occurrences** to a **group**.

EXPRESS specification:

```
*)
ENTITY draughting_group_elements_assignment
  SUBTYPE OF (group_assignment);
  items : SET [1:?] OF draughting_group_element;
END_ENTITY;
(*
```

Attribute definitions:

items: the **draughting_group_elements** that are assigned to a **group**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **draughting_group_elements_assignment** entity:

— group_assignment_subtype_exclusiveness (see 5.2.3.67).

5.2.2.1.41 draughting_model

A **draughting_model** is a type of **representation** that represents of the shape of a product for the purpose of draughting. A **draughting_model** may contain **mapped_items** that are the mappings of **shape_representations**. A **mapped_item** that is the mapping of a **shape_representation** specifies an explicit **representation** of the shape of a product that is to be presented in the drawing. The **draughting_model** may contain **styled_items**. These **styled_items** specify the style for a **mapped_item** that is the mapping of a **shape_representation**, and provide the **curve_style** to be used in presenting the **shape_representation** in the drawing. The **draughting_model** may contain **annotation_occurrences**. These **annotation_occurrences** specify annotation that is placed in the same coordinate system as the **shape_representation**, and is projected into a view when the **draughting_model** is presented in a drawing.

EXPRESS specification:

```
*)
ENTITY draughting_model
  SUBTYPE OF (representation);
  UNIQUE
  UR1: SELF\representation.name;
  WHERE
  WR1:  SIZEOF(QUERY(it <* SELF.items |
    NOT(SIZEOF(['ELECTROTECHNICAL_DESIGN.MAPPED_ITEM',
    'ELECTROTECHNICAL_DESIGN.STYLED_ITEM',
    'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT'] *
    TYPEOF (it)) = 1
  ))) = 0;
  WR2:  SIZEOF(QUERY(mi <* QUERY(it <* SELF.items |
```

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```

        ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
         IN TYPEOF(it))) |
NOT('ELECTROTECHNICAL_DESIGN.SHAPE_REPRESENTATION'
    IN TYPEOF(mi\mapped_item.mapping_source.
              mapped_representation))
)) = 0;
WR3:  SIZEOF(QUERY(smi <*
                  QUERY(si <*
                        QUERY(it <* SELF.items |
                              ('ELECTROTECHNICAL_DESIGN.STYLED_ITEM'
                               IN TYPEOF(it)) ) |
                              ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
                               IN TYPEOF(si\styled_item.item)) ) |
                              NOT(('ELECTROTECHNICAL_DESIGN.SHAPE_REPRESENTATION'
                                   IN TYPEOF(smi\styled_item.item\mapped_item.
                                             mapping_source.mapped_representation))
                                AND
                                (SIZEOF(QUERY(sty <* smi\styled_item.styles |
                                                NOT(SIZEOF(QUERY(psa <* sty.styles |
                                                                NOT('ELECTROTECHNICAL_DESIGN.'
                                                                'CURVE_STYLE'
                                                                IN TYPEOF(psa)) )
                                                                ) = 1 ) )
                                ) = 1 )) )
) = 0;
END_ENTITY;
(*
```

Formal Propositions:

UR1: The **name** of a **draughting_model** shall be unique.

WR1: Each item of a **draughting_model** shall be a **mapped_item**, **styled_item**, or **axis2_placement**.

WR2: If there is a **mapped_item** in the **draughting_model**, the source of the **mapped_item** shall be a **shape_representation**.

WR3: If a **mapped_item** is styled, the source of the **mapped_item** shall be a **shape_representation** and the style applied to the **mapped_item** shall be a **curve_style**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **draughting_model** entity:

— **draughting_model_annotation_layers** (see 5.2.3.50).

5.2.2.1.42 draughting_pre_defined_colour

A **draughting_pre_defined_colour** is a **pre_defined_colour** that is identified by name.

NOTE 1 See application object definition for Predefined_colour (see 4.2.251) for more information.

NOTE 2 The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```

*)
ENTITY draughting_pre_defined_colour
  SUBTYPE OF (pre_defined_colour);
WHERE
  WR1: SELF.name IN
    ['black', 'red', 'green', 'blue',
     'yellow', 'magenta', 'cyan', 'white'];
END_ENTITY;
(*

```

Formal propositions:

WR1: The **name** of the **draughting_pre_defined_colour** shall be 'black', 'red', 'green', 'blue', 'yellow', 'magenta', 'cyan', or 'white'.

5.2.2.1.43 draughting_pre_defined_curve_font

A **draughting_pre_defined_curve_font** is a **pre_defined_curve_font** that is identified by name.

NOTE 1 See application object definition for Predefined_line_font (see 4.2.254) for more information.

NOTE 2 The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```

*)
ENTITY draughting_pre_defined_curve_font
  SUBTYPE OF (pre_defined_curve_font);
WHERE
  WR1: SELF.name IN
    ['continuous', 'chain', 'chain double dash', 'dashed',
     'dotted'];
END_ENTITY;
(*

```

Formal propositions:

WR1: The **name** of the **draughting_pre_defined_curve_font** shall be 'continuous', 'chain', 'chain double dash', 'dashed', or 'dotted'.

5.2.2.1.44 draughting_pre_defined_text_font

A **draughting_pre_defined_text_font** is a **pre_defined_text_font** that is identified by name. The definition of the appearance of each **draughting_pre_defined_text_font** is given in ISO 3098-1.

NOTE The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
ENTITY draughting_pre_defined_text_font
  SUBTYPE OF (pre_defined_text_font);
WHERE
  WR1: SELF.name IN
    ['ISO 3098-1 font A', 'ISO 3098-1 font B'];
END_ENTITY;
(*
```

Formal propositions:

WR1: The **name** of the **draughting_pre_defined_text_font** shall be 'ISO 3098-1 font A' or 'ISO 3098-1 font B'.

5.2.2.1.45 draughting_presented_item

A **draughting_presented_item** defines the presentation by a drawing of a **product_definition_formation**.

NOTE The definition of this entity is identical to the definition in ISO 10303-505.

EXPRESS specification:

```
*)
ENTITY draughting_presented_item
  SUBTYPE OF (presented_item);
  items : SET [1:?] OF draughting_presented_item_select;
WHERE
  WR1: SIZEOF(QUERY(pir <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'PRESENTED_ITEM_REPRESENTATION.ITEM') |
    NOT('ELECTROTECHNICAL_DESIGN.DRAWING_REVISION'
    IN TYPEOF(pir.presentation))
  )) = 0;
END_ENTITY;
(*
```

Attribute definitions:

items: the set of **product_definition_formation**s that are presented.

Formal propositions:

WR1: Each **presented_item_representation** associated to a **draughting_presented_item** shall have as its **presentation** a **drawing_revision**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **draughting_presented_item** entity:

— **presented_item_subtype_exclusiveness** (see 5.2.3.80).

5.2.2.1.46 draughting_specification_reference

A **draughting_specification_reference** is the designation of an external draughting specification for a drawing revision.

NOTE The definition of this entity is identical to the definition in ISO 10303-505.

EXPRESS specification:

```
*)
ENTITY draughting_specification_reference
  SUBTYPE OF (document_reference);
  specified_items : SET [1:?] OF specified_item;
WHERE
  WR1: (SELF.assigned_document.kind.product_data_type =
    'draughting_specification');
END_ENTITY;
(*
```

Attribute definitions:

specified_items: the set of **drawing_revisions** to which a draughting specification is applied.

Formal propositions:

WR1: Each **document** assigned shall be a draughting specification.

5.2.2.1.47 drawing_sheet_layout

A **drawing_sheet_layout** is a symbol that presents the layout or format for a drawing sheet.

NOTE The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
ENTITY drawing_sheet_layout
  SUBTYPE OF (draughting_symbol_representation);
END_ENTITY;
(*
```

5.2.2.1.48 equipment_marking

An **equipment_marking** is a type of **shape_aspect** that specifies a mark applied to a piece of equipment. The mark is used to give additional information about that piece of equipment.

EXPRESS specification:

```

*)
ENTITY equipment_marking
  SUBTYPE OF (shape_aspect);
WHERE
  WR1:  SIZEOF(QUERY(pd <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION.' +
    'DEFINITION') |
    pd.name = 'information content')
    ) = 1;
  WR2:  SIZEOF(QUERY(pd <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION.' +
    'DEFINITION') |
    SIZEOF(QUERY(pdr <*
      USEDIN(pdr,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.'
+
        'DEFINITION') |
        pdr.used_representation.name
        IN ['linear pattern location',
          'marking location'] )
      ) = 1 )
    ) < 2;
  WR3:  SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_CLASSIFICATION_ASSIGNMENT.' +
    'ITEMS')
    ) = 1;
  WR4:  SIZEOF(QUERY(aca <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_CLASSIFICATION_ASSIGNMENT.' +
    'ITEMS') |
    aca.role.name = 'class system membership')
    ) = 1;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each instance of **equipment_marking** shall be referenced by exactly one instance of **property_definition** that has a **name** of ‘information content’.

WR2: Each instance of **equipment_marking** shall be referenced by at most one instance of **property_definition** that is represented by exactly one instance of **representation** that has a **name** of ‘linear pattern location’ or ‘marking location’.

WR3: Each instance of **equipment_marking** shall be referenced by exactly one instance of **applied_classification_assignment**.

WR4: Each instance of **equipment_marking** shall be referenced by exactly one instance of **applied_classification_assignment** that has an associated **classification_role** with a **name** of 'class system membership'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **equipment_marking** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.49 **exclusive_product_concept_feature_category**

An **exclusive_product_concept_feature_category** is a type of **product_concept_feature_category** in which the contained **product_concept_feature** instances describe mutually exclusive characteristics of a product.

NOTE See application object definition for **Specification_category** (see 4.2.324) for more information.

EXPRESS specification:

```
*)
ENTITY exclusive_product_concept_feature_category
  SUBTYPE OF (product_concept_feature_category);
END_ENTITY;
(*
```

5.2.2.1.50 **expression_conversion_based_unit**

An **expression_conversion_based_unit** is a type of **context_dependent_unit** and **variable_semantics** that represents the unit in an explicitly defined mathematical function.

EXPRESS specification:

```
*)
ENTITY expression_conversion_based_unit
  SUBTYPE OF (context_dependent_unit, variable_semantics);
INVERSE
  associated_variable_environment: environment FOR semantics;
END_ENTITY;
(*
```

Attribute definitions:

associated_variable_environment: the **environment** that specifies the representation for the derived unit.

5.2.2.1.51 **externally_defined_class**

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An **externally_defined_class** is a type of **externally_defined_item** and **class** that represents classification information whose identification and definition is defined externally, i.e., not within this part of ISO 10303.

EXPRESS specification:

```
*)
ENTITY externally_defined_class
  SUBTYPE OF (class, externally_defined_item);
WHERE
  WR1:  SIZEOF(QUERY(a <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_ORGANIZATION_ASSIGNMENT.' +
                                'ITEMS') |
                                a.role.name = 'library supplier')
            ) = 1;
  WR2:  SIZEOF(QUERY(a <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                a.role.name = 'version')
            ) = 1;
  WR3:  SIZEOF(QUERY(a <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                (a.role.name = 'version')
                                AND
                                NOT(SELF.source ==: a.source))
            ) = 0;
  WR4:  SIZEOF(QUERY(a <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                a.role.name = 'version')
            ) = 0;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each instance of **externally_defined_class** shall be referenced by exactly one instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of 'library supplier'.

WR2: Each instance of **externally_defined_class** shall be referenced by exactly one instance of **applied_external_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

WR3: For each instance of **externally_defined_class**, the referenced **external_source** shall be shared with the **source** of the referencing **applied_external_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

WR4: Each instance of **externally_defined_class** shall not be referenced by instances of **applied_identification_assignment** that have an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **externally_defined_class** entity:

— **externally_defined_item_subtype_exclusiveness** (see 5.2.3.63).

5.2.2.1.52 externally_defined_general_property

An **externally_defined_general_property** is a type of **externally_defined_item** and **general_property** that represents general property definition information which is defined externally, i.e., not within this part of ISO 10303.

EXPRESS specification:

```
* )
ENTITY externally_defined_general_property
  SUBTYPE OF (general_property, externally_defined_item);
END_ENTITY;
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **externally_defined_general_property** entity:

Ñ **externally_defined_item_subtype_exclusiveness** (see 5.2.3.63);

Ñ **property_reference_requires_name_scope** (see 5.2.3.92);

Ñ **property_reference_requires_version** (see 5.2.3.93).

5.2.2.1.53 free_segment

A **free_segment** is a type of **shape_aspect** that specifies a portion of a routing path that does not have a well-defined course.

EXPRESS specification:

```
* )
ENTITY free_segment
  SUBTYPE OF (installation_segment);
WHERE
  WR1: SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+

```

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```
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
    (sar.name = 'segment termination')
    AND
    ('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE'
     IN TYPEOF(sar.related_shape_aspect))
    )) > 0;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each **free_segment** shall participate as the **relating_shape_aspect** in at least one **shape_aspect_relationship** with the **name** 'segment termination' where the **related_shape_aspect** is of type **installation_node**.

5.2.2.1.54 inclusion_product_concept_feature

An **inclusion_product_concept_feature** is a type of **conditional_concept_feature** that is the representation of the statement that the application of a **product_concept_feature** or of a **conditional_concept_feature** implies the inclusion of an additional **product_concept_feature** or **conditional_concept_feature**. See Specification_inclusion (see 4.2.327) 4.2.x for more information.

EXPRESS specification:

```
*)
ENTITY inclusion_product_concept_feature
    SUBTYPE OF (conditional_concept_feature);
WHERE
    WR1: NOT ( 'ELECTROTECHNICAL_DESIGN.'+
              'PACKAGE_PRODUCT_CONCEPT_FEATURE' IN TYPEOF ( SELF ) ) ;
    WR2: SIZEOF ( QUERY ( cfr <* USEDIN ( SELF ,
              'ELECTROTECHNICAL_DESIGN.CONCEPT_FEATURE_RELATIONSHIP.'+
              'RELATING_PRODUCT_CONCEPT_FEATURE'
              ) | 'ELECTROTECHNICAL_DESIGN.'+
              'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION' IN TYPEOF (
              cfr ) ) ) + SIZEOF ( QUERY ( cfr <* USEDIN ( SELF ,
              'ELECTROTECHNICAL_DESIGN.CONCEPT_FEATURE_RELATIONSHIP.'+
              'RELATED_PRODUCT_CONCEPT_FEATURE'
              ) | 'ELECTROTECHNICAL_DESIGN.'+
              'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION' IN TYPEOF (
              cfr ) ) ) ) =0;
    WR3: SELF.condition. conditional_operator.name = 'implication';
END_ENTITY;
(*
```

Formal propositions:

WR1: An **inclusion_product_concept_feature** shall not be of type **package_product_concept_feature**.

WR2: An **inclusion_product_concept_feature** shall not be referenced as **relating_product_concept_feature** nor as **related_product_concept_feature** by **concept_feature_relationship_with_condition** instances.

WR3: An **inclusion_product_concept_feature** shall reference as **condition** a **concept_feature_relationship_with_condition** which references a **concept_feature_operator** with a **name** of 'implication'.

5.2.2.1.55 installation_location

An **installation_location** is a type of **shape_aspect** that specifies a region in space. In addition, it may be used to specify the physical or symbolic position of a piece of equipment.

NOTE See application object definition for Location (see 4.2.192) for more information.

EXPRESS specification:

```

*)
ENTITY installation_location
  SUBTYPE OF (shape_aspect);
WHERE
  WR1:  SIZEOF(TYPEOF(SELF) *
        ['ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
        'ELECTROTECHNICAL_DESIGN.SPECIFIED_HIGHER_USAGE_OCCURRENCE']
        ) = 1;
  WR2:
SELF.of_shape.definition\product_definition.frame_of_reference.name
  IN ['conceptual definition',
      'functional definition',
      'functional occurrence',
      'part definition',
      'part occurrence',
      'physical occurrence',
      'system definition'];
  WR3:  ( (SELF.of_shape.definition\product_definition_relationship.
          relating_product_definition.frame_of_reference.name
          = 'functional definition')
        AND
          (SELF.of_shape.definition\product_definition_relationship.
          related_product_definition.frame_of_reference.name
          = 'functional occurrence') )
  XOR
  ( (SELF.of_shape.definition\product_definition_relationship.
    relating_product_definition.frame_of_reference.name
    = 'part definition')
    AND
    (SELF.of_shape.definition\product_definition_relationship.
    related_product_definition.frame_of_reference.name
    = 'part occurrence') )
  AND
  (SELF.of_shape.definition\product_definition_relationship.
  related_product_definition.name = 'single instance');

```

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```
WR4:  SIZEOF(QUERY(des <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |
        SIZEOF(TYPEOF(des) *
                ['ELECTROTECHNICAL_DESIGN.' +
                 'DOCUMENT_DESIGNATION_ASSIGNMENT',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'SIGNAL_DESIGNATION_ASSIGNMENT',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'TERMINAL_DESIGNATION_ASSIGNMENT']
                ) > 0 )
        ) = 0;
WR5:  SIZEOF(QUERY(des <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |
        ('ELECTROTECHNICAL_DESIGN.' +
         'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT'
         IN TYPEOF(des))
        AND
        (des.role.description = 'primary') )
        ) = 1;
WR6:  SIZEOF(QUERY(i <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
        i.role.name = 'version')
        ) < 2;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each instance of **installation_location** shall be a **shape_aspect** of either a **product_definition** or a **specified_higher_usage_occurrence**.

WR2: For each instance of **installation_location** that is a **shape_aspect** of a **product_definition**, this **product_definition** shall have an associated **application_context_element** with a **name** of either 'conceptual definition', 'functional definition', 'functional occurrence', 'part definition', 'part occurrence', 'physical occurrence', or 'system definition'.

WR3: For each instance of **installation_location** that is a **shape_aspect** of a **specified_higher_usage_occurrence**, this **specified_higher_usage_occurrence** shall either reference as the **relating_product_definition** a **product_definition** that has an associated **application_context_element** with a **name** of 'functional definition' and as the **related_product_definition** a **product_definition** that has an associated **application_context_element** with a **name** of 'functional occurrence' or it shall reference as the **relating_product_definition** a **product_definition** that has an associated **application_context_element** with a **name** of 'part definition' and as the **related_product_definition** a **product_definition** that has an associated

application_context_element with a **name** of ‘part occurrence’. The **related_product_definition** shall have a **name** of ‘single instance’.

WR4: Each instance of **installation_location** shall be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**.

WR5: Each instance of **installation_location** shall be referenced by exactly one instance of **object_reference_designation_assignment** that has an associated **identification_role** with a **description** of ‘primary’.

WR6: Each instance of **installation_location** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of ‘version’.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **installation_location** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.56 installation_node

An **installation_node** is a type of **shape_aspect** that specifies a point in space that is of interest from the viewpoint of routing cables or arranging equipment.

NOTE See application object definition for Node (see 4.2.208) for more information.

EXPRESS specification:

```
*)
ENTITY installation_node
  SUBTYPE OF (shape_aspect);
END_ENTITY;
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **installation_node** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.57 installation_route

An **installation_route** is a type of **shape_aspect** that specifies a possible path for the laying of products.

NOTE See application object definition for Route (see 4.2.290) for more information.

EXPRESS specification:

```
*)
```

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```
ENTITY installation_route
  SUBTYPE OF (shape_aspect);
WHERE
  WR1:  SIZEOF(QUERY(i <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                i.role.name = 'version')
            ) < 2;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each instance of **installation_route** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **installation_route** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.58 installation_section

An **installation_section** is a type of **shape_aspect** that represents the segment of a path. The segment is terminated by exactly two **installation_nodes**.

NOTE See application object definition for Section (see 4.2.296) for more information.

EXPRESS specification:

```
*)
ENTITY installation_section
  SUBTYPE OF (shape_aspect);
WHERE
  WR1:  SIZEOF(QUERY(i <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                i.role.name = 'version')
            ) < 2;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each instance of **installation_section** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **installation_section** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.59 installation_section_end

An **installation_section_end** is a type of **shape_aspect** that represents the extremity of the associated **installation_section**.

NOTE See application object definition for **Section_end** (see 4.2.297) for more information.

EXPRESS specification:

```

*)
ENTITY installation_section_end
  SUBTYPE OF (shape_aspect);
WHERE
  WR1:  SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
        (sar.name = 'section end')
        AND
        ('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION'
         IN TYPEOF(sar.related_shape_aspect))
        )) = 1;
  WR2:  SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
        (sar.name = 'section end residence')
        AND
        ('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE'
         IN TYPEOF(sar.related_shape_aspect))
        )) < 2;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each **installation_section_end** shall participate as the **relating_shape_aspect** in exactly one **shape_aspect_relationship** with a **name** of 'section end' where the **related_shape_aspect** is of type **installation_section**.

WR2: Each **installation_section_end** shall participate as the **relating_shape_aspect** in at most one **shape_aspect_relationship** with the **name** 'section end residence' where the **related_shape_aspect** is of type **installation_node**.

Associated global rules:

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The following global rules defined in this part of ISO 10303 apply to the **installation_section_end** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.60 installation_section_interface

An **installation_section_interface** is a type of **shape_aspect** that represents the zone where **installation_sections** are connected at their ends in some way to each other.

NOTE See application object definition for **Section_interface** (see 4.2.298) for more information.

EXPRESS specification:

```
*)
ENTITY installation_section_interface
  SUBTYPE OF (shape_aspect);
WHERE
  WR1: SIZEOF(QUERY(sar <* USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_ASPECT_RELATIONSHIP.'
+
    'RELATING_SHAPE_ASPECT') |
    (sar.name = 'section end joint')
  AND
    ('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END'
    IN TYPEOF(sar.related_shape_aspect))
  )) > 0;
  WR3: SIZEOF(QUERY(sar <* USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_ASPECT_RELATIONSHIP.'
+
    'RELATING_SHAPE_ASPECT') |
    (sar.name = 'section interface residence')
  AND
    ('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE'
    IN TYPEOF(sar.related_shape_aspect))
  )) <= 1;
  WR4: SIZEOF(QUERY(i <* USEDIN(SELf,
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
    'ITEMS') |
    i.role.name = 'version')
  ) < 2;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each **installation_section_interface** shall participate as the **relating_shape_aspect** in at least one **shape_aspect_relationship** with the name 'section end joint' where the **related_shape_aspect** is of type **installation_section_end**.

WR2: Each **installation_section_interface** shall participate as the **relating_shape_aspect** in at most one **shape_aspect_relationship** with the **name** 'section interface residence' where the **related_shape_aspect** is of type **installation_node**.

WR3: Each instance of **installation_section_interface** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **installation_section_interface** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.61 installation_segment

An **installation_segment** is a type of **shape_aspect** that specifies a portion of a routing path.

EXPRESS specification:

```
*)
ENTITY installation_segment
  ABSTRACT SUPERTYPE
  SUBTYPE OF (shape_aspect);
END_ENTITY;
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **installation_segment** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.62 interface

An **interface** is a type of **shape_aspect** that specifies an aggregation of those terminals that characterize the use or the intended purpose of a functional or physical element.

NOTE See application object definitions for **Function_interface** (see 4.2.147) and **Interface** (see 4.2.170) for more information.

EXPRESS specification:

```
*)
ENTITY interface
  SUBTYPE OF (shape_aspect);
WHERE
  WR1: 'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(SELF\shape_aspect.of_shape\property_definition.definition);
  WR2: SELF\shape_aspect.of_shape\
  property_definition.definition.frame_of_reference\
```

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```
        application_context_element.name
        IN ['functional definition',
            'part definition'];
WR3:   SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
        (sar.name = 'external access')
        AND
        ('ELECTROTECHNICAL_DESIGN.TERMINAL' IN
         TYPEOF(sar.related_shape_aspect )))
        ) > 0;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each **interface** shall be a **shape_aspect** of a **product_definition**.

WR2: The **product_definition** the **interface** is a **shape_aspect** of shall have an associated **application_context_element** with a **name** of 'functional definition' or 'part definition'.

WR3: Each **interface** shall participate as the **relating_shape_aspect** in at least one **shape_aspect_relationship** with the **name** 'external access' where the **related_shape_aspect** is of type **terminal**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **interface** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.63 item_designation_assignment

An **item_designation_assignment** is a type of **identification_assignment** that specifies an identifier used to name the referenced physical or abstract object uniquely within its scope.

EXPRESS specification:

```
*)
ENTITY item_designation_assignment
  SUBTYPE OF (identification_assignment);
  items : SET [1:?] OF item_designation_item;
WHERE
  WR1:   SIZEOF(SELF.items) = 1;
  WR2:   SELF\identification_assignment.role.description
         IN ['alias', 'primary'];
  WR3:   NOT(SELF\identification_assignment.role.name
            IN ['alias', 'id', 'version']);
  WR4:   SIZEOF(QUERY(aca <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_CLASSIFICATION_ASSIGNMENT.' +
```

```

                'ITEMS') |
                'ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM'
                IN TYPEOF(aca.assigned_class) )
        ) < 2;
WR5:   SIZEOF(QUERY(aoa <* USEDIN(SELf,
                'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_ORGANIZATION_ASSIGNMENT.' +
                'ITEMS') |
                aoa.role.name = 'item designation scope')
        ) < 2;
WR6:   SIZEOF(QUERY(i <* USEDIN(SELf,
                'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                'ITEMS') |
                i.role.name = 'version')
        ) < 2;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the item designation is assigned.

Formal propositions:

WR1: Each instance of **item_designation_assignment** shall contain in its set of **items** exactly one item.

WR2: Each instance of **item_designation_assignment** shall have an associated **identification_role** with a **description** of either 'alias' or 'primary'.

WR3: Each instance of **item_designation_assignment** shall have an associated **identification_role** where the **name** is not one of either 'alias', 'id', or 'version'.

WR4: Each instance of **item_designation_assignment** shall be used in the set of **items** of at most one **applied_classification_assignment** where the **assigned_class** is of type **class_system**.

WR5: Each instance of **item_designation_assignment** shall be used in the set of **items** of at most one **applied_organization_assignment** that has an associated **organization_role** with a **name** of 'item designation scope'.

WR6: Each instance of **item_designation_assignment** shall be used in the set of **items** of at most one **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **item_designation_assignment** entity:

— **identification_assignment_subtype_exclusiveness** (see 5.2.3.71).

5.2.2.1.64 known_source

A **known_source** is a type of **external_source** and of **pre_defined_item** that provides a mechanism to refer to an entry in an external library that is compliant to either IEC 61360 or ISO 13584.

NOTE See application object definition for **External_library_reference** (see 4.2.132) for more information.

EXPRESS specification:

```
*)
ENTITY known_source
  SUBTYPE OF (external_source, pre_defined_item);
END_ENTITY;
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **item_designation_assignment** entity:

— **known_source_constraint** (see 5.2.3.72).

5.2.2.1.65 language

A **language** is a type of **group** that is a specification of the language in which an information is given. The group shall specify in its **name** a language code according to ISO 639-2, and, if present, in its **description** a country code according to ISO 3166-1. See ARM definition for **Multi_language_note** (see 4.2.204) for more information.

EXPRESS specification:

```
*)
ENTITY language
  SUBTYPE OF (group);
WHERE
  WR1: ( SIZEOF ( QUERY ( ca <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.' +
    'CLASSIFICATION_ASSIGNMENT.' + 'ASSIGNED_CLASS'
  ) | 'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE_ASSIGNMENT' IN TYPEOF
  (
    ca ) ) ) > 0 ) OR ( SIZEOF ( QUERY ( aca <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.' +
    'ATTRIBUTE_CLASSIFICATION_ASSIGNMENT.' + 'ASSIGNED_CLASS'
  ) | 'ELECTROTECHNICAL_DESIGN.' + 'ATTRIBUTE_LANGUAGE_ASSIGNMENT'
  IN
    TYPEOF ( aca ) ) ) > 0 ) ;
END_ENTITY;
(*
```


Formal propositions:

WR1: An instance of type language shall be referenced only by either the attribute **assigned_class** of a **classification_assignment** that is also a **language_assignment**, or by the attribute **assigned_class** of a **attribute_classification_assignment** that is also a **attribute_language_assignment**.

Informal propositions:

IP1: The **name** shall specify a language code according to ISO 639-2.

IP2: If present, the **description** shall specify a country code according to ISO 3166-1.

5.2.2.1.66 language_assignment

An **language_assignment** is a type of **classification_assignment** that assigns a language to a particular piece of product data.

EXPRESS specification:

```

*)
ENTITY language_assignment
  SUBTYPE OF (classification_assignment);
  items : SET [1:?] OF language_item;
WHERE
  WR1:'ELECTROTECHNICAL_DESIGN.'+ 'LANGUAGE' IN TYPEOF (
    SELF.assigned_class ) ;
  WR2:SELF.role.name='language';
  WR3: SIZEOF ( SELF.items ) = SIZEOF ( QUERY ( i <* SELF.items |
    ( 'ELECTROTECHNICAL_DESIGN.'+ 'REPRESENTATION' IN TYPEOF ( i )
  )
    AND ( i\representation.name = 'document content' ) ) ) ;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items to which the language is assigned.

Formal propositions:

WR1: The instance referenced as **assigned_class** shall be of type language.

WR2: The **name** of the **classification_role** referenced as **role** shall be 'language'.

WR3: The **representations** in the set of items shall be of **name** 'document content'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **language_assignment** entity:

— **classification_assignment_subtype_exclusiveness** (see 5.2.3.8).

5.2.2.1.67 multi_language_attribute_assignment

The **multi_language_attribute_assignment** is a type of **attribute_value_assignment**. It specifies an alternative value for the string valued attribute of an existing entity and the name of that attribute.

EXPRESS specification:

```

*)
ENTITY multi_language_attribute_assignment
  SUBTYPE OF (attribute_value_assignment);
  items : SET [1:?] OF multi_language_attribute_item;
DERIVE
language : label := get_multi_language(SELF);
WHERE
  WR1:SELF\attribute_value_assignment. role.name =
    'alternate language' ;
  WR2: ( SIZEOF ( USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.ATTRIBUTE_LANGUAGE_ASSIGNMENT.ITEMS' )
)
  =1 ) AND ( SIZEOF ( QUERY ( ala <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.'+'ATTRIBUTE_LANGUAGE_ASSIGNMENT.'+
    'ITEMS' ) | ala. attribute_name ='attribute_value' ) ) =1 )
  ;
END_ENTITY;
(*

```

Attribute definitions:

items: the set of items for which an alternative string value is specified.

language: The **language** specifies the **attribute_language_assignment** that refers as **items** to this object and provides the information concerning the language, in which an attribute value is specified.

Formal propositions:

WR1: The **attribute_value_role** specified by the **multi_language_attribute_assignment** shall have a **name** of 'alternate language'.

WR2: The **multi_language_attribute_assignment** shall be used exactly one time in role of **items** by an **attribute_language_assignment**. This **attribute_language_assignment** shall have a **attribute_name** of 'attribute_value'.

Informal propositions:

IP1: The **attribute_name** shall be the name of the attribute for which an alternative value is specified.

5.2.2.1.68 named_unit_variable

A **named_unit_variable** is a type of **named_unit** and **variable_semantics** that represents the unit in an explicitly defined mathematical function.

EXPRESS specification:

```

*)
ENTITY named_unit_variable
  SUBTYPE OF (named_unit, variable_semantics);
INVERSE
  associated_variable_environment: environment FOR semantics;
END_ENTITY;
(*

```

Attribute definitions:

associated_variable_environment: the **environment** that specifies the representation for the derived unit.

5.2.2.1.69 note_representation

A **note_representation** is a type of **representation** that specifies human-interpretable information that gives further details on a specific thing of interest.

NOTE See application object definitions for **Generic_note** (see 4.2.159), **Note** (see 4.2.210), and **Set_of_notes** (see 4.2.305) for more information.

EXPRESS specification:

```

*)
ENTITY note_representation
  SUBTYPE OF (representation);
WHERE
  WR1:  SIZEOF(SELF.items) = 1;
  WR2:  'ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM'
        IN TYPEOF(SELF.items[1]);
  WR3:  SIZEOF(USEDIN(SELF.items[1], 'ELECTROTECHNICAL_DESIGN.' +
                        'LANGUAGE_ASSIGNMENT.' +
                        'ITEMS'))
        = 1;
  WR4:  SIZEOF(QUERY(i <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                i.role.name = 'version'))
        < 2;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each instance of **note_representation** shall contain in its set of **items** exactly one element.

WR2: Each instance of **note_representation** shall contain in its set of **items** an instance of **descriptive_representation_item**.

WR3: For each instance of **note_representation** the **descriptive_representation_item** in its set of **items** shall be referenced by exactly one instance of **language_assignment** in the role of **items**.

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WR4: Each instance of **note_representation** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **note_representation** entity:

— representation_subtype_exclusiveness (see 5.2.3.99).

5.2.2.1.70 notification

A **notification** is a type of **characterized_object** that specifies a brief record of facts.

NOTE See application object definition for Notification (see 4.2.213) for more information.

EXPRESS specification:

```
*)
ENTITY notification
  SUBTYPE OF (characterized_object);
WHERE
  WR1:  SIZEOF(QUERY(i <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                i.role.name = 'version')
            ) < 2;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each instance of **notification** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **notification** entity:

— characterized_object_subtype_exclusiveness (see 5.2.3.6).

5.2.2.1.71 object_reference_designation_assignment

An **object_reference_designation_assignment** is a type of **item_designation_assignment** that specifies a reference designation which uniquely identifies the referenced **installation_location** or **product_definition** within its scope.

EXPRESS specification:

```
*)
ENTITY object_reference_designation_assignment
```

```

SUBTYPE OF (item_designation_assignment);
WHERE
  WR1:  SIZEOF(QUERY(i <* SELF.items |
                    SIZEOF(TYPEOF(i) *
                              ['ELECTROTECHNICAL_DESIGN.' +
                               'INSTALLATION_LOCATION',
                               'ELECTROTECHNICAL_DESIGN.' +
                               'PRODUCT_DEFINITION']
                              ) = 0 )
        ) = 0;
  WR2:  SIZEOF(QUERY(despd <* SELF.items |
                    ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                     IN TYPEOF(despd))
                    AND
                    NOT(despd\product_definition.frame_of_reference.name
                        IN ['conceptual definition',
                           'functional occurrence',
                           'part occurrence',
                           'system definition']))
        ) = 0;
  WR3:  SIZEOF(TYPEOF(SELF) *
              ['ELECTROTECHNICAL_DESIGN.' +
               'DOCUMENT_DESIGNATION_ASSIGNMENT',
               'ELECTROTECHNICAL_DESIGN.' +
               'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
               'ELECTROTECHNICAL_DESIGN.' +
               'SIGNAL_DESIGNATION_ASSIGNMENT',
               'ELECTROTECHNICAL_DESIGN.' +
               'TERMINAL_DESIGNATION_ASSIGNMENT']
        ) = 1;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each instance of **object_reference_designation_assignment** shall contain in its set of **items** only an instance of either **installation_location** or **product_definition**.

WR2: If an instance of **object_reference_designation_assignment** contains an instance of **product_definition** in its set of **items** this **product_definition** shall have an associated **application_context_element** with a **name** of either 'conceptual definition', 'functional occurrence', 'part occurrence', or 'system definition'.

WR3: Each instance of **object_reference_designation_assignment** shall not be an instance of any other subtype of **item_designation_assignment**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **object_reference_designation_assignment** entity:

— **identification_assignment_subtype_exclusiveness** (see 5.2.3.71).

5.2.2.1.72 package_product_concept_feature

A **package_product_concept_feature** is a type of **product_concept_feature** that combines several **product_concept_feature** instances that shall be offered to the market as a set.

NOTE See application object definition for Specification (see 4.2.323) for more information.

EXPRESS specification:

```
*)
ENTITY package_product_concept_feature
  SUBTYPE OF (product_concept_feature);
WHERE
  WR1: NOT ( 'ELECTROTECHNICAL_DESIGN.' +
'CONDITIONAL_CONCEPT_FEATURE'
  IN TYPEOF ( SELF ) ) ;
  WR2: SIZEOF ( QUERY ( cfr <* USEDIN ( SELF ,
  'ELECTROTECHNICAL_DESIGN.CONCEPT_FEATURE_RELATIONSHIP.' +
  'RELATING_PRODUCT_CONCEPT_FEATURE'
  ) | ( 'ELECTROTECHNICAL_DESIGN.' +
  'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION' IN TYPEOF (
  cfr ) ) AND ( SIZEOF ( QUERY ( ipcf <* USEDIN ( cfr ,
  'ELECTROTECHNICAL_DESIGN.CONDITIONAL_CONCEPT_FEATURE.' + 'CONDITION'
  ) | 'ELECTROTECHNICAL_DESIGN.' +
  'INCLUSION_PRODUCT_CONCEPT_FEATURE' IN TYPEOF ( ipcf ) ) )
  =1 ) ) ) >0;
END_ENTITY;
(*
```

Formal propositions:

WR1: An **package_product_concept_feature** shall not be of type **conditional_concept_feature**.

WR2: A **package_product_concept_feature** shall be referenced as **relating_product_concept_feature** by at least one **concept_feature_relationship_with_condition** which is referenced as **condition** by a **conditional_concept_feature** of type **inclusion_product_concept_feature**.

5.2.2.1.73 page_connector_group

A **page_connector_group** is a type of **group** that represents a page connector that is used in schematic diagrams to indicate that a connecting line continues elsewhere on the same sheet or on another sheet of the drawing or in other related documents.

NOTE See application object definition for Page_connector (see 4.2.227) for more information.

EXPRESS specification:

```
*)
ENTITY page_connector_group
  SUBTYPE OF (group);
WHERE
  WR1: SIZEOF(QUERY(gr <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
  'GROUP_RELATIONSHIP.' +
```

```

                'RELATED_GROUP') |
        (gr.name = 'connecting line ownership')
    AND
        ('ELECTROTECHNICAL_DESIGN.CONNECTING_LINE_GROUP'
        IN TYPEOF(gr.relatiing_group))
    )) = 1;
    WR2: SELF\group.description IN ['central', 'exclusive',
    'neutral'];
END_ENTITY;
(*

```

Formal propositions:

WR1: Each **page_connector_group** shall participate as the **related_group** in exactly one **group_relationship** with the name 'connecting line ownership' where the **relating_group** is of type **connecting_line_group**.

WR2: Each **page_connector_group** shall have a **description** with a value of either 'central', 'exclusive', or 'neutral'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **page_connector_group** entity:

— group_subtype_exclusiveness (see 5.2.3.69).

5.2.2.1.74 page_connector_presentation_group

A **page_connector_presentation_group** is a type of **group** that represents a visualization of a page connector in a schematic diagram.

NOTE See application object definition for Page_connector_presentation (see 4.2.228) for more information.

EXPRESS specification:

```

*)
ENTITY page_connector_presentation_group
    SUBTYPE OF (group);
WHERE
    WR1: SIZEOF(QUERY(gr <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
        'GROUP_RELATIONSHIP.' +
        'RELATED_GROUP') |
        (gr.name = 'page connector ownership')
    AND
        ('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_GROUP'
        IN TYPEOF(gr.relatiing_group))
    )) = 1;
    WR2: SELF\group.description IN ['none', 'sink', 'source'];
END_ENTITY;
(*

```

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Formal propositions:

WR1: Each **page_connector_presentation_group** shall participate as the **related_group** in exactly one **group_relationship** with the name 'page connector ownership' where the **relating_group** is of type **page_connector_group**.

WR2: Each **page_connector_presentation_group** shall have a **description** with a value of either 'none', 'sink', or 'source'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **page_connector_presentation_group** entity:

— **group_subtype_exclusiveness** (see 5.2.3.69).

5.2.2.1.75 page_connector_reference_group

A **page_connector_reference_group** is a type of **group** that represents a cross reference that is made from one part of a diagram to another part between page connectors being part of the representations for the same network.

NOTE See application object definition for **Page_connector_reference** (see 4.2.229) for more information.

EXPRESS specification:

```
*)
ENTITY page_connector_reference_group
  SUBTYPE OF (group);
WHERE
  WR1: SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
                    'GROUP_ASSIGNMENT.' +
                    'ASSIGNED_GROUP'))
        = 1;
  WR2: SIZEOF(QUERY(gr <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
                                'GROUP_RELATIONSHIP.' +
                                'RELATED_GROUP') |
                (gr.name = 'page connector presentation ownership')
                AND
                ('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_PRESENTATION_GROUP'
                 IN TYPEOF(gr.relying_group))
                )) = 1;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each **page_connector_reference_group** shall be referenced by exactly one **group_assignment** that is of type **page_connector_reference_group_assignment** as the **assigned_group**.

WR2: Each **page_connector_reference_group** shall participate as the **related_group** in exactly one **group_relationship** with the name 'page connector presentation ownership' where the **relating_group** is of type **page_connector_presentation_group**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **page_connector_reference_group** entity:

— group_subtype_exclusiveness (see 5.2.3.69).

5.2.2.1.76 page_connector_reference_group_assignment

A **page_connector_reference_group_assignment** is a type of **group_assignment** that assigns a **page_connector_reference_group** to either a **page_connector_group** or a **page_connector_presentation_group**.

EXPRESS specification:

```
*)
ENTITY page_connector_reference_group_assignment
  SUBTYPE OF (group_assignment);
  item : page_connector_reference_item;
END_ENTITY;
(*
```

Attribute definitions:

item: the item to which the **page_connector_reference_group** is assigned.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **page_connector_reference_group_assignment** entity:

— group_assignment_subtype_exclusiveness (see 5.2.3.67).

5.2.2.1.77 person_and_organization_address

A **person_and_organization_address** is a type of **personal_address** and **organizational_address**. It specifies the relevant address of a **person_and_organization**. See ARM definition for **Person_in_organization** (see 4.2.238) for more information.

EXPRESS specification:

```
*)
ENTITY person_and_organization_address
  SUBTYPE OF (organizational_address, personal_address);
WHERE
  WR1: SIZEOF ( SELF\personal_address. people ) =1;
  WR2: SIZEOF ( SELF\organizational_address. organizations ) =1;
  WR3: SIZEOF ( QUERY ( pao <* USEDIN ( SELF.people[1] ,
    'ELECTROTECHNICAL_DESIGN.PERSON_AND_ORGANIZATION.THE_PERSON' )
  |
```

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```
        pao. the_organization:=:SELF\organizational_address.
        organizations[1] ) ) =1;
END_ENTITY;
(*
```

Formal propositions:

WR1: There shall be exactly one item of type **person** in the set of **people**.

WR2: There shall be exactly one item of type **organization** in the set of **organizations**.

WR3: For each instance of type **person_and_organization_address** there exist a corresponding instance of type **person_and_organization**. The instance referenced by the attribute **people** of the instance of type **person_and_organization_address** is identical to the instance referenced by the attribute **the_person** of the instance of type **person_and_organization**. The instance referenced by the attribute **organizations** of the instance of type **person_and_organization_address** is identical to the instance referenced by the attribute **the_organization** of the instance of type **person_and_organization**.

5.2.2.1.78 physically_modelled_product_definition

A **physically_modelled_product_definition** is a type of **product_definition_with_associated_documents** that specifies a model of a shape of the part which is physically available. See ARM definition for **Physical_model** (see 4.2.244) in paragraph 4.2.x for more information.

EXPRESS specification:

```
*)
ENTITY physically_modelled_product_definition
  SUBTYPE OF (product_definition_with_associated_documents);
WHERE
  WR1:SELF.frame_of_reference\ application_context_element.name =
    'physical model occurrence' ;
  WR2: ( SIZEOF ( documentation_ids ) =1 ) AND ( SIZEOF ( QUERY (
    d <* documentation_ids | ( SIZEOF ( QUERY ( drt <*
    d.representation_types | ( drt.name ='physical' ) ) ) =1 )
  ) ) =1 ) ;
END_ENTITY;
(*
```

Formal propositions:

WR1: The **physically_modelled_product_definition** shall reference as its **frame_of_reference** a **product_definition_context** that has a **name** of 'physical model occurrence'.

WR2: The **physically_modelled_product_definition** shall have exactly one **document** in its set of **documentation_ids**. This **document** shall reference as its **representation_type** a **document_representation_type** that has a **name** of 'physical'.

Informal propositions:

IP1: In case the **physically_modelled_product_definition** is not referenced by a **product_definition_shape** as the **definition**, the scale shall be 1:1.

5.2.2.1.79 pre_defined_dimension_symbol

A **pre_defined_dimension_symbol** is a **pre_defined_symbol** that presents a dimension symbol and is identified by name.

NOTE 1 See application object definition for Dimension_symbol (see 4.2.98) for more information.

NOTE 2 The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```

*)
ENTITY pre_defined_dimension_symbol
  SUBTYPE OF (pre_defined_symbol);
WHERE
  WR1: SELF\pre_defined_item.name
    IN ['arc length',
        'conical taper',
        'counterbore',
        'countersink',
        'depth',
        'diameter',
        'plus minus',
        'radius',
        'slope',
        'spherical diameter',
        'spherical radius',
        'square'];
END_ENTITY;
(*

```

Formal propositions:

WR1: The **name** of the **pre_defined_dimension_symbol** shall be 'arc length', 'conical taper', 'counterbore', 'countersink', 'depth', 'diameter', 'plus minus', 'radius', 'slope', 'spherical diameter', 'spherical radius', or 'square'.

5.2.2.1.80 pre_defined_geometrical_tolerance_symbol

A **pre_defined_geometrical_tolerance_symbol** is a **pre_defined_symbol** that presents a geometrical tolerance and is identified by name.

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NOTE 1 See application object definition for Geometrical_tolerance_symbol (see 4.2.161) for more information.

NOTE 2 The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
ENTITY pre_defined_geometrical_tolerance_symbol
  SUBTYPE OF (pre_defined_symbol);
WHERE
  WR1: SELF\pre_defined_item.name
    IN ['angularity',
        'circular runout',
        'circularity',
        'concentricity',
        'cylindricity',
        'diameter',
        'flatness',
        'least material condition',
        'maximum material condition',
        'parallelism',
        'perpendicularity',
        'position',
        'profile of a line',
        'profile of a surface',
        'projected tolerance zone',
        'regardless of feature size',
        'straightness',
        'symmetry',
        'target point',
        'total runout'];
END_ENTITY;
(*
```

Formal propositions:

WR1: The **name** of the **pre_defined_geometrical_tolerance_symbol** shall be 'angularity', 'circular runout', 'circularity', 'concentricity', 'cylindricity', 'diameter', 'flatness', 'least material condition', 'maximum material condition', 'parallelism', 'perpendicularity', 'position', 'profile of a line', 'profile of a surface', 'projected tolerance zone', 'regardless of feature size', 'straightness', 'symmetry', 'target point', or 'total runout'.

5.2.2.1.81 pre_defined_point_marker_symbol

A **pre_defined_point_marker_symbol** is a **pre_defined_symbol** that presents the position of a point and is identified by name.

NOTE 1 See application object definition for Point_marker_symbol (see 4.2.246) for more information.

NOTE 2 The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
ENTITY pre_defined_point_marker_symbol
  SUBTYPE OF (pre_defined_symbol);
WHERE
  WR1: SELF\pre_defined_item.name
      IN ['asterisk',
         'circle',
         'dot',
         'plus',
         'square',
         'triangle',
         'x'];
END_ENTITY;
(*
```

Formal propositions:

WR1: The name of the **pre_defined_point_marker_symbol** shall be 'asterisk', 'circle', 'dot', 'plus', 'square', 'triangle', or 'x'.

5.2.2.1.82 pre_defined_terminator_symbol

A **pre_defined_terminator_symbol** is a **pre_defined_symbol** that presents a terminator and is identified by name.

NOTE 1 See application object definition for Terminator_symbol (see 4.2.341) for more information.

NOTE 2 The definition of this entity is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
ENTITY pre_defined_terminator_symbol
  SUBTYPE OF (pre_defined_symbol);
WHERE
  WR1: SELF\pre_defined_item.name
      IN ['blanked arrow',
         'blanked box',
         'blanked dot',
         'dimension origin',
         'filled arrow',
         'filled box',
         'filled dot',
         'integral symbol',
```

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```
        'open arrow',
        'slash',
        'unfilled arrow'];
END_ENTITY;
(*
```

Formal propositions:

WR1: The **name** of the **pre_defined_terminator_symbol** shall be 'blanked arrow', 'blanked box', 'blanked dot', 'dimension origin', 'filled arrow', 'filled box', 'filled dot', 'integral symbol', 'open arrow', 'slash', or 'unfilled arrow'.

5.2.2.1.83 predefined_connectivity_definition

A **predefined_connectivity_definition** is a type of **connectivity_definition** that represents physical connectivity that shall not be manipulated.

NOTE See application object definition for Predefined_connection (see 4.2.252) for more information.

EXPRESS specification:

```
*)
ENTITY predefined_connectivity_definition
  SUBTYPE OF (connectivity_definition);
WHERE
  WR1:  SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
        sar.name = 'connectivity'))
=
  SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
        (sar.name = 'connectivity')
        AND
        ('ELECTROTECHNICAL_DESIGN.TERMINAL'
         IN TYPEOF(sar.related_shape_aspect))
        AND
        (sar.related_shape_aspect.of_shape\
         property_definition.definition.frame_of_reference\
         application_context_element.name = 'part occurrence'))
);
END_ENTITY;
(*
```

Formal propositions:

WR1: For all **shape_aspect_relationships** with the **name** 'connectivity' the **predefined_connectivity_definition** participates in as the **relating_shape_aspect**, the

related_shape_aspects shall be of type **terminal**. The **application_context_elements** associated to the **product_definition** each **terminal** in the role of the **related_shape_aspect** is a **shape_aspect** of shall have a **name** of 'part occurrence'.

5.2.2.1.84 presentation_with_association

A **presentation_with_association** is a type of **presentation_representation** that relates an item to its presentation.

EXPRESS specification:

```
*)
ENTITY presentation_with_association
  SUBTYPE OF (presentation_representation);
WHERE
  WR1:  SIZEOF(SELF\representation.items) = 1;
  WR2:  SIZEOF(QUERY(pir <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
  'PRESENTED_ITEM_REPRESENTATION.' +
                                'PRESENTATION') |
                                NOT('ELECTROTECHNICAL_DESIGN.' +
                                'PRESENTATION_WITH_ASSOCIATION'
                                IN TYPEOF(pir.item)))
  ) = 0;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each **presentation_with_association** shall contain exactly one element in its set of items.

WR2: Each **presentation_with_association** shall be used as **presentation** in a **presented_item_representation** where the **item** is of type **presented_item_with_association**.

5.2.2.1.85 presented_item_with_association

A **presented_item_with_association** is a type of **presented_item** that specifies the item that is presented. The item is associated directly to the draughting elements presenting it.

EXPRESS specification:

```
*)
ENTITY presented_item_with_association
  SUBTYPE OF (presented_item);
  items : SET [1:?] OF associated_item;
WHERE
  WR1:  SIZEOF(QUERY(pir <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'PRESENTED_ITEM_REPRESENTATION.ITEM') |
                                NOT('ELECTROTECHNICAL_DESIGN.PRESENTATION_WITH_ASSOCIATION'
                                IN TYPEOF(pir.presentation))
  )) = 0;
```

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```
END_ENTITY;  
(*
```

Formal propositions:

WR1: Each **presented_item_with_association** shall be used as **item** in a **presented_item_representation** where the **presentation** is of type **presentation_with_association**.

5.2.2.1.86 **process_variable**

A **process_variable** is a type of **characterized_object** that specifies a physical quantity being the underlying parameter communicated by a signal.

EXPRESS specification:

```
*)  
ENTITY process_variable  
  SUBTYPE OF (characterized_object);  
END_ENTITY;  
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **process_variable** entity:

— **characterized_object_subtype_exclusiveness** (see 5.2.3.6).

5.2.2.1.87 **product_class**

A **product_class** is a type of **product_concept** and **characterized_object** that is a specification of the company's end product.

NOTE See application object definition for **Product_class** (see 4.2.263) for more information.

EXPRESS specification:

```
*)  
ENTITY product_class  
  SUBTYPE OF (product_concept, characterized_object);  
END_ENTITY;  
(*
```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_class** entity:

Ñ **characterized_object_subtype_exclusiveness** (see 5.2.3.6);

Ñ **restrict_configuration_design_for_product_class** (see 5.2.3.113).

5.2.2.1.88 product_concept_feature_category

A **product_concept_feature_category** is a type of **group** that specifies a set of similar **product_concept_feature** instances.

NOTE See application object definition for **Specification_category** (see 4.2.324) for more information.

EXPRESS specification:

```

*)
ENTITY product_concept_feature_category
  SUBTYPE OF (group);
WHERE
  WR1: SIZEOF ( QUERY ( aga <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.GROUP_ASSIGNMENT.'+'ASSIGNED_GROUP' )
  |
    ( 'ELECTROTECHNICAL_DESIGN.'+ 'APPLIED_GROUP_ASSIGNMENT' IN
    TYPEOF ( aga ) ) AND ( ( aga. role.name<>
    'specification category member' ) OR ( SIZEOF ( QUERY ( i
    <* aga. items | ( 'ELECTROTECHNICAL_DESIGN.'+
    'PRODUCT_CONCEPT_FEATURE' IN TYPEOF ( i ) ) AND NOT (
    'ELECTROTECHNICAL_DESIGN.'+ 'CONDITIONAL_CONCEPT_FEATURE' IN
    TYPEOF ( i ) ) ) ) ) <> SIZEOF ( aga. items ) ) ) ) ) =0;
END_ENTITY;
(*

```

Formal Propositions:

WR1: A **product_concept_feature_category** shall only be referenced as **assigned_group** by **applied_group_assignment** instances which reference as **role** an **object_role** with a **name** of 'specification category member' and which only contain **product_concept_features** in their set of **items** which are not of type **conditional_concept_feature**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_class** entity:

- group_subtype_exclusiveness (see 5.2.3.69);
- product_concept_feature_requires_category (see 5.2.3.81);
- restrict_group_relationship_for_specification_category (see 5.2.3.119).

5.2.2.1.89 product_concept_feature_category_usage

A **product_concept_feature_category_usage** is a type of **group_assignment** that assigns a **product_concept_feature_category** to a **product_class**. The **product_concept_feature_category_usage** specifies if the usage of one or more of the grouped **product_concept_feature** instances is mandatory or optional for all products of that **product_class**.

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NOTE See application object definition for `Class_category_association` (see 4.2.40) for more information.

EXPRESS specification:

```
*)
ENTITY product_concept_feature_category_usage
  SUBTYPE OF (group_assignment);
  items : SET [1:?] OF category_usage_item;
WHERE
  WR1: 'ELECTROTECHNICAL_DESIGN.PRODUCT_CONCEPT_FEATURE_CATEGORY'
      IN TYPEOF(SELF.assigned_group);
  WR2: SELF.role.name IN ['mandatory category usage',
                          'optional category usage'];
END_ENTITY;
(*
```

Attribute definitions:

items: the set of items to which the **product_concept_feature_category** is assigned.

Formal Propositions:

WR1: The **product_concept_feature_category_usage** shall reference as its **assigned_group** a **group** that is of type **product_concept_feature_category**.

WR2: The **product_concept_feature_category_usage** shall reference as its **role** a **group_role** that has a **name** of either 'mandatory category usage' or 'optional category usage'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_concept_feature_category_usage** entity:

- `group_assignment_subtype_exclusiveness` (see 5.2.3.67);
- `restrict_effectivity_assignment_for_class_category_usage` (see 5.2.3.115).

5.2.2.1.90 product_identification

A **product_identification** is a type of **configuration_item** and **characterized_object** that identifies a manufacturable object, or expected as so, which is defined with respect to the **product_class** it is a member of.

EXPRESS specification:

```
*)
ENTITY product_identification
  SUBTYPE OF (configuration_item,characterized_object);
WHERE
  WR1: SIZEOF ( QUERY ( cd <* USEDIN ( SELF ,
      'ELECTROTECHNICAL_DESIGN.CONFIGURATION_DESIGN.CONFIGURATION' )
      |
      ( 'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION_FORMATION' IN
```

```

    TYPEOF ( cd. design ) ) AND ( SIZEOF ( QUERY ( prpc <*
    USEDIN ( cd. design\product_definition_formation.
    of_product ,

'ELECTROTECHNICAL_DESIGN.PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS'
    ) | prpc. name IN ['part' , 'raw material' , 'tool'] ) ) >0
    ) ) ) <=1;
WR2: 'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_CLASS' IN TYPEOF (
    SELF.item_concept ) ;
WR3: NOT ( 'ELECTROTECHNICAL_DESIGN.'+ 'CONFIGURABLE_ITEM' IN
    TYPEOF
    ( SELF ) ) OR ( 'ELECTROTECHNICAL_DESIGN.'+
    'PRODUCT_SPECIFICATION' IN TYPEOF ( SELF ) ) ;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each **product_identification** shall be referenced as the **configuration** by at most one instance of **configuration_design** that references as **design** a **product_definition_formation** which references as **of_product** a **product** which is contained in the **of_products** set of a **product_related_product_category** with a **name** of either 'part', 'raw material', or 'tool'.

WR2: Each **product_identification** shall reference as its **item_concept** a **product_class**.

WR3: If a **product_identification** is of type **configurable_item** it shall also be of type **product_specification**. If a **product_identification** is of type **product_specification** it shall also be of type **configurable_item**.

5.2.2.1.91 product_specification

A **product_specification** is a type of **configurable_item** and **characterized_object** that is a characterization of a manufacturable product for which one or more associated **product_concept_features** enhance the characterization provided for the associated **product_class**.

NOTE See application object definition for Product_specification (see 4.2.269) for more information.

EXPRESS specification:

```

*)
ENTITY product_specification
    SUBTYPE OF (product_identification,configurable_item);
END_ENTITY;
(*

```

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_specification** entity:

— **characterized_object_subtype_exclusiveness** (see 5.2.3.6).

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5.2.2.1.92 reference_grid_layout

A **reference_grid_layout** is a symbol that presents the layout or format for a reference grid of a drawing sheet or a drawing view.

NOTE See application object definition for Reference_grid_layout (see 4.2.284) for more information.

EXPRESS specification:

```
*)
ENTITY reference_grid_layout
  SUBTYPE OF (draughting_symbol_representation);
WHERE
  WR1:  SIZEOF(QUERY(rr <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'REPRESENTATION_RELATIONSHIP.' +
                                'REP_1') |
                                (rr.name = 'reference grid')
                                AND
                                ('ELECTROTECHNICAL_DESIGN.REFERENCE_GRID_REPRESENTATION'
                                 IN TYPEOF(rr.rep_2))
                                )) = 1;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each **reference_grid_layout** shall participate as the **rep_1** in exactly one **representation_relationship** with a **name** of 'reference grid' where the **rep_2** is a **reference_grid_representation**.

5.2.2.1.93 reference_grid_representation

A **reference_grid_representation** is a type of **representation** that defines a grid reference system in accordance with IEC 1082-1.

NOTE See application object definition for Reference_grid (see 4.2.283) for more information.

EXPRESS specification:

```
*)
ENTITY reference_grid_representation
  SUBTYPE OF (representation);
WHERE
  WR1:  SIZEOF(SELF\representation.items) = 3;
  WR2:  SIZEOF(QUERY(column <* SELF\representation.items |
                    ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
                     IN TYPEOF(column))
                    AND
                    (column\mapped_item.mapping_source.
                     mapped_representation.name
                     = 'reference grid column representation'))
  ) = 3;
END_ENTITY;
(*
```

```

)) = 1;
WR3:  SIZEOF(QUERY(row <* SELF\representation.items |
        ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
         IN TYPEOF(row))
        AND
        (row\mapped_item.mapping_source.
         mapped_representation.name
         = 'reference grid row representation')
)) = 1;
WR4:  SIZEOF(QUERY(origin <* SELF\representation.items |
        ('ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT_2D'
         IN TYPEOF(origin))
        AND
        (origin.name = 'grid origin') )
) = 1;
WR5:  SIZEOF(QUERY(mi <* SELF\representation.items |
        ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
         IN TYPEOF(mi))
        AND
        (SIZEOF(QUERY(item <*
mi\mapped_item.mapping_source.
                                mapped_representation.items |
                                NOT(SIZEOF(TYPEOF(item) *
                                ['ELECTROTECHNICAL_DESIGN.' +
                                'AXIS2_PLACEMENT_2D',
                                'ELECTROTECHNICAL_DESIGN.' +
'DESRIPTIVE_REPRESENTATION_ITEM',
                                'ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM']
                                ) = 1 ) )
                                ) = 0 ) )
) = 0;
WR6:  SIZEOF(QUERY(mi <* SELF\representation.items |
        ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
         IN TYPEOF(mi))
        AND
        (NOT(SIZEOF(QUERY(pos <*
mi\mapped_item.mapping_source.
                                mapped_representation.items |
                                'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT_2D'
                                IN TYPEOF(pos)
                                )) = 1))
) = 0;
WR7:  SIZEOF(QUERY(mi <* SELF\representation.items |
        ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
         IN TYPEOF(mi))
        AND
        (NOT(SIZEOF(QUERY(spacing <*
mi\mapped_item.mapping_source.
                                mapped_representation.items |
                                (SIZEOF(TYPEOF(spacing) *

```

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```
[ 'ELECTROTECHNICAL_DESIGN.LENGTH_MEASURE_WITH_UNIT',
'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM' ]
    ) = 2)
    AND
    (spacing.name = 'grid spacing')
    )) = 1))
    )) = 0;
WR8:  SIZEOF(QUERY(rm <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
    'REPRESENTATION_MAP.' +
    'MAPPED_REPRESENTATION') |
    NOT(SIZEOF(USEDIN(rm, 'ELECTROTECHNICAL_DESIGN.' +
    'MAPPED_ITEM.' +
    'MAPPING_SOURCE')) = 1)
    )) = 0;
WR9:  SIZEOF(QUERY(rm <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
    'REPRESENTATION_MAP.' +
    'MAPPED_REPRESENTATION') |
    NOT(SIZEOF(QUERY(mi <* USEDIN(rm,
'ELECTROTECHNICAL_DESIGN.' +
    'MAPPED_ITEM.' +
    'MAPPING_SOURCE') |
    NOT(SIZEOF(QUERY(rep <*
    USEDIN(mi,
    'ELECTROTECHNICAL_DESIGN.' +
    'REPRESENTATION.' +
    'ITEMS') |
    SIZEOF(TYPEOF(rep) *
['ELECTROTECHNICAL_DESIGN.' +
'DRAWING_SHEET_REVISION',
'ELECTROTECHNICAL_DESIGN.' +
    'PRESENTATION_VIEW']
    ) = 1 )
    ) = 1 )
    )) = 0)
    )) = 0;
WR10: SIZEOF(QUERY(mi <* SELF\representation.items |
    ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM'
    IN TYPEOF(mi))
    AND
    (NOT(SIZEOF((QUERY(pos <*
mi\mapped_item.mapping_source.
mapped_representation.items |
    'ELECTROTECHNICAL_DESIGN.' +
    'AXIS2_PLACEMENT_2D'
    IN TYPEOF(pos) ))
    *
    (QUERY(origin <*
SELF\representation.items |
    'ELECTROTECHNICAL_DESIGN.' +
```

```

                                'AXIS2_PLACEMENT_2D'
                                IN TYPEOF(origin) ))
                                ) = 1 ) ) )
                                ) = 0;
WR11: SIZEOF(QUERY(rr <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'REPRESENTATION_RELATIONSHIP.' +
                                'REP_2') |
                                (rr.name = 'reference grid')
                                AND
                                ('ELECTROTECHNICAL_DESIGN.REFERENCE_GRID_LAYOUT'
                                IN TYPEOF(rr.rep_1))
                                )) >= 1;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each **reference_grid_representation** shall contain in its set of items exactly three items.

WR2: Each **reference_grid_representation** shall contain in its set of **items** exactly one **mapped_item** that has as its **mapping_source** a **representation_map** that identifies a **representation** with the **name** 'reference grid column representation' as the **mapped_representation**.

WR3: Each **reference_grid_representation** shall contain in its set of **items** exactly one **mapped_item** that has as its **mapping_source** a **representation_map** that identifies a **representation** with the **name** 'reference grid row representation' as the **mapped_representation**.

WR4: Each **reference_grid_representation** shall contain in its set of **items** exactly one **axis2_placement_2d** with the **name** 'grid origin'.

WR5: Each **mapped_item** in the set of items of a **reference_grid_representation** shall have as its **mapping_source** a **mapped_representation** that identifies a **representation** containing in its set of **items** only items of type **axis2_placement_2d**, **descriptive_representation_item**, or **measure_representation_item**.

WR6: Each **mapped_item** in the set of items of a **reference_grid_representation** shall have as its **mapping_source** a **mapped_representation** that identifies a **representation** containing in its set of **items** exactly one **axis2_placement_2d**.

WR7: Each **mapped_item** in the set of items of a **reference_grid_representation** shall have as its **mapping_source** a **mapped_representation** that identifies a **representation** containing in its set of **items** exactly one **measure_representation_item** with the **name** 'grid spacing' that is of type **length_measure_with_unit**.

WR8: Each **reference_grid_representation** shall be the **mapped_representation** of a **representation_map** that is used exactly once in the role of the **mapping_source** by a **mapped_item**.

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WR9: The **mapped_item** that has as its **mapping_source** a **representation_map** referring to a **reference_grid_representation** as **mapped_representation** shall be contained in exactly one **drawing_sheet** or **presentation_view**.

WR10: For each **reference_grid_representation** the **axis2_placement_2d** with the **name** 'grid origin' contained in the set of items shall be the **mapping_target** for the **mapped_items** contained in the set of **items**.

WR11: Each **reference_grid_representation** shall participate as the **rep_2** in at least one **representation_relationship** with a **name** of 'reference grid' where the **rep_1** is a **reference_grid_layout**.

5.2.2.1.94 retention

A **retention** is a type of **action** that defines a period of time that product data needs to be retained due to organizational policy or to legal requirements.

NOTE See application object definition for **Retention_period** (see 4.2.289) for more information.

EXPRESS specification:

```
*)
ENTITY retention
  SUBTYPE OF (action);
WHERE
  WR1: SIZEOF ( QUERY ( aa <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.'+'ACTION_ASSIGNMENT.'+
    'ASSIGNED_ACTION' ) | ( 'ELECTROTECHNICAL_DESIGN.'+
    'APPLIED_ACTION_ASSIGNMENT' IN TYPEOF ( aa ) ) AND ( aa.
    role.name = 'retention' ) ) ) >=1;
  WR2: ( SIZEOF ( QUERY ( atia <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_TIME_INTERVAL_ASSIGNMENT.'+
    'ITEMS' ) | ( atia. role.name = 'minimum retention period'
    ) ) ) =1 ) AND ( SIZEOF ( QUERY ( atia <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_TIME_INTERVAL_ASSIGNMENT.'+
    'ITEMS' ) | ( atia. role.name = 'maximum retention period'
    ) ) ) =1 ) AND ( SIZEOF ( QUERY ( atia1 <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_TIME_INTERVAL_ASSIGNMENT.'+
    'ITEMS' ) | ( atia1. role.name = 'minimum retention period'
    ) AND ( 'ELECTROTECHNICAL_DESIGN.'+ 'TIME_INTERVAL_WITH_BOUNDS'
    IN TYPEOF ( atia1. assigned_time_interval ) ) AND ( EXISTS
    ( atia1. assigned_time_interval\time_interval_with_bounds.
    secondary_bound ) OR EXISTS ( atia1.
    assigned_time_interval\time_interval_with_bounds. duration
    ) ) AND ( SIZEOF ( QUERY ( atia2 <* USEDIN ( SELF ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_TIME_INTERVAL_ASSIGNMENT.'+
    'ITEMS' ) | ( atia2. role.name = 'maximum retention period'
    ) ) AND ( 'ELECTROTECHNICAL_DESIGN.'+ 'TIME_INTERVAL_WITH_BOUNDS'
    IN TYPEOF ( atia2. assigned_time_interval ) ) AND ( EXISTS
    ( atia2. assigned_time_interval\time_interval_with_bounds.
    secondary_bound ) OR EXISTS ( atia2.
    assigned_time_interval\time_interval_with_bounds. duration
    ) ) AND ( atia1.
```



```

    assigned_time_interval\time_interval_with_bounds.
    primary_bound:=:atia2.
    assigned_time_interval\time_interval_with_bounds.
    primary_bound ) ) ) =1 ) ) ) =1 ) ;
WR3:  SIZEOF ( USEDIN ( SELF ,
        'ELECTROTECHNICAL_DESIGN.'+'ACTION_RELATIONSHIP.'+
        'RELATING_ACTION' ) ) + SIZEOF ( USEDIN ( SELF ,
        'ELECTROTECHNICAL_DESIGN.'+'ACTION_RELATIONSHIP.'+
        'RELATED_ACTION' ) ) =0;
END_ENTITY;
(*

```

Formal Propositions:

WR1: The **retention** shall be referenced as the **assigned_action** by at least one instance of **applied_action_assignment** that has a **role** with **name** 'retention'.

WR2: The **retention** shall be contained in the set of **items** of exactly one **applied_time_interval_assignment** that references as its **role** a **time_interval_role** with a **name** of 'minimum retention period', and shall be contained in the set of **items** of exactly one **applied_time_interval_assignment** that references as its **role** a **time_interval_role** with a **name** of 'maximum retention period'. Both **applied_time_interval_assignment** instances shall reference as **assigned_time_interval** a **time_interval_with_bounds** that has its **primary_bound** and either one of **secondary_bound** or **duration** attributes instantiated. Both **applied_time_interval_assignment** instances shall have the same **primary_bound**.

WR3: The **retention** shall not be referenced by an **action_relationship**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **retention** entity:

- **action_subtype_exclusiveness** (see 5.2.3.1);
- **dependent_instantiable_retention** (see 5.2.3.42);
- **retention_requires_retention_assignment** (see 5.2.3.144).

5.2.2.1.95 routed_segment

A **routed_segment** is a type of **shape_aspect** that specifies a portion of a routing path that has a well defined course.

EXPRESS specification:

```

*)
ENTITY routed_segment
  SUBTYPE OF (installation_segment);
WHERE
  WR1:  SIZEOF(QUERY(sar <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') |

```

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```
(sar.name = 'course sequence')
AND
(SIZEOF(TYPEOF(sar.related_shape_aspect) *
['ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE',
'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',
'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
'ELECTROTECHNICAL_DESIGN.' +
'INSTALLATION_SECTION_INTERFACE']
) = 1 )
)) >= 1;
END_ENTITY;
(*
```

Formal propositions:

WR1: Each **routed_segment** shall participate as the **relating_shape_aspect** in at least one **shape_aspect_relationship** with the **name** 'course sequence' where the **related_shape_aspect** is an instance of either **installation_node**, **installation_route**, **installation_section**, or **installation_section_interface**.

5.2.2.1.96 signal

A **signal** is a type of **characterized_object** that specifies a message being generated, processed or conveyed within an electrotechnical system.

EXPRESS specification:

```
*)
ENTITY signal
  SUBTYPE OF (characterized_object);
WHERE
  WR1:  SIZEOF(QUERY(des <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |
          SIZEOF(TYPEOF(des) *
          ['ELECTROTECHNICAL_DESIGN.' +
           'DOCUMENT_DESIGNATION_ASSIGNMENT',
           'ELECTROTECHNICAL_DESIGN.' +
           'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
           'ELECTROTECHNICAL_DESIGN.' +
           'TERMINAL_DESIGNATION_ASSIGNMENT']
          ) > 0 )
        ) = 0;
  WR2:  SIZEOF(QUERY(des <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |
          ('ELECTROTECHNICAL_DESIGN.' +
           'SIGNAL_DESIGNATION_ASSIGNMENT'
          IN TYPEOF(des))
          AND
```

```

        (des.role.description = 'primary' )
    ) = 1;
WR3:  SIZEOF(QUERY(i <* USEDIN(SELF,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                                'ITEMS') |
                                i.role.name = 'version')
            ) < 2;
END_ENTITY;
(*

```

Formal propositions:

WR1: Each instance of **signal** shall be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **object_reference_designation_assignment**, or **terminal_designation_assignment**.

WR2: Each instance of **signal** shall be referenced by exactly one **signal_designation_assignment** that has an associated **identification_role** with the **description** 'primary'.

WR3: Each instance of **signal** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **signal** entity:

— characterized_object_subtype_exclusiveness (see 5.2.3.6).

5.2.2.1.97 **signal_designation_assignment**

A **signal_designation_assignment** is a type of **item_designation_assignment** that specifies a reference designation which uniquely identifies the referenced **signal** within its scope.

EXPRESS specification:

```

*)
ENTITY signal_designation_assignment
  SUBTYPE OF (item_designation_assignment);
WHERE
  WR1:  'ELECTROTECHNICAL_DESIGN.SIGNAL'
        IN TYPEOF(SELF.items[1]);
  WR2:  SIZEOF(TYPEOF(SELF) *
                ['ELECTROTECHNICAL_DESIGN.' +
                 'DOCUMENT_DESIGNATION_ASSIGNMENT',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'SIGNAL_DESIGNATION_ASSIGNMENT',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'TERMINAL_DESIGNATION_ASSIGNMENT'])
        = 1;

```

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END_ENTITY;
(*

Formal propositions:

WR1: Each instance of **signal_designation_assignment** shall contain in its set of **items** only an instance of type **signal**.

WR2: Each instance of **signal_designation_assignment** shall not be an instance of any other subtype of **item_designation_assignment**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **signal_designation_assignment** entity:

— **identification_assignment_subtype_exclusiveness** (see 5.2.3.71).

5.2.2.1.98 terminal

A **terminal** is a type of **shape_aspect** that characterizes a single access element used to access the functionality of a functional or physical element.

NOTE See application object definitions for **Interface_terminal** (see 4.2.174), **Port** (see 4.2.247), and **Terminal** (see 4.2.338) for more information.

EXPRESS specification:

```
*)
ENTITY terminal
  SUBTYPE OF (shape_aspect);
WHERE
  WR1: SELF\shape_aspect.product_definitional = UNKNOWN;
  WR2: 'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(SELF\shape_aspect.of_shape\property_definition.definition);
  WR3: SELF\shape_aspect.of_shape\property_definition.definition.
    frame_of_reference\application_context_element.name
    IN ['functional definition',
        'functional occurrence',
        'part definition',
        'part occurrence'];
  WR4:
SELF\shape_aspect.of_shape\property_definition.definition.name
  = 'single instance';
  WR5: SIZEOF(QUERY(des <* USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |
NOT (SIZEOF (TYPEOF (des) *
                ['ELECTROTECHNICAL_DESIGN.' +
                'DOCUMENT_DESIGNATION_ASSIGNMENT',
                'ELECTROTECHNICAL_DESIGN.' +
```

```

'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'SIGNAL_DESIGNATION_ASSIGNMENT']
        ) > 0 ) )
    ) = 0;
WR6:  SIZEOF(QUERY(des <* USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
        'ITEMS') |
        ('ELECTROTECHNICAL_DESIGN.' +
        'TERMINAL_DESIGNATION_ASSIGNMENT'
        IN TYPEOF(des))
        AND
        (des.role.description = 'primary') )
    ) = 1;
WR7:  SIZEOF(QUERY(sar <* USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
        'RELATED_SHAPE_ASPECT') |
        (sar.related_shape_aspect.of_shape\
        property_definition.definition.frame_of_reference\
        application_context_element.name = 'functional
occurrence')
        AND
        (sar.name = 'definition usage')
        AND
        ('ELECTROTECHNICAL_DESIGN.TERMINAL'
        IN TYPEOF(sar.relatng_shape_aspect))
        AND
        (sar.relatng_shape_aspect.of_shape\
        property_definition.definition.frame_of_reference\
        application_context_element.name = 'functional
definition')
        )) = 1;
WR8:  SIZEOF(QUERY(sar <* USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.'
+
'SHAPE_ASPECT_RELATIONSHIP.' +
        'RELATED_SHAPE_ASPECT') |
        (sar.related_shape_aspect.of_shape\
        property_definition.definition.frame_of_reference\
        application_context_element.name = 'part occurrence')
        AND
        (sar.name = 'definition usage')
        AND
        ('ELECTROTECHNICAL_DESIGN.TERMINAL'
        IN TYPEOF(sar.relatng_shape_aspect))
        AND
        (sar.relatng_shape_aspect.of_shape\
        property_definition.definition.frame_of_reference\
        application_context_element.name = 'part definition')
        )) = 1;

```

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```
WR9:  SIZEOF(QUERY(sar <* USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
      (sar.relating_shape_aspect.of_shape\
       property_definition.definition.frame_of_reference\
       application_context_element.name = 'functional
definition'))
      AND
      (sar.name = 'correspondence')
      AND
      (NOT('ELECTROTECHNICAL_DESIGN.TERMINAL'
           IN TYPEOF(sar.related_shape_aspect)))
      AND
      (NOT(sar.related_shape_aspect.of_shape\
           property_definition.definition.frame_of_reference\
           application_context_element.name = 'functional
occurrence'))
      )) = 0;
WR10: SIZEOF(QUERY(sar <* USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
+
'SHAPE_ASPECT_RELATIONSHIP.' +
                                'RELATING_SHAPE_ASPECT') |
      (sar.relating_shape_aspect.of_shape\
       property_definition.definition.frame_of_reference\
       application_context_element.name = 'part definition')
      AND
      (sar.name = 'correspondence')
      AND
      ('ELECTROTECHNICAL_DESIGN.TERMINAL'
       IN TYPEOF(sar.related_shape_aspect))
      AND
      (sar.related_shape_aspect.of_shape\
       property_definition.definition.frame_of_reference\
       application_context_element.name = 'part occurrence')
      )) <= 1;
WR11: SIZEOF(QUERY(corr_mem <*
                  QUERY(sar <* USEDIN(SELf,
                                      'ELECTROTECHNICAL_DESIGN.' +
                                      'SHAPE_ASPECT_RELATIONSHIP.' +
                                      'RELATING_SHAPE_ASPECT') |
                                      (sar.relating_shape_aspect.of_shape\
                                       property_definition.definition.
frame_of_reference\application_context_element.
name = 'functional definition')
                                      AND
                                      (sar.name = 'correspondence')) |
                  NOT(SIZEOF(QUERY(next_corr_mem <*
                                      QUERY(sar <* (USEDIN(SELf,
'Electrotechnical_Design.' +
'Shape_Aspect_Relationship.' +
'Relating_Shape_Aspect') |
(sar.relating_shape_aspect.of_shape\
property_definition.definition.
frame_of_reference\application_context_element.
name = 'functional definition')
AND
(sar.name = 'correspondence')) |
NOT(SIZEOF(QUERY(next_corr_mem <*
QUERY(sar <* (USEDIN(SELf,
```

```

'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT')
                                - corr_mem) |
(sar.relating_shape_aspect.of_shape\
property_definition.definition.\
frame_of_reference\
application_context_element.\
name = 'functional_definition')
AND
(sar.name = 'correspondence')) |
corr_mem.related_shape_aspect =
next_corr_mem.related_shape_aspect
)) = 0)
)) = 0;
END_ENTITY;
(*

```

Formal propositions:

WR1: It is not known whether or not the **terminal** lies on the shape of the product.

WR2: The **terminal** shall be a **shape_aspect** of a **product_definition**.

WR3: The **product_definition** the **terminal** is a **shape_aspect** of shall have an **application_context_element** with a **name** of either 'functional definition', 'functional occurrence', 'part definition', or 'part occurrence' associated to it.

WR4: The **product_definition** the **terminal** is a **shape_aspect** of shall have a **name** of 'single instance'.

WR5: Each instance of **terminal** shall be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **object_reference_designation_assignment**, or **signal_designation_assignment**.

WR6: Each instance of **terminal** shall be referenced by exactly one instance of **terminal_designation_assignment** that has an associated **identification_role** with the **description** 'primary'.

WR7: Each **terminal** that is a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'functional occurrence' shall participate as the **related_shape_aspect** in exactly one **shape_aspect_relationship** with the **name** 'definition usage'. The **relating_shape_aspect** of this **shape_aspect_relationship** is of type **terminal** being a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'functional definition'.

WR8: Each **terminal** that is a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'part occurrence' shall participate as the **related_shape_aspect** in exactly one **shape_aspect_relationship** with the **name** 'definition usage'. The **relating_shape_aspect** of this **shape_aspect_relationship** is of type **terminal** being a

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shape_aspect of a **product_definition** with an associated **application_context_element** that has a **name** of 'part definition'.

WR9: Each **terminal** that is a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'functional definition' shall participate as the **relating_shape_aspect** in only those **shape_aspect_relationships** with the **name** 'correspondence' where the **related_shape_aspect** is of type **terminal** being a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'functional occurrence'.

WR10: Each **terminal** that is a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'part definition' shall participate as the **relating_shape_aspect** in at most one **shape_aspect_relationship** with the **name** 'correspondence'. The **related_shape_aspect** of this **shape_aspect_relationship** is of type **terminal** being a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'part occurrence'.

WR11: For the same pair of a **terminal** that is a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'functional definition' and a **terminal** being a **shape_aspect** of a **product_definition** with an associated **application_context_element** that has a **name** of 'functional occurrence' only one **shape_aspect_relationship** with the **name** 'correspondence' is allowed.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **terminal** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.1.99 terminal_designation_assignment

A **terminal_designation_assignment** is a type of **item_designation_assignment** that specifies a reference designation which uniquely identifies the referenced **terminal** within its scope.

EXPRESS specification:

```
*)
ENTITY terminal_designation_assignment
  SUBTYPE OF (item_designation_assignment);
WHERE
  WR1:  SIZEOF(TYPEOF(SELF.items[1]) *
            ['ELECTROTECHNICAL_DESIGN.TERMINAL']
        ) = 1;
  WR2:  SIZEOF(TYPEOF(SELF) *
            ['ELECTROTECHNICAL_DESIGN.' +
             'DOCUMENT_DESIGNATION_ASSIGNMENT',
             'ELECTROTECHNICAL_DESIGN.' +
             'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
             'ELECTROTECHNICAL_DESIGN.' +
             'SIGNAL_DESIGNATION_ASSIGNMENT',
             'ELECTROTECHNICAL_DESIGN.' +
             'TERMINAL_DESIGNATION_ASSIGNMENT']
        ) = 1;
END_ENTITY;
```


(*

Formal propositions:

WR1: Each instance of **terminal_designation_assignment** shall contain in its set of **items** only an instance of **terminal**.

WR2: Each instance of **terminal_designation_assignment** shall not be an instance of any other subtype of **item_designation_assignment**.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **terminal_designation_assignment** entity:

— **identification_assignment_subtype_exclusiveness** (see 5.2.3.71).

5.2.2.1.100 value_range

A **value_range** is a type of **compound_representation_item** that specifies a range of values defined either by two **measure_representation_items**, or two **value_representation_items**. See ARM definition for **Value_range** (see 4.2.359) in paragraph 4.2.x for more information.

EXPRESS specification:

```

*)
ENTITY value_range
  SUBTYPE OF (compound_representation_item);
WHERE
  WR1: ( 'ELECTROTECHNICAL DESIGN.'+ 'SET_REPRESENTATION_ITEM' IN
        TYPEOF ( item_element ) ) AND value_range_wr1 (
        item_element ) ;
  WR2:value_range_wr2 ( item_element ) ;
  WR3:value_range_wr3 ( item_element ) ;
END_ENTITY;
(*
```

Formal propositions:

WR1: The **value_range** shall have a **set_representation_item** as its **item_element**. This **set_representation_item** shall have exactly two **representation_items** of the same type in its set that are either **measure_representation_items** or **value_representation_items**.

WR2: One of the **representation_items** in the set specified by **item_element** shall have a **name** of 'upper limit', and the other a **name** of 'lower limit'.

WR3: If the set specified by **item_element** consists of **measure_representation_items**, then the **measure_representation_items** shall point to the same instance of **named_unit** or **derived_unit** as their respective **unit_component**.

5.2.2.2 electrotechnical_design imported entity modifications

5.2.2.2.1 action

The base definition of the **action** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **action** entity:

- action_subtype_exclusiveness (see 5.2.3.1);
- restrict_version_assignment_for_action.

5.2.2.2.2 action_directive

The base definition of the **action_directive** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **action_directive** entity:

- dependent_instantiable_action_directive (see 5.2.3.12);
- restrict_version_assignment_for_action_directive (see 5.2.3.134).

5.2.2.2.3 action_method

The base definition of the **action_method** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **action_method** entity:

- restrict_version_assignment_for_action_method.

5.2.2.2.4 action_relationship

The base definition of the **action_relationship** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **action_relationship** entity:

- action_relationship_constraint.

5.2.2.2.5 action_request_status

The base definition of the **action_request_status** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **action_relationship** entity:

— **versioned_action_request_requires_status** (see 5.2.3.162).

5.2.2.2.6 address

The base definition of the **address** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **address** entity:

— **dependent_instantiable_address** (see 5.2.3.13).

5.2.2.2.7 annotation_occurrence

The base definition of the **annotation_occurrence** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **annotation_occurrence** entity:

— **subtype_mandatory_annotation_occurrence** (see 5.2.3.151).

5.2.2.2.8 annotation_occurrence_relationship

The base definition of the **annotation_occurrence_relationship** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Informal propositions:

The following additional informal propositions apply:

IP1: Instances of **annotation_occurrence_relationship** with the name ‘detached representation reference’ are used to establish references between different presentations, i.e. between **annotation_occurrences**, for a specific object that are located at different parts of a diagram. The **related_annotation_occurrence** specifies the presentation the **annotation_occurrence_relationship** is a part of. The presentation specified by the **relating_annotation_occurrence** is the one that is referenced by the **annotation_occurrence_relationship**.

5.2.2.2.9 **annotation_text_occurrence**

The base definition of the **annotation_text_occurrence** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **annotation_text_occurrence** entity:

— **restrict_language_assignment_for_annotation_text_occurrence** (see 5.2.3.121).

5.2.2.2.10 **application_context**

The base definition of the **application_context** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **application_context** entity:

— **application_protocol_definition_required** (see 5.2.3.2).

5.2.2.2.11 **approval**

The base definition of the **approval** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **approval** entity:

— **approval_requires_approval_assignment** (see 5.2.3.4).

5.2.2.2.12 **approval_person_organization**

The base definition of the **approval_person_organization** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **approval_person_organization** entity:

— **approval_person_organization_requires_date_time** (see 5.2.3.3).

5.2.2.2.13 **approval_role**

The base definition of the **approval_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **approval_role** entity:

— `dependent_instantiable_approval_role` (see 5.2.3.14).

5.2.2.2.14 **approval_status**

The base definition of the **approval_status** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **approval_status** entity:

— `dependent_instantiable_approval_status` (see 5.2.3.15);

— `restrict_class_system_assignment_for_approval_status` (see 5.2.3.107).

5.2.2.2.15 **assembly_component_usage**

The base definition of the **assembly_component_usage** entity is given in ISO 10303-44. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **assembly_component_usage** entity:

— `assembly_component_usage_reference_designation_constraint` (see 5.2.3.5);

— `selected_instance_usage_requires_representation` (see 5.2.3.146).

5.2.2.2.16 **attribute_value_role**

The base definition of the **attribute_value_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **attribute_value_role** entity:

— `dependent_instantiable_attribute_value_role` (see 5.2.3.16).

5.2.2.2.17 **bounded_curve**

The base definition of the **bounded_curve** entity is given in ISO 10303-42. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **bounded_curve** entity:

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— subtype_mandatory_bounded_curve (see 5.2.3.152).

5.2.2.2.18 camera_image

The base definition of the **camera_image** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **camera_image** entity:

- restrict_camera_image_in_view (see 5.2.3.106);
- subtype_mandatory_camera_image (see 5.2.3.153).

5.2.2.2.19 camera_model

The base definition of the **camera_model** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **camera_model** entity:

- subtype_mandatory_camera_model (see 5.2.3.154).

5.2.2.2.20 classification_role

The base definition of the **classification_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **classification_role** entity:

- dependent_instantiable_classification_role (see 5.2.3.17).

5.2.2.2.21 colour_rgb

The base definition of the **colour_rgb** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **colour_rgb** entity:

- dependent_instantiable_colour_rgb (see 5.2.3.18).

5.2.2.2.22 compound_representation_item

The base definition of the **compound_representation_item** entity is given in ISO 10303-43. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **compound_representation_item** entity:

— representation_item_subtype_exclusiveness (see 5.2.3.97).

5.2.2.2.23 concept_feature_operator

The base definition of the **concept_feature_operator** entity is given in ISO 10303-44. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **concept_feature_operator** entity:

— restrict_concept_feature_operator (see 5.2.3.112).

5.2.2.2.24 configuration_design

The base definition of the **configuration_design** entity is given in ISO 10303-44. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **configuration_design** entity:

— configuration_design_constraint (see 5.2.3.10);

— restrict_configuration_design_for_product_class (see 5.2.3.113).

5.2.2.2.25 configuration_item

The base definition of the **configuration_item** entity is given in ISO 10303-44. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **configuration_item** entity:

— restrict_version_assignment_for_configuration_item (see 5.2.3.137).

5.2.2.2.26 curve

The base definition of the **curve** entity is given in ISO 10303-42. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **curve** entity:

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- dependent_instantiable_curve_style (see 5.2.3.19);
- subtype_mandatory_curve (see 5.2.3.155).

5.2.2.2.27 curve_style_font

The base definition of the **curve_style_font** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **curve_style_font** entity:

- curve_font_usage (see 5.2.3.11).

5.2.2.2.28 date

The base definition of the **date** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **date** entity:

- dependent_instantiable_date (see 5.2.3.20);
- subtype_mandatory_date (see 5.2.3.156).

5.2.2.2.29 date_and_time

The base definition of the **date_and_time** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **date_and_time** entity:

- dependent_instantiable_date_and_time (see 5.2.3.21).

5.2.2.2.30 date_role

The base definition of the **date_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **date_role** entity:

- dependent_instantiable_date_role (see 5.2.3.22).

5.2.2.2.31 **date_time_role**

The base definition of the **date_time_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **date_time_role** entity:

— `dependent_instantiable_date_time_role` (see 5.2.3.23).

5.2.2.2.32 **derived_unit**

The base definition of the **derived_unit** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **derived_unit** entity:

— `dependent_instantiable_derived_unit` (see 5.2.3.24).

5.2.2.2.33 **descriptive_representation_item**

The base definition of the **descriptive_representation_item** entity is given in ISO 10303-45. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **descriptive_representation_item** entity:

— `representation_item_subtype_exclusiveness` (see 5.2.3.97);

— `restrict_language_assignment_for_descriptive_representation_item`.

5.2.2.2.34 **document_usage_role**

The base definition of the **document_usage_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **document_usage_role** entity:

— `dependent_instantiable_document_usage_role` (see 5.2.3.25).

5.2.2.2.35 **draughting_callout**

The base definition of the **draughting_callout** entity is given in ISO 10303-101. The following modifications apply to this part of ISO 10303.

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Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **draughting_callout** entity:

— subtype_mandatory_draughting_callout (see 5.2.3.157).

5.2.2.2.36 draughting_subfigure_representation

The base definition of the **draughting_subfigure_representation** entity is given in ISO 10303-504. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **draughting_subfigure_representation** entity:

— draughting_subfigure_representation_layers (see 5.2.3.51).

5.2.2.2.37 draughting_title

The base definition of the **draughting_title** entity is given in ISO 10303-101. The following modifications apply to this part of ISO 10303.

Informal propositions:

The following additional informal propositions apply:

IP1: The values of the attribute **language** shall be specified according to the language codes defined in ISO 639-2.

5.2.2.2.38 drawing_revision

The base definition of the **drawing_revision** entity is given in ISO 10303-101. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **drawing_revision** entity:

— drawing_revision_requires_document_designation;

— restrict_draughting_title_for_drawing_revision.

5.2.2.2.39 drawing_sheet_revision

The base definition of the **drawing_sheet_revision** entity is given in ISO 10303-101. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **drawing_sheet_revision** entity:

- `drawing_sheet_annotation_layers` (see 5.2.3.53);
- `presentation_view_presented_once` (see 5.2.3.79);
- `drawing_sheet_revision_requires_document_designation`;
- `restrict draughting_title_for_drawing_sheet_revision` (see 5.2.3.114);
- `sheets_belong_to_one_drawing` (see 5.2.3.149).

5.2.2.2.40 `drawing_sheet_revision_usage`

The base definition of the `drawing_sheet_revision_usage` entity is given in ISO 10303-101. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the `drawing_sheet_revision_usage` entity:

- `sheets_belong_to_one_drawing` (see 5.2.3.149).

5.2.2.2.41 `effectivity`

The base definition of the `effectivity` entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the `effectivity` entity:

- `restrict_effectivity_usage` (see 5.2.3.117);
- `restrict_version_assignment_for_effectivity` (see 5.2.3.139).

5.2.2.2.42 `effectivity_context_role`

The base definition of the `effectivity_context_role` entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the `effectivity_context_role` entity:

- `dependent_instantiable_effectivity_context_role`.

5.2.2.2.43 `effectivity_relationship`

The base definition of the `effectivity_relationship` entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

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Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **effectivity_relationship** entity:

— `restrict_effectivity_for_effectivity_relationship` (see 5.2.3.116).

5.2.2.2.44 event_occurrence

The base definition of the **event_occurrence** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **event_occurrence** entity:

— `event_occurrence_requires_event_occurrence_assignment` (see 5.2.3.59).

5.2.2.2.45 event_occurrence_assignment

The base definition of the **event_occurrence_assignment** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **event_occurrence_assignment** entity:

— `event_occurrence_requires_event_occurrence_assignment` (see 5.2.3.59).

5.2.2.2.46 executed_action

The base definition of the **executed_action** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **executed_action** entity:

— `executed_action_requires_status` (see 5.2.3.60).

5.2.2.2.47 external_identification_assignment

The base definition of the **external_identification_assignment** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **external_identification_assignment** entity:

— `identification_assignment_subtype_exclusiveness` (see 5.2.3.71).

5.2.2.2.48 externally_defined_curve_font

The base definition of the **externally_defined_curve_font** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **externally_defined_curve_font** entity:

— curve_font_usage (see 5.2.3.11).

5.2.2.2.49 externally_defined_item

The base definition of the **externally_defined_item** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **externally_defined_item** entity:

— externally_defined_item_subtype_exclusiveness (see 5.2.3.63).

5.2.2.2.50 externally_defined_item_relationship

The base definition of the **externally_defined_item_relationship** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **externally_defined_item_relationship** entity:

— externally_defined_item_relationship_constraint (see 5.2.3.62).

5.2.2.2.51 externally_defined_symbol

The base definition of the **externally_defined_symbol** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **externally_defined_symbol** entity:

— dependent_instantiable_externally_defined_symbol (see 5.2.3.26).

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5.2.2.2.52 externally_defined_text_font

The base definition of the **externally_defined_text_font** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **externally_defined_text_font** entity:

— text_font_usage (see 5.2.3.160).

5.2.2.2.53 fill_area_style

The base definition of the **fill_area_style** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **fill_area_style** entity:

— dependent_instantiable_fill_area_style (see 5.2.3.27).

5.2.2.2.54 fill_area_style_colour

The base definition of the **fill_area_style_colour** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **fill_area_style_colour** entity:

— dependent_instantiable_fill_area_style_colour (see 5.2.3.28).

5.2.2.2.55 fill_area_style_tile_symbol_with_style

The base definition of the **fill_area_style_tile_symbol_with_style** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **fill_area_style_tile_symbol_with_style** entity:

— fill_area_style_tile_symbol_constraint (see 5.2.3.64).

5.2.2.2.56 general_property

The base definition of the **general_property** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **general_property** entity:

- **general_property_constraint** (see 5.2.3.65);
- **restrict_property_value_format_for_general_property** (see 5.2.3.127);
- **restrict_version_assignment_for_general_property** (see 5.2.3.140).

5.2.2.2.57 geometric_representation_context

The base definition of the **geometric_representation_context** entity is given in ISO 10303-42. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **geometric_representation_context** entity:

- **dimensionality_is_two_or_three** (see 5.2.3.49).

5.2.2.2.58 geometric_representation_item

The base definition of the **geometric_representation_item** entity is given in ISO 10303-42. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **geometric_representation_item** entity:

- **representation_item_subtype_exclusiveness** (see 5.2.3.97).

5.2.2.2.59 global_unit_assigned_context

The base definition of the **global_unit_assigned_context** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **global_unit_assigned_context** entity:

- **global_length_and_angle_units_2d_or_3d** (see 5.2.3.66).

5.2.2.2.60 global_uncertainty_assigned_context

The base definition of the **global_uncertainty_assigned_context** entity is given in ISO 10303-43. The following modifications apply to this part of ISO 10303.

Associated global rules:

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The following global rules defined in this part of ISO 10303 apply to the **global_uncertainty_assigned_context** entity:

— **restrict_uncertainty_in_global_uncertainty_assigned_context** (see 5.2.3.133).

5.2.2.2.61 **group_relationship**

The base definition of the **group_relationship** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **group_relationship** entity:

— **group_relationship_constraint** (see 5.2.3.68);

— **restrict_group_relationship_for_general_classification_hierarchy** (see 5.2.3.118);

— **restrict_group_relationship_for_specification_category** (see 5.2.3.119).

5.2.2.2.62 **identification_assignment_relationship**

The base definition of the **identification_assignment_relationship** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **identification_assignment_relationship** entity:

— **identification_assignment_relationship_constraint** (see 5.2.3.70).

5.2.2.2.63 **identification_role**

The base definition of the **identification_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **identification_role** entity:

— **dependent_instantiable_identification_role** (see 5.2.3.29).

5.2.2.2.64 **mapped_item**

The base definition of the **mapped_item** entity is given in ISO 10303-43. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **mapped_item** entity:

- drawing_sheet_layout_usage (see 5.2.3.54);
- reference_grid_layout_usage (see 5.2.3.94);
- representation_item_subtype_exclusiveness (see 5.2.3.97).

5.2.2.2.65 **measure_representation_item**

The base definition of the **measure_representation_item** entity is given in ISO 10303-45. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **measure_representation_item** entity:

- representation_item_subtype_exclusiveness (see 5.2.3.97).

5.2.2.2.66 **measure_with_unit**

The base definition of the **measure_with_unit** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **measure_with_unit** entity:

- dependent_instantiable_measure_with_unit (see 5.2.3.30).

5.2.2.2.67 **named_unit**

The base definition of the **named_unit** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **named_unit** entity:

- dependent_instantiable_named_unit (see 5.2.3.31).

5.2.2.2.68 **object_role**

The base definition of the **object_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **object_role** entity:

- dependent_instantiable_object_role (see 5.2.3.32);
- restrict_applied_action_assignment (see 5.2.3.101);

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- restrict_applied_action_request_assignment (see 5.2.3.102);
- restrict_applied_organizational_project_assignment (see 5.2.3.105).

5.2.2.2.69 organization_role

The base definition of the **organization_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **organization_role** entity:

- dependent_instantiable_organization_role (see 5.2.3.33).

5.2.2.2.70 organizational_project_role

The base definition of the **organizational_project_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **organizational_project_role** entity:

- dependent_instantiable_organizational_project_role (see 5.2.3.34).

5.2.2.2.71 path

The base definition of the **path** entity is given in ISO 10303-42. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **path** entity:

- restrict_version_assignment_for_path (see 5.2.3.141).

5.2.2.2.72 person

The base definition of the **person** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **person** entity:

- dependent_instantiable_person (see 5.2.3.35);
- person_requires_person_and_organization (see 5.2.3.73).

5.2.2.2.73 person_and_organization_role

The base definition of the **person_and_organization_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **person_and_organization_role** entity:

— `dependent_instantiable_person_and_organization_role` (see 5.2.3.36).

5.2.2.2.74 pre_defined_colour

The base definition of the **pre_defined_colour** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **pre_defined_colour** entity:

— `dependent_instantiable_pre_defined_colour` (see 5.2.3.37).

5.2.2.2.75 pre_defined_curve_font

The base definition of the **pre_defined_curve_font** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **pre_defined_curve_font** entity:

— `curve_font_usage` (see 5.2.3.11);

— `subtype_mandatory_pre_defined_curve_font` (see 5.2.3.158).

5.2.2.2.76 pre_defined_item

The base definition of the **pre_defined_item** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **pre_defined_item** entity:

— `pre_defined_item_subtype_exclusiveness` (see 5.2.3.75).

5.2.2.2.77 pre_defined_symbol

The base definition of the **pre_defined_symbol** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

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The following global rules defined in this part of ISO 10303 apply to the **pre_defined_symbol** entity:

- `dependent_instantiable_pre_defined_symbol` (see 5.2.3.38);
- `subtype_mandatory_pre_defined_symbol` (see 5.2.3.159).

5.2.2.2.78 **pre_defined_text_font**

The base definition of the **pre_defined_text_font** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **pre_defined_text_font** entity:

- `text_font_usage` (see 5.2.3.160).

5.2.2.2.79 **precision_qualifier**

The base definition of the **precision_qualifier** entity is given in ISO 10303-45. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **precision_qualifier** entity:

- `dependent_instantiable_precision_qualifier` (see 5.2.3.39).

5.2.2.2.80 **presentation_representation**

The base definition of the **presentation_representation** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **presentation_representation** entity:

- `draughting_model_annotation_layers` (see 5.2.3.50).

5.2.2.2.81 **presentation_size**

The base definition of the **presentation_size** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **presentation_size** entity:

- `presentation_size_constraint` (see 5.2.3.77).

5.2.2.2.82 presentation_style_by_context

The base definition of the **presentation_style_by_context** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **presentation_style_by_context** entity:

- dependent_instantiable_presentation_style_by_context (see 5.2.3.40);
- presentation_style_by_context_constraint (see 5.2.3.78).

5.2.2.2.83 presentation_view

The base definition of the **presentation_view** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **presentation_view** entity:

- drawing_view_annotation_layers (see 5.2.3.56);
- presentation_view_presented_once (see 5.2.3.79).

5.2.2.2.84 presented_item

The base definition of the **presented_item** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **presented_item** entity:

- presented_item_subtype_exclusiveness (see 5.2.3.80).

5.2.2.2.85 product

The base definition of the **product** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product** entity:

- product_requires_category (see 5.2.3.86);
- product_requires_version (see 5.2.3.88);
- restrict_identification_assignment_for_product (see 5.2.3.120);

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— restrict_product_category_name.

5.2.2.2.86 product_concept

The base definition of the **product_concept** entity is given in ISO 10303-44. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_concept** entity:

— restrict_version_assignment_for_product_concept (see 5.2.3.142).

5.2.2.2.87 product_concept_feature

The base definition of the **product_concept_feature** entity is given in ISO 10303-44. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_concept_feature** entity:

— product_concept_feature_requires_category (see 5.2.3.81);

— restrict_version_assignment_for_product_concept_feature (see 5.2.3.143).

5.2.2.2.88 product_definition

The base definition of the **product_definition** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition** entity:

— complex_product_requires_product_definition (see 5.2.3.9);

— physical_instance_requires_product_definition (see 5.2.3.74);

— product_definition_constraint (see 5.2.3.82);

— restrict_alternative_definition (see 5.2.3.100).

5.2.2.2.89 product_definition_context

The base definition of the **product_definition_context** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition_context** entity:

- product_definition_context_constraint (see 5.2.3.84);

5.2.2.2.90 product_definition_context_association

The base definition of the **product_definition_context_association** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition_context_association** entity:

- product_definition_context_association_constraint (see 5.2.3.83);

5.2.2.2.91 product_definition_formation

The base definition of the **product_definition_formation** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition_formation** entity:

- complex_product_requires_product_definition (see 5.2.3.9);
- physical_instance_requires_product_definition (see 5.2.3.74);
- product_requires_version (see 5.2.3.88).

5.2.2.2.92 product_definition_substitute

The base definition of the **product_definition_substitute** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition_substitute** entity:

- restrict_product_definition_substitute (see 5.2.3.125).

5.2.2.2.93 product_definition_relationship

The base definition of the **product_definition_relationship** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

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Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition_relationship** entity:

— **product_definition_relationship_constraint** (see 5.2.3.85).

5.2.2.2.94 product_related_product_category

The base definition of the **product_related_product_category** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_related_product_category** entity:

— **product_requires_category** (see 5.2.3.86).

5.2.2.2.95 property_definition

The base definition of the **property_definition** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **property_definition** entity:

— **property_definition_constraint** (see 5.2.3.89);

— **property_definition_subtype_exclusiveness**.

5.2.2.2.96 property_definition_relationship

The base definition of the **property_definition_relationship** entity is given in ISO 10303-45. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition_relationship** entity:

— **property_definition_relationship_constraint** (see 5.2.3.90).

Informal propositions:

The following additional informal propositions apply:

IP1: Instances of **property_definition_relationship** with the **name** ‘encountered object sequence’ are used to specify the order of the items encountered along the path represented by an **installation_route**. The association to the **installation_route** is established by the **relating_property_definition** that has the **name** ‘route requirements’ and that is the **property_definition** of an **installation_route**. The **related_property_definition** shall be the

property_definition of an instance of either **connectivity_definition**, **installation_location**, **product_component**, **product_definition**, or **signal** representing an item that may be encountered along the path. It shall have the **name** ‘route characteristics’. The ordering of the encountered items is identified by the **description** (‘first element’, ‘second element’, etc.) of these **property_definition_relationships**.

5.2.2.2.97 **property_definition_representation**

The base definition of the **property_definition_representation** entity is given in ISO 10303-45. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **product_definition_representation** entity:

— **property_definition_representation_constraint** (see 5.2.3.91).

5.2.2.2.98 **representation**

The base definition of the **representation** entity is given in ISO 10303-43. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **representation** entity:

- **representation_constraint** (see 5.2.3.95);
- **representation_subtype_exclusiveness** (see 5.2.3.99);
- **restrict_language_assignment_for_representation**;
- **restrict_representation_for_document_content_property** (see 5.2.3.128);
- **restrict_representation_for_document_creation_property** (see 5.2.3.129);
- **restrict_representation_for_document_format_property** (see 5.2.3.130);
- **restrict_representation_for_document_properties** (see 5.2.3.131);
- **restrict_representation_for_document_size_property** (see 5.2.3.132).

Informal propositions:

The following additional informal propositions apply:

IP1: Instances of **representation** with a **name** of either ‘reference grid column representation’ or ‘reference grid row representation’ contain in its set of **items** a number of **descriptive_representation_items** representing an ordered list. The ordering of the items is identified by the **name** of the **descriptive_representation_items** (‘first element’, ‘second element’, etc.).

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5.2.2.2.99 representation_item

The base definition of the **representation_item** entity is given in ISO 10303-43. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **representation_item** entity:

- representation_item_constraint (see 5.2.3.96);
- representation_item_subtype_exclusiveness (see 5.2.3.97).

5.2.2.2.100 representation_relationship

The base definition of the **representation_relationship** entity is given in ISO 10303-43. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **representation_relationship** entity:

- representation_relationship_constraint (see 5.2.3.98).

Informal propositions:

The following additional informal propositions apply:

IP1: If a **representation_relationship** has a **name** of ‘note representation set’ then the **rep_1** is the representation of a **Set_of_notes** (see 4.2.305). The **rep_2** of such a relationship is a constituent of the **Set_of_notes** (see 4.2.305) referenced by the **rep_1**. All those **representations** referenced in the role of **rep_2** by such relationships referencing the same **representation** in the role of **rep_1** are grouped into that **Set_of_notes** (see 4.2.305).

5.2.2.2.101 security_classification

The base definition of the **security_classification** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **security_classification** entity:

- security_classification_requires_security_classification_assignment.

5.2.2.2.102 security_classification_level

The base definition of the **security_classification_level** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **security_classification_level** entity:

— **dependent_instantiable_security_classification_level** (see 5.2.3.43).

5.2.2.2.103 shape_aspect

The base definition of the **shape_aspect** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **shape_aspect** entity:

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

5.2.2.2.104 shape_aspect_relationship

The base definition of the **shape_aspect_relationship** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **shape_aspect_relationship** entity:

— **shape_aspect_relationship_constraint** (see 5.2.3.147);

— **shape_aspect_subtype_exclusiveness** (see 5.2.3.148).

Informal propositions:

The following additional informal propositions apply:

IP1: Instances of **shape_aspect_relationship** with the **name** ‘arrangement sequence’ are used to specify the order of the constituents composing a course along which a piece of equipment is routed. The **relating_shape_aspect** of such a **shape_aspect_relationship** representing the equipment that is routed along the course shall be either an instance of **connectivity_definition** or an instance of **shape_aspect** that is associated to a **product_definition** with a **name** of either ‘conceptual definition’, ‘functional occurrence’, ‘part occurrence’, or ‘physical occurrence’. The **related_shape_aspect** of such a **shape_aspect_relationship** representing the course constituent shall be an instance of either **free_segment**, or **routed_segment**. The ordering of the course constituents is identified by the **description** (‘first element’, ‘second element’, etc.) of these **shape_aspect_relationships**.

IP2: Instances of **shape_aspect_relationship** with the **name** ‘course sequence’ are used to specify the order of the constituents composing a course represented by a **routed_segment**. Each constituent of the course is associated to the **routed_segment** by such a **shape_aspect_relationship** where the **routed_segment** is the **relating_shape_aspect**. The **related_shape_aspect** representing the constituent shall be an instance of either **installation_node**, **installation_route**, **installation_section**,

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or **installation_section_interface**. The ordering of the course constituents is identified by the **description** ('first element', 'second element', etc.) of these **shape_aspect_relationships**.

IP3: Instances of **shape_aspect_relationship** with the **name** 'route course sequence' are used to specify the order of the constituents composing a course represented by an **installation_route**. Each constituent of the course is associated to the **installation_route** by such a **shape_aspect_relationship** where the **installation_route** is the **relating_shape_aspect**. The **related_shape_aspect** representing the constituent shall be an instance of either **installation_node**, **installation_section**, or **installation_section_interface**. The ordering of the course constituents is identified by the **description** ('first element', 'second element', etc.) of these **shape_aspect_relationships**.

5.2.2.2.105 symbol_colour

The base definition of the **symbol_colour** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **symbol_colour** entity:

— **dependent_instantiable_symbol_colour** (see 5.2.3.44).

5.2.2.2.106 text_style_for_defined_font

The base definition of the **text_style_for_defined_font** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **text_style_for_defined_font** entity:

— **dependent_instantiable_text_style_for_defined_font** (see 5.2.3.46).

5.2.2.2.107 text_style

The base definition of the **text_style** entity is given in ISO 10303-46. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **text_style** entity:

— **dependent_instantiable_text_style** (see 5.2.3.45).

5.2.2.2.108 time_interval_role

The base definition of the **time_interval_role** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **time_interval_role** entity:

— **dependent_instantiable_time_interval_role** (see 5.2.3.47).

5.2.2.2.109 type_qualifier

The base definition of the **type_qualifier** entity is given in ISO 10303-42. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **type_qualifier** entity:

— **dependent_instantiable_type_qualifier** (see 5.2.3.48).

5.2.2.2.110 topological_representation_item

The base definition of the **topological_representation_item** entity is given in ISO 10303-42. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **topological_representation_item** entity:

— **representation_item_subtype_exclusiveness** (see 5.2.3.97).

5.2.2.2.111 versioned_action_request

The base definition of the **versioned_action_request** entity is given in ISO 10303-41. The following modifications apply to this part of ISO 10303.

Associated global rules:

The following global rules defined in this part of ISO 10303 apply to the **versioned_action_request** entity:

— **versioned_action_request_requires_date_person_organization**;

— **versioned_action_request_requires_status** (see 5.2.3.162).

5.2.3 electrotechnical_design rule definitions**5.2.3.1 action_subtype_exclusiveness**

The **action_subtype_exclusiveness** rule specifies that each instance of **action** shall be an instance of at most one of its subtypes **executed_action**, or **retention**.

EXPRESS specification:

*)

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```
RULE action_subtype_exclusiveness FOR
    (action);
WHERE
    WR1:  SIZEOF(QUERY(a <* action |
                    SIZEOF(TYPEOF(a) *
                    [ 'ELECTROTECHNICAL_DESIGN.EXECUTED_ACTION',
                    'ELECTROTECHNICAL_DESIGN.RETENTION' ]
                    ) > 1 )
    ) = 0;
END_RULE;
(*
```

Argument definitions:

action: the set of all instances of **action** entities.

Formal propositions:

WR1: Each instance of **action** shall be an instance of at most one of its subtypes **executed_action**, or **retention**.

5.2.3.2 application_protocol_definition_required

The **application_protocol_definition_required** rule ensures that at least one **application_protocol_definition** is specified that provides the designator 'electrotechnical_design' of this application protocol.

EXPRESS specification:

```
*)
RULE application_protocol_definition_required FOR
    (application_context);
WHERE
    WR1: SIZEOF ( QUERY ( ac <* application_context | ( SIZEOF (
        QUERY ( apd <* USEDIN ( ac ,
        'ELECTROTECHNICAL_DESIGN.APPLICATION_PROTOCOL_DEFINITION.APPLICATION
        ,
        ) | apd. application_interpreted_model_schema_name
        ='electrotechnical_design' ) ) >0 ) ) ) >0;
END_RULE;
(*
```

Argument definitions:

application_context: the set of all instances of **application_context**.

Formal propositions:

WR1: At least one instance of **application_context** shall be referred by one instance of **application_protocol_definition** which contains the instance of **application_context** as its

application attribute and has a **application_interpreted_model_schema_name** of 'electrotechnical_design'.

5.2.3.3 approval_person_organization_requires_date_time

The **approval_person_organization_requires_date_time** rule specifies that each instance of **approval_person_organization** shall be referenced by exactly one of either **applied_date_assignment** or **applied_date_and_time_assignment** where the assigned date or date and time specifies the sign off date of the approval. This rule enforces the requirement for every Approval (see 4.2.23), that in case the approving person or organization is specified, also the sign off date of the Approval (see 4.2.23) has to be given.

EXPRESS specification:

```
*)
RULE approval_person_organization_requires_date_time FOR
  (approval_person_organization);
WHERE
  WR1: SIZEOF ( QUERY ( apo <* approval_person_organization | (
    SIZEOF ( QUERY ( u <* USEDIN ( apo ,
      'ELECTROTECHNICAL_DESIGN.'+'APPLIED_DATE_ASSIGNMENT.'+ 'ITEMS' )
    |
      ( u.role.name = 'sign off' ) ) ) + SIZEOF ( QUERY (
      u <* USEDIN ( apo ,
        'ELECTROTECHNICAL_DESIGN.'+
        'APPLIED_DATE_AND_TIME_ASSIGNMENT.'+
        'ITEMS' ) | ( u.role.name = 'sign off' ) ) ) ) <>1 ) )
    =0;
END_RULE;
(*
```

Argument definitions:

approval_person_organization: the set of all instances of **approval_person_organization**.

Formal propositions:

WR1: There shall be exactly one instance of either **applied_date_assignment** or **applied_date_and_time_assignment** associated to an **approval_person_organization** where the name of **date_role** / **date_time_role** is 'sign off'.

5.2.3.4 approval_requires_approval_assignment

The **approval_requires_approval_assignment** rule specifies that each instance of **approval** is referenced by at least one instance of **approval_assignment** as the **assigned_approval**. This rule enforces the requirement for every approval to be applied at least once.

EXPRESS specification:

```
*)
RULE approval_requires_approval_assignment FOR
  (approval);
WHERE
```

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```
WR1: SIZEOF ( QUERY ( a <* approval | SIZEOF ( USEDIN ( a ,
    'ELECTROTECHNICAL_DESIGN.APPROVAL_ASSIGNMENT.ASSIGNED_APPROVAL'
)
    ) =0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

approval: the set of all instances of **approval**.

Formal propositions:

WR1: Each instance of **approval** shall be referenced at least once as the **assigned_approval** by an instance of **approval_assignment**.

5.2.3.5 assembly_component_usage_reference_designation_constraint

The **assembly_component_usage_reference_designation_constraint** rule constrains the value of the **reference_designator** and the number of associated instances of **object_reference_designation** for instances of **assembly_component_usage**.

EXPRESS specification:

```
*)
RULE assembly_component_usage_reference_designation_constraint FOR
    (assembly_component_usage);
WHERE
    WR1:  SIZEOF(QUERY(assy_rel <*
                QUERY(acu <* assembly_component_usage |
                    acu\product_definition_relationship.
                    related_product_definition.
                    frame_of_reference\application_context_element.name
                    IN ['functional occurrence', 'part
                    occurrence']) |
                SIZEOF(QUERY(primary <*
                    QUERY(orda <*
                    USEDIN(assy_rel.related_product_definition,
                        'ELECTROTECHNICAL_DESIGN.' +
                        'ITEM_DESIGNATION_ASSIGNMENT.' +
                        'ITEMS') |
                    orda\identification_assignment.role.description
                    = 'primary') |
                    NOT(assy_rel.reference_designator =
                    primary\identification_assignment.assigned_id))
                ) > 0 )
        ) = 0;
    WR2:  SIZEOF(QUERY(acu <* assembly_component_usage |
                SIZEOF(QUERY(orda <*
                    USEDIN(acu,
                        'ELECTROTECHNICAL_DESIGN.' +
```



```

                                'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |

orda\identification_assignment.role.description
                                = 'primary')
                                ) > 1 )
                                ) = 0;
WR3:  SIZEOF(QUERY(acu <* assembly_component_usage |
                                SIZEOF(QUERY(primary <*
                                QUERY(orda <*
                                USEDIN(acu,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |

orda\identification_assignment.role.description
                                = 'primary') |
                                NOT(acu.reference_designator =

primary\identification_assignment.assigned_id))
                                ) > 0 )
                                ) = 0;
END_RULE;
(*

```

Argument definitions:

assembly_component_usage: the set of all instances of **assembly_component_usage** entities.

Formal propositions:

WR1: For each instance of **assembly_component_usage** where the **related_product_definition** has an associated **application_context_element** with a **name** of either 'functional occurrence' or 'part occurrence' the **reference_designator** shall be equal to the **assigned_id** of the **object_reference_designation** that has an associated **identification_role** with a **description** of 'primary' referring to the **related_product_definition**.

WR2: Each instance of **assembly_component_usage** shall be referenced by at most one instance of **object_reference_designation** that has an associated **identification_role** with a **description** of 'primary'.

WR3: For each instance of **assembly_component_usage** that is referenced by an instance of **object_reference_designation** that has an associated **identification_role** with a **description** of 'primary' the **reference_designator** shall be equal to the **assigned_id** of the **object_reference_designation** referring to this instance of **assembly_component_usage**.

5.2.3.6 characterized_object_subtype_exclusiveness

The **characterized_object_subtype_exclusiveness** rule specifies that each instance of **characterized_object** shall be an instance of at most one of its subtypes **characterized_class**, **document_file**, **notification**, **process_variable**, **product_class**, **product_specification**, or **signal**.

EXPRESS specification:

ISO 10303-212:2001(E)

```
*)
RULE characterized_object_subtype_exclusiveness FOR
    (characterized_object);
WHERE
    WR1:  SIZEOF(QUERY(c <* characterized_object |
        SIZEOF(TYPEOF(c) *
            ['ELECTROTECHNICAL_DESIGN.' +
            'CHARACTERIZED_CLASS',
            'ELECTROTECHNICAL_DESIGN.' +
            'DOCUMENT_FILE',
            'ELECTROTECHNICAL_DESIGN.' +
            'NOTIFICATION',
            'ELECTROTECHNICAL_DESIGN.' +
            'PROCESS_VARIABLE',
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_CLASS',
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_IDENTIFICATION',
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_SPECIFICATION',
            'ELECTROTECHNICAL_DESIGN.' +
            'SIGNAL'])
        ) > 1 )
    ) = 0;
END_RULE;
(*
```

Argument definitions:

characterized_object: the set of all instances of **characterized_object** entities.

Formal propositions:

WR1: Each instance of **characterized_object** shall be an instance of at most one of its subtypes **characterized_class**, **document_file**, **notification**, **process_variable**, **product_class**, **product_specification**, or **signal**.

5.2.3.7 class_reference_requires_version

The **class_reference_requires_version** rule specifies that each instance of **externally_defined_class** that has as its source a **known_source** is contained in the set of **items** of exactly one **applied_external_identification_assignment** which references as its **role** an **identification_role** with a **name** of 'version'. This rule enforces the requirement for every **class_reference** to have exactly one version.

EXPRESS specification:

```
*)
RULE class_reference_requires_version FOR
    (externally_defined_class);
WHERE
    WR1:  SIZEOF ( QUERY ( edc <* externally_defined_class | (
        'ELECTROTECHNICAL_DESIGN.'+ 'KNOWN_SOURCE' IN TYPEOF ( edc.
        source ) ) AND ( SIZEOF ( QUERY ( aei <* USEDIN ( edc ,
```

```

'ELECTROTECHNICAL_DESIGN.'+
'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.ITEMS'
) | aei.role.name = 'version' ) ) <>1 ) ) ) =0;
WR2: SIZEOF ( QUERY ( edc <* externally_defined_class | (
'ELECTROTECHNICAL_DESIGN.'+ 'KNOWN_SOURCE' IN TYPEOF ( edc.
source ) ) AND ( SIZEOF ( QUERY ( aei <* USEDIN ( edc ,
'ELECTROTECHNICAL_DESIGN.'+
'APPLIED_IDENTIFICATION_ASSIGNMENT.ITEMS'
) | aei.role.name = 'version' ) ) >0 ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

externally_defined_class: the set of all instances of **externally_defined_class**.

Formal propositions:

WR1: Each instance of **externally_defined_class** that has as its source a **known_source** is contained in the set of **items** of exactly one **applied_external_identification_assignment** which references as its **role** an **identification_role** with a **name** of 'version'.

WR2: An instance of **externally_defined_class** that has as its source a **known_source** may not be contained in the set of **items** of an **applied_identification_assignment** which references as its **role** an **identification_role** with a **name** of 'version'.

5.2.3.8 classification_assignment_subtype_exclusiveness

The **classification_assignment_subtype_exclusiveness** rule specifies that each instance of **classification_assignment** shall be an instance of at most one of its subtypes **applied_classification_assignment** or **language_assignment**.

EXPRESS specification:

```

*)
RULE classification_assignment_subtype_exclusiveness FOR
(classification_assignment);
WHERE
WR1: SIZEOF(QUERY(c <* classification_assignment |
SIZEOF(TYPEOF(c) *
['ELECTROTECHNICAL_DESIGN.' +
'APPLIED_CLASSIFICATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'LANGUAGE_ASSIGNMENT']
) > 1 )
) = 0;
END_RULE;
(*

```

Argument definitions:

classification_assignment: the set of all instances of **classification_assignment** entities.

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Formal propositions:

WR1: Each instance of **classification_assignment** shall be an instance of at most one of its subtypes **applied_classification_assignment** or **language_assignment**.

5.2.3.9 complex_product_requires_product_definition

The **complex_product_requires_product_definition** rule ensures that each instance of **product_definition_formation** which has an associated **of_product** that is referenced by a **product_related_product_category** with a **name** of 'functionality', 'conceptual product', or 'alternative solution', is referenced as **formation** by exactly one instance of **product_definition** that references as its **frame_of_reference** a **product_definition_context** with a **name** of 'functional definition', 'conceptual definition', or 'alternative definition', respectively.

EXPRESS specification:

```
*)
RULE complex_product_requires_product_definition FOR
  (product_definition,
   product_definition_formation,
   product_related_product_category);
WHERE
  WR1: SIZEOF ( QUERY ( pdf <* product_definition_formation | ( (
    SIZEOF ( QUERY ( prpc <* USEDIN ( pdf. of_product ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_RELATED_PRODUCT_CATEGORY.'+
      'PRODUCTS' ) | prpc. name = 'functionality' ) ) =1 ) AND (
    SIZEOF ( QUERY ( pd <* USEDIN ( pdf ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION.'+ 'FORMATION' )
    |
    pd. frame_of_reference.name = 'functional definition' ) )
    <>1 ) ) OR ( ( SIZEOF ( QUERY ( prpc <* USEDIN ( pdf.
    of_product ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_RELATED_PRODUCT_CATEGORY.'+
      'PRODUCTS' ) | prpc. name = 'conceptual design' ) ) =1 )
    AND ( SIZEOF ( QUERY ( pd <* USEDIN ( pdf ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION.'+ 'FORMATION' )
    |
    pd. frame_of_reference.name = 'conceptual definition' ) )
    <>1 ) ) OR ( ( SIZEOF ( QUERY ( prpc <* USEDIN ( pdf.
    of_product ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_RELATED_PRODUCT_CATEGORY.'+
      'PRODUCTS' ) | prpc. name = 'alternative solution' ) ) =1 )
    AND ( SIZEOF ( QUERY ( pd <* USEDIN ( pdf ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION.'+ 'FORMATION' )
    |
    pd. frame_of_reference.name = 'alternative definition' ) )
    <>1 ) ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

product_definition: the set of all instances of **product_definition**.

product_definition_formation: the set of all instances of **product_definition_formation**.

product_related_product_category: the set of all instances of **product_related_product_category**.

Formal propositions:

WR1: Each instance of **product_definition_formation** which has an associated **of_product** that is referenced by a **product_related_product_category** with a **name** of 'functionality', 'conceptual definition', or 'alternative solution', is referenced as **formation** by exactly one instance of **product_definition** that references as its **frame_of_reference** a **product_definition_context** with a **name** of 'functional definition', 'conceptual definition', or 'alternative definition', respectively.

5.2.3.10 configuration_design_constraint

The **configuration_design_constraint** rule ensures that each instance of **configuration_design** satisfies the **configuration_design_correlation** function that correlates the **names** of a **configuration_design** to elements of product data.

EXPRESS specification:

```
*)
RULE configuration_design_constraint FOR
    (configuration_design);
WHERE
    WR1:  SIZEOF(QUERY(cd <* configuration_design |
                    NOT(configuration_design_correlation(cd)) )
              ) = 0;
END_RULE;
(*
```

Argument definitions:

configuration_design: the set of all instances of the **configuration_design** entity.

Formal propositions:

WR1: For each instance of **configuration_design**, the **configuration_design_correlation** function that correlates the **names** of a **configuration_design** to elements of product data shall be satisfied.

5.2.3.11 curve_font_usage

The **curve_font_usage** rule ensures that each **curve_style_font**, **pre_defined_curve_font**, and **externally_defined_curve_font** shall define the curve font of at least one **curve_style**.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE curve_font_usage FOR
    (curve_style_font,
```

ISO 10303-212:2001(E)

```
externally_defined_curve_font,  
pre_defined_curve_font);  
WHERE  
WR1: SIZEOF ( QUERY ( csf <* curve_style_font | ( SIZEOF (  
    USEDIN ( csf , 'ELECTROTECHNICAL_DESIGN.CURVE_STYLE.CURVE_FONT'  
    )  
    ) =0 ) ) ) =0;  
WR2: SIZEOF ( QUERY ( pdcf <* pre_defined_curve_font | ( SIZEOF  
    ( USEDIN ( pdcf ,  
    'ELECTROTECHNICAL_DESIGN.CURVE_STYLE.CURVE_FONT' ) ) =0 ) ) )  
=0;  
WR3: SIZEOF ( QUERY ( edcf <* externally_defined_curve_font |  
    NOT ( SIZEOF ( USEDIN ( edcf ,  
    'ELECTROTECHNICAL_DESIGN.'+'CURVE_STYLE.'+ 'CURVE_FONT' ) ) ) >=1  
    )  
    ) ) =0;  
END_RULE;  
(*
```

Argument definitions:

curve_style_font: the set of all instances of the **curve_style_font** entity.

externally_defined_curve_font: the set of all instances of the **externally_defined_curve_font** entity.

pre_defined_curve_font: the set of all instances of the **pre_defined_curve_font** entity.

Formal propositions:

WR1: Each **curve_style_font** shall participate in the definition of at least one **curve_style**.

WR2: Each **externally_defined_curve_font** shall participate in the definition of at least one **curve_style**.

WR3: Each **pre_defined_curve_font** shall participate in the definition of at least one **curve_style**.

5.2.3.12 dependent_instantiable_action_directive

The **dependent_instantiable_action_directive** rule specifies that each instance of **action_directive** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)  
RULE dependent_instantiable_action_directive FOR  
    (action_directive);  
WHERE  
WR1: SIZEOF ( QUERY ( a <* action_directive | NOT ( SIZEOF (  
    USEDIN ( a , '' ) ) ) >0 ) ) ) =0;  
END_RULE;  
(*
```

Argument definitions:

action_directive: identifies the set of all instances of **action_directive**.

Formal propositions:

WR1: For each instance of **action_directive**, there shall be a reference to the **action_directive** instance from an attribute of another entity.

5.2.3.13 dependent_instantiable_address

The **dependent_instantiable_address** rule specifies that all instances of **address** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_address FOR
  (address);
WHERE
  WR1:  SIZEOF(QUERY(a <* address |
                    NOT(SIZEOF(USEDIN (a, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

address: the set of all instances of **address**.

Formal propositions:

WR1: For each instance of **address**, there shall be a reference to the **address** instance from an attribute of another entity.

5.2.3.14 dependent_instantiable_approval_role

The **dependent_instantiable_approval_role** rule specifies that all instances of **approval_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_approval_role FOR
  (approval_role);
WHERE
  WR1:  SIZEOF(QUERY(a <* approval_role |
                    NOT(SIZEOF(USEDIN (a, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

approval_role: the set of all instances of **approval_role**.

ISO 10303-212:2001(E)

Formal propositions:

WR1: For each instance of **approval_role**, there shall be a reference to the **approval_role** instance from an attribute of another entity.

5.2.3.15 **dependent_instantiable_approval_status**

The **dependent_instantiable_approval_status** rule specifies that all instances of **approval_status** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_approval_status FOR
    (approval_status);
WHERE
    WR1:  SIZEOF(QUERY(a <* approval_status |
                    NOT(SIZEOF(USEDIN (a, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

approval_status: the set of all instances of **approval_status**.

Formal propositions:

WR1: For each instance of **approval_status**, there shall be a reference to the **approval_status** instance from an attribute of another entity.

5.2.3.16 **dependent_instantiable_attribute_value_role**

The **dependent_instantiable_attribute_value_role** rule specifies that each instance of **attribute_value_role** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_attribute_value_role FOR
    (attribute_value_role);
WHERE
    WR1:  SIZEOF ( QUERY ( a <* attribute_value_role | NOT ( SIZEOF
                    ( USEDIN ( a , '' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

attribute_value_role: identifies the set of all instances of **attribute_value_role**.

Formal propositions:

WR1: For each instance of **attribute_value_role**, there shall be a reference to the **attribute_value_role** instance from an attribute of another entity.

5.2.3.17 dependent_instantiable_classification_role

The **dependent_instantiable_classification_role** rule specifies that all instances of **classification_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_classification_role FOR
  (classification_role);
WHERE
  WR1: SIZEOF(QUERY(c <* classification_role |
    NOT(SIZEOF(USEDIN (c, 'r')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

classification_role: the set of all instances of **classification_role**.

Formal propositions:

WR1: For each instance of **classification_role**, there shall be a reference to the **classification_role** instance from an attribute of another entity.

5.2.3.18 dependent_instantiable_colour_rgb

The **dependent_instantiable_colour_rgb** rule specifies that each instance of **colour_rgb** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_colour_rgb FOR
  (colour_rgb);
WHERE
  WR1: SIZEOF ( QUERY ( c <* colour_rgb | NOT ( SIZEOF ( USEDIN (
    c , 'r' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

colour_rgb: identifies the set of all instances of **colour_rgb**.

ISO 10303-212:2001(E)

Formal propositions:

WR1: For each instance of **colour_rgb**, there shall be a reference to the **colour_rgb** instance from an attribute of another entity.

5.2.3.19 **dependent_instantiable_curve_style**

The **dependent_instantiable_curve_style** rule specifies that each instance of **curve_style** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_curve_style FOR
    (curve_style);
WHERE
    WR1: SIZEOF ( QUERY ( c <* curve_style | NOT ( SIZEOF ( USEDIN
        ( c , ' ' ) ) > 0 ) ) ) = 0;
END_RULE;
(*
```

Argument definitions:

curve_style: identifies the set of all instances of **curve_style**.

Formal propositions:

WR1: For each instance of **curve_style**, there shall be a reference to the **curve_style** instance from an attribute of another entity.

5.2.3.20 **dependent_instantiable_date**

The **dependent_instantiable_date** rule specifies that all instances of **date** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_date FOR
    (date);
WHERE
    WR1: SIZEOF(QUERY(d <* date |
        NOT(SIZEOF(USEDIN(d, ' ')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

date: the set of all instances of **date**.

Formal propositions:

WR1: For each instance of **date**, there shall be a reference to the **date** instance from an attribute of another entity.

5.2.3.21 dependent_instantiable_date_and_time

The **dependent_instantiable_date_and_time** rule specifies that all instances of **date_and_time** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_date_and_time FOR
  (date_and_time);
WHERE
  WR1:  SIZEOF(QUERY(d <* date_and_time |
                    NOT (SIZEOF(USEDIN(d, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

date_and_time: the set of all instances of **date_and_time**.

Formal propositions:

WR1: For each instance of **date_and_time**, there shall be a reference to the **date_and_time** instance from an attribute of another entity.

5.2.3.22 dependent_instantiable_date_role

The **dependent_instantiable_date_role** rule specifies that all instances of **date_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_date_role FOR
  (date_role);
WHERE
  WR1:  SIZEOF(QUERY(d <* date_role |
                    NOT (SIZEOF(USEDIN(d, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

date_role: the set of all instances of **date_role**.

ISO 10303-212:2001(E)

Formal propositions:

WR1: For each instance of **date_role**, there shall be a reference to the **date_role** instance from an attribute of another entity.

5.2.3.23 **dependent_instantiable_date_time_role**

The **dependent_instantiable_date_time_role** rule specifies that all instances of **date_time_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_date_time_role FOR
    (date_time_role);
WHERE
    WR1:  SIZEOF(QUERY(d <* date_time_role |
                    NOT (SIZEOF(USEDIN(d, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

date_time_role: the set of all instances of **date_time_role**.

Formal propositions:

WR1: For each instance of **date_time_role**, there shall be a reference to the **date_time_role** instance from an attribute of another entity.

5.2.3.24 **dependent_instantiable_derived_unit**

The **dependent_instantiable_derived_unit** rule specifies that all instances of **derived_unit** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_derived_unit FOR
    (derived_unit);
WHERE
    WR1:  SIZEOF(QUERY(d <* derived_unit |
                    NOT (SIZEOF(USEDIN (d, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

derived_unit: the set of all instances of **derived_unit**.

Formal propositions:

WR1: For each instance of **derived_unit**, there shall be a reference to the **derived_unit** instance from an attribute of another entity.

5.2.3.25 dependent_instantiable_document_usage_role

The **dependent_instantiable_document_usage_role** rule specifies that all instances of **document_usage_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_document_usage_role FOR
  (document_usage_role);
WHERE
  WR1:  SIZEOF(QUERY(d <* document_usage_role |
                    NOT(SIZEOF(USEDIN(d, 'r')) > 0))) = 0;
END_RULE;
(*
```

Argument definitions:

document_usage_role: the set of all instances of **document_usage_role**.

Formal propositions:

WR1: For each instance of **document_usage_role**, there shall be a reference to the **document_usage_role** instance from an attribute of another entity.

5.2.3.26 dependent_instantiable_externally_defined_symbol

The **dependent_instantiable_externally_defined_symbol** rule specifies that each instance of **externally_defined_symbol** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_externally_defined_symbol FOR
  (externally_defined_symbol);
WHERE
  WR1:  SIZEOF ( QUERY ( e <* externally_defined_symbol | NOT (
                    SIZEOF ( USEDIN ( e , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

externally_defined_symbol: identifies the set of all instances of **externally_defined_symbol**.

ISO 10303-212:2001(E)

Formal propositions:

WR1: For each instance of **externally_defined_symbol**, there shall be a reference to the **externally_defined_symbol** instance from an attribute of another entity.

5.2.3.27 **dependent_instantiable_fill_area_style**

The **dependent_instantiable_fill_area_style** rule specifies that each instance of **fill_area_style** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_fill_area_style FOR
    (fill_area_style);
WHERE
    WR1: SIZEOF ( QUERY ( f <* fill_area_style | NOT ( SIZEOF (
        USEDIN ( f , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

fill_area_style: identifies the set of all instances of **fill_area_style**.

Formal propositions:

WR1: For each instance of **fill_area_style**, there shall be a reference to the **fill_area_style** instance from an attribute of another entity.

5.2.3.28 **dependent_instantiable_fill_area_style_colour**

The **dependent_instantiable_fill_area_style_colour** rule specifies that each instance of **fill_area_style_colour** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_fill_area_style_colour FOR
    (fill_area_style_colour);
WHERE
    WR1: SIZEOF ( QUERY ( f <* fill_area_style_colour | NOT (
        SIZEOF ( USEDIN ( f , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

fill_area_style_colour: identifies the set of all instances of **fill_area_style_colour**.

Formal propositions:

WR1: For each instance of **fill_area_style_colour**, there shall be a reference to the **fill_area_style_colour** instance from an attribute of another entity.

5.2.3.29 dependent_instantiable_identification_role

The **dependent_instantiable_identification_role** rule specifies that all instances of **identification_role** are dependent on the usage to define another entity.

EXPRESS specification:

```

*)
RULE dependent_instantiable_identification_role FOR
  (identification_role);
WHERE
  WR1:  SIZEOF(QUERY(i <* identification_role |
                    NOT(SIZEOF(USEDIN (i, 'r')) > 0 ))) = 0;
END_RULE;
(*

```

Argument definitions:

identification_role: the set of all instances of **identification_role**.

Formal propositions:

WR1: For each instance of **identification_role**, there shall be a reference to the **identification_role** instance from an attribute of another entity.

5.2.3.30 dependent_instantiable_measure_with_unit

The **dependent_instantiable_measure_with_unit** rule specifies that all instances of **measure_with_unit** are dependent on the usage to define another entity.

EXPRESS specification:

```

*)
RULE dependent_instantiable_measure_with_unit FOR
  (measure_with_unit);
WHERE
  WR1:  SIZEOF(QUERY(m <* measure_with_unit |
                    NOT(SIZEOF(USEDIN (m, 'r')) > 0 ))) = 0;
END_RULE;
(*

```

Argument definitions:

measure_with_unit: the set of all instances of **measure_with_unit**.

ISO 10303-212:2001(E)

Formal propositions:

WR1: For each instance of **measure_with_unit**, there shall be a reference to the **measure_with_unit** instance from an attribute of another entity.

5.2.3.31 **dependent_instantiable_named_unit**

The **dependent_instantiable_named_unit** rule specifies that all instances of **named_unit** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_named_unit FOR
    (named_unit);
WHERE
    WR1:  SIZEOF(QUERY(n <* named_unit |
                        NOT(SIZEOF(USEDIN(n, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

named_unit: Identifies the set of all instances of **named_unit**.

Formal propositions:

WR1: For each instance of **named_unit**, there shall be a reference to the **named_unit** instance from an attribute of another entity.

5.2.3.32 **dependent_instantiable_object_role**

The **dependent_instantiable_object_role** rule specifies that all instances of **object_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_object_role FOR
    (object_role);
WHERE
    WR1:  SIZEOF(QUERY(o <* object_role |
                        NOT(SIZEOF(USEDIN(o, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

object_role: the set of all instances of **object_role**.

Formal propositions:

WR1: For each instance of **object_role**, there shall be a reference to the **object_role** instance from an attribute of another entity.

5.2.3.33 dependent_instantiable_organization_role

The **dependent_instantiable_organization_role** rule specifies that all instances of **organization_role** are dependent on the usage to define another entity.

EXPRESS specification:

```

*)
RULE dependent_instantiable_organization_role FOR
  (organization_role);
WHERE
  WR1:  SIZEOF(QUERY(o <* organization_role |
                NOT(SIZEOF(USEDIN(o, 'T')) > 0 ))) = 0;
END_RULE;
(*

```

Argument definitions:

organization_role: Identifies the set of all instances of **organization_role**.

Formal propositions:

WR1: For each instance of **organization_role**, there shall be a reference to the **organization_role** instance from an attribute of another entity.

5.2.3.34 dependent_instantiable_organizational_project_role

The **dependent_instantiable_organizational_project_role** rule specifies that each instance of **organizational_project_role** is dependent on the usage to define another entity.

EXPRESS specification:

```

*)
RULE dependent_instantiable_organizational_project_role FOR
  (organizational_project_role);
WHERE
  WR1:  SIZEOF ( QUERY ( o <* organizational_project_role | NOT (
                SIZEOF ( USEDIN ( o , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

organizational_project_role: identifies the set of all instances of **organizational_project_role**.

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Formal propositions:

WR1: For each instance of **organizational_project_role**, there shall be a reference to the **organizational_project_role** instance from an attribute of another entity.

5.2.3.35 **dependent_instantiable_person**

The **dependent_instantiable_person** rule specifies that all instances of **person** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_person FOR
    (person);
WHERE
    WR1:  SIZEOF(QUERY(p <* person |
                    NOT (SIZEOF(USEDIN(p, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

person: Identifies the set of all instances of **person**.

Formal propositions:

WR1: For each instance of **person**, there shall be a reference to the **person** instance from an attribute of another entity.

5.2.3.36 **dependent_instantiable_person_and_organization_role**

The **dependent_instantiable_person_and_organization_role** rule specifies that all instances of **person_and_organization_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_person_and_organization_role FOR
    (person_and_organization_role);
WHERE
    WR1:  SIZEOF(QUERY(p <* person_and_organization_role |
                    NOT (SIZEOF(USEDIN(p, '')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

person_and_organization_role: Identifies the set of all instances of **person_and_organization_role**.

Formal propositions:

WR1: For each instance of **person_and_organization_role**, there shall be a reference to the **person_and_organization_role** instance from an attribute of another entity.

5.2.3.37 dependent_instantiable_pre_defined_colour

The **dependent_instantiable_pre_defined_colour** rule specifies that each instance of **pre_defined_colour** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_pre_defined_colour FOR
  (pre_defined_colour);
WHERE
  WR1: SIZEOF ( QUERY ( p <* pre_defined_colour | NOT ( SIZEOF (
    USEDIN ( p , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

pre_defined_colour: identifies the set of all instances of **pre_defined_colour**.

Formal propositions:

WR1: For each instance of **pre_defined_colour**, there shall be a reference to the **pre_defined_colour** instance from an attribute of another entity.

5.2.3.38 dependent_instantiable_pre_defined_symbol

The **dependent_instantiable_pre_defined_symbol** rule specifies that each instance of **pre_defined_symbol** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_pre_defined_symbol FOR
  (pre_defined_symbol);
WHERE
  WR1: SIZEOF ( QUERY ( p <* pre_defined_symbol | NOT ( SIZEOF (
    USEDIN ( p , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

pre_defined_symbol: identifies the set of all instances of **pre_defined_symbol**.

ISO 10303-212:2001(E)

Formal propositions:

WR1: For each instance of **pre_defined_symbol**, there shall be a reference to the **pre_defined_symbol** instance from an attribute of another entity.

5.2.3.39 dependent_instantiable_precision_qualifier

The **dependent_instantiable_precision_qualifier** rule specifies that each instance of **precision_qualifier** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_precision_qualifier FOR
    (precision_qualifier);
WHERE
    WR1: SIZEOF ( QUERY ( p <* precision_qualifier | NOT ( SIZEOF (
        USEDIN ( p , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

precision_qualifier: identifies the set of all instances of **precision_qualifier**.

Formal propositions:

WR1: For each instance of **precision_qualifier**, there shall be a reference to the **precision_qualifier** instance from an attribute of another entity.

5.2.3.40 dependent_instantiable_presentation_style_by_context

The **dependent_instantiable_presentation_style_by_context** rule specifies that each instance of **presentation_style_by_context** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_presentation_style_by_context FOR
    (presentation_style_by_context);
WHERE
    WR1: SIZEOF ( QUERY ( p <* presentation_style_by_context | NOT
        ( SIZEOF ( USEDIN ( p , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

presentation_style_by_context: identifies the set of all instances of **presentation_style_by_context**.

Formal propositions:

WR1: For each instance of **presentation_style_by_context**, there shall be a reference to the **presentation_style_by_context** instance from an attribute of another entity.

5.2.3.41 dependent_instantiable_product_definition_context_role

The **dependent_instantiable_product_definition_context_role** rule specifies that each instance of **product_definition_context_role** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_product_definition_context_role FOR
    (product_definition_context_role);
WHERE
    WR1: SIZEOF ( QUERY ( p <* product_definition_context_role |
        NOT ( SIZEOF ( USEDIN ( p , '' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

product_definition_context_role: identifies the set of all instances of **product_definition_context_role**.

Formal propositions:

WR1: For each instance of **product_definition_context_role**, there shall be a reference to the **product_definition_context_role** instance from an attribute of another entity.

5.2.3.42 dependent_instantiable_retention

The **dependent_instantiable_retention** rule specifies that each instance of **retention** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_retention FOR
    (retention);
WHERE
    WR1: SIZEOF ( QUERY ( r <* retention | NOT ( SIZEOF ( USEDIN (
        r , '' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

retention: identifies the set of all instances of **retention**.

ISO 10303-212:2001(E)

Formal propositions:

WR1: For each instance of **retention**, there shall be a reference to the **retention** instance from an attribute of another entity.

5.2.3.43 **dependent_instantiable_security_classification_level**

The **dependent_instantiable_security_classification_level** rule specifies that all instances of **security_classification_level** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_security_classification_level FOR
    (security_classification_level);
WHERE
    WR1:  SIZEOF(QUERY(s <* security_classification_level |
        NOT(SIZEOF(USEDIN(s, '')) > 0))) = 0;
END_RULE;
(*
```

Argument definitions:

security_classification_level: the set of all instances of **security_classification_level**.

Formal propositions:

WR1: For each instance of **security_classification_level**, there shall be a reference to the **security_classification_level** instance from an attribute of another entity.

5.2.3.44 **dependent_instantiable_symbol_colour**

The **dependent_instantiable_symbol_colour** rule specifies that each instance of **symbol_colour** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_symbol_colour FOR
    (symbol_colour);
WHERE
    WR1:  SIZEOF ( QUERY ( s <* symbol_colour | NOT ( SIZEOF (
        USEDIN ( s , '' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

symbol_colour: identifies the set of all instances of **symbol_colour**.

Formal propositions:

WR1: For each instance of **symbol_colour**, there shall be a reference to the **symbol_colour** instance from an attribute of another entity.

5.2.3.45 dependent_instantiable_text_style

The **dependent_instantiable_text_style** rule specifies that each instance of **text_style** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_text_style FOR
    (text_style);
WHERE
    WR1: SIZEOF ( QUERY ( t <* text_style | NOT ( SIZEOF ( USEDIN (
        t , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

text_style: identifies the set of all instances of **text_style**.

Formal propositions:

WR1: For each instance of **text_style**, there shall be a reference to the **text_style** instance from an attribute of another entity.

5.2.3.46 dependent_instantiable_text_style_for_defined_font

The **dependent_instantiable_text_style_for_defined_font** rule specifies that each instance of **text_style_for_defined_font** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_text_style_for_defined_font FOR
    (text_style_for_defined_font);
WHERE
    WR1: SIZEOF ( QUERY ( t <* text_style_for_defined_font | NOT (
        SIZEOF ( USEDIN ( t , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

text_style_for_defined_font: identifies the set of all instances of **text_style_for_defined_font**.

Formal propositions:

WR1: For each instance of **text_style_for_defined_font**, there shall be a reference to the **text_style_for_defined_font** instance from an attribute of another entity.

5.2.3.47 dependent_instantiable_time_interval_role

The **dependent_instantiable_time_interval_role** rule specifies that all instances of **time_interval_role** are dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_time_interval_role FOR
    (time_interval_role);
WHERE
    WR1:  SIZEOF(QUERY(t <* time_interval_role |
                    NOT(SIZEOF(USEDIN(t, ' ')) > 0 ))) = 0;
END_RULE;
(*
```

Argument definitions:

time_interval_role: the set of all instances of **time_interval_role**.

Formal propositions:

WR1: For each instance of **time_interval_role**, there shall be a reference to the **time_interval_role** instance from an attribute of another entity.

5.2.3.48 dependent_instantiable_type_qualifier

The **dependent_instantiable_type_qualifier** rule specifies that each instance of **type_qualifier** is dependent on the usage to define another entity.

EXPRESS specification:

```
*)
RULE dependent_instantiable_type_qualifier FOR
    (type_qualifier);
WHERE
    WR1:  SIZEOF ( QUERY ( t <* type_qualifier | NOT ( SIZEOF (
                    USEDIN ( t , ' ' ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

type_qualifier: identifies the set of all instances of **type_qualifier**.

Formal propositions:

WR1: For each instance of **type_qualifier**, there shall be a reference to the **type_qualifier** instance from an attribute of another entity.

5.2.3.49 dimensionality_is_two_or_three

The **dimensionality_is_two_or_three** rule ensures that all **representations** with an associated **geometric_representation_context** are defined in a twodimensional or threedimensional coordinate system.

EXPRESS specification:

```

*)
RULE dimensionality_is_two_or_three FOR
  (geometric_representation_context);
WHERE
  WR1:  SIZEOF(QUERY(g <* geometric_representation_context |
                    NOT((g.coordinate_space_dimension = 2)
                       OR
                       (g.coordinate_space_dimension = 3))
                    )) = 0;
END_RULE;
(*

```

Argument definitions:

geometric_representation_context: the set of all instances of **geometric_representation_context**.

Formal Propositions:

WR1: Each **geometric_representation_context** shall have a **coordinate_space_dimension** equal to two or three.

5.2.3.50 draughting_model_annotation_layers

The **draughting_model_annotation_layers** rule ensures that every **annotation_occurrence** that is an item in a draughting model is assigned to at least one layer.

EXPRESS specification:

```

*)
RULE draughting_model_annotation_layers FOR
  (presentation_representation);
WHERE
  WR1:  SIZEOF(QUERY(pr <* presentation_representation |
                    NOT(SIZEOF(QUERY(ao <* QUERY(it <* pr\representation.items
                    |
                    ('ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE'
                    IN TYPEOF(it))) |
                    NOT(SIZEOF(USEDIN(ao, 'ELECTROTECHNICAL_DESIGN.' +
                    'PRESENTATION_LAYER_ASSIGNMENT.'
                    +
                    'ASSIGNED_ITEMS')) >= 1)
                    )) = 0)
                    )) = 0;
END_RULE;
(*

```

ISO 10303-212:2001(E)

Argument definitions:

presentation_representation: the set of all instances of the **presentation_representation** entity.

Formal propositions:

WR1: Every item of each **presentation_representation** that is an **annotation_occurrence** shall be one of the **assigned_items** of at least one **presentation_layer_assignment**.

5.2.3.51 draughting_subfigure_representation_layers

The **draughting_subfigure_representation_layers** rule ensures that every **annotation_occurrence** that is an item in a **draughting_subfigure_representation** is assigned to at least one layer.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE draughting_subfigure_representation_layers FOR
  (draughting_subfigure_representation);
WHERE
  WR1: SIZEOF(QUERY(dsr <* draughting_subfigure_representation |
    NOT(SIZEOF(QUERY (item <* dsr\representation.items |
      ('ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE'
        IN TYPEOF(item))
      AND
        (SIZEOF(USEDIN(item, 'ELECTROTECHNICAL_DESIGN.' +
          'PRESENTATION_LAYER_ASSIGNMENT.'
          +
            'ASSIGNED_ITEMS')) = 0 )
        )) = 0 )
    )) = 0;
END_RULE;
(*
```

Argument definitions:

draughting_subfigure_representation: the set of all instances of the **draughting_subfigure_representation** entity.

Formal propositions:

WR1: Every item of each **draughting_subfigure_representation** that is an **annotation_occurrence** shall be one of the **assigned_items** of at least one **presentation_layer_assignment**.

5.2.3.52 drawing_revision_document_designation_constraint

The **drawing_revision_document_designation_constraint** rule ensures that each instance of **drawing_revision** is referenced only by instances of **item_designation_assignment** that are not instances of **object_reference_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**. At most one instance of **document_designation_assignment**

that has an associated **identification_role** with a **description** of 'primary' shall reference each instance of **drawing_revision**.

EXPRESS specification:

```

*)
RULE drawing_revision_document_designation_constraint FOR
  (drawing_revision);
WHERE
  WR1:  SIZEOF(QUERY(d <* drawing_revision |
                    SIZEOF(QUERY(des <* USEDIN(d,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'ITEM_DESIGNATION_ASSIGNMENT.'
+
                                'ITEMS') |
                    SIZEOF(TYPEOF(des) *
                    ['ELECTROTECHNICAL_DESIGN.' +
'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
                    'ELECTROTECHNICAL_DESIGN.' +
                    'SIGNAL_DESIGNATION_ASSIGNMENT',
                    'ELECTROTECHNICAL_DESIGN.' +
                    'TERMINAL_DESIGNATION_ASSIGNMENT']
                    ) > 0 )
                    ) > 0 )
        ) = 0;
  WR2:  SIZEOF(QUERY(d <* drawing_revision |
                    SIZEOF(QUERY(des <* USEDIN(d,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'ITEM_DESIGNATION_ASSIGNMENT.'
+
                                'ITEMS') |
                    ('ELECTROTECHNICAL_DESIGN.' +
                    'DOCUMENT_DESIGNATION_ASSIGNMENT'
                    IN TYPEOF(des))
                    AND
                    (des.role.description = 'primary') )
                    ) > 1 )
        ) = 0;
END_RULE;
(*

```

Argument definitions:

drawing_revision: the set of all instances of the **drawing_revision** entity.

Formal propositions:

WR1: Each instance of **drawing_revision** shall be referenced in the role of **items** only by those instances of **item_designation_assignment** that are not instances of **object_reference_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**.

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WR2: Each instance of **drawing_revision** shall be referenced by at most one **document_designation_assignment** that has an associated **identification_role** with the **description** 'primary'.

5.2.3.53 drawing_sheet_annotation_layers

The **drawing_sheet_annotation_layers** rule ensures that every **annotation_occurrence** that is an item in a **drawing_sheet_revision** is assigned to at least one layer.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE drawing_sheet_annotation_layers FOR
  (drawing_sheet_revision);
WHERE
  WR1: SIZEOF(QUERY(dsr <* drawing_sheet_revision |
    NOT(SIZEOF(QUERY(ao <* QUERY(it <* dsr\representation.items
  |
    ('ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE'
    IN TYPEOF(it))) |
    NOT(SIZEOF(USEDIN(ao, 'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_LAYER_ASSIGNMENT.' +
'ASSIGNED_ITEMS')) >= 1)
  )) = 0)
  )) = 0;
END_RULE;
(*
```

Argument definitions:

drawing_sheet_revision: the set of all instances of the **drawing_sheet_revision** entity.

Formal propositions:

WR1: Every item of each **drawing_sheet_revision** that is an **annotation_occurrence** shall be one of the **assigned_items** of at least one **presentation_layer_assignment**.

5.2.3.54 drawing_sheet_layout_usage

The **drawing_sheet_layout_usage** rule ensures that a **drawing_sheet_layout** is mapped as one of the items of a **drawing_sheet_revision**.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE drawing_sheet_layout_usage FOR
  (mapped_item);
```

```

WHERE
  WR1: SIZEOF(QUERY(dsl <* QUERY(mi <* mapped_item |
    ('ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_LAYOUT'
    IN TYPEOF(mi.mapping_source.mapped_representation))) |
    NOT(SIZEOF(USEDIN(dsl, '')) =
      SIZEOF(QUERY(dsr <* USEDIN(dsl,
'ELECTROTECHNICAL_DESIGN.' +
                                                                    'REPRESENTATION.ITEMS')
|
      ('ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION'
      IN TYPEOF(dsr))))))
    )) = 0;
END_RULE;
(*

```

Argument definitions:

mapped_item: the set of all instances of the **mapped_item** entity.

Formal propositions:

WR1: Each **mapped_item** that is the mapping of a **drawing_sheet_layout** shall be one of the items in a **drawing_sheet_revision**.

5.2.3.55 drawing_sheet_revision_document_designation_constraint

The **drawing_sheet_revision_document_designation_constraint** rule ensures that each instance of **drawing_sheet_revision** is referenced only by instances of **item_designation_assignment** that are not instances of **object_reference_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**. At most one instance of **document_designation_assignment** that has an associated **identification_role** with a **description** of 'primary' shall reference each instance of **drawing_sheet_revision**.

EXPRESS specification:

```

*)
RULE drawing_sheet_revision_document_designation_constraint FOR
  (drawing_sheet_revision);
WHERE
  WR1: SIZEOF(QUERY(d <* drawing_sheet_revision |
    SIZEOF(QUERY(des <* USEDIN(d,
      'ELECTROTECHNICAL_DESIGN.' +
      'ITEM_DESIGNATION_ASSIGNMENT.'
+
      'ITEMS') |
    SIZEOF(TYPEOF(des) *
      ['ELECTROTECHNICAL_DESIGN.' +
'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'SIGNAL_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'TERMINAL_DESIGNATION_ASSIGNMENT']
    ) > 0 )

```

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```

        ) > 0 )
    ) = 0;
WR2:  SIZEOF(QUERY(d <* drawing_sheet_revision |
        SIZEOF(QUERY(des <* USEDIN(d,
            'ELECTROTECHNICAL_DESIGN.' +
            'ITEM_DESIGNATION_ASSIGNMENT.'
+
            'ITEMS') |
        ('ELECTROTECHNICAL_DESIGN.' +
        'DOCUMENT_DESIGNATION_ASSIGNMENT'
        IN TYPEOF(des))
        AND
        (des.role.description = 'primary') )
    ) > 1 )
    ) = 0;
END_RULE;
(*
```

Argument definitions:

drawing_sheet_revision: the set of all instances of the **drawing_sheet_revision** entity.

Formal propositions:

WR1: Each instance of **drawing_sheet_revision** shall be referenced in the role of **items** only by those instances of **item_designation_assignment** that are not instances of **object_reference_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**.

WR2: Each instance of **drawing_sheet_revision** shall be referenced by at most one **document_designation_assignment** that has an associated **identification_role** with the **description** 'primary'.

5.2.3.56 drawing_view_annotation_layers

The **drawing_view_annotation_layers** rule ensures that every **annotation_occurrence** that is an item in a **presentation_view** is assigned to at least one layer.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```

*)
RULE drawing_view_annotation_layers FOR
    (presentation_view);
WHERE
    WR1: SIZEOF(QUERY(pv <* presentation_view |
        NOT(SIZEOF(QUERY(ao <* QUERY(it <* pv\representation.items
|
        ('ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE'
        IN TYPEOF(it))) |
        NOT(SIZEOF(USEDIN(ao, 'ELECTROTECHNICAL_DESIGN.' +
```

```

+
    'PRESENTATION_LAYER_ASSIGNMENT.'
    'ASSIGNED_ITEMS')) >= 1)
    )) = 0)
    )) = 0;
END_RULE;
(*

```

Argument definitions:

presentation_view: the set of all instances of the **presentation_view** entity.

Formal propositions:

WR1: Every item of each **presentation_view** that is an **annotation_occurrence** shall be one of the **assigned_items** of at least one **presentation_layer_assignment**.

5.2.3.57 effectivity_assignment_subtype_exclusiveness

The **effectivity_assignment_subtype_exclusiveness** rule specifies that each instance of **effectivity_assignment** shall be an instance of at most one of its subtypes **applied_effectivity_assignment**, **applied_ineffectivity_assignment**, or **configured_effectivity_assignment**.

EXPRESS specification:

```

*)
RULE effectivity_assignment_subtype_exclusiveness FOR
    (effectivity_assignment);
WHERE
    WR1:  SIZEOF(QUERY(e <* effectivity_assignment |
        SIZEOF(TYPEOF(e) *
            ['ELECTROTECHNICAL_DESIGN.' +
            'APPLIED_EFFECTIVITY_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'APPLIED_INEFFECTIVITY_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'CONFIGURED_EFFECTIVITY_ASSIGNMENT']
        ) > 1 )
    ) = 0;
END_RULE;
(*

```

Argument definitions:

effectivity_assignment: the set of all instances of **effectivity_assignment** entities.

Formal propositions:

WR1: Each instance of **effectivity_assignment** shall be an instance of at most one of its subtypes **applied_effectivity_assignment**, **applied_ineffectivity_assignment**, or **configured_effectivity_assignment**.

5.2.3.58 effectivity_context_assignment_subtype_exclusiveness

The **effectivity_context_assignment_subtype_exclusiveness** rule specifies that each instance of **effectivity_context_assignment** shall be an instance of at most one of its subtypes **applied_effectivity_context_assignment**, **applied_ineffectivity_context_assignment**, or **configured_effectivity_context_assignment**.

EXPRESS specification:

```

*)
RULE effectivity_context_assignment_subtype_exclusiveness FOR
  (effectivity_context_assignment);
WHERE
  WR1:  SIZEOF(QUERY(e <* effectivity_context_assignment |
    SIZEOF(TYPEOF(e) *
      ['ELECTROTECHNICAL_DESIGN.' +
      'CLASS_USAGE_EFFECTIVITY_CONTEXT_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'CONFIGURED_EFFECTIVITY_CONTEXT_ASSIGNMENT']
    ) > 1 )
    ) = 0;
END_RULE;
(*

```

Argument definitions:

effectivity_context_assignment: the set of all instances of **effectivity_context_assignment** entities.

Formal propositions:

WR1: Each instance of **effectivity_context_assignment** shall be an instance of at most one of its subtypes **applied_effectivity_context_assignment**, **applied_ineffectivity_context_assignment**, or **configured_effectivity_context_assignment**.

5.2.3.59 event_occurrence_requires_event_occurrence_assignment

The **event_occurrence_requires_event_occurrence_assignment** rule ensures that each instance of **event_occurrence** that serves not as a base for another instance of **event_occurrence** is referenced by at least one instance of **event_occurrence_assignment** as the **assigned_event_occurrence**. This rule enforces the requirement for every **event_reference** to be assigned to product data at least once.

EXPRESS specification:

```

*)
RULE event_occurrence_requires_event_occurrence_assignment FOR
  (event_occurrence,
  event_occurrence_assignment,
  relative_event_occurrence);
WHERE
  WR1:  SIZEOF ( QUERY ( eo <* event_occurrence | ( SIZEOF (
    USEDIN ( eo ,
    'ELECTROTECHNICAL_DESIGN.'+'RELATIVE_EVENT_OCCURRENCE.'+
    'BASE_EVENT' ) ) =0 ) AND ( SIZEOF ( USEDIN ( eo ,
    'ELECTROTECHNICAL_DESIGN.'+'EVENT_OCCURRENCE_ASSIGNMENT.'+

```



```

    'ASSIGNED_EVENT_OCCURRENCE' ) ) =0 ) ) ) =0;
END_RULE;
(*)

```

Argument definitions:

event_occurrence: the set of all instances of **event_occurrence**.

event_occurrence_assignment: the set of all instances of **event_occurrence_assignment**.

relative_event_occurrence: the set of all instances of **relative_event_occurrence**.

Formal propositions:

WR1: Each **event_occurrence** that is not used as a **base_event** by an instance of **relative_event_occurrence** shall be used at least once as the **assigned_event_occurrence** of an instance of **event_occurrence_assignment**.

5.2.3.60 executed_action_requires_status

The **executed_action_requires_status** rule ensures that each instance of **executed_action** is referenced by exactly one instance of the **action_status** entity.

EXPRESS specification:

```

*)
RULE executed_action_requires_status FOR
    (executed_action);
WHERE
    WR1: SIZEOF ( QUERY ( ea <* executed_action | SIZEOF ( USEDIN (
        ea , 'ELECTROTECHNICAL_DESIGN.'+'ACTION_STATUS.'+'
        'ASSIGNED_ACTION' ) ) <>1 ) ) ) =0;
END_RULE;
(*)

```

Argument definitions:

executed_action: the set of all instances of **executed_action** entities.

Formal propositions:

WR1: Each instance of **executed_action** shall be referenced by exactly one instance of **action_status** as the **assigned_action**.

5.2.3.61 externally_defined_class_with_known_source_requirement

The **externally_defined_class_with_known_source_requirement** rule specifies that each instance of **externally_defined_class** which references as the **source** a **known_source** is contained in the set of **items** of exactly one **applied_organization_assignment** which references as its **role** an **organization_role** with a **name** of 'class supplier'. This rule enforces the requirement for every **class_reference** to have a **supplier**.

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EXPRESS specification:

```
*)
RULE externally_defined_class_with_known_source_requirement FOR
    (externally_defined_class);
WHERE
    WR1: SIZEOF ( QUERY ( edc <* externally_defined_class | (
        'ELECTROTECHNICAL_DESIGN.'+ 'KNOWN_SOURCE' IN TYPEOF ( edc.
        source ) ) AND ( SIZEOF ( QUERY ( aoa <* USEDIN ( edc ,
        'ELECTROTECHNICAL_DESIGN.APPLIED_ORGANIZATION_ASSIGNMENT.ITEMS'
    )
        | aoa. role.name = 'class supplier' ) ) =0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

externally_defined_class: the set of all instances of **externally_defined_class**.

Formal propositions:

WR1: Each instance of **externally_defined_class** which references as the **source** a **known_source** shall be member in the set of **items** of an **applied_organization_assignment**. This **organization_assignment** shall reference as its **role** an **organization_role** with a **name** of 'class supplier'.

5.2.3.62 externally_defined_item_relationship_constraint

The **externally_defined_item_relationship_constraint** rule ensures that each instance of **externally_defined_item_relationship** satisfies the **externally_defined_item_relationship_correlation** function that correlates the **names** of a **externally_defined_item_relationship** to elements of product data.

EXPRESS specification:

```
*)
RULE externally_defined_item_relationship_constraint FOR
    (externally_defined_item_relationship);
WHERE
    WR1: SIZEOF(QUERY(e <* externally_defined_item_relationship |
        NOT(externally_defined_item_relationship_correlation(e)) )
    ) = 0;
END_RULE;
(*
```

Argument definitions:

externally_defined_item_relationship: the set of all instances of the **externally_defined_item_relationship** entity.

Formal propositions:

WR1: For each instance of **externally_defined_item_relationship**, the **externally_defined_item_relationship_correlation** function that correlates the names of a **externally_defined_item_relationship** to elements of product data shall be satisfied.

5.2.3.63 externally_defined_item_subtype_exclusiveness

The **externally_defined_item_subtype_exclusiveness** rule specifies that each instance of **externally_defined_item** shall be an instance of at most one of its subtypes **externally_defined_class**, **externally_defined_curve_font**, **externally_defined_general_property**, **externally_defined_hatch_style**, **externally_defined_symbol**, **externally_defined_text_font**, or **externally_defined_tile_style**.

EXPRESS specification:

```

*)
RULE externally_defined_item_subtype_exclusiveness FOR
    (externally_defined_item);
WHERE
    WR1:  SIZEOF(QUERY(e <* externally_defined_item |
                SIZEOF(TYPEOF(e) *
                    ['ELECTROTECHNICAL_DESIGN.' +
                     'EXTERNALLY_DEFINED_CLASS',
                     'ELECTROTECHNICAL_DESIGN.' +
                     'EXTERNALLY_DEFINED_CURVE_FONT',
                     'ELECTROTECHNICAL_DESIGN.' +
                     'EXTERNALLY_DEFINED_GENERAL_PROPERTY',
                     'ELECTROTECHNICAL_DESIGN.' +
                     'EXTERNALLY_DEFINED_HATCH_STYLE',
                     'ELECTROTECHNICAL_DESIGN.' +
                     'EXTERNALLY_DEFINED_SYMBOL',
                     'ELECTROTECHNICAL_DESIGN.' +
                     'EXTERNALLY_DEFINED_TEXT_FONT',
                     'ELECTROTECHNICAL_DESIGN.' +
                     'EXTERNALLY_DEFINED_TILE_STYLE']
                ) > 1
            )) = 0;
END_RULE;
(*

```

Argument definitions:

externally_defined_item: the set of all instances of **externally_defined_item** entities.

Formal propositions:

WR1: Each instance of **externally_defined_item** shall be an instance of at most one of its subtypes **externally_defined_class**, **externally_defined_curve_font**, **externally_defined_general_property**, **externally_defined_hatch_style**, **externally_defined_symbol**, **externally_defined_text_font**, or **externally_defined_tile_style**.

5.2.3.64 fill_area_style_tile_symbol_constraint

The **fill_area_style_tile_symbol_constraint** rule ensures that a **pre_defined_symbol** does not participate in the definition of a **fill_area_style_tile_symbol_with_style**.

EXPRESS specification:

```

*)
RULE fill_area_style_tile_symbol_constraint FOR
    (fill_area_style_tile_symbol_with_style);
WHERE
    WR1: SIZEOF ( QUERY ( fast <*
        fill_area_style_tile_symbol_with_style | ( (
            'ELECTROTECHNICAL_DESIGN.'+ 'DEFINED_SYMBOL' IN TYPEOF ( fast.
            symbol\styled_item. item ) ) AND NOT (
            'ELECTROTECHNICAL_DESIGN.'+ 'EXTERNALLY_DEFINED_SYMBOL' IN
            TYPEOF
            ( fast. symbol\styled_item.item\ defined_symbol.definition
            ) ) ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

fill_area_style_tile_symbol_with_style: the set of all instances of **fill_area_style_tile_symbol_with_style**.

Formal propositions:

WR1: Each **fill_area_style_tile_symbol_with_style** that has an implicit definition shall be defined by an **externally_defined_symbol**.

5.2.3.65 general_property_constraint

The **general_property_constraint** rule ensures that each instance of **general_property** satisfies the **general_property_correlation** function that correlates the **names** of a **general_property** to elements of product data.

EXPRESS specification:

```

*)
RULE general_property_constraint FOR
    (general_property);
WHERE
    WR1: SIZEOF(QUERY(g <* general_property |
        NOT(general_property_correlation(g)) )
        ) = 0;
END_RULE;
(*

```

Argument definitions:

general_property: the set of all instances of the **general_property** entity.

Formal propositions:

WR1: For each instance of **general_property**, the **general_property_correlation** function that correlates the **names** of a **general_property** to elements of product data shall be satisfied.

5.2.3.66 global_length_and_angle_units_2d_or_3d

The **global_length_and_angle_units_2d_or_3d** rule ensures that units of length and plane angle are given for every **global_unit_assigned_context**.

EXPRESS specification:

```
*)
RULE global_length_and_angle_units_2d_or_3d FOR
  (global_unit_assigned_context);
WHERE
  WR1: SIZEOF ( QUERY ( guac <* global_unit_assigned_context |
    SIZEOF ( guac. units ) <2 ) ) =0;
  WR2: SIZEOF ( QUERY ( guac <* global_unit_assigned_context | (
    SIZEOF ( QUERY ( x <* guac. units | 'ELECTROTECHNICAL_DESIGN.' +
      'LENGTH_UNIT' IN TYPEOF ( x ) ) ) <>1 ) OR ( SIZEOF ( QUERY
      ( x <* guac. units | 'ELECTROTECHNICAL_DESIGN.' +
      'PLANE_ANGLE_UNIT' IN TYPEOF ( x ) ) ) <>1 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

global_unit_assigned_context: the set of all instances of **global_unit_assigned_context**.

Formal Propositions:

WR1: Each **global_unit_assigned_context** shall have at least two elements in its set of **units**.

WR2: Each **global_unit_assigned_context** shall have exactly one **length_unit** and exactly one **plane_angle_unit** in its set of **units**.

5.2.3.67 group_assignment_subtype_exclusiveness

The **group_assignment_subtype_exclusiveness** rule specifies that each instance of **group_assignment** shall be an instance of at most one of its subtypes **applied_group_assignment**, **connecting_line_group_assignment**, **draughting_group_elements_assignment**, **page_connector_reference_group_assignment**, or **product_concept_feature_category_usage**.

EXPRESS specification:

```
*)
RULE group_assignment_subtype_exclusiveness FOR
  (group_assignment);
WHERE
  WR1: SIZEOF(QUERY(ga <* group_assignment |
    SIZEOF(TYPEOF(ga) *
      ['ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_GROUP_ASSIGNMENT',
```

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```
'ELECTROTECHNICAL_DESIGN.' +
'CONNECTING_LINE_GROUP_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_GROUP_ELEMENTS_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +

'PAGE_CONNECTOR_REFERENCE_GROUP_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE']
) > 1 )
) = 0;
END_RULE;
(*
```

Argument definitions:

group_assignment: the set of all instances of **group_assignment** entities.

Formal propositions:

WR1: Each instance of **group_assignment** shall be an instance of at most one of its subtypes **applied_group_assignment**, **connecting_line_group_assignment**, **draughting_group_elements_assignment**, **page_connector_reference_group_assignment**, or **product_concept_feature_category_usage**.

5.2.3.68 group_relationship_constraint

The **group_relationship_constraint** rule ensures that each instance of **group_relationship** satisfies the **group_relationship_correlation** function that correlates the **names** of a **group_relationship** to elements of product data.

EXPRESS specification:

```
*)
RULE group_relationship_constraint FOR
  (group_relationship);
WHERE
  WR1:  SIZEOF(QUERY(g <* group_relationship |
                    NOT(group_relationship_correlation(g)) )
          ) = 0;
END_RULE;
(*
```

Argument definitions:

group_relationship: the set of all instances of the **group_relationship** entity.

Formal propositions:

WR1: For each instance of **group_relationship**, the **group_relationship_correlation** function that correlates the **names** of a **group_relationship** to elements of product data shall be satisfied.

5.2.3.69 group_subtype_exclusiveness

The **group_subtype_exclusiveness** rule specifies that each instance of **group** shall be an instance of at most one of its subtypes **class**, **class_system**, **connecting_line_group**, **language**, **page_connector_group**, **page_connector_presentation_group**, **page_connector_reference_group**, or **product_concept_feature_category**.

EXPRESS specification:

```

*)
RULE group_subtype_exclusiveness FOR
  (group);
WHERE
  WR1:  SIZEOF(QUERY(g <* group |
          SIZEOF(TYPEOF(g) *
              ['ELECTROTECHNICAL_DESIGN.' +
               'CLASS',
               'ELECTROTECHNICAL_DESIGN.' +
               'CLASS_SYSTEM',
               'ELECTROTECHNICAL_DESIGN.' +
               'CONNECTING_LINE_GROUP',
               'ELECTROTECHNICAL_DESIGN.' +
               'LANGUAGE',
               'ELECTROTECHNICAL_DESIGN.' +
               'PAGE_CONNECTOR_GROUP',
               'ELECTROTECHNICAL_DESIGN.' +
               'PAGE_CONNECTOR_PRESENTATION_GROUP',
               'ELECTROTECHNICAL_DESIGN.' +
               'PAGE_CONNECTOR_REFERENCE_GROUP',
               'ELECTROTECHNICAL_DESIGN.' +
               'PRODUCT_CONCEPT_FEATURE_CATEGORY'])
          ) > 1 )
          ) = 0;
END_RULE;
(*

```

Argument definitions:

group: the set of all instances of **group** entities.

Formal propositions:

WR1: Each instance of **group** shall be an instance of at most one of its subtypes **class**, **class_system**, **connecting_line_group**, **language**, **page_connector_group**, **page_connector_presentation_group**, **page_connector_reference_group**, or **product_concept_feature_category**.

5.2.3.70 identification_assignment_relationship_constraint

The **identification_assignment_relationship_constraint** rule ensures that each instance of **identification_assignment_relationship** satisfies the **identification_assignment_relationship_correlation** function that correlates the **names** of a **identification_assignment_relationship** to elements of product data.

EXPRESS specification:

```

*)

```

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```
RULE identification_assignment_relationship_constraint FOR
    (identification_assignment_relationship);
WHERE
    WR1:  SIZEOF(QUERY(i <* identification_assignment_relationship |
        NOT(identification_assignment_relationship_correlation(i))
    )
        ) = 0;
END_RULE;
(*
```

Argument definitions:

identification_assignment_relationship: the set of all instances of the **identification_assignment_relationship** entity.

Formal propositions:

WR1: For each instance of **identification_assignment_relationship**, the **identification_assignment_relationship_correlation** function that correlates the names of a **identification_assignment_relationship** to elements of product data shall be satisfied.

5.2.3.71 identification_assignment_subtype_exclusiveness

The **identification_assignment_subtype_exclusiveness** rule specifies that each instance of **identification_assignment** shall be an instance of at most one of its subtypes **applied_identification_assignment**, **external_identification_assignment**, or **item_designation_assignment**.

EXPRESS specification:

```
*)
RULE identification_assignment_subtype_exclusiveness FOR
    (identification_assignment);
WHERE
    WR1:  SIZEOF(QUERY(i <* identification_assignment |
        SIZEOF(TYPEOF(i) *
            ['ELECTROTECHNICAL_DESIGN.' +
            'APPLIED_IDENTIFICATION_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'EXTERNAL_IDENTIFICATION_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'ITEM_DESIGNATION_ASSIGNMENT']
        ) > 1 )
        ) = 0;
END_RULE;
(*
```

Argument definitions:

identification_assignment: the set of all instances of **identification_assignment** entities.

Formal propositions:

WR1: Each instance of **identification_assignment** shall be an instance of at most one of its subtypes **applied_identification_assignment**, **external_identification_assignment**, or **item_designation_assignment**.

5.2.3.72 known_source_constraint

The **known_source_constraint** rule ensures that each instance of **known_source** has a **name** of 'IEC 61360 library' or 'ISO 13584 library'.

EXPRESS specification:

```

*)
RULE known_source_constraint FOR
  (known_source);
WHERE
  WR1:  SIZEOF(QUERY(k <* known_source |
                    NOT(k\pre_defined_item.name
                       IN ['IEC 61360 library', 'ISO 13584 library']))
        ) = 0;
END_RULE;
(*

```

Argument definitions:

known_source: the set of all instances of **known_source** entities.

Formal propositions:

WR1: Each instance of **known_source** shall have a **name** of 'IEC 61360 library' or 'ISO 13584 library'.

5.2.3.73 person_requires_person_and_organization

The **person_requires_organization** rule ensures that each instance of **person** shall be referenced by at least one instance of **person_and_organization** as **the_person**. This rule enforces the requirement for each person to have at least one organization specified the person belongs to.

EXPRESS specification:

```

*)
RULE person_requires_person_and_organization FOR
  (person);
WHERE
  WR1:  SIZEOF ( QUERY ( p <* person |  SIZEOF ( USEDIN ( p ,
                    'ELECTROTECHNICAL_DESIGN.PERSON_AND_ORGANIZATION.THE_PERSON' )
                    ) =0 ) ) =0;
END_RULE;
(*

```

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Argument definitions:

person: the set of all instances of **person** entities.

Formal propositions:

WR1: Each instance of **person** shall be referenced by at least one instance of **person_and_organization** as **the_person**.

5.2.3.74 **physical_instance_requires_product_definition**

The **physical_instance_requires_product_definition** rule ensures that each instance of **product_definition_formation** which has an associated **of_product** that is referenced by a **product_related_product_category** with a **name** of 'physically realized product', is referenced as **formation** by exactly one instance of **product_definition** that references as its **frame_of_reference** a **product_definition_context** with a **name** of 'physical occurrence'.

EXPRESS specification:

```
*)
RULE physical_instance_requires_product_definition FOR
  (product_definition,
   product_definition_formation,
   product_related_product_category);
WHERE
  WR1: SIZEOF ( QUERY ( pdf <* product_definition_formation | (
    SIZEOF ( QUERY ( prpc <* USEDIN ( pdf. of_product ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_RELATED_PRODUCT_CATEGORY.'+
      'PRODUCTS' ) | prpc. name = 'physically realized product' )
    ) >0 ) AND ( SIZEOF ( QUERY ( pd <* USEDIN ( pdf ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION.'+ 'FORMATION' )
    |
      pd. frame_of_reference.name = 'physical occurrence' ) ) <>1
    ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

product_definition: the set of all instances of **product_definition**.

product_definition_formation: the set of all instances of **product_definition_formation**.

product_related_product_category: the set of all instances of **product_related_product_category**.

Formal propositions:

WR1: Each instance of **product_definition_formation** which has an associated **of_product** that is referenced by a **product_related_product_category** with a **name** of 'physically realized product', is referenced as **formation** by exactly one instance of **product_definition** that references as its **frame_of_reference** a **product_definition_context** with a **name** of 'physical occurrence'.

5.2.3.75 pre_defined_item_subtype_exclusiveness

The **pre_defined_item_subtype_exclusiveness** rule specifies that each instance of **pre_defined_item** shall be an instance of at most one of its subtypes **known_source**, or **pre_defined_symbol**.

EXPRESS specification:

```

*)
RULE pre_defined_item_subtype_exclusiveness FOR
  (pre_defined_item);
WHERE
  WR1:  SIZEOF(QUERY(p <* pre_defined_item|
              SIZEOF(TYPEOF(p) *
                ['ELECTROTECHNICAL_DESIGN.KNOWN_SOURCE',
                 'ELECTROTECHNICAL_DESIGN.PRE_DEFINED_SYMBOL'])
              ) > 1
        )) = 0;
END_RULE;
(*

```

Argument definitions:

pre_defined_item: the set of all instances of **pre_defined_item** entities.

Formal propositions:

WR1: Each instance of **pre_defined_item** shall be an instance of at most one of its subtypes **known_source** or **pre_defined_symbol**.

5.2.3.76 presentation_layer_assignment_constraint_2d_or_3d

The **presentation_layer_assignment_constraint_2d_or_3d** rule ensures that every element of a layer that is a **point**, or **curve** is an element in a **shape_representation** and that every element of a layer that is an **annotation_occurrence** is one of the items in a **draughting_subfigure_representation**, **draughting_model**, **presentation_area**, or **presentation_view**.

EXPRESS specification:

```

*)
RULE presentation_layer_assignment_constraint_2d_or_3d FOR
  (presentation_layer_assignment);
WHERE
  WR1:  SIZEOF ( QUERY ( pla <* presentation_layer_assignment |
                      NOT ( SIZEOF ( QUERY ( pnt <* QUERY ( item <* pla.
                      assigned_items | ( 'ELECTROTECHNICAL_DESIGN.'+ 'POINT' IN
TYPEOF
                      ( item ) ) ) | NOT ( SIZEOF ( QUERY ( rep <* USEDIN ( pnt ,
                      'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS' ) | (
                      'ELECTROTECHNICAL_DESIGN.'+ 'SHAPE_REPRESENTATION' IN TYPEOF (
                      rep ) ) ) ) =0 ) ) ) =0 ) ) ) =0;
  WR2:  SIZEOF ( QUERY ( pla <* presentation_layer_assignment |
                      NOT ( SIZEOF ( QUERY ( crv <* QUERY ( item <* pla.

```

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```
assigned_items | ( 'ELECTROTECHNICAL_DESIGN.'+ 'CURVE' IN
TYPEOF
( item ) ) ) | NOT ( SIZEOF ( QUERY ( rep <* USEDIN ( crv ,
'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS' ) | (
'ELECTROTECHNICAL_DESIGN.'+ 'SHAPE_REPRESENTATION' IN TYPEOF (
rep ) ) ) ) =0 ) ) ) =0 ) ) =0;
WR3: SIZEOF ( QUERY ( pla <* presentation_layer_assignment |
NOT ( SIZEOF ( QUERY ( ao <* QUERY ( item <* pla.
assigned_items | ( 'ELECTROTECHNICAL_DESIGN.'+
'ANNOTATION_OCCURRENCE' IN TYPEOF ( item ) ) ) | NOT (
SIZEOF ( QUERY ( ur <* using_representations ( ao ) | NOT (
SIZEOF ( TYPEOF ( ur )
*['ELECTROTECHNICAL_DESIGN.'+'DRAUGHTING_SUBFIGURE_REPRESENTATION'
, 'ELECTROTECHNICAL_DESIGN.'+ 'DRAUGHTING_MODEL' ,
'ELECTROTECHNICAL_DESIGN.'+ 'PRESENTATION_AREA' ,
'ELECTROTECHNICAL_DESIGN.'+ 'PRESENTATION_VIEW'] ) =1 ) ) ) =0
)
) ) =0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

presentation_layer_assignment: the set of all instances of **presentation_layer_assignment**.

Formal propositions:

WR1: Every **point** that is one of the **assigned_items** of a **presentation_layer_assignment** shall also be a member of the set of **items** of a **shape_representation**.

WR2: Every **curve** that is one of the **assigned_items** of a **presentation_layer_assignment** shall also be a member of the set of **items** of a **shape_representation**.

WR3: Every **annotation_occurrence** that is one of the **assigned_items** of a **presentation_layer_assignment** shall also be a member of the set of **items** of an **draughting_subfigure_representation**, **draughting_model**, **presentation_area**, or **presentation_view**.

5.2.3.77 presentation_size_constraint

The **presentation_size_constraint** rule ensures that each **presentation_size** is used only to specify the size of a **drawing_sheet_revision**.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE presentation_size_constraint FOR
(presentation_size);
WHERE
WR1: SIZEOF(QUERY(ps <* presentation_size |
```

```

NOT('ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION'
    IN TYPEOF(ps.unit))) = 0;
END_RULE;
(*

```

Argument definitions:

presentation_size: the set of all instances of the **presentation_size** entity.

Formal propositions:

WR1: Each **presentation_size** shall specify a **drawing_sheet_revision** as the **unit**.

5.2.3.78 presentation_style_by_context_constraint

The **presentation_style_by_context_constraint** rule specifies that only **presentation_view** provides a context for the assignment of style and that exactly one style is assigned within the context.

NOTE The definition of this rule is identical to the definition in ISO 10303-202.

EXPRESS specification:

```

*)
RULE presentation_style_by_context_constraint FOR
    (presentation_style_by_context);
WHERE
    WR1: SIZEOF(QUERY(psbcc <* presentation_style_by_context |
        NOT('ELECTROTECHNICAL_DESIGN.PRESENTATION_VIEW'
            IN TYPEOF(psbcc.style_context))
        )) = 0;
    WR2: SIZEOF(QUERY(psbcc <* presentation_style_by_context |
        NOT(SIZEOF(psbcc.presentation_style_assignment.styles) = 1)
        )) = 0;
END_RULE;
(*

```

Argument definitions:

presentation_style_by_context: the set of all instances of the **presentation_style_by_context** entity.

Formal propositions:

WR1: The **style_context** of each **presentation_style_by_context** shall be **presentation_view**.

WR2: Each **presentation_style_by_context** shall assign exactly one style.

5.2.3.79 presentation_view_presented_once

The **presentation_view_presented_once** rule ensures that a **presentation_view** is presented in a **drawing_sheet_revision**.

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NOTE The definition of this rule is identical to the definition in ISO 10303-202.

EXPRESS specification:

```
*)
RULE presentation_view_presented_once FOR
  (drawing_sheet_revision,
   presentation_view);
WHERE
  WR1: SIZEOF(QUERY(pv <* presentation_view |
    NOT(SIZEOF(QUERY(rm <* USEDIN(pv,
'ELECTROTECHNICAL_DESIGN.' +
                                'REPRESENTATION_MAP.' +
                                'MAPPED_REPRESENTATION')
|
    NOT(SIZEOF(QUERY(mi <* rm.map_usage |
    NOT(SIZEOF(QUERY(dsr <* drawing_sheet_revision |
    (mi IN dsr\representation.items))) = 1)
    )) = 0)
  )) = 0)
)) = 0;
END_RULE;
(*
```

Argument definitions:

presentation_view: the set of all instances of the **presentation_view** entity.

drawing_sheet_revision: the set of all instances of the **drawing_sheet_revision** entity.

Formal propositions:

WR1: Each **presentation_view** shall be mapped as an item in exactly one **drawing_sheet_revision**.

5.2.3.80 presented_item_subtype_exclusiveness

The **presented_item_subtype_exclusiveness** rule specifies that each instance of **presented_item** shall be an instance of at most one of its subtypes **applied_presented_item** or **draughting_presented_item**.

EXPRESS specification:

```
*)
RULE presented_item_subtype_exclusiveness FOR
  (presented_item);
WHERE
  WR1: SIZEOF(QUERY(p <* presented_item |
    SIZEOF(TYPEOF(p) *
    ['ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_PRESENTED_ITEM',
    'ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_PRESENTED_ITEM']
    ) > 1 )
  ) = 0;
END_RULE;
```

(*

Argument definitions:

presented_item: the set of all instances of **presented_item** entities.

Formal propositions:

WR1: Each instance of **presented_item** shall be an instance of at most one of its subtypes **applied_presented_item** or **draughting_presented_item**.

5.2.3.81 product_concept_feature_requires_category

The **product_concept_feature_requires_category** rule specifies that each instance of **product_concept_feature** is contained in the set of **items** of exactly one **applied_group_assignment** which has as the **role** an **object_role** with a **name** of 'specification category member' and which references as the **assigned_group** a **product_concept_feature_category**. This rule enforces the requirement for every **specification** to have one **Specification_category** (see 4.2.324).

EXPRESS specification:

```

*)
RULE product_concept_feature_requires_category FOR
  (product_concept_feature,
   product_concept_feature_category);
WHERE
  WR1: SIZEOF ( QUERY ( pcf <* product_concept_feature | SIZEOF (
    QUERY ( aga <* USEDIN ( pcf ,
      'ELECTROTECHNICAL_DESIGN.'+'APPLIED_GROUP_ASSIGNMENT.'+ 'ITEMS '
    )
    | ( aga.role.name = 'specification category member' ) AND
      ( 'ELECTROTECHNICAL_DESIGN.'+
        'PRODUCT_CONCEPT_FEATURE_CATEGORY'
        IN TYPEOF ( aga.assigned_group ) ) ) ) <>1 ) ) =0;
END_RULE;
(*

```

Argument definitions:

product_concept_feature: the set of all instances of **product_concept_feature**.

product_concept_feature_category: the set of all instances of **product_concept_feature_category**.

Formal propositions:

WR1: Each instance of **product_concept_feature** is contained in the set of **items** of exactly one **applied_group_assignment** which has as the **role** an **object_role** with a **name** of 'specification category member' and which references as the **assigned_group** a **product_concept_feature_category**.

5.2.3.82 product_definition_constraint

The **product_definition_constraint** rule ensures that each instance of **product_definition** satisfies the **product_definition_correlation** function that correlates the **names** of a **product_definition** as well as the **names** of the **application_context_element** associated to a **product_definition** to elements of product data.

EXPRESS specification:

```

*)
RULE product_definition_constraint FOR
  (product_definition);
WHERE
  WR1:  SIZEOF(QUERY(p <* product_definition |
                NOT(product_definition_correlation(p)) )
          ) = 0;
END_RULE;
(*

```

Argument definitions:

product_definition: the set of all instances of the **product_definition** entity.

Formal propositions:

WR1: For each instance of **product_definition**, the **product_definition_correlation** function that correlates the **names** of a **product_definition** as well as the **names** of the **application_context_element** associated to a **product_definition** to elements of product data shall be satisfied.

5.2.3.83 product_definition_context_association_constraint

The **product_definition_context_association_constraint** rule ensures that each instance of **product_definition_context_association** satisfies the **product_definition_context_association_correlation** function that correlates the **names** of a **product_definition_context_association** to elements of product data.

EXPRESS specification:

```

*)
RULE product_definition_context_association_constraint FOR
  (product_definition_context_association);
WHERE
  WR1:  SIZEOF(QUERY(p <* product_definition_context_association |
                NOT(product_definition_context_association_correlation(p))
          )
          ) = 0;
END_RULE;
(*

```


Argument definitions:

product_definition_context_association: the set of all instances of the **product_definition_context_association** entity.

Formal propositions:

WR1: For each instance of **product_definition_context_association**, the **product_definition_context_association_correlation** function that correlates the **names** of a **product_definition_context_association** to elements of product data shall be satisfied.

5.2.3.84 product_definition_context_constraint

The **product_definition_context_constraint** rule ensures that each instance of **product_definition_context** satisfies the **product_definition_context_correlation** function that correlates the **names** of a **product_definition_context** to elements of product data.

EXPRESS specification:

```

*)
RULE product_definition_context_constraint FOR
    (product_definition_context);
WHERE
    WR1:  SIZEOF(QUERY(p <* product_definition_context |
                    NOT(product_definition_context_correlation(p)) )
            ) = 0;
END_RULE;
(*

```

Argument definitions:

product_definition_context: the set of all instances of the **product_definition_context** entity.

Formal propositions:

WR1: For each instance of **product_definition_context**, the **product_definition_context_correlation** function that correlates the **names** of a **product_definition_context** to elements of product data shall be satisfied.

5.2.3.85 product_definition_relationship_constraint

The **product_definition_relationship_constraint** rule ensures that each instance of **product_definition_relationship** satisfies the **product_definition_relationship_correlation** function that correlates the **names** of a **product_definition_relationship** to elements of product data.

EXPRESS specification:

```

*)
RULE product_definition_relationship_constraint FOR
    (product_definition_relationship);
WHERE
    WR1:  SIZEOF(QUERY(p <* product_definition_relationship |

```

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```
NOT(product_definition_relationship_correlation(p))
)
) = 0;
END_RULE;
(*
```

Argument definitions:

product_definition_relationship: the set of all instances of the **product_definition_relationship** entity.

Formal propositions:

WR1: For each instance of **product_definition_relationship**, the **product_definition_relationship_correlation** function that correlates the names of a **product_definition_relationship** to elements of product data shall be satisfied.

5.2.3.86 product_requires_category

The **product_requires_category** rule specifies that each instance of **product** shall be referenced by at least one **product_related_product_category**.

EXPRESS specification:

```
*)
RULE product_requires_category FOR
    (product,
     product_related_product_category);
WHERE
    WR1: SIZEOF ( QUERY ( p <* product | SIZEOF ( USEDIN ( p ,
'ELECTROTECHNICAL DESIGN.PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS '
    ) ) =0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

product: the set of all instances of **product** entities.

product_related_product_category: the set of all instances of **product_related_product_category** entities.

Formal propositions:

WR1: Each instance of **product** shall be referenced by at least one instance of **product_related_product_category** in the role of **products**.

5.2.3.87 product_requires_person_organization

The **product_requires_person_organization** rule specifies that each instance of **product** that is referenced by an **product_related_product_category** with a **name** of 'accessory', 'part', or 'software'

shall be referenced by an instance of **applied_person_and_organization_assignment**. This rule enforces the requirement that for every Item (see 4.2.178) an owner shall be specified for its id.

EXPRESS specification:

```
*)
RULE product_requires_person_organization FOR
  (product);
WHERE
  WR1: SIZEOF ( QUERY ( prod <* product | ( SIZEOF ( QUERY ( prpc
    <* USEDIN ( prod ,
    'ELECTROTECHNICAL_DESIGN.PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS'
    ) | prpc.name IN ['accessory' , 'part' , 'software' ] ) )
    >0 ) AND ( SIZEOF ( QUERY ( apoa <* USEDIN ( prod ,
    'ELECTROTECHNICAL_DESIGN.'+
    'APPLIED_PERSON_AND_ORGANIZATION_ASSIGNMENT.ITEMS'
    ) | apoa\ person_and_organization_assignment.role.name<>
    'id owner' ) ) =1 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

product: the set of all instances of **product**.

Formal propositions:

WR1: Each instance of **product** that is referenced by an **product_related_product_category** with a **name** of 'accessory', 'part', or 'software' is contained in the set of **items** of exactly one **applied_person_and_organization_assignment** which references as its role an **person_and_organization_role** with a **name** of 'id owner'.

5.2.3.88 product_requires_version

The **product_requires_version** rule ensures that each instance of **product** is referenced by at least one instance of **product_definition_formation**.

EXPRESS specification:

```
*)
RULE product_requires_version FOR
  (product);
WHERE
  WR1: SIZEOF ( QUERY ( prod <* product | ( SIZEOF ( USEDIN (
    prod ,
    'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION_FORMATION.'+
    'OF_PRODUCT' ) ) =0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

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product: the set of all instances of **product** entities.

Formal propositions:

WR1: For each instance of **product**, there shall be one or more instances of **product_definition_formation** that reference it in the role of the **of_product**.

5.2.3.89 property_definition_constraint

The **property_definition_constraint** rule ensures that each instance of **property_definition** satisfies the **property_definition_correlation** function that correlates the **names** of a **property_definition** to elements of product data.

EXPRESS specification:

```
*)
RULE property_definition_constraint FOR
  (property_definition);
WHERE
  WR1:  SIZEOF(QUERY(p <* property_definition |
                    NOT(property_definition_correlation(p)) )
            ) = 0;
END_RULE;
(*
```

Argument definitions:

property_definition: the set of all instances of the **property_definition** entity.

Formal propositions:

WR1: For each instance of **property_definition**, the **property_definition_correlation** function that correlates the **names** of a **property_definition** to elements of product data shall be satisfied.

5.2.3.90 property_definition_relationship_constraint

The **property_definition_relationship_constraint** rule ensures that each instance of **property_definition_relationship** satisfies the **property_definition_relationship_correlation** function that correlates the **names** of a **property_definition_relationship** to elements of product data.

EXPRESS specification:

```
*)
RULE property_definition_relationship_constraint FOR
  (property_definition_relationship);
WHERE
  WR1:  SIZEOF(QUERY(p <* property_definition_relationship |
                    NOT(property_definition_relationship_correlation(p)) )
            ) = 0;
END_RULE;
(*
```

Argument definitions:

property_definition_relationship: the set of all instances of the **property_definition_relationship** entity.

Formal propositions:

WR1: For each instance of **property_definition_relationship**, the **property_definition_relationship_correlation** function that correlates the **names** of a **property_definition_relationship** to elements of product data shall be satisfied.

5.2.3.91 property_definition_representation_constraint

The **property_definition_representation_constraint** rule ensures that each instance of **property_definition_representation** satisfies the **property_definition_representation_correlation** function that correlates the **names** of a **property_definition_representation** to elements of product data.

EXPRESS specification:

```

*)
RULE property_definition_representation_constraint FOR
    (property_definition_representation);
WHERE
    WR1:  SIZEOF(QUERY(p <* property_definition_representation |
NOT(property_definition_representation_correlation(p)) )
    ) = 0;
END_RULE;
(*

```

Argument definitions:

property_definition_representation: the set of all instances of the **property_definition_representation** entity.

Formal propositions:

WR1: For each instance of **property_definition_representation**, the **property_definition_representation_correlation** function that correlates the **names** of a **property_definition_representation** to elements of product data shall be satisfied.

5.2.3.92 property_reference_requires_name_scope

The **property_reference_requires_name_scope** rule specifies that each instance of **externally_defined_general_property** that has as its source a **known_source** is referenced as the **relating_item** by exactly one instance of **externally_defined_item_relationship** which has a **name** of 'name scope' and which references as the **related_item** an **externally_defined_class** that has as its source a **known_source**.

This rule enforces the requirement for every **property_reference** to have a **name_scope**.

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EXPRESS specification:

```
*)
RULE property_reference_requires_name_scope FOR
  (externally_defined_general_property);
WHERE
  WR1: SIZEOF ( QUERY ( edgp <*
    externally_defined_general_property | (
      'ELECTROTECHNICAL_DESIGN.'+ 'KNOWN_SOURCE' IN TYPEOF ( edgp.
      source ) ) AND ( SIZEOF ( QUERY ( edir <* USEDIN ( edgp ,
      'ELECTROTECHNICAL_DESIGN.'+'EXTERNALLY_DEFINED_ITEM_RELATIONSHIP.'+
      'RELATING_ITEM' ) | ( edir. name = 'name_scope' ) AND (
      'ELECTROTECHNICAL_DESIGN.'+ 'EXTERNALLY_DEFINED_CLASS' IN
      TYPEOF
      ( edir. related_item ) ) AND ( 'ELECTROTECHNICAL_DESIGN.'+
      'KNOWN_SOURCE' IN TYPEOF ( edir. related_item.source ) ) )
      ) <>1 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

externally_defined_general_property: the set of all instances of **externally_defined_general_property**.

Formal propositions:

WR1: Each instance of **externally_defined_general_property** that has as its source a **known_source** is referenced as the **relating_item** by exactly one instance of **externally_defined_item_relationship** which has a **name** of 'name_scope' and which references as the **related_item** an **externally_defined_class** that has as its source a **known_source**.

5.2.3.93 property_reference_requires_version

The **property_reference_requires_version** rule specifies that each instance of **externally_defined_general_property** that has as its source a **known_source** is contained in the set of **items** of exactly one **applied_external_identification_assignment** which references as its **role** an **identification_role** with a **name** of 'version'. This rule enforces the requirement for every **Property_reference** (see 4.2.275) to have a version.

EXPRESS specification:

```
*)
RULE property_reference_requires_version FOR
  (externally_defined_general_property);
WHERE
  WR1: SIZEOF ( QUERY ( edgp <*
    externally_defined_general_property | (
      'ELECTROTECHNICAL_DESIGN.'+ 'KNOWN_SOURCE' IN TYPEOF ( edgp.
      source ) ) AND ( SIZEOF ( QUERY ( edir <* USEDIN ( edgp ,
      'ELECTROTECHNICAL_DESIGN.'+
      'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.'+
      'ITEMS' ) | ( edir. role.name = 'version' ) ) ) <>1 ) ) )
```

```

    =0;
END_RULE;
(*

```

Argument definitions:

externally_defined_general_property: the set of all instances of **externally_defined_general_property**.

Formal propositions:

WR1: Each instance of **externally_defined_general_property** that has as its **source** a **known_source** is contained in the set of **items** of exactly one **applied_external_identification_assignment** which references as its **role** an **identification_role** with a **name** of 'version'.

5.2.3.94 reference_grid_layout_usage

The **reference_grid_layout_usage** rule ensures that a **reference_grid_layout** is mapped as one of the items of either a **drawing_sheet_revision** or a **presentation_view**.

EXPRESS specification:

```

*)
RULE reference_grid_layout_usage FOR
    (mapped_item);
WHERE
    WR1:  SIZEOF(QUERY(rgl <* QUERY(mi <* mapped_item |
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_LAYOUT'
        IN
        TYPEOF(mi\mapped_item.mapping_source.
            mapped_representation) ) |
        NOT(SIZEOF(USEDIN(rgl, ''))
            =
            SIZEOF(QUERY(items <* USEDIN(rgl,
                'ELECTROTECHNICAL_DESIGN.' +
                'REPRESENTATION.' +
                'ITEMS') |
                SIZEOF(TYPEOF(items) *
                ['ELECTROTECHNICAL_DESIGN.' +
                'DRAWING_SHEET_REVISION',
                'ELECTROTECHNICAL_DESIGN.' +
                'PRESENTATION_VIEW']
            ) = 1 ) ) ) )
    ) = 0;
END_RULE;
(*

```

Argument definitions:

mapped_item: the set of all instances of the **mapped_item** entity.

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Formal propositions:

WR1: Each **mapped_item** that is the mapping of a **reference_grid_layout** shall be one of the items in either a **drawing_sheet_revision** or a **presentation_view**.

5.2.3.95 **representation_constraint**

The **representation_constraint** (see 5.2.3.95) rule ensures that each instance of **representation** satisfies the **representation_correlation** function that correlates the **names** of a **representation** to elements of product data.

EXPRESS specification:

```
*)
RULE representation_constraint FOR
  (representation);
WHERE
  WR1:  SIZEOF(QUERY(r <* representation |
                    NOT(representation_correlation(r)) )
            ) = 0;
END_RULE;
(*
```

Argument definitions:

representation: the set of all instances of the **representation** entity.

Formal propositions:

WR1: For each instance of **representation**, the **representation_correlation** function that correlates the **names** of a **representation** to elements of product data shall be satisfied.

5.2.3.96 **representation_item_constraint**

The **representation_item_constraint** rule ensures that each instance of **representation_item** satisfies the **representation_item_correlation** function that correlates the **names** of a **representation_item** to elements of product data.

EXPRESS specification:

```
*)
RULE representation_item_constraint FOR
  (representation_item);
WHERE
  WR1:  SIZEOF(QUERY(r <* representation_item |
                    NOT(representation_item_correlation(r)) )
            ) = 0;
END_RULE;
(*
```

Argument definitions:

representation_item: the set of all instances of the **representation_item** entity.

Formal propositions:

WR1: For each instance of **representation_item**, the **representation_item_correlation** function that correlates the **names** of a **representation_item** to elements of product data shall be satisfied.

5.2.3.97 representation_item_subtype_exclusiveness

The **representation_item_subtype_exclusiveness** rule specifies constraints restricting the complex instantiations allowed for instances of **representation_item**.

EXPRESS specification:

```

*)
RULE representation_item_subtype_exclusiveness FOR
  (representation_item);
WHERE
  WR1:  SIZEOF(QUERY(r <* representation_item |
    SIZEOF(TYPEOF(r) *
      ['ELECTROTECHNICAL_DESIGN.COMPOUND_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.DESRIPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM']
    ) > 1
  )) = 0;
  WR2:  SIZEOF(QUERY(r <* representation_item |
    SIZEOF(TYPEOF(r) *
      ['ELECTROTECHNICAL_DESIGN.COMPOUND_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.DESRIPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.TOPOLOGICAL_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM']
    ) > 1
  )) = 0;
  WR3:  SIZEOF(QUERY(r <* representation_item |
    SIZEOF(TYPEOF(r) *
      ['ELECTROTECHNICAL_DESIGN.COMPOUND_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.DESRIPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM',
'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.TOPOLOGICAL_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM']
    ) > 1
  )) = 0;
END_RULE;
(*

```

Argument definitions:

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representation_item: the set of all instances of **representation_item** entities.

Formal propositions:

WR1: Each instance of **representation_item** shall be an instance of at most one of its subtypes **compound_representation_item**, **descriptive_representation_item**, **geometric_representation_item**, **measure_representation_item**, or **value_representation_item**.

WR2: Each instance of **representation_item** shall be an instance of at most one of its subtypes **compound_representation_item**, **descriptive_representation_item**, **measure_representation_item**, **topological_representation_item**, or **value_representation_item**.

WR3: Each instance of **representation_item** shall be an instance of at most one of its subtypes **compound_representation_item**, **descriptive_representation_item**, **mapped_item**, **measure_representation_item**, **topological_representation_item**, or **value_representation_item**.

5.2.3.98 representation_relationship_constraint

The **representation_relationship_constraint** rule ensures that each instance of **representation_relationship** satisfies the **representation_relationship_correlation** function that correlates the **names** of a **representation_relationship** to elements of product data.

EXPRESS specification:

```
*)
RULE representation_relationship_constraint FOR
  (representation_relationship);
WHERE
  WR1:  SIZEOF(QUERY(r <* representation_relationship |
                    NOT(representation_relationship_correlation(r)) )
            ) = 0;
END_RULE;
(*
```

Argument definitions:

representation_relationship: the set of all instances of the **representation_relationship** entity.

Formal propositions:

WR1: For each instance of **representation_relationship**, the **representation_relationship_correlation** function that correlates the **names** of a **representation_relationship** to elements of product data shall be satisfied.

5.2.3.99 representation_subtype_exclusiveness

The **representation_subtype_exclusiveness** rule specifies that each instance of **representation** shall be an instance of at most one of its subtypes **draughting_model**, **note_representation**, **presentation_representation**, **reference_grid_representation**, or **shape_representation**.

EXPRESS specification:

```
*)
```

```

RULE representation_subtype_exclusiveness FOR
  (representation);
WHERE
  WR1:  SIZEOF(QUERY(r <* representation |
          SIZEOF(TYPEOF(r) *
                ['ELECTROTECHNICAL_DESIGN.' +
                 'DRAUGHTING_MODEL',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'NOTE_REPRESENTATION',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'PRESENTATION_REPRESENTATION',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'REFERENCE_GRID_REPRESENTATION',
                 'ELECTROTECHNICAL_DESIGN.' +
                 'SHAPE_REPRESENTATION']
          ) > 1 )
        ) = 0;
END_RULE;
(*

```

Argument definitions:

representation: the set of all instances of **representation** entities.

Formal propositions:

WR1: Each instance of **representation** shall be an instance of at most one of its subtypes **draughting_model**, **note_representation**, **presentation_representation**, **reference_grid_representation**, or **shape_representation**.

5.2.3.100 restrict_alternative_definition

The **restrict_alternative_definition** rule specifies the restrictions that apply to **product_definitions** which reference as **frame_of_reference** a **product_definition_context** with a **name** of 'alternative definition'.

EXPRESS specification:

```

*)
RULE restrict_alternative_definition FOR
  (product_definition,
   product_definition_context);
WHERE
  WR1: SIZEOF ( QUERY ( pd <* product_definition | ( pd.
    frame_of_reference.name = 'alternative definition' ) AND (
    SIZEOF ( QUERY ( pdr <* USEDIN ( pd ,
    'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION_RELATIONSHIP.'+
    'RELATED_PRODUCT_DEFINITION' ) | pdr.name =
    'solution alternative definition' ) ) <>1 ) ) ) =0;
  WR2: SIZEOF ( QUERY ( pd <* product_definition | ( pd.
    frame_of_reference.name = 'alternative definition' ) AND
    NOT ( pd.name IN ['technical' , 'supplier' , 'final' ,
    'technical supplier' , 'technical final' , 'supplier final'
    , 'technical supplier final' , ''] ) ) ) =0;

```

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```
WR3: SIZEOF ( QUERY ( pd <* product_definition | ( pd.
  frame_of_reference.name = 'alternative definition' ) AND (
  pd.name IN ['supplier', 'technical supplier',
  'supplier final', 'technical supplier final' ] ) AND (
  SIZEOF ( QUERY ( aoa <* USEDIN ( pd ,
  'ELECTROTECHNICAL_DESIGN.'+'APPLIED_ORGANIZATION_ASSIGNMENT.'+
  'ITEMS' ) | aoa.role.name = 'supplier' ) ) <>1 ) ) ) =0;
WR4: SIZEOF ( QUERY ( pd <* product_definition | ( pd.
  frame_of_reference.name = 'alternative definition' ) AND (
  pd.name IN ['final', 'technical final', 'supplier final',
  'technical supplier final' ] ) AND ( SIZEOF ( QUERY ( pdr
  <* USEDIN ( pd ,
  'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION_RELATIONSHIP.'+
  'RELATING_PRODUCT_DEFINITION' ) | pdr.name =
  'final specification' ) ) =0 ) AND ( SIZEOF ( QUERY ( pd <*
  USEDIN ( pd ,
  'ELECTROTECHNICAL_DESIGN.'+'PROPERTY_DEFINITION.'+
  'DEFINITION' ) | SIZEOF ( QUERY ( pdr <* USEDIN ( pd ,
  'ELECTROTECHNICAL_DESIGN.'+'PROPERTY_DEFINITION_REPRESENTATION.'+
  'DEFINITION' ) | ( pdr.used_representation.name =
  'final item characteristics' ) AND ( SIZEOF ( QUERY ( i <*
  pdr.used_representation.items | 'ELECTROTECHNICAL_DESIGN.'+
  'DESCRIPTIVE_REPRESENTATION_ITEM' IN TYPEOF ( i ) ) ) =
  SIZEOF ( pdr.used_representation.items ) ) AND ( SIZEOF (
  pdr.used_representation.items ) >=2 ) AND ( SIZEOF ( QUERY
  ( i <* pdr.used_representation.items | i.name =
  'final item status' ) ) =1 ) ) ) >0 ) ) =0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

product_definition: the set of all instances of **product_definition**.

product_definition_context: the set of all instances of **product_definition_context**.

Formal propositions:

WR1: Each instance of **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'alternative definition' shall participate as the **related_product_definition** in exactly one **product_definition_relationship** with a **name** of 'solution alternative definition'.

WR2: Each instance of **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'alternative definition' shall have a **name** of 'technical', 'supplier', 'final', 'technical supplier', 'technical final', 'supplier final', 'technical supplier final', or “.

WR3: Each instance of **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'alternative definition' and which has a **name** of 'supplier', 'technical supplier', 'supplier final', or 'technical supplier final' shall be in the set of **items**

of exactly one **applied_organization_assignment** which has as **role** an **organization_role** with a **name** of 'supplier'.

WR4: Each instance of **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'alternative definition' and which has a **name** of 'final', 'technical final', 'supplier final', or 'technical supplier final' shall either participate as the **relating_product_definition** in at least one **product_definition_relationship** with a **name** of 'final specification', or shall be referenced by a **property_definition** which is referenced as **definition** by a **property_definition_representation** which has as **used_representation** a **representation** which has a **name** of 'final item characteristics'. This **representation** shall only contain **representation_items** in its set of **items** which are of type **descriptive_representation_item**. This **representation** shall contain at least two **representation_items** in its set of **items**. One **representation_item** shall have a **name** of 'final item status'.

5.2.3.101 restrict_applied_action_assignment

The **restrict_applied_action_assignment** rule enforces the correct correlation between the types of items in the set of **items** of an **applied_action_assignment** and the type of the **assigned_action**, and its associated **object_role**.

EXPRESS specification:

```

*)
RULE restrict_applied_action_assignment FOR
  (applied_action_assignment,
   object_role);
WHERE
WR1: SIZEOF ( QUERY ( aaa <* applied_action_assignment | ( aaa.
  role.description = 'activity element' ) AND NOT (
  'ELECTROTECHNICAL_DESIGN.'+ 'EXECUTED_ACTION' IN TYPEOF ( aaa.
  assigned_action ) ) ) ) =0;
WR2: SIZEOF ( QUERY ( aaa <* applied_action_assignment | ( aaa.
  role.description = 'activity element' ) AND NOT
  item_correlation ( aaa. items , ['ACTION' , 'ACTION_METHOD'
  , 'ACTION_PROPERTY' , 'ASSEMBLY_COMPONENT_USAGE_SUBSTITUTE'
  , 'CONFIGURATION_ITEM' , 'CONFIGURATION_EFFECTIVITY' ,
  'CONFIGURED_EFFECTIVITY_ASSIGNMENT' , 'DOCUMENT_FILE' ,
  'DRAUGHTING_MODEL' , 'DRAWING_REVISION' ,
  'GENERAL_PROPERTY' , 'PRESENTATION_AREA' , 'PRODUCT' ,
  'PRODUCT_CONCEPT' , 'PRODUCT_CONCEPT_FEATURE' ,
  'PRODUCT_CONCEPT_FEATURE_ASSOCIATION' ,
  'PRODUCT_CONCEPT_FEATURE_CATEGORY' ,
  'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE' ,
  'PRODUCT_DEFINITION' , 'PRODUCT_DEFINITION_FORMATION' ,
  'PRODUCT_DEFINITION_RELATIONSHIP' ,
  'PRODUCT_DEFINITION_SUBSTITUTE' , 'PROPERTY_DEFINITION' ,
  'SHAPE_ASPECT' , 'SHAPE_REPRESENTATION'] ) ) ) =0;
WR3: SIZEOF ( QUERY ( aaa <* applied_action_assignment | ( NOT
  EXISTS ( aaa. role ) OR ( aaa. role.description =
  'activity element' ) ) AND ( SIZEOF ( QUERY ( i <* aaa.
  items | 'ELECTROTECHNICAL_DESIGN.'+ 'APPLIED_ACTION_ASSIGNMENT'
  IN TYPEOF ( i ) ) ) >0 ) ) ) =0;
WR4: SIZEOF ( QUERY ( aaa <* applied_action_assignment | ( aaa.
  role.name = 'retention' ) AND NOT ( 'ELECTROTECHNICAL_DESIGN.'+

```

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```
'RETENTION' IN TYPEOF ( aaa. assigned_action ) ) ) =0;
WR5: SIZEOF ( QUERY ( aaa <* applied_action_assignment | ( aaa.
role.name = 'retention' ) AND NOT item_correlation ( aaa.
items , ['ACTION' , 'ACTION_DIRECTIVE' , 'ACTION_PROPERTY'
, 'ACTION_RELATIONSHIP' , 'APPLIED_ACTION_ASSIGNMENT' ,
'APPLIED_CLASSIFICATION_ASSIGNMENT' ,
'ASSEMBLY_COMPONENT_USAGE_SUBSTITUTE' , 'CERTIFICATION' ,
'CLASS_SYSTEM' , 'CONFIGURATION_EFFECTIVITY' ,
'CONFIGURATION_ITEM' , 'CONFIGURED_EFFECTIVITY_ASSIGNMENT'
, 'DOCUMENT_FILE' , 'DRAUGHTING_MODEL' , 'DRAWING_REVISION'
, 'GENERAL_PROPERTY' , 'ORGANIZATIONAL_PROJECT' ,
'PRESENTATION_AREA' , 'PRODUCT' , 'PRODUCT_CONCEPT' ,
'PRODUCT_CONCEPT_FEATURE' ,
'PRODUCT_CONCEPT_FEATURE_ASSOCIATION' ,
'PRODUCT_CONCEPT_FEATURE_CATEGORY' ,
'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE' ,
'PRODUCT_DEFINITION' , 'PRODUCT_DEFINITION_FORMATION' ,
'PRODUCT_DEFINITION_RELATIONSHIP' ,
'PRODUCT_DEFINITION_SUBSTITUTE' , 'PROPERTY_DEFINITION' ,
'SHAPE_REPRESENTATION' ,
'VERSIONED_ACTION_REQUEST'] ) ) ) =0;
WR6: SIZEOF ( QUERY ( aaa <* applied_action_assignment | ( aaa.
role.name = 'test activity' ) AND NOT item_correlation (
aaa. items , ['PROPERTY_DEFINITION'] ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

applied_action_assignment: the set of all instances of **applied_action_assignment**.

object_role: the set of all instances of **object_role**.

Formal propositions:

WR1: If the **applied_action_assignment** has an associated **object_role** with a **description** of 'activity element', the **assigned_action** shall be of type **executed_action**.

WR2: If the role has a description of 'activity element', only items of type **action**, **action_method**, **action_property**, **assembly_component_usage_substitute**, **configuration_item**, **configuration_effectivity**, **configured_effectivity_assignment**, **document_file**, **draughting_model**, **drawing_revision**, **general_property**, **presentation_area**, **product**, **product_concept**, **product_concept_feature**, **product_concept_feature_association**, **product_concept_feature_category**, **product_concept_feature_category_usage**, **product_definition**, **product_definition_formation**, **product_definition_relationship**, **product_definition_substitute**, **property_definition**, **shape_aspect**, or **shape_representation** shall be in the set of **items**.

WR3: If the **applied_action_assignment** has no associated **object_role** or has an associated **object_role** with a **description** of 'activity element', the set of **items** shall not contain items of type **applied_action_assignment**.

WR4: If the **applied_action_assignment** has an associated **object_role** with a **name** of 'retention', the **assigned_action** shall be of type **retention**.

WR5: If the **role** has a **name** of 'retention', only items of type **action**, **action_directive**, **action_property**, **action_relationship**, **applied_action_assignment**, **applied_classification_assignment**, **assembly_component_usage_substitute**, **certification**, **class_system**, **configuration_effectivity**, **configuration_item**, **configured_effectivity_assignment**, **document_file**, **draughting_model**, **drawing_revision**, **general_property**, **organizational_project**, **presentation_area**, **product**, **product_concept**, **product_concept_feature**, **product_concept_feature_association**, **product_concept_feature_category**, **product_concept_feature_category_usage**, **product_definition**, **product_definition_formation**, **product_definition_relationship**, **product_definition_substitute**, **property_definition**, **shape_representation**, or **versioned_action_request** shall be in the set of **items**.

WR6: If the **role** has a **name** of 'test activity', only items of type **property_definition** shall be in the set of **items**.

5.2.3.102 restrict_applied_action_request_assignment

The **restrict_applied_action_request_assignment** rule enforces the correct correlation between the types of items in the set of **items** of an **applied_action_request_assignment** and its associated **object_role**.

EXPRESS specification:

```

*)
RULE restrict_applied_action_request_assignment FOR
  (applied_action_request_assignment,
   object_role);
WHERE
  WR1: SIZEOF ( QUERY ( aara <* applied_action_request_assignment
    | aara.role.name<>'scope' ) ) =0;
END_RULE;
(*

```

Argument definitions:

applied_action_request_assignment: the set of all instances of **applied_action_request_assignment**.

object_role: the set of all instances of **object_role**

Formal propositions:

WR1: The **applied_action_request_assignment** shall only be referenced by **object_role** instances that have a **name** of 'scope'.

5.2.3.103 restrict_applied_classification_assignment_role

The **restrict_applied_classification_assignment_role** rule ensures the correct correlation between the **assigned_class** of the **applied_classification_assignment** and the **name** of the **classification_role** referenced as the **role**.

EXPRESS specification:

```

*)
RULE restrict_applied_classification_assignment_role FOR
  (applied_classification_assignment);
WHERE
  WR1: SIZEOF ( QUERY ( aca <* applied_classification_assignment
    | ( 'ELECTROTECHNICAL_DESIGN.'+ 'CLASS' IN TYPEOF ( aca.
      assigned_class ) ) AND NOT ( aca.role.name IN
        ['definitional' , 'nondefinitional' , '' ] ) ) ) ) =0;
  WR2: SIZEOF ( QUERY ( aca <* applied_classification_assignment
    | ( aca.role.name IN ['definitional' , 'nondefinitional'
      , '' ] ) AND NOT ( 'ELECTROTECHNICAL_DESIGN.'+ 'CLASS' IN TYPEOF
    (
      aca.assigned_class ) ) ) ) ) =0;
  WR3: SIZEOF ( QUERY ( aca <* applied_classification_assignment
    | ( 'ELECTROTECHNICAL_DESIGN.'+ 'CLASS_SYSTEM' IN TYPEOF ( aca.
      assigned_class ) ) AND ( aca.role.name<>
      'class system membership' ) ) ) ) =0;
  WR4: SIZEOF ( QUERY ( aca <* applied_classification_assignment
    | ( aca.role.name = 'class system membership' ) AND NOT (
      'ELECTROTECHNICAL_DESIGN.'+ 'CLASS_SYSTEM' IN TYPEOF ( aca.
      assigned_class ) ) ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

applied_classification_assignment: the set of all instances of **applied_classification_assignment**.

Formal propositions:

WR1: If the **assigned_class** of an **applied_classification_assignment** is of type **class**, the **classification_role** referenced by the **role** attribute has a value of either 'definitional', 'nondefinitional', or "".

WR2: If an **applied_classification_assignment** references as its **role** a **classification_role** with a **name** of either 'definitional', 'nondefinitional', or "", the **assigned_class** shall be of type **class**.

WR3: If the **assigned_class** of an **applied_classification_assignment** is of type **class_system**, the **classification_role** referenced by the **role** attribute has a value of 'class system membership'.

WR4: If an **applied_classification_assignment** references as its **role** a **classification_role** with a **name** of 'class system membership', the **assigned_class** shall be of type **class_system**.

5.2.3.104 restrict_applied_event_occurrence_assignment

The **restrict_applied_event_occurrence_assignment** rule ensures that each instance of **applied_event_occurrence_assignment** that provides the context for an **event_occurrence** contains exactly one element in its set of **items**.

EXPRESS specification:

```
*)
RULE restrict_applied_event_occurrence_assignment FOR
  (applied_event_occurrence_assignment);
WHERE
  WR1: SIZEOF ( QUERY ( eo <* applied_event_occurrence_assignment
    | ( eo\ event_occurrence_assignment.role.name =
      'event context' ) AND ( SIZEOF ( eo.items ) >1 ) ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

applied_event_occurrence_assignment: the set of all instances of **applied_event_occurrence_assignment**.

Formal propositions:

WR1: Each **applied_event_occurrence_assignment** that has a **role** with a **name** of 'event context' shall contain exactly one element in its set of **items**.

5.2.3.105 restrict_applied_organizational_project_assignment

The **restrict_applied_organizational_project_assignment** rule enforces the correct correlation between the types of **items** in the set of **items** of an **applied_organizational_project_assignment** and its associated **object_role**.

EXPRESS specification:

```
*)
RULE restrict_applied_organizational_project_assignment FOR
  (applied_organizational_project_assignment,
  object_role);
WHERE
  WR1: SIZEOF ( QUERY ( aopa <*
    applied_organizational_project_assignment | ( aopa.
    role.name = 'affecting project' ) AND NOT item_correlation
    ( aopa.items , ['PRODUCT_CONCEPT'] ) ) ) ) =0;
  WR2: SIZEOF ( QUERY ( aopa <*
    applied_organizational_project_assignment | ( aopa.
    role.name = 'work program' ) AND NOT item_correlation (
    aopa.items , ['EXECUTED_ACTION'] ) ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

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applied_organizational_project_assignment: the set of all instances of **applied_organizational_project_assignment**

object_role: the set of all instances of **object_role**

Formal propositions:

WR1: If the **role** has a **name** of 'affecting project', only items of type **product_concept** shall be in the set of **items**.

WR2: If the **role** has a **name** of 'work program', only items of type **executed_action** shall be in the set of **items**.

5.2.3.106 restrict_camera_image_in_view

The **restrict_camera_image_in_view** rule ensures that each **camera_image** is contained in exactly one **presentation_view** and that each **presentation_view** contains at most one **camera_image**. For more information see definition of application objects **Model_image** and **View**.

EXPRESS specification:

```
*)
RULE restrict_camera_image_in_view FOR
  (camera_image,
   presentation_view);
WHERE
  WR1: SIZEOF ( QUERY ( ci <* camera_image | ( SIZEOF ( QUERY ( r
    <* USEDIN ( ci , 'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS '
  )
    | ( 'ELECTROTECHNICAL_DESIGN.'+ 'PRESENTATION_VIEW' IN TYPEOF ( r
  ) ) ) ) ) <>1 ) ) =0;
  WR2: SIZEOF ( QUERY ( pv <* presentation_view | ( SIZEOF (
    QUERY ( ri <* pv\ representation.items |
    'ELECTROTECHNICAL_DESIGN.'+ 'CAMERA_IMAGE' IN TYPEOF ( ri ) ) )
  )
  >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

camera_image: the set of all instances of **camera_image**.

presentation_view: the set of all instances of **presentation_view**.

Formal propositions:

WR1: Each **camera_image** shall be included in exactly one **presentation_view**.

WR2: Each **presentation_view** shall contain at most one **camera_image**.

5.2.3.107 restrict_class_system_assignment_for_approval_status

The **restrict_class_system_assignment_for_approval_status** rule specifies that each instance of **approval_status** shall be referenced by at most one instance of **applied_classification_assignment** that specifies the classification system for the **approval_status**.

EXPRESS specification:

```

*)
RULE restrict_class_system_assignment_for_approval_status FOR
  (applied_classification_assignment,
   approval_status);
WHERE
  WR1: SIZEOF ( QUERY ( ent <* approval_status | SIZEOF ( QUERY (
    ia <* USEDIN ( ent ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_CLASSIFICATION_ASSIGNMENT.'+
      'ITEMS' ) | ia. role.name = 'class system membership' ) )
    >1 ) ) =0;
END_RULE;
(*

```

Argument definitions:

applied_classification_assignment: the set of all instances of **applied_classification_assignment**.

approval_status: The set of all instances of **approval_status**.

Formal propositions:

WR1: For each instance of **approval_status** there shall be only at most one instance of **applied_classification_assignment** with a role name of 'class system membership'.

5.2.3.108 restrict_class_system_assignment_for_class

The **restrict_class_system_assignment_for_class** rule specifies that each instance of **class** shall be referenced by at most one instance of **applied_classification_assignment** that specifies the classification system for the **class**.

EXPRESS specification:

```

*)
RULE restrict_class_system_assignment_for_class FOR
  (applied_classification_assignment,
   class);
WHERE
  WR1: SIZEOF ( QUERY ( c <* class | SIZEOF ( QUERY ( aca <*
    USEDIN ( c ,
    'ELECTROTECHNICAL_DESIGN.'+'CLASSIFICATION_ASSIGNMENT.'+
      'ASSIGNED_CLASS' ) | ( ( aca. role.name =
      'class system membership' ) AND ( 'ELECTROTECHNICAL_DESIGN.'+
      'APPLIED_CLASSIFICATION_ASSIGNMENT' IN TYPEOF ( aca ) ) ) )
    ) >1 ) ) =0;
END_RULE;
(*

```

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Argument definitions:

applied_classification_assignment: the set of all instances of **applied_classification_assignment**.

class: the set of all instances of **class**.

Formal propositions:

WR1: For each instance of **class** there shall be only at most one instance of **applied_classification_assignment** with a role name of 'class system membership' that references that instance of **class**.

5.2.3.109 restrict_class_system_assignment_for_document_type

The **restrict_class_system_assignment_for_document_type** rule specifies that each instance of **document_type** shall be referenced by at most one instance of **applied_classification_assignment** that specifies the classification system for the **document_type**.

EXPRESS specification:

```
*)
RULE restrict_class_system_assignment_for_document_type FOR
    (applied_classification_assignment,
     document_type);
WHERE
    WR1: SIZEOF ( QUERY ( ent <* document_type | SIZEOF ( QUERY (
        ia <* USEDIN ( ent ,
        'ELECTROTECHNICAL DESIGN.'+'APPLIED_CLASSIFICATION_ASSIGNMENT.'+
        'ITEMS' ) | ia. role.name = 'class system membership' ) )
        >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

applied_classification_assignment: the set of all instances of **applied_classification_assignment**.

document_type: The set of all instances of **document_type**.

Formal propositions:

WR1: For each instance of **document_type** there shall be only at most one instance of **applied_classification_assignment** with a role name of 'class system membership'.

5.2.3.110 restrict_class_system_assignment_for_planar_extent

The **restrict_class_system_assignment_for_planar_extent** rule specifies that each instance of **planar_extent** with a **name** of 'size format' shall be referenced by at most one instance of **applied_classification_assignment** that specifies the referenced standard for the application object **Named_size**.

EXPRESS specification:

```

*)
RULE restrict_class_system_assignment_for_planar_extent FOR
  (applied_classification_assignment,
   planar_extent);
WHERE
  WR1: SIZEOF ( QUERY ( pe <* planar_extent | ( pe\
    representation_item.name = 'size format' ) AND ( SIZEOF (
    QUERY ( aca <* USEDIN ( pe ,
    'ELECTROTECHNICAL_DESIGN.APPLIED_CLASSIFICATION_ASSIGNMENT.ITEMS'
      ) | aca\ classification_assignment.role.name =
      'class system membership' ) ) >1 ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

applied_classification_assignment: the set of all instances of **applied_classification_assignment**.

planar_extent: the set of all instances of **planar_extent**.

Formal propositions:

WR1: For each instance of **planar_extent** with a **name** of 'size format' there shall be at most one instance of **applied_classification_assignment** with a role name of 'class system membership'.

5.2.3.111 restrict_class_system_assignment_for_security_classification_level

The **restrict_class_system_assignment_for_security_classification_level** rule specifies that each instance of **security_classification_level** shall be referenced by at most one instance of **applied_classification_assignment** that specifies the classification system for the **security_classification_level**.

EXPRESS specification:

```

*)
RULE
restrict_class_system_assignment_for_security_classification_level
FOR
  (applied_classification_assignment,
   security_classification_level);
WHERE
  WR1: SIZEOF ( QUERY ( ent <* security_classification_level |
    SIZEOF ( QUERY ( ia <* USEDIN ( ent ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_CLASSIFICATION_ASSIGNMENT.'+
      'ITEMS' ) | ia.role.name = 'class system membership' ) )
      >1 ) ) =0;
END_RULE;
(*

```

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Argument definitions:

applied_classification_assignment: the set of all instances of **applied_classification_assignment**.

security_classification_level: The set of all instances of **security_classification_level**.

Formal propositions:

WR1: For each instance of **security_classification_level** there shall be only at most one instance of **applied_classification_assignment** with a role name of 'class system membership'.

5.2.3.112 restrict_concept_feature_operator

The **restrict_concept_feature_operator** rule restricts the **name** and usage of a **concept_feature_operator**.

EXPRESS specification:

```
*)
RULE restrict_concept_feature_operator FOR
  (concept_feature_operator);
WHERE
  WR1: SIZEOF ( QUERY ( cfo <* concept_feature_operator | NOT (
    cfo.name IN ['and', 'or', 'oneof', 'not',
    'implication'] ) ) ) =0;
  WR2: SIZEOF ( QUERY ( cfo <* concept_feature_operator | ( cfo.
    name = 'implication' ) AND ( SIZEOF ( QUERY ( cfrwc <*
    USEDIN ( cfo ,
    'ELECTROTECHNICAL_DESIGN.'+
    'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION.'+
    'CONDITIONAL_OPERATOR' ) | SIZEOF ( QUERY ( ccf <* USEDIN (
    cfrwc ,
    'ELECTROTECHNICAL_DESIGN.'+'CONDITIONAL_CONCEPT_FEATURE.'+
    'CONDITION' ) | NOT ( 'ELECTROTECHNICAL_DESIGN.'+
    'INCLUSION_PRODUCT_CONCEPT_FEATURE' IN TYPEOF ( ccf ) ) ) )
    >0 ) ) >0 ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

concept_feature_operator: the set of all instances of **concept_feature_operator**.

Formal propositions:

WR1: Each instance of **concept_feature_operator** shall have a **name** of 'and', 'or', 'oneof', 'not', or 'implication'.

WR2: If the **concept_feature_operator** has a **name** of 'implication', it shall only be referenced as **conditional_operator** by **concept_feature_relationship_with_condition** instances which are referenced as the **condition** by **conditional_concept_features** which are of type **inclusion_product_concept_feature**.

5.2.3.113 restrict_configuration_design_for_product_class

The **restrict_configuration_design_for_product_class** rule enforces the restrictions that apply to the usage of a **configuration_design** when it relates to a **configuration_item** which references as its **item_concept** a **product_class**.

EXPRESS specification:

```

*)
RULE restrict_configuration_design_for_product_class FOR
  (configuration_design,
   product_class);
WHERE
  WR1: SIZEOF ( QUERY ( cd <* configuration_design | ( cd.name
    = 'functionality' ) AND ( NOT ( 'ELECTROTECHNICAL_DESIGN.'+
    'PRODUCT_DEFINITION' IN TYPEOF ( cd.design ) ) OR ( cd.
    design\product_definition.frame_of_reference.name<>
    'functional definition' ) ) ) ) =0;
  WR2: SIZEOF ( QUERY ( cd <* configuration_design | ( cd.name
    = 'realization' ) AND ( NOT ( 'ELECTROTECHNICAL_DESIGN.'+
    'PRODUCT_DEFINITION' IN TYPEOF ( cd.design ) ) OR ( cd.
    design\product_definition.frame_of_reference.name<>
    'conceptual definition' ) ) ) ) =0;
  WR3: SIZEOF ( QUERY ( cd <* configuration_design | ( cd.name
    IN ['functionality' , 'realization'] ) AND ( NOT (
    'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_CLASS' IN TYPEOF ( cd.
    configuration.item_concept ) ) ) ) ) =0;
  WR4: SIZEOF ( QUERY ( cd <* configuration_design | (
    'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION' IN TYPEOF (
    cd.
    design ) ) AND ( cd.design\product_definition.
    frame_of_reference.name<> 'design constraint definition' )
    AND ( ( cd.configuration.name<> 'design constraint usage'
    ) OR NOT ( 'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_CLASS' IN
    TYPEOF
    ( cd.configuration.item_concept ) ) ) ) ) =0;
  WR5: SIZEOF ( QUERY ( cd <* configuration_design | ( cd.name =
    'physical instance basis' ) AND ( NOT (
    'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION' IN TYPEOF (
    cd.
    design ) ) OR ( cd.design\product_definition.
    frame_of_reference.name<> 'physical occurrence' ) ) ) ) =0;
  WR6: SIZEOF ( QUERY ( cd <* configuration_design | ( cd.name =
    'physical instance basis' ) AND ( NOT (
    'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_IDENTIFICATION' IN TYPEOF
    (
    cd.configuration ) ) ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

configuration_design: the set of all instances of **configuration_design**.

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product_class: the set of all instances of **product_class**.

Formal propositions:

WR1: Each instance of **configuration_design** which has a **name** of 'functionality' shall reference as **design** a **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'functional definition'.

WR2: Each instance of **configuration_design** which has a **name** of 'realization' shall reference as **design** a **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'conceptual definition'.

WR3: Each instance of **configuration_design** which has a **name** of 'functionality' or 'realization' shall reference as **configuration** a **configuration_item** which references as its **item_concept** a **product_class**.

WR4: Each instance of **configuration_design** which has as **design** a **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'design constraint definition' shall reference as **configuration** a **configuration_item** which has a **name** of 'design constraint usage' and which references as its **item_concept** a **product_class**.

WR5: Each instance of **configuration_design** which has a **name** of 'physical instance basis' shall reference as **design** a **product_definition** which references as its **frame_of_reference** a **product_definition_context** with a **name** of 'physical occurrence'.

WR6: Each instance of **configuration_design** which has a **name** of 'physical instance basis' shall reference as **configuration** a **configuration_item** of type **product_identification**.

5.2.3.114 **restrict draughting title for drawing sheet revision**

The **restrict draughting title for drawing sheet revision** rule ensures that each instance of **drawing_sheet_revision** can be referenced by at most one instance of **draughting_title**.

EXPRESS specification:

```
*)
RULE restrict_draughting_title_for_drawing_sheet_revision FOR
    (drawing_sheet_revision);
WHERE
    WR1:  SIZEOF(QUERY(d <* drawing_sheet_revision |
        SIZEOF(USEDIN(d, 'ELECTROTECHNICAL_DESIGN.' +
            'DRAUGHTING_TITLE.' +
            'ITEMS')
        ) > 1
    )) = 0;
END_RULE;
(*
```

Argument definitions:

drawing_sheet_revision: the set of all instances of **drawing_sheet_revision** entities.

Formal propositions:

WR1: Each instance of **drawing_sheet_revision** shall be referenced by at most one instance of **draughting_title** in the role of **items**.

5.2.3.115 restrict_effectivity_assignment_for_class_category_usage

The **restrict_effectivity_assignment_for_class_category_usage** rule restricts the usage of **product_concept_feature_category_usage** objects in an **applied_effectivity_assignment**.

EXPRESS specification:

```

*)
RULE restrict_effectivity_assignment_for_class_category_usage FOR
  (applied_effectivity_assignment,
   product_concept_feature_category_usage);
WHERE
  WR1: SIZEOF ( QUERY ( aea <* applied_effectivity_assignment | (
    ( SIZEOF ( QUERY ( i <* aea.items | (
      'ELECTROTECHNICAL_DESIGN.'+
      'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE' IN TYPEOF ( i ) )
    ) ) >0 ) OR ( SIZEOF ( QUERY ( i <* aea.items | (
      'ELECTROTECHNICAL_DESIGN.'+
      'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE' IN TYPEOF ( i ) )
    ) ) <> SIZEOF ( aea.items ) ) ) AND ( ( SIZEOF ( TYPEOF (
      aea.assigned_effectivity ) ) >1 ) OR ( aea.
      assigned_effectivity.id<> 'class usage' ) OR ( SIZEOF (
      QUERY ( cueca <* USEDIN ( aea ,
        'ELECTROTECHNICAL_DESIGN.'+'EFFECTIVITY_CONTEXT_ASSIGNMENT.'+
        'ASSIGNED_EFFECTIVITY_ASSIGNMENT' ) |
        'ELECTROTECHNICAL_DESIGN.'+
        'CLASS_USAGE_EFFECTIVITY_CONTEXT_ASSIGNMENT' IN TYPEOF (
          cueca ) ) ) =0 ) ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

applied_effectivity_assignment: the set of all instances of **applied_effectivity_assignment**.

product_concept_feature_category_usage: the set of all instances of **product_concept_feature_category_usage**.

Formal propositions:

WR1: An **applied_effectivity_assignment** which has a **product_concept_feature_category_usage** in its set of **items** may only have other **product_concept_feature_category_usage** objects in its set of **items**. It shall have an **assigned_effectivity** which is not of an **effectivity** subtype and which has an **id** of 'class usage' and it shall be the **assigned_effectivity_assignment** of a **class_usage_effectivity_context_assignment**.

5.2.3.116 restrict_effectivity_for_effectivity_relationship

The **restrict_effectivity_for_effectivity_relationship** rule restricts the types of **effectivity** that may participate in an **effectivity_relationship**.

EXPRESS specification:

```
*)
RULE restrict_effectivity_for_effectivity_relationship FOR
  (effectivity_relationship);
WHERE
  WR1: SIZEOF ( QUERY ( er <* effectivity_relationship | ( SIZEOF
    ( ['ELECTROTECHNICAL_DESIGN.'+ 'LOT_EFFECTIVITY' ,
      'ELECTROTECHNICAL_DESIGN.'+ 'SERIAL_NUMBERED_EFFECTIVITY' ,
      'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION_EFFECTIVITY'])*
    TYPEOF ( er. relating_effectivity ) ) >0 ) OR ( SIZEOF (
    ['ELECTROTECHNICAL_DESIGN.'+ 'LOT_EFFECTIVITY' ,
      'ELECTROTECHNICAL_DESIGN.'+ 'SERIAL_NUMBERED_EFFECTIVITY' ,
      'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_DEFINITION_EFFECTIVITY'])*
    TYPEOF ( er. related_effectivity ) ) >0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

effectivity_relationship: the set of all instances of **effectivity_relationship**.

Formal propositions:

WR1: The **relating_effectivity** and the **related_effectivity** of an **effectivity_relationship** may not be of type **lot_effectivity**, **serial_numbered_effectivity**, or **product_definition_effectivity**

5.2.3.117 restrict_effectivity_usage

The **restrict_effectivity_usage** rule enforces the usage of an **effectivity** that is not a **dated_effectivity** or a **time_interval_based_effectivity** by at least one instance of **applied_effectivity_assignment** or **effectivity_relationship**.

EXPRESS specification:

```
*)
RULE restrict_effectivity_usage FOR
  (configured_effectivity_assignment,
  effectivity);
WHERE
  WR1: SIZEOF ( QUERY ( e <* effectivity | ( SIZEOF (
    ['ELECTROTECHNICAL_DESIGN.'+ 'DATED_EFFECTIVITY' ,
      'ELECTROTECHNICAL_DESIGN.'+ 'TIME_INTERVAL_BASED_EFFECTIVITY'])*
    TYPEOF ( e ) ) =0 ) AND ( ( SIZEOF ( QUERY ( er <* USEDIN (
    e , 'ELECTROTECHNICAL_DESIGN.EFFECTIVITY_RELATIONSHIP.'
    +'RELATED_EFFECTIVITY'
    ) | er. name = 'inheritance' ) ) =0 ) AND ( ( e.id =
    'configuration validity' ) AND ( SIZEOF ( QUERY ( cea <*
    USEDIN ( e ,
```

```

'ELECTROTECHNICAL_DESIGN.EFFECTIVITY_ASSIGNMENT.ASSIGNED_EFFECTIVITY
'
) | 'ELECTROTECHNICAL_DESIGN.'+
'CONFIGURED_EFFECTIVITY_ASSIGNMENT' IN TYPEOF ( cea ) ) )
=0 ) ) AND ( ( e.id = 'class usage' ) AND ( SIZEOF ( QUERY
( aea <* USEDIN ( e ,
'ELECTROTECHNICAL_DESIGN.'+'EFFECTIVITY_ASSIGNMENT.'+
'ASSIGNED_EFFECTIVITY' ) | ( 'ELECTROTECHNICAL_DESIGN.'+
'APPLIED_EFFECTIVITY_ASSIGNMENT' IN TYPEOF ( aea ) ) AND (
SIZEOF ( QUERY ( i <* aea.items | 'ELECTROTECHNICAL_DESIGN.'+
'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE' IN TYPEOF ( i ) )
) >0 ) ) ) =0 ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

configured_effectivity_assignment: the set of all instances of **configured_effectivity_assignment**.

effectivity: the set of all instances of **effectivity**.

Formal propositions:

WR1: An **effectivity** that is not a **dated_effectivity** or a **time_interval_based_effectivity**, shall either be used at least once as the **related_effectivity** by an **effectivity_relationship** with a **name** of 'inheritance', or it shall have an **id** of 'configuration validity' and be the **assigned_effectivity** of a **configured_effectivity_assignment** or it shall have an **id** of 'class usage' and be the **assigned_effectivity** of an **applied_effectivity_assignment** which has a **product_concept_feature_category_usage** in its set of **items**.

5.2.3.118 restrict_group_relationship_for_general_classification_hierarchy

The **restrict_group_relationship_for_general_classification_hierarchy** rule ensures the correct correlation between the **name** of a **group_relationship** and the related **groups** of type **class**.

EXPRESS specification:

```

*)
RULE
restrict_group_relationship_for_general_classification_hierarchy FOR
(class,
group_relationship);
WHERE
WR1: SIZEOF ( QUERY ( gr <* group_relationship | ( gr.name =
'class hierarchy' ) AND ( NOT ( 'ELECTROTECHNICAL_DESIGN.'+
'CLASS' IN TYPEOF ( gr.related_group ) ) OR NOT (
'ELECTROTECHNICAL_DESIGN.'+ 'CLASS' IN TYPEOF ( gr.
relating_group ) ) ) ) ) =0;
END_RULE;
(*

```

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Argument definitions:

class: the set of all instances of **class**.

group_relationship: the set of all instances of **group_relationship**.

Formal propositions:

WR1: If the **group_relationship** has a name of 'class hierarchy', the **related_group** and the **relating_group** shall be of type **class**.

5.2.3.119 restrict_group_relationship_for_specification_category

The **restrict_group_relationship_for_specification_category** rule ensures the correct correlation between the **name** of a **group_relationship** and the related **groups** of type **product_concept_feature_category**.

EXPRESS specification:

```
*)
RULE restrict_group_relationship_for_specification_category FOR
    (group_relationship,
     product_concept_feature_category);
WHERE
    WR1: SIZEOF ( QUERY ( gr <* group_relationship | ( gr. name =
        'specification category hierarchy' ) AND ( NOT (
        'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_CONCEPT_FEATURE_CATEGORY'
    IN
        TYPEOF ( gr. related_group ) ) OR NOT (
        'ELECTROTECHNICAL_DESIGN.'+ 'PRODUCT_CONCEPT_FEATURE_CATEGORY'
    IN
        TYPEOF ( gr. relating_group ) ) ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

group_relationship: the set of all instances of **group_relationship**.

product_concept_feature_category: the set of all instances of **product_concept_feature_category**.

Formal propositions:

WR1: If the **group_relationship** has a name of 'specification category hierarchy', the **related_group** and the **relating_group** shall be of type **product_concept_feature_category**.

5.2.3.120 restrict_identification_assignment_for_product

The **restrict_identification_assignment_for_product** rule ensures that each instance of **product** can be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'id'.

EXPRESS specification:

```

*)
RULE restrict_identification_assignment_for_product FOR
  (product);
WHERE
  WR1:  SIZEOF(QUERY(p <* product |
                SIZEOF(QUERY(i <* USEDIN(p,
                'ELECTROTECHNICAL_DESIGN.' +
                'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                'ITEMS') |
                i.role.name = 'id')
                ) > 1 )
        ) = 0;
END_RULE;
(*

```

Argument definitions:

product: the set of all instances of **product** entities.

Formal Propositions:

WR1: Each instance of **product** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'id'.

5.2.3.121 restrict_language_assignment_for_annotation_text_occurrence

The **restrict_language_assignment_for_annotation_text_occurrence** rule ensures that each instance of **annotation_text_occurrence** can be referenced by at most one instance of **language_assignment**.

EXPRESS specification:

```

*)
RULE restrict_language_assignment_for_annotation_text_occurrence FOR
  (annotation_text_occurrence);
WHERE
  WR1:  SIZEOF(QUERY(a <* annotation_text_occurrence |
                SIZEOF(USEDIN(a, 'ELECTROTECHNICAL_DESIGN.' +
                'LANGUAGE_ASSIGNMENT.' +
                'ITEMS')
                ) > 1
        )) = 0;
END_RULE;
(*

```

Argument definitions:

annotation_text_occurrence: the set of all instances of **annotation_text_occurrence** entities.

Formal propositions:

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WR1: Each instance of **annotation_text_occurrence** shall be referenced by at most one instance of **language_assignment** in the role of **items**.

5.2.3.122 restrict_language_assignment_for_descriptive_representation_item

The **restrict_language_assignment_for_descriptive_representation_item** rule ensures that each instance of **descriptive_representation_item** can be referenced by at most one instance of **language_assignment**.

EXPRESS specification:

```
*)
RULE
restrict_language_assignment_for_descriptive_representation_item FOR
  (descriptive_representation_item);
WHERE
  WR1:  SIZEOF(QUERY(d <* descriptive_representation_item |
                    SIZEOF(USEDIN(d, 'ELECTROTECHNICAL_DESIGN.' +
                    'LANGUAGE_ASSIGNMENT.' +
                    'ITEMS')
                    ) > 1
                    )) = 0;
END_RULE;
(*
```

Argument definitions:

descriptive_representation_item: the set of all instances of **descriptive_representation_item** entities.

Formal propositions:

WR1: Each instance of **descriptive_representation_item** shall be referenced by at most one instance of **language_assignment** in the role of **items**.

5.2.3.123 restrict_language_assignment_for_representation

The **restrict_language_assignment_for_representation** rule ensures that each instance of **representation** can be referenced by at most one instance of **language_assignment**.

EXPRESS specification:

```
*)
RULE restrict_language_assignment_for_representation FOR
  (representation);
WHERE
  WR1:  SIZEOF(QUERY(r <* representation |
                    SIZEOF(USEDIN(r, 'ELECTROTECHNICAL_DESIGN.' +
                    'LANGUAGE_ASSIGNMENT.' +
                    'ITEMS')
                    ) > 1 )
                    ) = 0;
```

```
END_RULE;
(*
```

Argument definitions:

representation: the set of all instances of **representation** entities.

Formal propositions:

WR1: Each instance of **representation** shall be referenced by at most one instance of **language_assignment** in the role of **items**.

5.2.3.124 restrict_product_category_for_product

The **restrict_product_category_for_product** rule enforces the existence of a **product_related_product_category** with a **name** of 'accessory', 'conceptual product', 'document', 'functionality', 'other', 'part', 'requirement', 'software', or 'technical system' for each **product** 'accessory', 'conceptual product', 'document', 'functionality', 'other', 'part', 'requirement', 'software', or 'technical system'

EXPRESS specification:

```
*)
RULE restrict_product_category_for_product FOR
  (product);
WHERE
  WR1: SIZEOF ( QUERY ( p <* product | SIZEOF ( QUERY ( prpc <*
    USEDIN ( p ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_RELATED_PRODUCT_CATEGORY.'+
      'PRODUCTS' ) | prpc.name IN ['conceptual product' , 'document'
    ,
      'functionality' , 'part' , 'physically realized product',
      'alternative solution' , 'requirement' ,
      'technical system' , 'accessory' , 'software'] ) ) =0 ) )
    =0;
  WR2: SIZEOF ( QUERY ( p <* product | SIZEOF ( QUERY ( prpc <*
    USEDIN ( p ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_RELATED_PRODUCT_CATEGORY.'+
      'PRODUCTS' ) | prpc.name IN ['conceptual product' , 'document'
    ,
      'functionality' , 'part' , 'physically realized product',
      'alternative solution' , 'requirement' ,
      'technical system' ] ) ) >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

product: the set of all instances of **product**.

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Formal propositions:

WR1: Each instance of **product** shall be referenced by a **product_related_product_category** with a **name** of either 'conceptual product', 'document', 'functionality', 'part', 'physically realized product', 'alternative solution', 'requirement', 'technical system', 'accessory', 'software'.

WR2: Each instance of **product** shall be referenced by at most one **product_related_product_category** with a **name** of 'conceptual product', 'document', 'functionality', 'part', 'physically realized product', 'alternative solution', 'requirement', 'technical system'.

5.2.3.125 restrict_product_definition_substitute

The **restrict_product_definition_substitute** rule specifies the restrictions that apply to the usage of **product_definition_substitute**.

EXPRESS specification:

```
*)
RULE restrict_product_definition_substitute FOR
  (product_definition_substitute);
WHERE
  WR1: SIZEOF ( QUERY ( pds <* product_definition_substitute | (
    SIZEOF ( USEDIN ( pds ,
      'ELECTROTECHNICAL_DESIGN.'+'APPLIED_EFFECTIVITY_ASSIGNMENT.'+
      'ITEMS' ) ) =0 ) ) ) =0;
  WR2: SIZEOF ( QUERY ( pds <* product_definition_substitute |
    pds.substitute_definition.frame_of_reference.name<>
    'part occurrence' ) ) =0;
  WR3: SIZEOF ( QUERY ( pds <* product_definition_substitute | (
    ( 'ELECTROTECHNICAL_DESIGN.'+ 'ASSEMBLY_COMPONENT_USAGE' IN
    TYPEOF ( pds.context_relationship ) ) AND ( SIZEOF (
    USEDIN ( pds.context_relationship ,
      'ELECTROTECHNICAL_DESIGN.'+'PRODUCT_DEFINITION_OCCURRENCE_RELATIONSH
      IP.'+
      'OCCURRENCE_USAGE' ) ) =0 ) ) AND ( (
      'ELECTROTECHNICAL_DESIGN.'+
      'PRODUCT_DEFINITION_RELATIONSHIP' IN TYPEOF ( pds.
      context_relationship ) ) AND ( pds.
      context_relationship.related_product_definition.
      frame_of_reference.name<> 'part occurrence' ) ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

product_definition_substitute: the set of all instances of **product_definition_substitute**.

Formal propositions:

WR1: For each instance of **product_definition_substitute** there shall be at least one instance of **applied_effectivity_assignment** that contains the instance in its set of **items**. This rule enforces the

requirement for every instance of `Replaced_usage_relationship` to have at least one Effectivity (see 4.2.127) applied to it specifying the start of the validity of the replacement.

WR2: Each instance of `product_definition_substitute` shall reference as `substitute_definition` a `product_definition` which references as `frame_of_reference` a `product_definition_context` with a name of 'part occurrence'.

WR3: Each instance of `product_definition_substitute` shall reference as `context_relationship` an `assembly_component_usage` which is referenced as `occurrence_usage` by a `product_definition_occurrence_relationship`, or shall reference as `context_relationship` a `product_definition_relationship` with a `related_product_definition` which references as its `frame_of_reference` a `product_definition_context` with a name of 'part occurrence'.

5.2.3.126 restrict_properties_of_document_file

The `restrict_properties_of_document_file` rule specifies the restrictions that apply for properties of `digital_files`.

EXPRESS specification:

```

*)
RULE restrict_properties_of_document_file FOR
  (document_file);
WHERE
  WR1: SIZEOF ( QUERY ( df <* document_file | SIZEOF ( QUERY ( pd
    <* USEDIN ( df ,
      'ELECTROTECHNICAL_DESIGN.'+'PROPERTY_DEFINITION.'+ 'DEFINITION'
    )
    | pd. name = 'document property' ) ) >1 ) ) =0;
  WR2: SIZEOF ( QUERY ( df <* document_file | SIZEOF ( QUERY ( rt
    <* df. representation_types | ( 'ELECTROTECHNICAL_DESIGN.'+
      'DOCUMENT_REPRESENTATION_TYPE' IN TYPEOF ( rt ) ) AND ( rt.
      name IN [ 'digital' , 'physical' ] ) ) ) =0 ) ) =0;
END_RULE;
(*

```

Argument definitions:

document_file: the set of all instances of `document_file`.

Formal propositions:

WR1: Each instance of `document_file` shall be referenced as `definition` by at most one `property_definition` with a name of 'document property'.

WR2: Each instance of `document_file` shall reference as `representation_types` an instance of `document_representation_type` with a name of either 'digital', or 'physical'.

5.2.3.127 restrict_property_value_format_for_general_property

The `restrict_property_value_format_for_general_property` rule ensures that each instance of `general_property` can be referenced by at most one instance of

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property_definition_representation where the **used_representation** has a **name** of 'property value format'.

EXPRESS specification:

```
*)
RULE restrict_property_value_format_for_general_property FOR
  (general_property);
WHERE
  WR1:  SIZEOF(QUERY(gp <* general_property |
                SIZEOF(QUERY(pdr <*
                USEDIN(gp,
                'ELECTROTECHNICAL_DESIGN.' +
                'PROPERTY_DEFINITION_REPRESENTATION.'
+
                'DEFINITION') |
                pdr.used_representation.name
                = 'property value format')
                ) > 2 )
        ) = 0;
END_RULE;
(*
```

Argument definitions:

general_property: the set of all instances of the **general_property** entity.

Formal Propositions:

WR1: Each instance of **general_property** shall be referenced by at most one instance of **property_definition_representation** where the **used_representation** has a **name** of 'property value format'.

5.2.3.128 restrict_representation_for_document_content_property

The **restrict_representation_for_document_content_property** rule specifies the restrictions that apply for **representations** with a **name** of 'document content'.

EXPRESS specification:

```
*)
RULE restrict_representation_for_document_content_property FOR
  (representation,
  representation_item);
WHERE
  WR1:  SIZEOF ( QUERY ( r <* representation | ( r.name =
        'document content' ) AND ( ( SIZEOF ( r.items ) <1 ) OR (
        SIZEOF ( r.items ) >3 ) ) ) ) =0;
  WR2:  SIZEOF ( QUERY ( ri <* representation_item | ( SIZEOF (
        QUERY ( r <* USEDIN ( ri ,
        'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS' ) | r.name =
        'document content' ) ) >0 ) AND NOT ( ri.name IN [
        'detail level' , 'geometry type' , 'real world scale' ] ) )
        ) =0;
```

```

WR3: SIZEOF ( QUERY ( r <* representation | ( r.name =
  'document content' ) AND ( SIZEOF ( QUERY ( i <* r.items |
    ( i.name = 'detail level' ) AND ( 'ELECTROTECHNICAL_DESIGN.'+
    'DESCRIPTIVE_REPRESENTATION_ITEM' IN TYPEOF ( i ) ) ) ) ) >1
  ) ) ) =0;
WR4: SIZEOF ( QUERY ( r <* representation | ( r.name =
  'document content' ) AND ( SIZEOF ( QUERY ( i <* r.items |
    ( i.name = 'geometry type' ) AND ( 'ELECTROTECHNICAL_DESIGN.'+
    'DESCRIPTIVE_REPRESENTATION_ITEM' IN TYPEOF ( i ) ) ) ) ) >1
  ) ) ) =0;
WR5: SIZEOF ( QUERY ( r <* representation | ( r.name =
  'document content' ) AND ( SIZEOF ( QUERY ( i <* r.items |
    ( i.name = 'real world scale' ) AND ( SIZEOF (
    ['ELECTROTECHNICAL_DESIGN.'+ 'MEASURE_REPRESENTATION_ITEM' ,
    'ELECTROTECHNICAL_DESIGN.'+ 'VALUE_REPRESENTATION_ITEM'] ) *
  TYPEOF
    ( i ) ) =1 ) ) ) >1 ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

representation: the set of all instances of **representation**.

representation_item: the set of all instances of **representation_item**.

Formal propositions:

WR1: For each instance of **representation** which has a **name** of 'document content' there shall be at least one and at most three instances of **representation_items** in the set of **items**.

WR2: Each instance of **representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document content' shall have a **name** of either 'detail level', 'geometry type', or 'real world scale'.

WR3: There shall be at most one instance of **representation_item** that have a **name** of 'detail level' and which is of type **descriptive_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document content'.

WR4: There shall be at most one instance of **representation_item** that have a **name** of 'geometry type' and which is of type **descriptive_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document content'.

WR5: There shall be at most one instance of **representation_item** that have a **name** of 'real world scale' and which is either of type **measure_representation_item**, or **value_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document content'.

5.2.3.129 restrict_representation_for_document_creation_property

The **restrict_representation_for_document_creation_property** rule specifies the restrictions that apply for **representations** with a **name** of 'document creation'.

EXPRESS specification:

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```
*)
RULE restrict_representation_for_document_creation_property FOR
  (representation,
   representation_item);
WHERE
  WR1: SIZEOF ( QUERY ( r <* representation | ( r.name =
    'document creation' ) AND ( ( SIZEOF ( r.items ) <2 ) OR (
    SIZEOF ( r.items ) >3 ) ) ) ) =0;
  WR2: SIZEOF ( QUERY ( ri <* representation_item | ( SIZEOF (
    QUERY ( r <* USEDIN ( ri ,
    'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS' ) | r.name =
    'document creation' ) ) >0 ) AND NOT ( ri.name IN [
    'creating interface' , 'creating system' ,
    'operating system' ] ) ) ) =0;
  WR3: SIZEOF ( QUERY ( r <* representation | ( r.name =
    'document creation' ) AND ( SIZEOF ( QUERY ( i <* r.items |
    ( i.name = 'creating interface' ) AND (
    'ELECTROTECHNICAL_DESIGN.'+ 'DESCRIPTIVE_REPRESENTATION_ITEM'
IN
    TYPEOF ( i ) ) ) ) >1 ) ) ) =0;
  WR4: SIZEOF ( QUERY ( r <* representation | ( r.name =
    'document creation' ) AND ( SIZEOF ( QUERY ( i <* r.items |
    ( i.name = 'creating system' ) AND (
    'ELECTROTECHNICAL_DESIGN.'+
    'DESCRIPTIVE_REPRESENTATION_ITEM' IN TYPEOF ( i ) ) ) ) <>1
    ) ) ) =0;
  WR5: SIZEOF ( QUERY ( r <* representation | ( r.name =
    'document creation' ) AND ( SIZEOF ( QUERY ( i <* r.items |
    ( i.name = 'operating system' ) AND (
    'ELECTROTECHNICAL_DESIGN.'+
    'DESCRIPTIVE_REPRESENTATION_ITEM' IN TYPEOF ( i ) ) ) ) >1
    ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

representation: the set of all instances of **representation**.

representation_item: the set of all instances of **representation_item**.

Formal propositions:

WR1: For each instance of **representation** which has a **name** of 'document creation' there shall be at least two and at most three instances of **representation_items** in the set of **items**.

WR2: Each instance of **representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document creation' shall have a **name** of either 'creating interface', 'creating system', or 'operating system'.

WR3: There shall be at most one instance of **representation_item** that have a **name** of 'creating interface' and which is of type **descriptive_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document creation'.

WR4: There shall be exactly one instance of **representation_item** that have a **name** of 'creating system' and which is of type **descriptive_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document creation'.

WR5: There shall be at most one instance of **representation_item** that have a **name** of 'operating system' and which is of type **descriptive_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document creation'.

5.2.3.130 restrict_representation_for_document_format_property

The **restrict_representation_for_document_format_property** rule specifies the restrictions that apply for **representations** with a **name** of 'document format'.

EXPRESS specification:

```

*)
RULE restrict_representation_for_document_format_property FOR
  (representation,
   representation_item);
WHERE
  WR1: SIZEOF ( QUERY ( r <* representation | ( r.name =
    'document format' ) AND ( ( SIZEOF ( r.items ) <1 ) OR (
    SIZEOF ( r.items ) >2 ) ) ) ) =0;
  WR2: SIZEOF ( QUERY ( ri <* representation_item | ( SIZEOF (
    QUERY ( r <* USEDIN ( ri ,
    'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS' ) | r.name =
    'document format' ) ) >0 ) AND NOT ( ri.name IN [
    'character code' , 'data format' ] ) ) ) ) =0;
  WR3: SIZEOF ( QUERY ( r <* representation | ( r.name =
    'document format' ) AND ( SIZEOF ( QUERY ( i <* r.items | (
    i.name = 'character code' ) AND ( 'ELECTROTECHNICAL_DESIGN.'+
    'DESCRIPTIVE_REPRESENTATION_ITEM' IN TYPEOF ( i ) ) ) ) ) >1
    ) ) ) =0;
  WR4: SIZEOF ( QUERY ( r <* representation | ( r.name =
    'document format' ) AND ( SIZEOF ( QUERY ( i <* r.items | (
    i.name = 'data format' ) AND ( 'ELECTROTECHNICAL_DESIGN.'+
    'DESCRIPTIVE_REPRESENTATION_ITEM' IN TYPEOF ( i ) ) ) ) ) >1
    ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

representation: the set of all instances of **representation**.

representation_item: the set of all instances of **representation_item**.

Formal propositions:

WR1: For each instance of **representation** which has a **name** of 'document format' there shall be at least one and at most two instances of **representation_items** in the set of **items**.

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WR2: Each instance of **representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document format' shall have a **name** of either 'character code', or 'data format'.

WR3: There shall be at most one instance of **representation_item** that have a **name** of 'character code' and which is of type **descriptive_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document format'.

WR4: There shall be at most one instance of **representation_item** that have a **name** of 'data format' and which is of type **descriptive_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document format'.

5.2.3.131 restrict_representation_for_document_properties

The **restrict_representation_for_document_properties** rule specifies that each instance of **property_definition** with a **name** of 'document property' shall be represented by **representations** with a **name** of either 'document content', 'document creation', 'document format', or 'document size'. At the same time, this rule enforces that each instance of **representation** with a **name** of either 'document content', 'document creation', 'document format', or 'document size', shall be referenced by one instance of **property_definition** with a **name** of 'document property'.

EXPRESS specification:

```
*)
RULE restrict_representation_for_document_properties FOR
    (property_definition,
     representation,
     representation_context);
WHERE
WR1: SIZEOF ( QUERY ( pd <* property_definition | ( pd.name =
    'document property' ) AND ( SIZEOF ( QUERY ( pdr <* USEDIN
    ( pd , 'ELECTROTECHNICAL_DESIGN.'
    + 'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'
    ) | NOT ( pdr.used_representation.name IN [
    'document content' , 'document creation' ,
    'document format' , 'document size' ] ) ) ) ) >0 ) ) ) =0;
WR2: SIZEOF ( QUERY ( r <* representation | ( r.name IN [
    'document content' , 'document creation' ,
    'document format' , 'document size' ] ) AND ( SIZEOF (
    QUERY ( pdr <* USEDIN ( r ,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' + 'USED_REPRESENTATION'
    ) | ( 'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION' IN
TYPEOF
    ( pdr.definition ) ) AND ( pdr.definition.name =
    'document property' ) ) ) ) ) =0;
WR3: SIZEOF ( QUERY ( r <* representation | ( r.name IN [
    'document content' , 'document creation' ,
    'document format' , 'document size' ] ) AND (
    r.context_of_items.context_type <> 'document parameters' )
    ) ) =0;
WR4: SIZEOF ( QUERY ( rc <* representation_context | ( rc.
    context_type = 'document parameters' ) AND ( SIZEOF ( QUERY
    ( r <* USEDIN ( rc ,
```

```

'ELECTROTECHNICAL_DESIGN.REPRESENTATION.CONTEXT_OF_ITEMS' ) |
NOT
( r.name IN [ 'document content' , 'document creation' ,
'document format' , 'document size' ] ) ) ) >0 ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

property_definition: the set of all instances of **property_definition**.

representation: the set of all instances of **representation**.

representation_context: the set of all instances of **representation_context**.

Formal propositions:

WR1: Each instance of **property_definition** with a **name** of 'document property' shall be referenced as **definition** by a **property_definition_representation**, which has as **used_representation** a **representation** with a **name** of either 'document content', 'document creation', 'document format', or 'document size'.

WR2: Each instance of **representation** with a **name** of either 'document content', 'document creation', 'document format', or 'document size' shall be referenced as **used_representation** by a **property_definition_representation**, which has as **definition** a **property_definition** with a **name** of 'document property'.

WR3: Each instance of **representation** with a **name** of either 'document content', 'document creation', 'document format', or 'document size' shall reference as **context_of_items** a **representation_context**, with a **context_type** of 'document parameters'.

WR4: Each instance of **representation_context** with a **context_type** of 'document parameters' shall be referenced as **context_of_items** by a **representation** with a **name** of either 'document content', 'document creation', 'document format', or 'document size'.

5.2.3.132 restrict_representation_for_document_size_property

The **restrict_representation_for_document_size_property** rule specifies the restrictions that apply for **representations** with a **name** of 'document size'.

EXPRESS specification:

```

*)
RULE restrict_representation_for_document_size_property FOR
  (representation,
  representation_item);
WHERE
  WR1: SIZEOF ( QUERY ( r <* representation | ( r.name =
'document size' ) AND ( ( SIZEOF ( r.items ) <1 ) OR (
SIZEOF ( r.items ) >2 ) ) ) ) ) =0;
  WR2: SIZEOF ( QUERY ( ri <* representation_item | ( SIZEOF (
QUERY ( r <* USEDIN ( ri ,
'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS' ) | r.name =
'document size' ) ) >0 ) AND NOT ( ri.name IN [

```

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```
'file size' , 'page count' ] ) ) ) =0;
WR3: SIZEOF ( QUERY ( r <* representation | ( r.name =
'document size' ) AND ( SIZEOF ( QUERY ( i <* r.items | (
i.name = 'file size' ) AND ( SIZEOF (
['ELECTROTECHNICAL_DESIGN.'+ 'MEASURE_REPRESENTATION_ITEM' ,
'ELECTROTECHNICAL_DESIGN.'+ 'VALUE_RANGE' ,
'ELECTROTECHNICAL_DESIGN.'+
'VALUE_REPRESENTATION_ITEM']* TYPEOF ( i ) ) =1 ) ) ) >1 )
) ) =0;
WR4: SIZEOF ( QUERY ( r <* representation | ( r.name =
'document size' ) AND ( SIZEOF ( QUERY ( i <* r.items | (
i.name = 'page count' ) AND ( SIZEOF (
['ELECTROTECHNICAL_DESIGN.'+ 'MEASURE_REPRESENTATION_ITEM' ,
'ELECTROTECHNICAL_DESIGN.'+ 'VALUE_RANGE' ,
'ELECTROTECHNICAL_DESIGN.'+
'VALUE_REPRESENTATION_ITEM']* TYPEOF ( i ) ) =1 ) ) ) >1 )
) ) =0;
END_RULE;
(*
```

Argument definitions:

representation: the set of all instances of **representation**.

representation_item: the set of all instances of **representation_item**.

Formal propositions:

WR1: For each instance of **representation** which has a **name** of 'document size' there shall be at least one and at most two instances of **representation_items** in the set of **items**.

WR2: Each instance of **representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document size' shall have a **name** of either 'file size', or 'page count'.

WR3: There shall be at most one instance of **representation_item** that have a **name** of 'file size' and which is either of type **measure_representation_item**, **value_range**, or **value_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document size'.

WR4: There shall be at most one instance of **representation_item** that have a **name** of 'page count' and which is either of type **measure_representation_item**, **value_range**, or **value_representation_item** that is referenced as **items** by an instance of **representation** with a **name** of 'document size'.

5.2.3.133 restrict_uncertainty_in_global_uncertainty_assigned_context

The **restrict_uncertainty_in_global_uncertainty_assigned_context** rule ensures that each instance of **global_uncertainty_assigned_context** contains exactly two instances of **uncertainty_measure_with_unit** in its set **uncertainty**.

EXPRESS specification:

*)


```

RULE restrict_uncertainty_in_global_uncertainty_assigned_context FOR
  (global_uncertainty_assigned_context);
WHERE
  WR1: SIZEOF(QUERY(guac <* global_uncertainty_assigned_context |
                    NOT(SIZEOF(guac.uncertainty) = 2)
                    )) = 0;
END_RULE;
(*

```

Argument definitions:

global_uncertainty_assigned_context: the set of all instances of **global_uncertainty_assigned_context** entities.

Formal propositions:

WR1: Each instance of **global_uncertainty_assigned_context** shall contain exactly two instances of **uncertainty_measure_with_unit** in its set of **uncertainty**.

5.2.3.134 restrict_version_assignment_for_action_directive

The **restrict_version_assignment_for_action_directive** rule ensures that each instance of **action_directive** can be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

EXPRESS specification:

```

*)
RULE restrict_version_assignment_for_action_directive FOR
  (action_directive);
WHERE
  WR1: SIZEOF(QUERY(a <* action_directive |
                    SIZEOF(QUERY(i <* USEDIN(a,
                    'ELECTROTECHNICAL_DESIGN.' +
                    'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                    'ITEMS') |
                    i.role.name = 'version')
                    ) > 1 )
                    ) = 0;
END_RULE;
(*

```

Argument definitions:

action_directive: the set of all instances of **action_directive** entities.

Formal Propositions:

WR1: Each instance of **action_directive** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

5.2.3.135 restrict_version_assignment_for_applied_identification_assignment

The **restrict_version_assignment_for_applied_identification_assignment** rule specifies that each instance of **applied_identification_assignment** shall be referenced by at most one instance of **applied_identification_assignment** that specifies the version of the **applied_identification_assignment**.

EXPRESS specification:

```
*)
RULE
restrict_version_assignment_for_applied_identification_assignment
FOR
    (applied_identification_assignment);
WHERE
    WR1: SIZEOF ( QUERY ( ent <* applied_identification_assignment
        | SIZEOF ( QUERY ( ia <* USEDIN ( ent ,
            'ELECTROTECHNICAL_DESIGN.'+'APPLIED_IDENTIFICATION_ASSIGNMENT.'+
                'ITEMS' ) | ia. role.name ='version' ) ) >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

applied_identification_assignment: The set of all instances of **applied_identification_assignment**.

Formal propositions:

WR1: For each instance of **applied_identification_assignment** there shall be only at most one instance of **applied_identification_assignment** with a role name of 'version'.

5.2.3.136 restrict_version_assignment_for_class

The **restrict_version_assignment_for_class** rule specifies that each instance of **class** shall be referenced by at most one instance of **applied_identification_assignment** that specifies the version of the **class**.

EXPRESS specification:

```
*)
RULE restrict_version_assignment_for_class FOR
    (class);
WHERE
    WR1: SIZEOF ( QUERY ( ent <* class | SIZEOF ( QUERY ( ia <*
        USEDIN ( ent ,
            'ELECTROTECHNICAL_DESIGN.'+'APPLIED_IDENTIFICATION_ASSIGNMENT.'+
                'ITEMS' ) | ia. role.name ='version' ) ) >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

class: The set of all instances of **class**.

Formal propositions:

WR1: For each instance of **class** there shall be only at most one instance of **applied_identification_assignment** with a role name of 'version'.

5.2.3.137 restrict_version_assignment_for_configuration_item

The **restrict_version_assignment_for_configuration_item** rule ensures that each instance of **configuration_item** can be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

EXPRESS specification:

```
*)
RULE restrict_version_assignment_for_configuration_item FOR
    (configuration_item);
WHERE
    WR1:  SIZEOF(QUERY(c <* configuration_item |
                    SIZEOF(QUERY(i <* USEDIN(c,
                    'ELECTROTECHNICAL_DESIGN.' +
                    'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                    'ITEMS') |
                    i.role.name = 'version')
                    ) > 1 )
        ) = 0;
END_RULE;
(*
```

Argument definitions:

configuration_item: the set of all instances of **configuration_item** entities.

Formal Propositions:

WR1: Each instance of **configuration_item** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

5.2.3.138 restrict_version_assignment_for_document_file

The **restrict_version_assignment_for_document_file** rule specifies that each instance of **document_file** shall be referenced by at most one instance of **applied_identification_assignment** that specifies the version of the **document_file**.

EXPRESS specification:

```
*)
RULE restrict_version_assignment_for_document_file FOR
```

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```
(document_file);
WHERE
  WR1: SIZEOF ( QUERY ( ent <* document_file | SIZEOF ( QUERY (
    ia <* USEDIN ( ent ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_IDENTIFICATION_ASSIGNMENT.'+
      'ITEMS' ) | ia. role.name ='version' ) ) >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

document_file: The set of all instances of **document_file**.

Formal propositions:

WR1: For each instance of **document_file** there shall be only at most one instance of **applied_identification_assignment** with a role name of 'version'.

5.2.3.139 restrict_version_assignment_for_effectivity

The **restrict_version_assignment_for_effectivity** rule specifies that each instance of **effectivity** shall be referenced by at most one instance of **applied_identification_assignment** that specifies the version of the **effectivity**.

EXPRESS specification:

```
*)
RULE restrict_version_assignment_for_effectivity FOR
  (effectivity);
WHERE
  WR1: SIZEOF ( QUERY ( ent <* effectivity | SIZEOF ( QUERY ( ia
    <* USEDIN ( ent ,
    'ELECTROTECHNICAL_DESIGN.'+'APPLIED_IDENTIFICATION_ASSIGNMENT.'+
      'ITEMS' ) | ia. role.name ='version' ) ) >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

effectivity: The set of all instances of **effectivity**.

Formal propositions:

WR1: For each instance of **effectivity** there shall be only at most one instance of **applied_identification_assignment** with a role name of 'version'.

5.2.3.140 restrict_version_assignment_for_general_property

The **restrict_version_assignment_for_general_property** rule ensures that each instance of **general_property** can be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

EXPRESS specification:

```

*)
RULE restrict_version_assignment_for_general_property FOR
  (general_property);
WHERE
  WR1:  SIZEOF(QUERY(g <* general_property |
                    SIZEOF(QUERY(i <* USEDIN(g,
                    'ELECTROTECHNICAL_DESIGN.' +
                    'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                    'ITEMS') |
                    i.role.name = 'version')
                    ) > 1 )
        ) = 0;
END_RULE;
(*

```

Argument definitions:

general_property: the set of all instances of **general_property** entities.

Formal Propositions:

WR1: Each instance of **general_property** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

5.2.3.141 restrict_version_assignment_for_path

The **restrict_version_assignment_for_path** rule ensures that each instance of **path** can be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

EXPRESS specification:

```

*)
RULE restrict_version_assignment_for_path FOR
  (path);
WHERE
  WR1:  SIZEOF(QUERY(p <* path |
                    SIZEOF(QUERY(i <* USEDIN(p,
                    'ELECTROTECHNICAL_DESIGN.' +
                    'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                    'ITEMS') |
                    i.role.name = 'version')
                    ) > 1 )
        ) = 0;
END_RULE;
(*

```

Argument definitions:

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path: the set of all instances of **path** entities.

Formal Propositions:

WR1: Each instance of **path** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

5.2.3.142 restrict_version_assignment_for_product_concept

The **restrict_version_assignment_for_product_concept** rule specifies that each instance of **product_concept** shall be referenced by at most one instance of **applied_identification_assignment** that specifies the version of the **product_concept**.

EXPRESS specification:

```
*)
RULE restrict_version_assignment_for_product_concept FOR
    (product_concept);
WHERE
    WR1: SIZEOF ( QUERY ( ent <* product_concept | SIZEOF ( QUERY (
        ia <* USEDIN ( ent ,
        'ELECTROTECHNICAL_DESIGN.'+'APPLIED_IDENTIFICATION_ASSIGNMENT.'+
        'ITEMS' ) | ia. role.name ='version' ) ) >1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

product_concept: The set of all instances of **product_concept**.

Formal propositions:

WR1: For each instance of **product_concept** there shall be only at most one instance of **applied_identification_assignment** with a role name of 'version'.

5.2.3.143 restrict_version_assignment_for_product_concept_feature

The **restrict_version_assignment_for_product_concept_feature** rule ensures that each instance of **product_concept_feature** can be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

EXPRESS specification:

```
*)
RULE restrict_version_assignment_for_product_concept_feature FOR
    (product_concept_feature);
WHERE
    WR1: SIZEOF(QUERY(p <* product_concept_feature |
        SIZEOF(QUERY(i <* USEDIN(p,
        'ELECTROTECHNICAL_DESIGN.' +
```

```
'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
      'ITEMS') |
      i.role.name = 'version')
    ) > 1 )
  ) = 0;
END_RULE;
(*
```

Argument definitions:

product_concept_feature: the set of all instances of **product_concept_feature** entities.

Formal Propositions:

WR1: Each instance of **product_concept_feature** shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version'.

5.2.3.144 retention_requires_retention_assignment

The **retention_requires_retention_assignment** rule specifies that each instance of **retention** is referenced by at least one instance of **applied_action_assignment** as the **assigned_action**, where the role of this **applied_action_assignment** is 'retention'.

This rule enforces the requirement for every instance of **Retention_period** (see 4.2.289) to be applied at least once.

EXPRESS specification:

```
*)
RULE retention_requires_retention_assignment FOR
  (retention);
WHERE
  WR1: SIZEOF ( QUERY ( r <* retention | SIZEOF ( QUERY ( aa <*
    USEDIN ( r , 'ELECTROTECHNICAL DESIGN.'+'ACTION ASSIGNMENT.'+
    'ASSIGNED_ACTION' ) | ( 'ELECTROTECHNICAL DESIGN.'+
    'APPLIED_ACTION_ASSIGNMENT' IN TYPEOF ( aa ) ) AND ( aa.
    role.name = 'retention' ) ) ) =0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

retention: the set of all instances of **retention**.

Formal propositions:

WR1: Each instance of **retention** shall be referenced at least once as the **assigned_action** by an instance of **applied_action_assignment**, where the **name** of the **object_role** of this **applied_action_assignment** is 'retention'.

5.2.3.145 security_classification_requires_security_classification_assignment

The **security_classification_requires_security_classification_assignment** rule specifies that each instance of **security_classification** is referenced by at least one instance of **security_classification_assignment** as the **assigned_security_classification**.

This rule enforces the requirement for every **Security_classification** (see 4.2.301) to be applied at least once.

EXPRESS specification:

```
*)
RULE
security_classification_requires_security_classification_assignment
FOR
    (security_classification);
WHERE
    WR1: SIZEOF ( QUERY ( sc <* security_classification | SIZEOF (
        USEDIN ( sc ,
            'ELECTROTECHNICAL_DESIGN.'+'SECURITY_CLASSIFICATION_ASSIGNMENT.'+
            'ASSIGNED_SECURITY_CLASSIFICATION' ) ) =0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

security_classification: the set of all instances of **security_classification**.

Formal propositions:

WR1: Each instance of **security_classification** shall be used at least once as the **assigned_security_classification** by an instance of **security_classification_assignment**.

5.2.3.146 selected_instance_usage_requires_representation

The **selected_instance_usage_requires_representation** rule specifies that each instance of **assembly_component_usage** which has a **name** of 'selected instance usage' shall be represented by a **representation** with a **name** of 'selection criteria' containing two **representation_items** describing the constraints the quantity of the **related_product_definition** depends on.

EXPRESS specification:

```
*)
RULE selected_instance_usage_requires_representation FOR
    (assembly_component_usage,
    representation);
WHERE
    WR1: SIZEOF ( QUERY ( acr <* assembly_component_usage | ( acr.
        name = 'selected instance usage' ) AND ( SIZEOF ( QUERY (
        pd <* USEDIN ( acr ,
```



```

'ELECTROTECHNICAL_DESIGN.'+'PROPERTY_DEFINITION.'+ 'DEFINITION'
)
| ( pdr. name = 'occurrence selection' ) AND ( SIZEOF (
QUERY ( pdr <* USEDIN ( pd ,

'ELECTROTECHNICAL_DESIGN.'+'PROPERTY_DEFINITION_REPRESENTATION.'+
'DEFINITION' ) | ( pdr. used_representation.name =
'selection criteria' ) AND ( SIZEOF ( pdr.
used_representation.items ) =2 ) AND ( SIZEOF ( QUERY ( i
<* pdr. used_representation.items | ( SIZEOF (
['ELECTROTECHNICAL_DESIGN.'+ 'MEASURE_REPRESENTATION_ITEM' ,
'ELECTROTECHNICAL_DESIGN.'+ 'VALUE_RANGE']* TYPEOF ( i ) ) =1 )
AND ( i.name = 'selection quantity' ) ) ) =1 ) AND ( SIZEOF
( QUERY ( i <* pdr. used_representation.items | (
'ELECTROTECHNICAL_DESIGN.'+ 'DESCRIPTIVE_REPRESENTATION_ITEM'
IN
TYPEOF ( i ) ) AND ( i.name = 'selection control' ) ) ) =1
) ) ) >0 ) ) ) =0 ) ) ) =0;
END_RULE;
(*

```

Argument definitions:

assembly_component_usage: the set of all instances of **assembly_component_usage**.

representation: the set of all instances of **representation**.

Formal propositions:

WR1: Each instance of **assembly_component_relationship** which has a **name** of 'selected instance usage' shall be referenced by a **property_definition** which has a **name** of 'occurrence selection', and which is referenced as **definition** by a **property_definition_representation** which has as **used_representation** a **representation** which has a **name** of 'selection criteria' and which contains exactly two **representation_items** in its set of **items**. One of these **representation_items** shall be of type **measure_representation_item** or **value_range** and shall have a **name** of 'selection quantity'. The other one of these **representation_items** shall be of type **descriptive_representation_item** and shall have a **name** of 'selection control'.

5.2.3.147 shape_aspect_relationship_constraint

The **shape_aspect_relationship_constraint** rule ensures that each instance of **shape_aspect_relationship** satisfies the **shape_aspect_relationship_correlation** function that correlates the **names** of a **shape_aspect_relationship** to elements of product data.

EXPRESS specification:

```

*)
RULE shape_aspect_relationship_constraint FOR
  (shape_aspect_relationship);
WHERE
  WR1:  SIZEOF(QUERY(s <* shape_aspect_relationship |
          NOT(shape_aspect_relationship_correlation(s) )
          ) = 0;
END_RULE;

```

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(*

Argument definitions:

shape_aspect_relationship: the set of all instances of the **shape_aspect_relationship** entity.

Formal propositions:

WR1: For each instance of **shape_aspect_relationship**, the **shape_aspect_relationship_correlation** function that correlates the **names** of a **shape_aspect_relationship** to elements of product data shall be satisfied.

5.2.3.148 **shape_aspect_subtype_exclusiveness**

The **shape_aspect_subtype_exclusiveness** rule specifies that each instance of **shape_aspect** shall be an instance of at most one of its subtypes **connectivity_definition**, **equipment_marking**, **installation_location**, **installation_node**, **installation_route**, **installation_section**, **installation_section_end**, **installation_section_interface**, **installation_segment**, **interface**, **terminal**.

EXPRESS specification:

```
*)
RULE shape_aspect_subtype_exclusiveness FOR
    (shape_aspect);
WHERE
    WR1: SIZEOF(QUERY(s <* shape_aspect |
        SIZEOF(TYPEOF(s) *
            ['ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION',
            'ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING',
            'ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION',
            'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE',
            'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',
            'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
            'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END',
            'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_INTERFACE',
            'ELECTROTECHNICAL_DESIGN.INSTALLATION_SEGMENT',
            'ELECTROTECHNICAL_DESIGN.INTERFACE',
            'ELECTROTECHNICAL_DESIGN.TERMINAL'])
        ) > 1 )
    ) = 0;
END_RULE;
(*
```

Argument definitions:

shape_aspect: identifies the set of all instances of **shape_aspect** entities.

Formal propositions:

WR1: Each instance of **shape_aspect** shall be an instance of at most one of its subtypes **connectivity_definition**, **equipment_marking**, **installation_location**, **installation_node**,

installation_route, installation_section, installation_section_end, installation_section_interface, installation_segment, interface, terminal.

5.2.3.149 sheets_belong_to_one_drawing

The **sheets_belong_to_one_drawing** rule ensures that each **drawing_sheet_revision** belongs to exactly one **drawing_revision**.

EXPRESS specification:

```
*)
RULE sheets_belong_to_one_drawing FOR
  (drawing_sheet_revision);
WHERE
  WR1: SIZEOF ( QUERY ( dsr <* drawing_sheet_revision | SIZEOF (
    QUERY ( dsru <* USEDIN ( dsr ,
      'ELECTROTECHNICAL_DESIGN.AREA_IN_SET.AREA' ) | (
        'ELECTROTECHNICAL_DESIGN.'+ 'DRAWING_SHEET_REVISION_USAGE' IN
        TYPEOF ( dsru ) ) ) ) <>1 ) ) =0;
END_RULE;
(*
```

Argument definitions:

drawing_sheet_revision: the set of all instances of **drawing_sheet_revision**.

Formal propositions:

WR1: For each instance of **drawing_sheet_revision** there shall be exactly one instance of **drawing_sheet_revision_usage** which contains the instance of **drawing_sheet_revision** as its **area** attribute.

5.2.3.150 subtype_mandatory_address

The **subtype_mandatory_address** rule ensures that all **address** entities are of type **organizational_address** and/or **personal_address**.

EXPRESS specification:

```
*)
RULE subtype_mandatory_address FOR
  (address);
WHERE
  WR1: SIZEOF ( QUERY ( a <* address | NOT ( type_check_function
    ( a , ['ELECTROTECHNICAL_DESIGN.'+ 'ORGANIZATIONAL_ADDRESS' ,
      'ELECTROTECHNICAL_DESIGN.'+ 'PERSONAL_ADDRESS'] , 0 ) ) ) ) =0;
END_RULE;
(*
```

Argument definitions:

address: the set of all instances of **address**.

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Formal propositions:

WR1: Each instance of **address** shall be of type **organizational_address** and/or **personal_address**.

5.2.3.151 subtype_mandatory_annotation_occurrence

The **subtype_mandatory_annotation_occurrence** rule ensures that all **annotation_occurrence** entities are **draughting_annotation_occurrence** entities.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE subtype_mandatory_annotation_occurrence FOR
    (annotation_occurrence);
WHERE
    WR1: SIZEOF(QUERY(ao <* annotation_occurrence |
        NOT ('ELECTROTECHNICAL_DESIGN.DRAUGHTING_ANNOTATION_OCCURRENCE'
            IN TYPEOF(ao))
        )) = 0;
END_RULE;
(*
```

Argument definitions:

annotation_occurrence: the set of all instances of the **annotation_occurrence** entity.

Formal propositions:

WR1: Each **annotation_occurrence** shall be a **draughting_annotation_occurrence**.

5.2.3.152 subtype_mandatory_bounded_curve

The **subtype_mandatory_bounded_curve** rule ensures that each instance of **bounded_curve** shall be of type of one of either **b_spline_curve**, **composite_curve**, **polyline**, or **trimmed_curve**.

EXPRESS specification:

```
*)
RULE subtype_mandatory_bounded_curve FOR
    (bounded_curve);
WHERE
    WR1: SIZEOF(QUERY(c <* bounded_curve |
        NOT (SIZEOF(TYPEOF(c) *
            ['ELECTROTECHNICAL_DESIGN.B_SPLINE_CURVE',
            'ELECTROTECHNICAL_DESIGN.COMPOSITE_CURVE',
            'ELECTROTECHNICAL_DESIGN.POLYLINE',
            'ELECTROTECHNICAL_DESIGN.TRIMMED_CURVE']) = 1
        ))) = 0;
END_RULE;
```

(*

Argument definitions:

bounded_curve: the set of all instances of the **bounded_curve** entity.

Formal propositions:

WR1: Each **bounded_curve** shall be one of either **b_spline_curve**, **composite_curve**, **polyline**, or **trimmed_curve**.

5.2.3.153 subtype_mandatory_camera_image

The **subtype_mandatory_camera_image** rule ensures that all **camera_image** entities are **camera_image_2d_with_scale** entities.

NOTE The definition of this rule is identical to the definition in ISO 10303-201.

EXPRESS specification:

```

*)
RULE subtype_mandatory_camera_image FOR
    (camera_image);
WHERE
    WR1: SIZEOF(QUERY(ci <* camera_image |
        NOT ('ELECTROTECHNICAL_DESIGN.CAMERA_IMAGE_2D_WITH_SCALE'
            IN TYPEOF(ci))
        )) = 0;
END_RULE;
(*

```

Argument definitions:

camera_image: the set of all instances of the **camera_image** entity.

Formal propositions:

WR1: Each **camera_image** shall be a **camera_image_2d_with_scale**.

5.2.3.154 subtype_mandatory_camera_model

The **subtype_mandatory_camera_model** rule ensures that all **camera_model** entities are **camera_model_d2** entities.

EXPRESS specification:

```

*)
RULE subtype_mandatory_camera_model FOR
    (camera_model);
WHERE
    WR1: SIZEOF(QUERY(cm <* camera_model |
        NOT ('ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2'
            IN TYPEOF(cm))
        )) = 0;
END_RULE;
(*

```

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```
    )) = 0;  
END_RULE;  
(*
```

Argument definitions:

camera_model: the set of all instances of the **camera_model** entity.

Formal propositions:

WR1: Each **camera_model** shall be a **camera_model_d2**.

5.2.3.155 subtype_mandatory_curve

The **subtype_mandatory_curve** rule ensures that each instance of **curve** shall be of type of one of either **bounded_curve**, **conic**, or **line**.

EXPRESS specification:

```
*)  
RULE subtype_mandatory_curve FOR  
  (curve);  
WHERE  
  WR1: SIZEOF(QUERY(c <* curve |  
    NOT (SIZEOF(TYPEOF(c) *  
      ['ELECTROTECHNICAL_DESIGN.BOUNDED_CURVE',  
       'ELECTROTECHNICAL_DESIGN.CONIC',  
       'ELECTROTECHNICAL_DESIGN.LINE']) = 1  
    ))) = 0;  
END_RULE;  
(*
```

Argument definitions:

curve: the set of all instances of the **curve** entity.

Formal propositions:

WR1: Each **curve** shall be one of either **bounded_curve**, **conic**, or **line**.

5.2.3.156 subtype_mandatory_date

The **subtype_mandatory_date** rule ensures that all **date** entities are **calendar_date** entities.

EXPRESS specification:

```
*)  
RULE subtype_mandatory_date FOR  
  (date);  
WHERE  
  WR1: SIZEOF(QUERY(d <* date |  
    NOT ('ELECTROTECHNICAL_DESIGN.CALENDAR_DATE'  
      IN TYPEOF(d)) )  
    ) = 0;
```

END_RULE;
(*

Argument definitions:

date: the set of all instances of the **date** entity.

Formal propositions:

WR1: Each **date** shall be a **calendar_date**.

5.2.3.157 subtype_mandatory_draughting_callout

The **subtype_mandatory_draughting_callout** rule ensures that all **draughting_callout** entities are **draughting_elements** entities.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE subtype_mandatory_draughting_callout FOR
  (draughting_callout);
WHERE
  WR1:  SIZEOF(QUERY(dc <* draughting_callout |
                    NOT('ELECTROTECHNICAL_DESIGN.DRAUGHTING_ELEMENTS'
                       IN TYPEOF(dc)) )
            ) = 0;
END_RULE;
(*
```

Argument definitions:

draughting_callout: the set of all instances of the **draughting_callout** entity.

Formal propositions:

WR1: Each **draughting_callout** shall be a **draughting_elements**.

5.2.3.158 subtype_mandatory_pre_defined_curve_font

The **subtype_mandatory_pre_defined_curve_font** rule ensures that all **pre_defined_curve_font** entities are **draughting_pre_defined_curve_font** entities.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE subtype_mandatory_pre_defined_curve_font FOR
  (pre_defined_curve_font);
WHERE
```

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```
WR1: SIZEOF(QUERY(pdcf <* pre_defined_curve_font |
NOT ('ELECTROTECHNICAL_DESIGN.DRAUGHTING_PRE_DEFINED_CURVE_FONT'
      IN TYPEOF(pdcf))
      )) = 0;
END_RULE;
(*
```

Argument definitions:

pre_defined_curve_font: the set of all instances of the **pre_defined_curve_font** entity.

Formal propositions:

WR1: Each **pre_defined_curve_font** shall be a **draughting_pre_defined_curve_font**.

5.2.3.159 subtype_mandatory_pre_defined_symbol

The **subtype_mandatory_pre_defined_symbol** rule ensures that all **pre_defined_symbol** entities are **pre_defined_geometrical_tolerance_symbol**, **pre_defined_dimension_symbol**, **pre_defined_point_marker_symbol**, or **pre_defined_terminator_symbol** entities.

NOTE The definition of this rule is identical to the definition in ISO 10303-201 and ISO 10303-202.

EXPRESS specification:

```
*)
RULE subtype_mandatory_pre_defined_symbol FOR
      (pre_defined_symbol);
WHERE
      WR1: SIZEOF(QUERY(pds <* pre_defined_symbol |
      NOT(SIZEOF(TYPEOF(pds) *
      ['ELECTROTECHNICAL_DESIGN.' +
      'PRE_DEFINED_GEOMETRICAL_TOLERANCE_SYMBOL',
      'ELECTROTECHNICAL_DESIGN.' +
      'PRE_DEFINED_DIMENSION_SYMBOL',
      'ELECTROTECHNICAL_DESIGN.' +
      'PRE_DEFINED_POINT_MARKER_SYMBOL',
      'ELECTROTECHNICAL_DESIGN.' +
      'PRE_DEFINED_TERMINATOR_SYMBOL']) = 1)
      )) = 0;
END_RULE;
(*
```

Argument definitions:

pre_defined_symbol: the set of all instances of the **pre_defined_symbol** entity.

Formal propositions:

WR1: Each **pre_defined_symbol** shall be either a **pre_defined_geometrical_tolerance_symbol**, **pre_defined_dimension_symbol**, **pre_defined_point_marker_symbol**, or **pre_defined_terminator_symbol**.

5.2.3.160 text_font_usage

The **text_font_usage** rule ensures that every **pre_defined_text_font** and **externally_defined_text_font** is used in the presentation of a **text_literal**.

EXPRESS specification:

```
*)
RULE text_font_usage FOR
  (externally_defined_text_font,
   pre_defined_text_font);
WHERE
  WR1: SIZEOF ( QUERY ( pdtf <* pre_defined_text_font | SIZEOF (
    USEDIN ( pdtf , 'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL.FONT' ) )
    =0 ) ) =0;
  WR2: SIZEOF ( QUERY ( edtf <* externally_defined_text_font |
    SIZEOF ( USEDIN ( edtf ,
    'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL.FONT' ) ) =0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

externally_defined_text_font: the set of all instances of **externally_defined_text_font**.

pre_defined_text_font: the set of all instances of **pre_defined_text_font**.

Formal propositions:

WR1: Each **pre_defined_text_font** shall be the font for at least one **text_literal**.

WR2: Each **externally_defined_text_font** shall be the font for at least one **text_literal**.

5.2.3.161 versioned_action_request_requires_date_and_person_or_organization

The **versioned_action_request_requires_date_and_person_or_organization** rule specifies that each instance of **versioned_action_request** shall be referenced by at least two instances of either **applied_person_and_organization_assignment** or **applied_organization_assignment** that has a **role** with a **name** of 'requestor' and 'notified person or organization', respectively.

This rule enforces the requirement for every **Work_request** (see 4.2.365) to have at least one notified person or organization associated to it.

EXPRESS specification:

```
*)
```

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```
RULE
versioned_action_request_requires_date_and_person_or_organization
FOR
    (versioned_action_request);
WHERE
    WR1: SIZEOF ( QUERY ( va <* versioned_action_request | ( SIZEOF
        ( QUERY ( adapaoa <* USEDIN ( va ,
            'ELECTROTECHNICAL_DESIGN.'+
            'APPLIED_PERSON_AND_ORGANIZATION_ASSIGNMENT.'+
            'ITEMS' ) | adapaoa.role.name = 'requestor ' ) ) + SIZEOF (
        QUERY ( adaoa <* USEDIN ( va ,
            'ELECTROTECHNICAL_DESIGN.'+'APPLIED_ORGANIZATION_ASSIGNMENT.'+
            'ITEMS' ) | adaoa.role.name = 'requestor ' ) ) ) =0 ) ) =0;
    WR2: SIZEOF ( QUERY ( va <* versioned_action_request | ( SIZEOF
        ( QUERY ( adapaoa <* USEDIN ( va ,
            'ELECTROTECHNICAL_DESIGN.'+
            'APPLIED_PERSON_AND_ORGANIZATION_ASSIGNMENT.'+
            'ITEMS' ) | adapaoa.role.name =
            'notified person or organization' ) ) + SIZEOF ( QUERY (
        adaoa <* USEDIN ( va ,
            'ELECTROTECHNICAL_DESIGN.'+'APPLIED_ORGANIZATION_ASSIGNMENT.'+
            'ITEMS' ) | adaoa.role.name =
            'notified person or organization' ) ) ) =0 ) ) =0;
END_RULE;
(*
```

Argument definitions:

versioned_action_request: the set of all instances of **versioned_action_request**.

Formal propositions:

WR1: For each instance of **versioned_action_request** there shall be at least one instance of either **applied_person_and_organization_assignment**, or **applied_organization_assignment** that contains the instance of **versioned_action_request** in its set of **items** and has a **role** with a **name** of 'requestor'.

WR2: For each instance of **versioned_action_request** there shall be at least one instance of either **applied_person_and_organization_assignment**, or **applied_organization_assignment** that contains the instance of **versioned_action_request** in its set of **items** and has a **role** with a **name** of 'notified person or organization'.

5.2.3.162 versioned_action_request_requires_status

The **versioned_action_request_requires_status** rule ensures that each instance of **versioned_action_request** is referenced by exactly one instance of the **action_request_status** entity.

EXPRESS specification:

```
*)
RULE versioned_action_request_requires_status FOR
    (action_request_status,
    versioned_action_request);
WHERE
```

```

WR1:  SIZEOF(QUERY(ar <* versioned_action_request |
              (NOT(SIZEOF(QUERY(ars <* action_request_status |
                              (ar :=: ars.assigned_request) )
                              ) = 1 )) )
      ) = 0;
END_RULE;
(*

```

Argument definitions:

action_request_status: the set of all instances of **action_request_status** entities.

versioned_action_request: the set of all instances of **versioned_action_request** entities.

Formal propositions:

WR1: Each instance of **versioned_action_request** shall be referenced by exactly one instance of **action_request_status** as the **assigned_request**.

5.2.4 electrotechnical_design function definitions

5.2.4.1 acyclic_shape_aspect_relationship

The **acyclic_shape_aspect_relationship** function determines whether or not the given **shape_aspects** have been self-defined by the associations made in the specified **shape_aspect_relationship**. This function may be used to evaluate either a **shape_aspect_relationship** or any of its subtypes.

This function returns a value of TRUE if none of the elements of the **relatives** argument occur in the **relation** argument of the type which is given in the **specific_relation** argument. Otherwise it returns a value of FALSE.

EXPRESS specification:

```

*)
FUNCTION acyclic_shape_aspect_relationship
  (relation          : shape_aspect_relationship;
   relatives         : SET [1:?] OF shape_aspect;
   specific_relation : STRING) : LOGICAL;
LOCAL
  x : SET OF shape_aspect_relationship;
END_LOCAL;

IF relation.relating_shape_aspect IN relatives THEN
  RETURN (FALSE);
END_IF;
x := QUERY (sa <* bag_to_set
           (USEDIN (relation.relating_shape_aspect,
                   'PRODUCT_PROPERTY_DEFINITION_SCHEMA.' +
                   'SHAPE_ASPECT_RELATIONSHIP.' +
                   'RELATED_SHAPE_ASPECT')) |
           specific_relation IN TYPEOF (sa));
REPEAT i := 1 TO HIINDEX(x);
  IF NOT acyclic_shape_aspect_relationship

```

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```
(x[i],
  relatives + relation.relatng_shape_aspect,
  specific_relation) THEN
  RETURN (FALSE);
END_IF;
END_REPEAT;
RETURN (TRUE);
END_FUNCTION;
(*
```

Argument definitions:

relation: (input) the candidate **shape_aspect_relationship** to be checked.

relatives: (input) the set of **shape_aspects** which the function is searching for in the **relating_shape_aspect** parameter of the **relation** argument.

specific_relation: (input) the fully qualified name of a subtype of the **shape_aspect_relationship** entity.

5.2.4.2 applied_classification_assignment_correlation

The **applied_classification_assignment_correlation** function returns true if the **name** attribute value of the **classification_role** associated to instances of the **applied_classification_assignment** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **applied_classification_assignment** that has an associated **classification_role** with a **name** of ‘class system membership’ shall reference
 - a) in the role of the **assigned_class** an instance of **class_system**;
 - b) in the role of **items** only instances of **applied_identification_assignment**, **approval_status**, **class**, **colour_representation_item**, **equipment_marking**, **item_designation_assignment**, or **security_classification_level**.
- An instance of **applied_classification_assignment** that has an associated **classification_role** with a **name** of either ‘definitional’, ‘non definitional’, or ‘’ (empty string) shall reference
 - a) in the role of the **assigned_class** an instance of **class**;
 - b) in the role of **items** only instances of **assembly_component_usage**, **camera_model_d2**, **configuration_item**, **connectivity_definition**, **document**, **document_file**, **drawing_revision**, **drawing_sheet_revision**, **equipment_marking**, **installation_location**, **installation_section**, **installation_section_interface**, **item_designation_assignment**, **product**, **product_definition**, **product_definition_formation**, **product_definition_relationship**, **security_classification**, **signal**, **symbol_representation_map**, or **terminal**.
- An instance of **applied_classification_assignment** that has an associated **classification_role** with a **name** of ‘instance requirement’ shall reference in the role of the **assigned_class** an instance of

group with a **name** of 'product component with required instances' that is not instantiated as any of the subtypes.

— An instance of **applied_classification_assignment** that has an associated **classification_role** with a **name** of 'system composition' shall reference

- a) in the role of the **assigned_class** an instance of **class_system**;
- b) in the role of **items** only instances of **product_definition**;
- c) in the role of **items** only those instances of **product_definition** that have an associated **application_context_element** with a **name** of 'system definition'.

EXPRESS specification:

```

*)
FUNCTION applied_classification_assignment_correlation
  (aca : applied_classification_assignment) : BOOLEAN;
LOCAL
  role_name : STRING;
END_LOCAL;

role_name := aca.role.name;
CASE role_name OF
  'class system membership':
    BEGIN
      IF NOT ('ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM'
              IN TYPEOF(aca.assigned_class))
      THEN RETURN (FALSE);
      END_IF;
      IF SIZEOF(QUERY(i <* aca.items |
                     SIZEOF(TYPEOF(i) *
                               ['ELECTROTECHNICAL_DESIGN.' +
                                'APPLIED_IDENTIFICATION_ASSIGNMENT',
                                'ELECTROTECHNICAL_DESIGN.' +
                                'APPROVAL_STATUS',
                                'ELECTROTECHNICAL_DESIGN.CLASS',
                                'ELECTROTECHNICAL_DESIGN.' +
                                'COLOUR_REPRESENTATION_ITEM',
                                'ELECTROTECHNICAL_DESIGN.' +
                                'EQUIPMENT_MARKING',
                                'ELECTROTECHNICAL_DESIGN.' +
                                'ITEM_DESIGNATION_ASSIGNMENT',
                                'ELECTROTECHNICAL_DESIGN.' +
                                'SECURITY_CLASSIFICATION_LEVEL']
                               ) = 0 )
              ) > 0
      THEN RETURN (FALSE);
      END_IF;
    END;
  'definitional', 'non definitional', '':
    BEGIN
      IF NOT ('ELECTROTECHNICAL_DESIGN.CLASS'
              IN TYPEOF(aca.assigned_class))

```

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```
THEN RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY(i <* aca.items |
                SIZEOF(TYPEOF(i) *
                        ['ELECTROTECHNICAL_DESIGN.' +
                        'ASSEMBLY_COMPONENT_USAGE',

'ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2',

'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'CONNECTIVITY_DEFINITION',
                        'ELECTROTECHNICAL_DESIGN.DOCUMENT',
                        'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',

'ELECTROTECHNICAL_DESIGN.DRAWING_REVISION',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'DRAWING_SHEET_REVISION',

'ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'INSTALLATION_LOCATION',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'INSTALLATION_SECTION',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'INSTALLATION_SECTION_INTERFACE',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'ITEM_DESIGNATION_ASSIGNMENT',
                        'ELECTROTECHNICAL_DESIGN.PRODUCT',

'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'PRODUCT_DEFINITION_FORMATION',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'PRODUCT_DEFINITION_RELATIONSHIP',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'SECURITY_CLASSIFICATION',
                        'ELECTROTECHNICAL_DESIGN.SIGNAL',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'SYMBOL_REPRESENTATION_MAP',
                        'ELECTROTECHNICAL_DESIGN.TERMINAL']
                ) = 0 )
    ) > 0
THEN RETURN (FALSE);
END_IF;
END;

'instance requirement':
BEGIN
  IF NOT(aca.assigned_class.name
        = 'product component with required instances')
  THEN RETURN (FALSE);
  END_IF;
  IF SIZEOF(TYPEOF(aca.assigned_class) *
            ['ELECTROTECHNICAL_DESIGN.' +
```

```

        'CLASS',
        'ELECTROTECHNICAL_DESIGN.' +
        'CLASS_SYSTEM',
        'ELECTROTECHNICAL_DESIGN.' +
        'CONNECTING_LINE_GROUP',
        'ELECTROTECHNICAL_DESIGN.' +
        'PAGE_CONNECTOR_GROUP',
        'ELECTROTECHNICAL_DESIGN.' +
        'PAGE_CONNECTOR_PRESENTATION_GROUP',
        'ELECTROTECHNICAL_DESIGN.' +
        'PAGE_CONNECTOR_REFERENCE_GROUP',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_CONCEPT_FEATURE_CATEGORY']
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'system composition':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM'
        IN TYPEOF(aca.assigned_class))
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* aca.items |
        NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
            IN TYPEOF(i)) )
        ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* aca.items |
        NOT(i.frame_of_reference.name = 'system
definition') )
        ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

aca: the input **applied_classification_assignment** to be checked.

5.2.4.3 applied_document_reference_correlation

The **applied_document_reference_correlation** function returns true if the **name** attribute value of the **object_role** associated to instances of the **applied_document_reference** entity is coordinated

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with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **applied_document_reference** that has an associated **object_role** with a **name** of 'documentation' or 'verification' shall reference
 - a) in the role of **items** only instances of **product_definition**;
 - b) in the role of **items** only those instances of **product_definition** that have an associated **application_context_element** with a **name** of 'requirement definition'.
- An instance of **applied_document_reference** that has an associated **object_role** with a **name** of 'referenced standard' shall reference in the role of **items** only instances of **planar_box**.

EXPRESS specification:

```
*)
FUNCTION applied_document_reference_correlation
  (adr : applied_document_reference) : BOOLEAN;
LOCAL
  role_name : STRING;
END_LOCAL;

role_name := adr.role.name;
CASE role_name OF
  'documentation',
  'verification':
    BEGIN
      IF SIZEOF(QUERY(i <* adr.items |
                     NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                         IN TYPEOF(i)) )
              ) > 0
      THEN RETURN(FALSE);
      END_IF;
      IF SIZEOF(QUERY(i <* adr.items |
                     ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                      IN TYPEOF(i))
                     AND
                     NOT(i.frame_of_reference.name
                         = 'requirement definition'))
              ) > 0
      THEN RETURN(FALSE);
      END_IF;
    END;

'referenced standard':
  IF SIZEOF(QUERY(i <* adr.items |
                 NOT('ELECTROTECHNICAL_DESIGN.PLANAR_BOX'
                     IN TYPEOF(i)) )
          ) > 0
  THEN RETURN(FALSE);
  END_IF;
```



```

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

adr: the input **applied_document_reference** to be checked.

5.2.4.4 applied_document_usage_constraint_assignment_correlation

The **applied_document_usage_constraint_assignment_correlation** function returns true if the **name** attribute value of the **document_usage_role** associated to instances of the **applied_document_usage_constraint_assignment** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **applied_document_usage_constraint_assignment** that has an associated **document_usage_role** with a **name** of ‘documentation’ or ‘verification’ shall reference
 - a) in the role of **items** only instances of **product_definition**;
 - b) in the role of **items** only those instances of **product_definition** that have an associated **application_context_element** with a **name** of ‘requirement definition’.

EXPRESS specification:

```

*)
FUNCTION applied_document_usage_constraint_assignment_correlation
  (aduca : applied_document_usage_constraint_assignment) :
BOOLEAN;
LOCAL
  role_name : STRING;
END_LOCAL;

  role_name := aduca.role.name;
CASE role_name OF
  'documentation',
  'verification':
  BEGIN
    IF SIZEOF(QUERY(i <* aduca.items |
      NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
        IN TYPEOF(i)) )
      ) > 0
    THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* aduca.items |
    ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
      IN TYPEOF(i))
    AND

```

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```
                NOT(i.frame_of_reference.name
                    = 'requirement definition') )
            ) > 0
        THEN RETURN (FALSE);
    END_IF;
END;

    OTHERWISE: RETURN (TRUE);
END_CASE;

RETURN (TRUE);

END_FUNCTION;
(*
```

Argument definitions:

aduca: the input **applied_document_usage_constraint_assignment** to be checked.

5.2.4.5 applied_group_assignment_correlation

The **applied_group_assignment_correlation** function returns true if the **name** attribute value of the **object_role** associated to instances of the **applied_group_assignment** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **applied_external_identification_assignment** that has an associated **identification_role** with a **name** of 'specification category member' shall reference
 - a) in the role of **items** only instances of **product_concept_feature**;
 - b) in the role of **items** only those instances of **product_concept_feature** that are not instances of **conditional_concept_feature**;
 - c) in the role of the **assigned_group** only an instance of **product_concept_feature_category**.

EXPRESS specification:

```
*)
FUNCTION applied_group_assignment_correlation
    (aga : applied_group_assignment) : BOOLEAN;
LOCAL
    role_name : STRING;
END_LOCAL;

    role_name := aga.role.name;
CASE role_name OF
    'specification category member':
        BEGIN
            IF SIZEOF(QUERY(i <* aga.items |
NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_CONCEPT_FEATURE'
```

```

        IN TYPEOF(i) )
    ) > 0
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* aga.items |
'ELECTROTECHNICAL_DESIGN.CONDITIONAL_CONCEPT_FEATURE'
        IN TYPEOF(i) )
    ) > 0
    THEN RETURN (FALSE);
    END_IF;
    IF
NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_CONCEPT_FEATURE_CATEGORY'
        IN TYPEOF(aga.assigned_group))
    THEN RETURN (FALSE);
    END_IF;
    END;

    OTHERWISE: RETURN (TRUE);
    END_CASE;

    RETURN (TRUE);

END_FUNCTION;
(*

```

Argument definitions:

aga: the input **applied_group_assignment** to be checked.

5.2.4.6 applied_identification_assignment_correlation

The **applied_identification_assignment_correlation** function returns true if the **name** attribute value of the **identification_role** associated to instances of the **applied_identification_assignment** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'alias' shall

a) reference in the role of **items** only instances of **approval_status**, **class_system**, **colour_representation_item**, **configuration_item**, **connectivity_definition**, **document_file**, **general_property**, **installation_node**, **installation_route**, **installation_section**, **installation_section_interface**, **notification**, **organization**, **path**, **process_variable**, **product**, **product_class**, **product_concept_feature**, **product_concept_feature_category**, **product_definition**, **property_definition**, **security_classification_level**, **terminal**, or **vertex**;

b) be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with the **name** 'version';

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- c) be referenced by at most one instance of **applied_organization_assignment** that has an associated **organization_role** with the **name** 'alias scope'.
- An instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'id' shall reference
- a) in the role of **items** only instances of **product**;
 - b) in the role of **items** only those instances of **product** that are referenced by exactly one instance of **product_related_product_category** with a **name** of 'accessory', 'other', 'part' or 'software'.
- An instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'inventory number' shall reference
- a) in the role of **items** only instances of **product_definition**;
 - b) in the role of **items** only those instances of **product_definition** that have an associated **application_context_element** with a **name** of 'physical instance'.
- An instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of 'version' shall reference
- a) in the role of **items** only instances of **action**, **action_directive**, **class**, **configuration_item**, **connectivity_definition**, **document_file**, **effectivity**, **general_property**, **identification_assignment**, **installation_location**, **installation_route**, **installation_section**, **installation_section_interface**, **notification**, **path**, **product_class**, **product_concept_feature**, **product_definition**, **representation**, or **signal**;
 - b) in the role of **items** only those instances of **effectivity** that are not instances of **lot_effectivity** or **serial_numbered_effectivity**;
 - c) in the role of **items** only those instances of **identification_assignment** that are instances of **applied_identification_assignment** or **item_designation_assignment**;
 - d) in the role of **items** only those instances of **applied_identification_assignment** that have an associated **identification_role** with a **name** of 'alias';
 - e) in the role of **items** only those instances of **item_designation_assignment** that have an associated **identification_role** with a **description** of 'alias'.

EXPRESS specification:

```
* )
FUNCTION applied_identification_assignment_correlation
  (aia : applied_identification_assignment) : BOOLEAN;
LOCAL
  role_name : STRING;
END_LOCAL;

  role_name := aia.role.name;
CASE role_name OF
  'alias':
```

```

BEGIN
  IF SIZEOF(QUERY(i <* aia.items |
                sizeof(TYPEOF(i) *
['ELECTROTECHNICAL_DESIGN.APPROVAL_STATUS',
  'ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM',
  'ELECTROTECHNICAL_DESIGN.' +
  'COLOUR_REPRESENTATION_ITEM',

'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
  'ELECTROTECHNICAL_DESIGN.' +
  'CONNECTIVITY_DEFINITION',
  'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',

'ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY',

'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE',

'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',

'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
  'ELECTROTECHNICAL_DESIGN.' +
  'INSTALLATION_SECTION_INTERFACE',
  'ELECTROTECHNICAL_DESIGN.NOTIFICATION',
  'ELECTROTECHNICAL_DESIGN.ORGANIZATION',
  'ELECTROTECHNICAL_DESIGN.PATH',

'ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE',
  'ELECTROTECHNICAL_DESIGN.PRODUCT',
  'ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS',
  'ELECTROTECHNICAL_DESIGN.' +
  'PRODUCT_CONCEPT_FEATURE',
  'ELECTROTECHNICAL_DESIGN.' +
  'PRODUCT_CONCEPT_FEATURE_CATEGORY',

'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',

'ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION',
  'ELECTROTECHNICAL_DESIGN.' +
  'SECURITY_CLASSIFICATION_LEVEL',
  'ELECTROTECHNICAL_DESIGN.TERMINAL',
  'ELECTROTECHNICAL_DESIGN.VERTEX']
    ) = 0 )
    ) > 0
  THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(i <* USEDIN(aia,
                        'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                        'ITEMS') |
                i.role.name = 'version')
    ) > 1
  THEN RETURN(FALSE);
END_IF;

```

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```
IF SIZEOF(QUERY(i <* USEDIN(aia,
                        'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_ORGANIZATION_ASSIGNMENT.' +
                        'ITEMS') |
            i.role.name = 'alias scope')
        ) > 1
THEN RETURN(FALSE);
END_IF;
END;

'id':
BEGIN
IF SIZEOF(QUERY(i <* aia.items |
                NOT('ELECTROTECHNICAL_DESIGN.PRODUCT'
                    IN TYPEOF(i)) )
        ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(i <* aia.items |
                ('ELECTROTECHNICAL_DESIGN.PRODUCT'
                 IN TYPEOF(i))
                AND
                NOT(SIZEOF(QUERY(cat <*
                                USEDIN(i,
                                'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
                                'PRODUCTS') |
                                cat.name IN ['accessory', 'other',
                                             'part', 'software'] )
                            ) = 1 ) )
        ) > 0
THEN RETURN(FALSE);
END_IF;
END;

'inventory number':
BEGIN
IF SIZEOF(QUERY(i <* aia.items |
                NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                    IN TYPEOF(i)) )
        ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(i <* aia.items |
                ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                 IN TYPEOF(i))
                AND
                NOT(i\product_definition.frame_of_reference.name
                    = 'physical instance') )
        ) > 0
THEN RETURN(FALSE);
END_IF;
END;
```

```

'version':
  BEGIN
    IF SIZEOF(QUERY(i <* aia.items |
      SIZEOF(TYPEOF(i) *
        ['ELECTROTECHNICAL_DESIGN.ACTION',
'ELECTROTECHNICAL_DESIGN.ACTION_DIRECTIVE',
      'ELECTROTECHNICAL_DESIGN.CLASS',
'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
      'ELECTROTECHNICAL_DESIGN.' +
      'CONNECTIVITY_DEFINITION',
      'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',
      'ELECTROTECHNICAL_DESIGN.EFFECTIVITY',
'ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY',
      'ELECTROTECHNICAL_DESIGN.' +
      'IDENTIFICATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'INSTALLATION_LOCATION',
'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',
'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
      'ELECTROTECHNICAL_DESIGN.' +
      'INSTALLATION_SECTION_INTERFACE',
      'ELECTROTECHNICAL_DESIGN.NOTIFICATION',
      'ELECTROTECHNICAL_DESIGN.PATH',
      'ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS',
      'ELECTROTECHNICAL_DESIGN.' +
      'PRODUCT_CONCEPT_FEATURE',
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
      'ELECTROTECHNICAL_DESIGN.REPRESENTATION',
      'ELECTROTECHNICAL_DESIGN.SIGNAL']
      ) = 0 )
    ) > 0
    THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* aia.items |
    SIZEOF(TYPEOF(i) *
      ['ELECTROTECHNICAL_DESIGN.' +
      'LOT_EFFECTIVITY',
      'ELECTROTECHNICAL_DESIGN.' +
      'SERIAL_NUMBERED_EFFECTIVITY']
    ) > 0 )
    ) > 0
    THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* aia.items |
('ELECTROTECHNICAL_DESIGN.IDENTIFICATION_ASSIGNMENT'
  IN TYPEOF(i))
  AND

```

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```
(SIZEOF(TYPEOF(i) *
    ['ELECTROTECHNICAL_DESIGN.' +
     'APPLIED_IDENTIFICATION_ASSIGNMENT',
     'ELECTROTECHNICAL_DESIGN.' +
     'ITEM_DESIGNATION_ASSIGNMENT']
) = 0 ) )
) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(i <* aia.items |
    ('ELECTROTECHNICAL_DESIGN.' +
     'APPLIED_IDENTIFICATION_ASSIGNMENT'
     IN TYPEOF(i))
    AND
    NOT(i.role.name = 'alias') )
) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(i <* aia.items |
    ('ELECTROTECHNICAL_DESIGN.' +
     'ITEM_DESIGNATION_ASSIGNMENT'
     IN TYPEOF(i))
    AND
    NOT(i.role.description = 'alias') )
) > 0
THEN RETURN(FALSE);
END_IF;
END;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*
```

Argument definitions:

aia: the input **applied_identification_assignment** to be checked.

5.2.4.7 applied_organization_assignment_correlation

The **applied_organization_assignment_correlation** function returns true if the **name** attribute value of the **organization_role** associated to instances of the **applied_organization_assignment** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of 'alias scope' shall reference in the role of **items** only instances of **applied_identification_assignment**.

- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘class supplier’ shall reference in the role of **items** only instances of **externally_defined_class**.
- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘concerned organization’ or ‘supplying organization’ shall reference
 - a) in the role of **items** only instances of **action**;
 - b) in the role of **items** only those instances of **action** that are not instances of **retention**.
- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘item designation scope’ shall reference in the role of **items** only instances of **item_designation_assignment**.
- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘notified person or organization’ shall reference in the role of **items** only instances of **versioned_action_request**.
- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘organization in contract’ shall reference in the role of **items** only instances of **contract**.
- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘requestor’ shall
 - a) reference in the role of **items** only instances of **action** or **versioned_action_request**;
 - b) reference in the role of **items** only those instances of **action** that are not instances of **retention**;
 - c) be contained in the set of **items** of at most one instance of either an **applied_date_assignment** that has an associated **date_role** with a **name** of ‘actual’ or an **applied_date_and_time_assignment** that has an associated **date_time_role** with a **name** of ‘actual’.
- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘signing for contract’ shall reference
 - a) in the role of **items** only instances of **applied_organization_assignment**;
 - b) in the role of **items** only those instances of **applied_organization_assignment** that have an associated **organization_role** with a **name** of ‘organization in contract’.
- An instance of **applied_organization_assignment** that has an associated **organization_role** with a **name** of ‘validity context’ shall reference in the role of **items** only instances of **action_property**, **property_definition**, or **representation_relationship**.

EXPRESS specification:

*)

```
FUNCTION applied_organization_assignment_correlation
  (aoa : applied_organization_assignment) : BOOLEAN;
```

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```
LOCAL
  role_name : STRING;
END_LOCAL;

role_name:= aoa.role.name;
CASE role_name OF
  'alias scope':
    IF SIZEOF(QUERY(i <* aoa.items |
                    NOT('ELECTROTECHNICAL_DESIGN.' +
                        'APPLIED_IDENTIFICATION_ASSIGNMENT'
                        IN TYPEOF(i)) )
              ) > 0
    THEN RETURN(FALSE);
    END_IF;

  'class supplier':
    IF SIZEOF(QUERY(i <* aoa.items |
                    NOT('ELECTROTECHNICAL_DESIGN.EXTERNALLY_DEFINED_CLASS'
                        IN TYPEOF(i)) )
              ) > 0
    THEN RETURN(FALSE);
    END_IF;

  'concerned organization',
  'supplying organization':
    BEGIN
      IF SIZEOF(QUERY(i <* aoa.items |
                      NOT('ELECTROTECHNICAL_DESIGN.ACTION'
                          IN TYPEOF(i)) )
                ) > 0
      THEN RETURN(FALSE);
      END_IF;
      IF SIZEOF(QUERY(i <* aoa.items |
                      'ELECTROTECHNICAL_DESIGN.RETENTION'
                      IN TYPEOF(i)) )
                ) > 0
      THEN RETURN(FALSE);
      END_IF;
    END;

  'item designation scope':
    IF SIZEOF(QUERY(i <* aoa.items |
                    NOT('ELECTROTECHNICAL_DESIGN.' +
                        'ITEM_DESIGNATION_ASSIGNMENT'
                        IN TYPEOF(i)) )
              ) > 0
    THEN RETURN(FALSE);
    END_IF;

  'notified person or organization':
    IF SIZEOF(QUERY(i <* aoa.items |
                    NOT('ELECTROTECHNICAL_DESIGN.' +
                        'VERSIONED_ACTION_REQUEST'
                        IN TYPEOF(i)) )
              ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;
```

```

    ) > 0
  THEN RETURN(FALSE);
  END_IF;

'organization in contract':
  IF SIZEOF(QUERY(i <* aoa.items |
                  NOT('ELECTROTECHNICAL_DESIGN.CONTRACT'
                      IN TYPEOF(i)) )
    ) > 0
  THEN RETURN(FALSE);
  END_IF;

'requestor':
  BEGIN
    IF SIZEOF(QUERY(i <* aoa.items |
                   SIZEOF(TYPEOF(i) *
                           ['ELECTROTECHNICAL_DESIGN.' +
                             'ACTION',
                             'ELECTROTECHNICAL_DESIGN.' +
                             'VERSIONED_ACTION_REQUEST']
                           ) = 0 )
    ) > 0
  THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* aoa.items |
                  'ELECTROTECHNICAL_DESIGN.RETENTION'
                  IN TYPEOF(i) )
    ) > 0
  THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(da <* USEDIN(aoa,
                              'ELECTROTECHNICAL_DESIGN.' +
                              'APPLIED_DATE_ASSIGNMENT.' +
                              'ITEMS') |
                  da.role.name = 'actual') )
    +
    SIZEOF(QUERY(dta <* USEDIN(aoa,
                              'ELECTROTECHNICAL_DESIGN.' +
                              'APPLIED_DATE_AND_TIME_ASSIGNMENT.'
                              +
                              'ITEMS') |
                  dta.role.name = 'actual') )
    = 0
  THEN RETURN(FALSE);
  END_IF;
  END;

'signing for contract':
  BEGIN
    IF SIZEOF(QUERY(i <* aoa.items |
                   NOT('ELECTROTECHNICAL_DESIGN.' +
                       'APPLIED_ORGANIZATION_ASSIGNMENT'
                       IN TYPEOF(i)) )
    ) > 0
  THEN RETURN(FALSE);

```

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```
END_IF;
IF SIZEOF(QUERY(i <* aoa.items |
    ('ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_ORGANIZATION_ASSIGNMENT'
    IN TYPEOF(i))
    AND
    NOT(i.role.name = 'organization in contract') )
    ) > 0
    THEN RETURN(FALSE);
END_IF;
END;

'validity context':
IF SIZEOF(QUERY(i <* aoa.items |
    SIZEOF(TYPEOF(i) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'ACTION_PROPERTY',
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION_RELATIONSHIP']
    ) = 0 )
    ) > 0
    THEN RETURN(FALSE);
END_IF;

OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*
```

Argument definitions:

aoa: the input **applied_organization_assignment** to be checked.

5.2.4.8 **applied_person_and_organization_assignment_correlation**

The **applied_person_and_organization_assignment_correlation** function returns true if the **name** attribute value of the **person_and_organization_role** associated to instances of the **applied_person_and_organization_assignment** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **applied_person_and_organization_assignment** that has an associated **person_and_organization_role** with a **name** of 'notified person or organization' shall reference in the role of **items** only instances of **versioned_action_request**.
- An instance of **applied_person_and_organization_assignment** that has an associated **person_and_organization_role** with a **name** of 'requestor' shall reference

- a) in the role of **items** only instances of **action** or **versioned_action_request**;
 - b) in the role of **items** only those instances of **action** that are not instances of **retention**;
 - c) be contained in the set of **items** of at most one instance of either an **applied_date_assignment** that has an associated **date_role** with a **name** of 'actual' or an **applied_date_and_time_assignment** that has an associated **date_time_role** with a **name** of 'actual'.
- An instance of **applied_person_and_organization_assignment** that has an associated **person_and_organization_role** with a **name** of 'signing for contract' shall reference
- a) in the role of **items** only instances of **applied_organization_assignment**;
 - b) in the role of **items** only those instances of **applied_organization_assignment** that have an associated **organization_role** with a **name** of 'organization in contract'.

EXPRESS specification:

```

*)
FUNCTION applied_person_and_organization_assignment_correlation
  (apoa : applied_person_and_organization_assignment) : BOOLEAN;
LOCAL
  role_name : STRING;
END_LOCAL;

role_name:= apoa.role.name;
CASE role_name OF
  'notified person or organization':
    IF SIZEOF(QUERY(i <* apoa.items |
      NOT('ELECTROTECHNICAL_DESIGN.' +
        'VERSIONED_ACTION_REQUEST'
        IN TYPEOF(i)) )
      ) > 0
    THEN RETURN(FALSE);
    END_IF;

  'requestor':
    BEGIN
      IF SIZEOF(QUERY(i <* apoa.items |
        SIZEOF(TYPEOF(i) *
          ['ELECTROTECHNICAL_DESIGN.' +
            'ACTION',
            'ELECTROTECHNICAL_DESIGN.' +
            'VERSIONED_ACTION_REQUEST']
          ) = 0 )
        ) > 0
      THEN RETURN(FALSE);
      END_IF;
      IF SIZEOF(QUERY(i <* apoa.items |
        'ELECTROTECHNICAL_DESIGN.RETENTION'
        IN TYPEOF(i) )
        ) > 0
      THEN RETURN(FALSE);
      END_IF;
    END;

```

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```
IF SIZEOF(QUERY(da <* USEDIN(apoa,
                          'ELECTROTECHNICAL_DESIGN.' +
                          'APPLIED_DATE_ASSIGNMENT.' +
                          'ITEMS') |
          da.role.name = 'actual') )
+
  SIZEOF(QUERY(dta <* USEDIN(apoa,
                          'ELECTROTECHNICAL_DESIGN.' +
                          'APPLIED_DATE_AND_TIME_ASSIGNMENT.' +
+
                          'ITEMS') |
          dta.role.name = 'actual') )
= 0
THEN RETURN(FALSE);
END_IF;
END;

'signing for contract':
BEGIN
  IF SIZEOF(QUERY(i <* apoa.items |
                  NOT('ELECTROTECHNICAL_DESIGN.' +
                      'APPLIED_ORGANIZATION_ASSIGNMENT'
                      IN TYPEOF(i)) )
    ) > 0
  THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* apoa.items |
                  ('ELECTROTECHNICAL_DESIGN.' +
                  'APPLIED_ORGANIZATION_ASSIGNMENT'
                  IN TYPEOF(i))
                  AND
                  NOT(i.role.name = 'organization in contract') )
    ) > 0
  THEN RETURN(FALSE);
  END_IF;
END;

  OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*
```

Argument definitions:

apoa: the input **person_and_organization_assignment** to be checked.

5.2.4.9 aspect_ratio

The **aspect_ratio** function returns a **positive_ratio_measure** that is the ratio of length to height for a given **planar_box**.

NOTE The definition of this function is identical to the definition in ISO 10303-201, ISO 10303-202.

EXPRESS specification:

```
*)
FUNCTION aspect_ratio (p : planar_box) : positive_ratio_measure;
  RETURN (p.size_in_x / p.size_in_y);
END_FUNCTION;
(*
```

Argument definitions:

p: the input **planar_box** to be checked.

5.2.4.10 bag_to_set

This function converts BAGs into SETs.

NOTE The definition of this function is identical to the definition in ISO 10303-41.

EXPRESS specification:

```
*)
FUNCTION bag_to_set
  (the_bag : BAG OF GENERIC : intype) : SET OF GENERIC : intype;
LOCAL
  the_set : SET OF GENERIC : intype := [];
END_LOCAL;
IF SIZEOF (the_bag) > 0 THEN
  REPEAT i := 1 to HIINDEX (the_bag);
    the_set := the_set + the_bag [i];
  END_REPEAT;
END_IF;
RETURN (the_set);
END_FUNCTION;
(*
```

Argument definitions:

the_bag: the BAG that is converted into a SET.

5.2.4.11 configuration_design_correlation

The **configuration_design_correlation** function returns true if the **name** attribute value of the **configuration_design** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **configuration_design** that has a **name** of ‘functionality’ shall reference

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- a) in the role of the **configuration** an instance of **configuration_item** that references an instance of **product_class** in the role of the **item_concept**;
 - b) in the role of the **design** an instance of **product_definition** that has an associated **application_context_element** with a **name** of either 'functional definition' or 'functional occurrence'.
- An instance of **configuration_design** that has a **name** of 'occurrence usage definition' shall reference in the role of the **design** an instance of **product_definition** that has a **name** of either 'quantified instance', 'selected instance', or 'single instance'.
- An instance of **configuration_design** that has a **name** of 'physical instance basis' shall reference in the role of the **design** an instance of **product_definition** that has a **name** of 'physical instance'.
- An instance of **configuration_design** that has a **name** of 'realization' shall reference
- a) in the role of the **configuration** an instance of **configuration_item** that references an instance of **product_class** in the role of the **item_concept**;
 - b) in the role of the **design** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'conceptual definition'.

EXPRESS specification:

```
*)
FUNCTION configuration_design_correlation
    (cd : configuration_design) : BOOLEAN;
LOCAL
    name : STRING;
END_LOCAL;

name := cd.name;
CASE name OF
    'functionality':
        BEGIN
            IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS'
                IN TYPEOF(cd.configuration.item_concept))
            THEN RETURN(FALSE);
            END_IF;
            IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                IN TYPEOF(cd.design))
            THEN RETURN(FALSE);
            END_IF;
            IF NOT(cd.design.frame_of_reference\
                application_context_element.name
                IN ['functional definition',
                    'functional occurrence'])
            THEN RETURN(FALSE);
            END_IF;
        END;
    'occurrence usage definition':
        BEGIN
```



```

IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
      IN TYPEOF(cd.design))
THEN RETURN(FALSE);
END_IF;
IF NOT(cd.design.name
      IN ['quantified instance',
        'selected instance',
        'single instance'])
THEN RETURN(FALSE);
END_IF;
END;

```

'physical instance basis':

```

BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
        IN TYPEOF(cd.design))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(cd.design.name = 'physical instance')
  THEN RETURN(FALSE);
  END_IF;
END;

```

'realization':

```

BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS'
        IN TYPEOF(cd.configuration.item_concept))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
        IN TYPEOF(cd.design))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(cd.design.frame_of_reference\
        application_context_element.name
        = 'conceptual definition')
  THEN RETURN(FALSE);
  END_IF;
END;

```

```

  OTHERWISE: RETURN(TRUE);
END_CASE;

```

```

RETURN(TRUE);

```

```

END_FUNCTION;

```

```

(*

```

Argument definitions:

cd: the input **configuration_design** to be checked.

5.2.4.12 externally_defined_item_relationship_correlation

The **externally_defined_item_relationship_correlation** function returns true if the **name** attribute value of the **externally_defined_item_relationship** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **externally_defined_item_relationship** with a **name** of 'name scope' shall reference

- a) in the role of the **related_item** an instance of **externally_defined_class**;
- b) in the role of the **relating_item** an instance of **externally_defined_general_property**.

EXPRESS specification:

```

*)
FUNCTION externally_defined_item_relationship_correlation
  (edir : externally_defined_item_relationship) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

  name := edir.name;
  CASE name OF
    'name scope':
      BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.EXTERNALLY_DEFINED_CLASS'
              IN TYPEOF(edir.related_item))
        THEN RETURN(FALSE);
        END_IF;
        IF NOT ('ELECTROTECHNICAL_DESIGN.' +
              'EXTERNALLY_DEFINED_GENERAL_PROPERTY'
              IN TYPEOF(edir.relating_item))
        THEN RETURN(FALSE);
        END_IF;
      END;

    OTHERWISE: RETURN(TRUE);
  END_CASE;

  RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

edir: the input **externally_defined_item_relationship** to be checked.

5.2.4.13 general_property_correlation

The **general_property_correlation** function returns true if the **name** attribute value of the **general_property** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **general_property** with a **name** of either 'body breadth', 'body height', 'body length', 'component colour', 'cross section area', 'mass', 'material specification', 'operating temperature', 'storage temperature', 'mounting features specification', 'outside diameter', 'rated current', 'rated power', or 'rated voltage' shall

- a) not be associated with an instance of **representation** that has a **name** of 'property specification';
- b) not be associated with an instance of **representation** that has a **name** of 'property value format'.

EXPRESS specification:

```

*)
FUNCTION general_property_correlation
  (gp : general_property) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

name := gp.name;
CASE name OF
  'body breadth',
  'body height',
  'body length',
  'component colour',
  'cross section area',
  'mass',
  'material specification',
  'mounting features specification',
  'operating temperature',
  'outside diameter',
  'rated current',
  'rated power',
  'rated voltage',
  'storage temperature':
  BEGIN
    IF SIZEOF(QUERY(pdr <* USEDIN(gp,
      'ELECTROTECHNICAL_DESIGN.' +
      'PROPERTY_DEFINITION_REPRESENTATION.' +
      'DEFINITION') |
      pdr.used_representation.name = 'property value
format')
    ) > 0
    THEN RETURN(FALSE);
  
```

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```
        END_IF;
        IF SIZEOF(QUERY(pdr <* USEDIN(gp,
                        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                        'DEFINITION') |
                pdr.used_representation.name = 'property
specification')
        ) > 0
        THEN RETURN(FALSE);
        END_IF;
    END;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*
```

Argument definitions:

gp: the input **general_property** to be checked.

5.2.4.14 **get_multi_language**

The **get_multi_language** function accepts an instance of **multi_language_attribute_assignment** as input and returns a label representing the language.

NOTE - This function is used to determine the value of the derived attribute **language** of **multi_language_attribute_assignment**.

EXPRESS specification:

```
*)
FUNCTION get_multi_language
(x : attribute_value_assignment) : label;
LOCAL
alas : BAG OF attribute_language_assignment :=
        USEDIN(x, 'ELECTROTECHNICAL_DESIGN.' +
                'ATTRIBUTE_LANGUAGE_ASSIGNMENT.ITEMS');
-- note: sizeof(alas) has to be 1 due to
-- multi_language_attribute_assignment.wr2
END_LOCAL;
IF SIZEOF(alas) > 0 THEN RETURN(alas[1].language);
END_IF;
RETURN (?);
END_FUNCTION;
(*
```

Argument definitions:

x: The **x** identifies the instance of **attribute_value_assignment** for which a language is returned.

5.2.4.15 group_relationship_correlation

The **group_relationship_correlation** function returns true if the **name** attribute value of the **group_relationship** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **group_relationship** with a **name** of 'class hierarchy' shall reference in the role of the **related_group** and in the role of the **relating_group** instances of **class**.
- An instance of **group_relationship** with a **name** of 'connecting line ownership' shall reference
 - a) in the role of the **related_group** an instance of **page_connector_group**;
 - b) in the role of the **relating_group** an instance of **connecting_line_group**.
- An instance of **group_relationship** with a **name** of 'page connector ownership' shall reference
 - a) in the role of the **related_group** an instance of **page_connector_presentation_group**;
 - b) in the role of the **relating_group** an instance of **page_connector_group**.
- An instance of **group_relationship** with a **name** of 'page connector presentation ownership' shall reference
 - a) in the role of the **related_group** an instance of **page_connector_reference_group**;
 - b) in the role of the **relating_group** an instance of **page_connector_presentation_group**.

EXPRESS specification:

```

*)
FUNCTION group_relationship_correlation
  (gr : group_relationship) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

name := gr.name;
CASE name OF
  'class hierarchy':
    IF NOT( ('ELECTROTECHNICAL_DESIGN.CLASS'
            IN TYPEOF(gr.related_group))
            AND
            ('ELECTROTECHNICAL_DESIGN.CLASS'
            IN TYPEOF(gr.relating_group)) )
    THEN RETURN(FALSE);
    END_IF;

  'connecting line ownership':
    BEGIN
      IF NOT('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_GROUP'
            IN TYPEOF(gr.related_group))
    
```

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```
        THEN RETURN (FALSE);
        END_IF;
        IF NOT ('ELECTROTECHNICAL_DESIGN.CONNECTING_LINE_GROUP'
                IN TYPEOF(gr.relatiing_group))
        THEN RETURN (FALSE);
        END_IF;
    END;

'page connector ownership':
BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.' +
            'PAGE_CONNECTOR_PRESENTATION_GROUP'
            IN TYPEOF(gr.related_group))
    THEN RETURN (FALSE);
    END_IF;
    IF NOT ('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_GROUP'
            IN TYPEOF(gr.relatiing_group))
    THEN RETURN (FALSE);
    END_IF;
END;

'page connector presentation ownership':
BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.' +
            'PAGE_CONNECTOR_REFERENCE_GROUP'
            IN TYPEOF(gr.related_group))
    THEN RETURN (FALSE);
    END_IF;
    IF NOT ('ELECTROTECHNICAL_DESIGN.' +
            'PAGE_CONNECTOR_PRESENTATION_GROUP'
            IN TYPEOF(gr.relatiing_group))
    THEN RETURN (FALSE);
    END_IF;
END;

    OTHERWISE: RETURN (TRUE);
END_CASE;

RETURN (TRUE);

END_FUNCTION;
(*
```

Argument definitions:

gr: the input **group_relationship** to be checked.

5.2.4.16 identification_assignment_relationship_correlation

The **identification_assignment_relationship_correlation** function returns true if the **name** attribute value of the **identification_assignment_relationship** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **identification_assignment_relationship** with a **name** of ‘item designation composition’ shall reference in the role of the **related_identification_assignment** and in the role of the **relating_identification_assignment** instances of **item_designation_assignment**.

EXPRESS specification:

```

*)
FUNCTION identification_assignment_relationship_correlation
    (iar : identification_assignment_relationship) : BOOLEAN;
LOCAL
    name : STRING;
END_LOCAL;

    name := iar.name;
CASE name OF
    'item designation composition':
        IF NOT(
('ELECTROTECHNICAL_DESIGN.ITEM_DESIGNATION_ASSIGNMENT'
            IN TYPEOF(iar.related_identification_assignment))
            AND
('ELECTROTECHNICAL_DESIGN.ITEM_DESIGNATION_ASSIGNMENT'
            IN TYPEOF(iar.relating_identification_assignment)) )
        THEN RETURN(FALSE);
        END_IF;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

iar: the input **identification_assignment_relationship** to be checked.

5.2.4.17 item_correlation

The **item_correlation** function accepts a set of **GENERIC** and a set of **STRING** as input and returns a boolean result. The function will return **TRUE** if all elements of the first set are in the set of types that is generated from the second set. Else it will return **FALSE**.

EXPRESS specification:

```

*)
FUNCTION item_correlation
    (items : SET OF GENERIC;
     c_items: SET OF STRING): LOGICAL;
LOCAL
    c_types : SET OF STRING := [];
    c_hit : INTEGER := 0;
END_LOCAL;

```

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```
REPEAT i:=1 TO HIINDEX(c_items);
  c_types := c_types + ['ELECTROTECHNICAL_DESIGN.' + c_items[i]];
END_REPEAT;

REPEAT i:=1 TO HIINDEX(items);
  IF (SIZEOF(c_types * TYPEOF(items[i])) = 1)
    THEN
      c_hit := c_hit + 1;
    END_IF;
END_REPEAT;

IF (SIZEOF(items) = c_hit)
  THEN
    RETURN(TRUE);
  ELSE
    RETURN(FALSE);
  END_IF;
END_FUNCTION;
(*
```

Argument definitions:

items: The **items** identifies the set of instances which are tested, if they are in the set of types constructed from the second argument **c_items**.

c_items: The **c_items** identifies a set of STRING, from which a set of types is generated.

5.2.4.18 product_definition_context_association_correlation

The **product_definition_context_association_correlation** function returns true if the **name** attribute value of the **product_definition_context_role** associated to instances of the **product_definition_context_association** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **product_definition_context_association** with a **name** of ‘application context’ shall reference in the role of the **definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of either ‘conceptual definition’, ‘functional definition’, or ‘part definition’.

— An instance of **product_definition_context_association** with a **name** of ‘external’ shall reference in the role of the **frame_of_reference** an instance of **product_definition_context** that has a **name** of ‘external’.

— An instance of **product_definition_context_association** with a **name** of ‘part definition type’ shall reference

a) in the role of the **frame_of_reference** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’;

b) in the role of the **frame_of_reference** an instance of **product_definition_context** that has a **name** of 'assembly definition'.

EXPRESS specification:

```

*)
FUNCTION product_definition_context_association_correlation
    (pdca : product_definition_context_association) : BOOLEAN;
LOCAL
    role_name : STRING;
END_LOCAL;

    role_name := pdca.role.name;
CASE role_name OF
    'application context':
        IF NOT(pdca.definition.frame_of_reference.name
            IN ['conceptual definition',
                'functional definition',
                'part definition'])
        THEN RETURN(FALSE);
        END_IF;

    'external':
        IF NOT(pdca.frame_of_reference.name = 'external')
        THEN RETURN(FALSE);
        END_IF;

    'part definition type':
        BEGIN
            IF NOT(pdca.definition.frame_of_reference.name
                = 'part definition')
            THEN RETURN(FALSE);
            END_IF;
            IF NOT(pdca.frame_of_reference.name
                = 'assembly definition')
            THEN RETURN(FALSE);
            END_IF;
        END;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

pdca: the input **product_definition_context_association** to be checked.

5.2.4.19 product_definition_context_correlation

The **product_definition_context_correlation** function returns true if the **name** attribute value of the **product_definition_context** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **product_definition_context** with a **name** of ‘assembly definition’ shall
 - a) be referenced by at least one instance of **product_definition_context_association**;
 - b) be referenced by an instance of **product_definition_context_association** that has a **name** of ‘part definition type’ and that references in the role of the **frame_of_reference** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’;
 - c) not be referenced by an instance of **product_definition** in the role of the **frame_of_reference**.
- An instance of **product_definition_context** with a **name** of ‘external’ shall be referenced by
 - a) be referenced by at least one instance of **product_definition_context_association**;
 - b) be referenced by an instance of **product_definition_context_association** that has a **name** of ‘external’ and that references in the role of the **frame_of_reference** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’;
 - c) not be referenced by an instance of **product_definition** in the role of the **frame_of_reference**.

EXPRESS specification:

```

*)
FUNCTION product_definition_context_correlation
  (pdc : product_definition_context) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

name := pdc\application_context_element.name;
CASE name OF
  'assembly definition':
    BEGIN
      IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
'FRAME_OF_REFERENCE'
) = 0
      THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY(a <* USEDIN(pdc,
'ELECTROTECHNICAL_DESIGN.' +

```

```

'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
    'FRAME_OF_REFERENCE') |
    NOT(a.role.name = 'part definition type')
    OR
    NOT(a.definition.frame_of_reference.name
        = 'part definition') )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_DEFINITION.' +
        'FRAME_OF_REFERENCE')
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'external':
BEGIN
    IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
    'FRAME_OF_REFERENCE')
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(a <* USEDIN(pdc,
        'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
    'FRAME_OF_REFERENCE') |
    NOT(a.role.name = 'external') )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_DEFINITION.' +
        'FRAME_OF_REFERENCE')
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

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pd: the input **product_definition_context** to be checked.

5.2.4.20 product_definition_correlation

The **product_definition_correlation** function returns true if

- the **name** attribute value of the **application_context_element** associated to the **product_definition** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303;
- the **name** attribute value of the **product_definition** entity is coordinated with the **name** of the **application_context_element** associated to this **product_definition**.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘alternative definition’ shall be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of ‘version’.
- An instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘conceptual definition’ shall
 - a) be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**;
 - b) be referenced by exactly one **object_reference_designation_assignment** that has an associated **identification_role** with the **description** ‘primary’.
- An instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘digital document definition’, ‘physical document definition’, or ‘physical model occurrence’ shall
 - a) have an associated **product** that is referenced by exactly one instance of **product_related_product_category** with a **name** of ‘document’;
 - b) be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**;
 - c) be referenced by exactly one **object_reference_designation_assignment** that has an associated **identification_role** with the **description** ‘primary’.
- An instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional occurrence’ shall
 - a) have an associated **product** that is referenced by exactly one instance of **product_related_product_category** with a **name** of ‘functionality’;

- b) be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**;
- c) be referenced by exactly one **object_reference_designation_assignment** that has an associated **identification_role** with the **description** 'primary';
- d) either participate as the **related_product_definition** in exactly one **product_definition_relationship** with the **name** 'definition usage' that is an instance of **product_definition_usage** where the **relating_product_definition** has an associated **application_context_element** with a **name** of 'functional definition' or shall be referenced by exactly one instance of **configuration_design** that has a **name** of 'occurrence usage definition'.
- An instance of **product_definition** that has an associated **application_context_element** with a **name** of 'part definition' shall have an associated **product** that is referenced by exactly one instance of **product_related_product_category** with a **name** of 'accessory', 'other', 'part' or 'software'.
- An instance of **product_definition** that has an associated **application_context_element** with a **name** of 'part occurrence' shall
- a) have an associated **product** that is referenced by exactly one instance of **product_related_product_category** with a **name** of 'accessory', 'other', 'part' or 'software';
- b) be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**;
- c) be referenced by exactly one **object_reference_designation_assignment** that has an associated **identification_role** with the **description** 'primary';
- d) either participate as the **related_product_definition** in exactly one **product_definition_relationship** with the **name** 'definition usage' that is an instance of **product_definition_usage** where the **relating_product_definition** has an associated **application_context_element** with a **name** of 'part definition' or shall be referenced by exactly one instance of **configuration_design** that has a **name** of 'occurrence usage definition'.
- An instance of **product_definition** that has an associated **application_context_element** with a **name** of 'physical occurrence' shall
- a) have an associated **product** that is referenced by exactly one instance of **product_related_product_category** with a **name** of 'accessory', 'other', 'part' or 'software';
- b) either participate as the **related_product_definition** in exactly one **product_definition_relationship** with the **name** 'physical realization' that is an instance of **product_definition_usage** where the **relating_product_definition** has an associated **application_context_element** with a **name** of 'part definition' or shall be referenced by exactly one instance of **configuration_design** that has a **name** of 'physical instance basis'.

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- An instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘requirement definition’ shall have an associated **product** that is referenced by exactly one instance of **product_related_product_category** with a **name** of ‘requirement’.
- An instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘system definition’ shall
 - a) have an associated **product** that is referenced by exactly one instance of **product_related_product_category** with a **name** of ‘technical system’;
 - b) be referenced only by those instances of **item_designation_assignment** that are not instances of **document_designation_assignment**, **signal_designation_assignment**, or **terminal_designation_assignment**;
 - c) be referenced by exactly one **object_reference_designation_assignment** that has an associated **identification_role** with the **description** ‘primary’.
- An instance of **product_definition** that has a **name** of ‘physical instance’ shall
 - a) have an associated **application_context_element** with a **name** of ‘physical occurrence’;
 - b) be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of ‘inventory number’.
- An instance of **product_definition** that has a **name** of ‘quantified instance’ shall
 - a) have an associated **application_context_element** with a **name** of ‘part occurrence’;
 - b) be referenced by exactly one instance of **property_definition** that has a **name** of ‘occurrence quantity’.
- An instance of **product_definition** that has a **name** of ‘selected instance’ shall
 - a) have an associated **application_context_element** with a **name** of ‘part occurrence’;
 - b) be referenced by exactly one instance of **property_definition** that has a **name** of ‘occurrence selection control’.
- An instance of **product_definition** that has a **name** of ‘single instance’ shall have an associated **application_context_element** with a **name** of ‘functional occurrence’ or ‘part occurrence’.
- An instance of **product_definition** that has a **name** of ‘specified instance’ shall
 - a) have an associated **application_context_element** with a **name** of ‘functional occurrence’ or ‘part occurrence’;
 - b) be an instance of **specified_higher_usage_occurrence** if the associated **application_context_element** has a **name** of ‘functional occurrence’ or of ‘part occurrence’.
- An instance of **product_definition** that has a **name** of ‘final’, ‘supplier’, ‘technical’, ‘technical supplier’, ‘technical final’, ‘supplier final’, or ‘technical supplier final’ shall have an associated **application_context_element** with a **name** of ‘alternative definition’.

EXPRESS specification:

```

*)
FUNCTION product_definition_correlation
  (pd : product_definition) : BOOLEAN;
LOCAL
  context_name : STRING;
  name         : STRING;
END_LOCAL;

  context_name := pd.frame_of_reference.name;
CASE context_name OF
  'alternative definition':
    BEGIN
      IF SIZEOF(QUERY(i <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
          'ITEMS') |
          i.role.name = 'version')
        ) > 1
      THEN RETURN(FALSE);
      END_IF;
    END;

  'conceptual definition':
    BEGIN
      IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
        'ITEM_DESIGNATION_ASSIGNMENT.' +
          'ITEMS') |
          SIZEOF(TYPEOF(des) *
            ['ELECTROTECHNICAL_DESIGN.' +
              'DOCUMENT_DESIGNATION_ASSIGNMENT',
              'ELECTROTECHNICAL_DESIGN.' +
              'SIGNAL_DESIGNATION_ASSIGNMENT',
              'ELECTROTECHNICAL_DESIGN.' +
              'TERMINAL_DESIGNATION_ASSIGNMENT']
            ) > 0 )
        ) > 0
      THEN RETURN(FALSE);
      END_IF;
      IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
        'ITEM_DESIGNATION_ASSIGNMENT.' +
          'ITEMS') |
          ('ELECTROTECHNICAL_DESIGN.' +
            'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT'
            IN TYPEOF(des))
          AND
            (des.role.description = 'primary') )
        ) <> 1
      THEN RETURN(FALSE);

```

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```
        END_IF;
    END;

    'digital document definition',
    'physical document definition',
    'physical model occurrence':
    BEGIN
        IF SIZEOF(QUERY(cat <* USEDIN(pd.formation.of_product,
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
            'PRODUCTS') |
            NOT(cat.name = 'document') )
            ) > 0
        THEN RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
            'ITEM_DESIGNATION_ASSIGNMENT.' +
            'ITEMS') |
            SIZEOF(TYPEOF(des) *
            ['ELECTROTECHNICAL_DESIGN.' +
            'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'SIGNAL_DESIGNATION_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'TERMINAL_DESIGNATION_ASSIGNMENT']
            ) > 0 )
            ) > 0
        THEN RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
            'ITEM_DESIGNATION_ASSIGNMENT.' +
            'ITEMS') |
            ('ELECTROTECHNICAL_DESIGN.' +
            'DOCUMENT_DESIGNATION_ASSIGNMENT'
            IN TYPEOF(des))
            AND
            (des.role.description = 'primary') )
            ) <> 1
        THEN RETURN(FALSE);
        END_IF;
    END;

    'functional occurrence':
    BEGIN
        IF SIZEOF(QUERY(cat <* USEDIN(pd.formation.of_product,
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
            'PRODUCTS') |
```



```

        NOT(cat.name = 'functionality') )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
        'ITEMS') |
        SIZEOF(TYPEOF(des) *
            ['ELECTROTECHNICAL_DESIGN.' +
            'DOCUMENT_DESIGNATION_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'SIGNAL_DESIGNATION_ASSIGNMENT',
            'ELECTROTECHNICAL_DESIGN.' +
            'TERMINAL_DESIGNATION_ASSIGNMENT']
        ) > 0 )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
        'ITEMS') |
        ('ELECTROTECHNICAL_DESIGN.' +
        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT'
        IN TYPEOF(des))
        AND
        (des.role.description = 'primary') )
    ) <> 1
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdu <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP.' +
        'RELATED_PRODUCT_DEFINITION') |
        ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE'
        IN TYPEOF(pdu))
        AND
        (pdu.name = 'definition usage')
        AND
        (pdu.relating_product_definition.frame_of_reference\
        application_context_element.name
        = 'functional definition') ) )
    +
    SIZEOF(QUERY(cd <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'CONFIGURATION_DESIGN.' +
        'DESIGN') |
        cd.name = 'occurrence usage definition') )
    <> 1

```

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```
    THEN RETURN (FALSE);
    END_IF;
END;

'part definition':
    IF SIZEOF(QUERY(cat <* USEDIN(pd.formation.of_product,
                                'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
                                'PRODUCTS') |
                                NOT(cat.name IN ['accessory', 'other',
                                                'part', 'software'])))
    ) > 0
    THEN RETURN (FALSE);
    END_IF;

'part occurrence':
    BEGIN
    IF SIZEOF(QUERY(cat <* USEDIN(pd.formation.of_product,
                                'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
                                'PRODUCTS') |
                                NOT(cat.name IN ['accessory', 'other',
                                                'part', 'software'])))
    ) > 0
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |
                                SIZEOF(TYPEOF(des) *
                                ['ELECTROTECHNICAL_DESIGN.' +
                                'DOCUMENT_DESIGNATION_ASSIGNMENT',
                                'ELECTROTECHNICAL_DESIGN.' +
                                'SIGNAL_DESIGNATION_ASSIGNMENT',
                                'ELECTROTECHNICAL_DESIGN.' +
                                'TERMINAL_DESIGNATION_ASSIGNMENT']
                                ) > 0 )
    ) > 0
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
'ITEM_DESIGNATION_ASSIGNMENT.' +
                                'ITEMS') |
                                ('ELECTROTECHNICAL_DESIGN.' +
                                'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT'
                                IN TYPEOF(des))
                                AND
                                (des.role.description = 'primary'))
    ) <> 1
```

```

THEN RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY(pdu <* USEDIN(pd,
                                'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP.' +
                                'RELATED_PRODUCT_DEFINITION') |
('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE'
 IN TYPEOF(pdu))
 AND
 (pdu.name = 'definition usage')
 AND
(pdu.relating_product_definition.frame_of_reference\
 application_context_element.name
 = 'part definition') ) )
+
  SIZEOF(QUERY(cd <* USEDIN(pd,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'CONFIGURATION_DESIGN.' +
                                'DESIGN') |
                                cd.name = 'occurrence usage definition') )
  <> 1
  THEN RETURN (FALSE);
END_IF;
END;

'physical occurrence':
BEGIN
  IF SIZEOF(QUERY(cat <* USEDIN(pd.formation.of_product,
                                'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
                                'PRODUCTS') |
                                NOT(cat.name IN ['accessory', 'other',
                                'part', 'software']))
  ) > 0
  THEN RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY(pdu <* USEDIN(pd,
                                'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP.' +
                                'RELATED_PRODUCT_DEFINITION') |
('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE'
 IN TYPEOF(pdu))
 AND
 (pdu.name = 'physical realization')
 AND
(pdu.relating_product_definition.frame_of_reference\
 application_context_element.name
 = 'part definition') ) )

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```
+
    SIZEOF(QUERY(cd <* USEDIN(pd,
                        'ELECTROTECHNICAL_DESIGN.' +
                        'CONFIGURATION_DESIGN.' +
                        'DESIGN') |
                        cd.name = 'physical instance basis') )
    <> 1
    THEN RETURN(FALSE);
    END_IF;
END;

'requirement definition':
    IF SIZEOF(QUERY(cat <* USEDIN(pd.formation.of_product,
                        'ELECTROTECHNICAL_DESIGN.' +
                        'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
                        'PRODUCTS') |
                        NOT(cat.name = 'requirement') )
        ) > 0
    THEN RETURN(FALSE);
    END_IF;

'system definition':
    BEGIN
        IF SIZEOF(QUERY(cat <* USEDIN(pd.formation.of_product,
                        'ELECTROTECHNICAL_DESIGN.' +
                        'PRODUCT_RELATED_PRODUCT_CATEGORY.' +
                        'PRODUCTS') |
                        NOT(cat.name = 'technical system') )
            ) > 0
        THEN RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
        'ITEM_DESIGNATION_ASSIGNMENT.' +
                        'ITEMS') |
                        SIZEOF(TYPEOF(des) *
                        ['ELECTROTECHNICAL_DESIGN.' +
                        'DOCUMENT_DESIGNATION_ASSIGNMENT',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'SIGNAL_DESIGNATION_ASSIGNMENT',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'TERMINAL_DESIGNATION_ASSIGNMENT']
                        ) > 0 )
            ) > 0
        THEN RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY(des <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
+
        'ITEM_DESIGNATION_ASSIGNMENT.' +
                        'ITEMS') |
                        ('ELECTROTECHNICAL_DESIGN.' +
```

```

        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT'
        IN TYPEOF(des))
        AND
        (des.role.description = 'primary') )
    ) <> 1
    THEN RETURN(FALSE);
    END_IF;
END;

OTHERWISE: RETURN(TRUE);
END_CASE;

name := pd.name;
CASE name OF
    'physical instance':
        BEGIN
            IF NOT(pd.frame_of_reference.name = 'physical occurrence')
            THEN RETURN(FALSE);
            END_IF;
            IF SIZEOF(QUERY(i <* USEDIN(pd,
                'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
                'ITEMS') |
                i.role.name = 'inventory number')
            ) > 1
            THEN RETURN(FALSE);
            END_IF;
        END;

    'quantified instance':
        BEGIN
            IF NOT(pd.frame_of_reference.name = 'part occurrence')
            THEN RETURN(FALSE);
            END_IF;
            IF NOT(SIZEOF(QUERY(prop <* USEDIN(pd,
                'ELECTROTECHNICAL_DESIGN.'
+
                'PROPERTY_DEFINITION.' +
                'DEFINITION') |
                prop.name = 'occurrence quantity')
            ) = 1 )
            THEN RETURN(FALSE);
            END_IF;
        END;

    'selected instance':
        BEGIN
            IF NOT(pd.frame_of_reference.name = 'part occurrence')
            THEN RETURN(FALSE);
            END_IF;
            IF NOT(SIZEOF(QUERY(prop <* USEDIN(pd,
                'ELECTROTECHNICAL_DESIGN.'
+
                'PROPERTY_DEFINITION.' +

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```

                                'DEFINITION') |
                                prop.name = 'occurrence selection control')
                                ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
END;

'single instance':
    IF NOT(pd.frame_of_reference.name
           IN ['part occurrence', 'functional occurrence'])
    THEN RETURN(FALSE);
    END_IF;

'specified instance':
    BEGIN
        IF NOT(pd.frame_of_reference.name
              IN ['part occurrence', 'functional occurrence'])
        THEN RETURN(FALSE);
        END_IF;
        IF NOT( ( (pd.frame_of_reference.name = 'functional
occurrence')
                AND
                ('ELECTROTECHNICAL_DESIGN.' +
                 'SPECIFIED_HIGHER_USAGE_OCCURRENCE'
                 IN TYPEOF(pd)) )
              OR
              ( (pd.frame_of_reference.name = 'part occurrence')
                AND
                ('ELECTROTECHNICAL_DESIGN.' +
                 'SPECIFIED_HIGHER_USAGE_OCCURRENCE'
                 IN TYPEOF(pd)) ) )
        THEN RETURN(FALSE);
        END_IF;
    END;

'final',
'supplier',
'technical',
'technical supplier',
'technical final',
'supplier final',
'technical supplier final':
    IF NOT(pd.frame_of_reference.name = 'alternative definition')
    THEN RETURN(FALSE);
    END_IF;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*
```

Argument definitions:

pd: the input **product_definition** to be checked.

5.2.4.21 product_definition_relationship_correlation

The **product_definition_relationship_correlation** function returns true if the **name** attribute value of the **product_definition_relationship** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **product_definition_relationship** with a **name** of ‘conceptual definition allocation’ shall reference

a) in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of either ‘functional occurrence’, ‘part occurrence’, or ‘physical occurrence’;

b) in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘conceptual definition’.

— An instance of **product_definition_relationship** with a **name** of either ‘dedicated function’ or ‘offered function’ shall reference

a) in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional definition’;

b) in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘conceptual definition’, ‘part definition’, ‘part occurrence’, or ‘physical occurrence’.

— An instance of **product_definition_relationship** with a **name** of ‘definition usage’ shall

a) be an instance of **product_definition_usage**;

b) either reference in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional definition’ and in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional occurrence’ or shall reference in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’ and in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part occurrence’.

— An instance of **product_definition_relationship** with a **name** of ‘final specification’ shall reference

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a) in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'functional definition', 'part definition', or 'physical occurrence';

b) in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'alternative definition'.

— An instance of **product_definition_relationship** with a **name** of 'functional unit allocation' shall reference

a) in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'conceptual definition', 'part occurrence', or 'physical occurrence';

b) in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'functional occurrence'.

— An instance of **product_definition_relationship** with a **name** of 'physical occurrence usage' shall

a) be an instance of **assembly_component_usage**;

b) reference in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'physical occurrence';

c) reference in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'physical occurrence'.

— An instance of **product_definition_relationship** with a **name** of 'physical realization' shall

a) be an instance of **product_definition_usage**;

b) reference in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'physical occurrence';

c) reference in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'part definition'.

— An instance of **product_definition_relationship** with a **name** of 'preferred item allocation' shall reference

a) in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'functional definition' or 'part definition';

b) in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'functional occurrence'.

— An instance of **product_definition_relationship** with a **name** of 'quantified instance usage' shall

a) be an instance of **quantified_assembly_component_usage**;

- b) reference in the roles of both the **related_product_definition** and the **relating_product_definition** instances of **product_definition** that have an associated **application_context_element** with a **name** of 'part definition'.
- An instance of **product_definition_relationship** with a **name** of 'selected instance usage' shall
- a) be an instance of **assembly_component_usage**;
 - b) reference in the roles of both the **related_product_definition** and the **relating_product_definition** instances of **product_definition** that have an associated **application_context_element** with a **name** of 'part definition';
 - c) be referenced by exactly one instance of **property_definition** that has a **name** of 'occurrence selection control'.
- An instance of **product_definition_relationship** with a **name** of 'single instance usage' shall
- a) be an instance of **assembly_component_usage**;
 - b) reference in the roles of both the **related_product_definition** and the **relating_product_definition** either instances of **product_definition** that have an associated **application_context_element** with a **name** of 'functional definition' or instances of **product_definition** that have an associated **application_context_element** with a **name** of 'part definition'.
- An instance of **product_definition_relationship** with a **name** of 'solution alternative definition' shall reference
- a) in the role of the **related_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'alternative definition';
 - b) in the role of the **relating_product_definition** an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'alternative definition', 'conceptual definition', or 'functional occurrence';
 - c) in the role of the **relating_product_definition** one of those instances of **product_definition** that have a **name** of 'single instance'.
- An instance of **product_definition_relationship** with a **name** of 'specified instance usage' shall
- a) be an instance of **assembly_component_usage**;
 - b) not be an instance of **specified_higher_usage_occurrence**;
 - c) reference in the roles of both the **related_product_definition** and the **relating_product_definition** either instances of **product_definition** that have an associated **application_context_element** with a **name** of 'functional definition' or instances of **product_definition** that have an associated **application_context_element** with a **name** of 'part definition'.

EXPRESS specification:

*)

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```
FUNCTION product_definition_relationship_correlation
    (pdr : product_definition_relationship) : BOOLEAN;
LOCAL
    name : STRING;
END_LOCAL;

name := pdr.name;
CASE name OF
    'conceptual definition allocation':
        BEGIN
            IF NOT(pdr.related_product_definition.frame_of_reference.name
                IN ['functional occurrence',
                    'part occurrence',
                    'physical occurrence'])
            THEN RETURN(FALSE);
            END_IF;
        IF
NOT(pdr.relatering_product_definition.frame_of_reference.name
    = 'conceptual definition')
    THEN RETURN(FALSE);
    END_IF;
    END;

    'dedicated function',
    'offered function':
        BEGIN
            IF NOT(pdr.related_product_definition.frame_of_reference.name
                = 'functional definition')
            THEN RETURN(FALSE);
            END_IF;
        IF
NOT(pdr.relatering_product_definition.frame_of_reference.name
    IN ['conceptual definition',
        'part definition',
        'part occurrence',
        'physical occurrence'])
    THEN RETURN(FALSE);
    END_IF;
    END;

    'definition usage':
        BEGIN
            IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE'
                IN TYPEOF(pdr))
            THEN RETURN(FALSE);
            END_IF;
            IF NOT( (
(pdr.relatering_product_definition.frame_of_reference.name
    = 'functional definition')
    AND
(pdr.related_product_definition.frame_of_reference.name
    = 'functional occurrence') )
                XOR
```

```

(
  (pdr.relatiing_product_definition.frame_of_reference.name
    = 'part definition')
    AND

  (pdr.related_product_definition.frame_of_reference.name
    = 'part occurrence') ) )
  THEN RETURN(FALSE);
  END_IF;
END;

'final specification':
BEGIN
  IF NOT(pdr.related_product_definition.frame_of_reference.name
    IN ['functional definition',
      'part definition',
      'physical occurrence'])
  THEN RETURN(FALSE);
  END_IF;
  IF
NOT(pdr.relatiing_product_definition.frame_of_reference.name
  = 'alternative definition')
  THEN RETURN(FALSE);
  END_IF;
END;

'functional unit allocation':
BEGIN
  IF NOT(pdr.related_product_definition.frame_of_reference.name
    IN ['conceptual definition',
      'part occurrence',
      'physical occurrence'])
  THEN RETURN(FALSE);
  END_IF;
  IF
NOT(pdr.relatiing_product_definition.frame_of_reference.name
  = 'functional occurrence')
  THEN RETURN(FALSE);
  END_IF;
END;

'physical occurrence usage':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.ASSEMBLY_COMPONENT_USAGE'
    IN TYPEOF(pdr))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(pdr.related_product_definition.frame_of_reference.name
    = 'physical occurrence')
  THEN RETURN(FALSE);
  END_IF;
  IF
NOT(pdr.relatiing_product_definition.frame_of_reference.name
  = 'physical occurrence')
  THEN RETURN(FALSE);

```

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```
    END_IF;
END;

'physical realization':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE'
          IN TYPEOF(pdr))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(pdr.related_product_definition.frame_of_reference.name
          = 'physical occurrence')
    THEN RETURN(FALSE);
    END_IF;
    IF
NOT(pdr.relating_product_definition.frame_of_reference.name
    = 'part definition')
    THEN RETURN(FALSE);
    END_IF;
END;

'preferred item allocation':
BEGIN
    IF NOT(pdr.related_product_definition.frame_of_reference.name
          IN ['functional definition',
             'part definition'])
    THEN RETURN(FALSE);
    END_IF;
    IF
NOT(pdr.relating_product_definition.frame_of_reference.name
    = 'functional occurrence')
    THEN RETURN(FALSE);
    END_IF;
END;

'quantified instance usage':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
          'QUANTIFIED_ASSEMBLY_COMPONENT_USAGE'
          IN TYPEOF(pdr))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(
(pdr.related_product_definition.frame_of_reference.name
    = 'part definition')
    AND
(pdr.relating_product_definition.frame_of_reference.name
    = 'part definition') )
    THEN RETURN(FALSE);
    END_IF;
END;

'selected instance usage':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.ASSEMBLY_COMPONENT_USAGE'
```

```

        IN TYPEOF(pdr))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(
(pdr.related_product_definition.frame_of_reference.name
    = 'part definition')
    AND

(pdr.relating_product_definition.frame_of_reference.name
    = 'part definition') )
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(SIZEOF(QUERY(prop <* USEDIN(pdr,
        'ELECTROTECHNICAL_DESIGN.'
+
        'PROPERTY_DEFINITION.' +
        'DEFINITION') |
        prop.name = 'occurrence selection control')
    ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
END;

'single instance usage':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.ASSEMBLY_COMPONENT_USAGE'
        IN TYPEOF(pdr))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT( (
(pdr.relating_product_definition.frame_of_reference.name
    = 'functional definition')
    AND

(pdr.related_product_definition.frame_of_reference.name
    = 'functional definition') )
    XOR
    (
(pdr.relating_product_definition.frame_of_reference.name
    = 'part definition')
    AND

(pdr.related_product_definition.frame_of_reference.name
    = 'part definition') ) )
    THEN RETURN(FALSE);
    END_IF;
END;

'solution alternative definition':
BEGIN
    IF NOT(pdr.related_product_definition.frame_of_reference.name
        = 'alternative definition')
    THEN RETURN(FALSE);
    END_IF;
END;

```

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```

    IF
NOT (pdr.relatiing_product_definition.frame_of_reference.name
      IN ['alternative definition',
          'conceptual product',
          'functional occurrence'])
    THEN RETURN (FALSE);
    END_IF;
    IF (pdr.relatiing_product_definition.frame_of_reference.name
        = 'functional occurrence')
        AND
        NOT (pdr.relatiing_product_definition.name
            = 'single instance')
    THEN RETURN (FALSE);
    END_IF;
END;

'specified instance usage':
BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.' +
            'SPECIFIED_HIGHER_USAGE_OCCURRENCE'
            IN TYPEOF(pdr))
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF (TYPEOF (pdr) *
               ['ELECTROTECHNICAL_DESIGN.' +
                'SPECIFIED_HIGHER_USAGE_OCCURRENCE']
               ) > 0
    THEN RETURN (FALSE);
    END_IF;
    IF NOT ( (
(pdr.relatiing_product_definition.frame_of_reference.name
  = 'functional definition')
  AND

(pdr.related_product_definition.frame_of_reference.name
  = 'functional definition') )
  XOR
  (
(pdr.relatiing_product_definition.frame_of_reference.name
  = 'part definition')
  AND

(pdr.related_product_definition.frame_of_reference.name
  = 'part definition') ) )
    THEN RETURN (FALSE);
    END_IF;
END;

    OTHERWISE: RETURN (TRUE);
END_CASE;

RETURN (TRUE);

END_FUNCTION;
```

(*

Argument definitions:

pdr: the input **product_definition_relationship** to be checked.

5.2.4.22 property_definition_correlation

The **property_definition_correlation** function returns true if the **name** attribute value of the **property_definition** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **property_definition** that has a **name** of ‘information content’ shall

- a) be referenced by exactly one instance of **property_definition_representation** that has a **name** of ‘information content’;
- b) reference in the role of the **definition** an instance of **equipment_marking**.

EXPRESS specification:

```

*)
FUNCTION property_definition_correlation
  (pd : property_definition) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

  name := pd.name;
  CASE name OF
    'information content':
      BEGIN
        IF SIZEOF(QUERY(pdr <* USEDIN(pd,
          'ELECTROTECHNICAL_DESIGN.' +
          'PROPERTY_DEFINITION_REPRESENTATION.'
+
          'DEFINITION') |
          pdr.name = 'information content')
          ) = 0
        THEN RETURN(FALSE);
        END_IF;
        IF NOT('ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING'
          IN TYPEOF(pd.definition))
        THEN RETURN(FALSE);
        END_IF;
      END;

    OTHERWISE: RETURN(TRUE);
  END_CASE;

RETURN(TRUE);

```

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END_FUNCTION;
(*

Argument definitions:

pd: the input **property_definition** to be checked.

5.2.4.23 **property_definition_relationship_correlation**

The **property_definition_relationship_correlation** function returns true if the **name** attribute value of the **property_definition_relationship** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **property_definition_relationship** with a **name** of ‘connectivity allocation’ shall reference

a) in the role of the **relating_property_definition** an instance of **property_definition** that refers to an instance of **connectivity_definition** that is the **shape_aspect** of a **product_definition** that has an associated **application_context_element** with a **name** of ‘functional definition’;

b) in the role of the **related_property_definition** an instance of **property_definition** that refers to an instance of **product_definition_relationship** that has an associated **application_context_element** with a **name** of either ‘functional occurrence’, ‘part occurrence’, or ‘physical occurrence’.

— An instance of **property_definition_relationship** with a **name** of ‘encountered object sequence’ shall reference

a) in the role of the **related_property_definition** an instance of **property_definition** that has a **name** of ‘route characteristics’;

b) in the role of the **related_property_definition** an instance of **property_definition** that refers to an instance of either **connectivity_definition**, **installation_location**, **product_definition**, or **signal**;

c) in the role of the **related_property_definition** only one of those instances of **property_definition** that refer to an instance of **product_definition** that has an associated **application_context_element** with a **name** of either ‘conceptual definition’, ‘functional occurrence’, ‘part occurrence’, or ‘physical occurrence’;

d) in the role of the **relating_property_definition** an instance of **property_definition** that has a **name** of ‘route requirements’;

e) in the role of the **relating_property_definition** an instance of **property_definition** that refers to an instance of **installation_route**.

— An instance of **property_definition_relationship** with a **name** of ‘functional unit allocation’ shall reference

a) in the role of the **related_property_definition** an instance of **property_definition** that refers to an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘conceptual definition’, ‘part occurrence’, or ‘physical occurrence’;

b) in the role of the **relating_property_definition** an instance of **property_definition** that refers to an instance of **product_definition_relationship** that has a **name** of either ‘single instance usage’ or ‘specified instance usage’;

c) in the role of the **relating_property_definition** an instance of **property_definition** that refers to an instance of **product_definition_relationship** that references in the roles of both the **related_product_definition** and the **relating_product_definition** instances of **product_definition** that have an associated **application_context_element** with a **name** of ‘functional definition’.

— For an instance of **property_definition_relationship** with a **name** of ‘item allocation’

a) the **related_property_definition** shall reference an instance of **property_definition** that refers to an instance of **shape_aspect_relationship** that has a **name** of either ‘preferred item terminal allocation’ or ‘terminal allocation’;

b) the **relating_property_definition** shall reference an instance of **property_definition** that refers to an instance of **product_definition_relationship** that has a **name** of either ‘functional unit allocation’ or ‘preferred item allocation’;

c) the **relating_property_definition** shall reference an instance of **property_definition** that refers to an instance of **product_definition_relationship** with a **name** of ‘functional unit allocation’ if the **related_property_definition** references an instance of **property_definition** that refers to an instance of **shape_aspect_relationship** that has a **name** of ‘terminal allocation’ and vice versa;

d) the **relating_property_definition** shall reference an instance of **property_definition** that refers to an instance of **product_definition_relationship** with a **name** of ‘preferred item allocation’ if the **related_property_definition** references an instance of **property_definition** that refers to an instance of **shape_aspect_relationship** that has a **name** of ‘preferred item terminal allocation’ and vice versa.

— For an instance of **property_definition_relationship** with a **name** of ‘parameter association’

a) the **related_property_definition** shall reference an instance of **property_definition** that refers to an instance of **process_variable**;

b) the **relating_property_definition** shall reference an instance of **property_definition** that refers to an instance of **signal**.

— For an instance of **property_definition_relationship** with a **name** of ‘preferred equipment’

a) the **related_property_definition** shall reference an instance of **property_definition** that refers to an instance of **product_definition**;

b) the **relating_property_definition** shall reference an instance of **property_definition** that refers to an instance of **signal**;

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c) the instance of **product_definition** referenced by the **property_definition** that is the **related_property_definition** shall have an associated **application_context_element** with a **name** of either 'functional definition' or 'part definition'.

— For an instance of **property_definition_relationship** with a **name** of 'trigger'

a) the **related_property_definition** shall reference an instance of **property_definition** that refers to an instance of **process_variable** or **signal**;

b) the **relating_property_definition** shall reference an instance of **property_definition** that refers to an instance of **notification**.

— An instance of **property_definition_relationship** with a **name** of 'validity context' shall reference

a) in the role of the **relating_property_definition** an instance of **property_definition** that refers to an instance of **product_class** or **product_definition**;

b) in the role of the **relating_property_definition** only one of those instances of **property_definition** that refer to an instance of **product_definition** that has an associated **application_context_element** with a **name** of 'system definition'.

EXPRESS specification:

```
*)
FUNCTION property_definition_relationship_correlation
    (pdr : property_definition_relationship) : BOOLEAN;
LOCAL
    name : STRING;
END_LOCAL;

name := pdr.name;
CASE name OF
    'connectivity allocation':
        BEGIN
            IF NOT( ('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
                IN
                TYPEOF(pdr.relying_property_definition.definition))
                AND
                (pdr.relying_property_definition.definition\
                    shape_aspect.of_shape.definition\
                    product_definition.frame_of_reference.name
                    = 'functional definition') )
            THEN RETURN(FALSE);
        END_IF;
        IF NOT(pdr.relying_property_definition.definition\
            product_definition.frame_of_reference.name
            IN ['functional occurrence',
                'part occurrence',
                'physical occurrence'])
            THEN RETURN(FALSE);
        END_IF;
    END;
END;
```

```

'encountered object sequence':
  BEGIN
    IF NOT(pdr.related_property_definition.name
           = 'route characteristics')
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(pdr.related_property_definition.definition)
*
['ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION',
  'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION']
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(pdr.related_property_definition.definition\
           product_definition.frame_of_reference.name
           IN ['conceptual definition',
              'functional occurrence',
              'part occurrence',
              'physical occurrence'])
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(pdr.relying_property_definition.name
           = 'route requirements')
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE'
           IN
TYPEOF(pdr.relying_property_definition.definition))
    THEN RETURN(FALSE);
    END_IF;
  END;

'functional unit allocation':
  BEGIN
    IF NOT(pdr.related_property_definition.definition\
           product_definition.frame_of_reference.name
           IN ['conceptual definition',
              'part occurrence',
              'physical occurrence'])
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(pdr.relying_property_definition.definition\
           product_definition_relationship.name
           IN ['single instance usage',
              'specified instance usage'])
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(pdr.relying_property_definition.definition\
product_definition_relationship.related_product_definition.
           frame_of_reference.name = 'functional definition')
    THEN RETURN(FALSE);
    END_IF;
  END;

```

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```
'item allocation':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.SHAPE_ASPECT_RELATIONSHIP'
        IN TYPEOF(pdr.related_property_definition.definition))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(pdr.related_property_definition.definition\
        shape_aspect_relationship.name
        IN ['preferred item terminal allocation',
            'terminal allocation'])
  THEN RETURN(FALSE);
  END_IF;
  IF
NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_RELATIONSHIP'
    IN
TYPEOF(pdr.relatng_property_definition.definition))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(pdr.relatng_property_definition.definition\
        product_definition_relationship.name
        IN ['functional unit allocation',
            'preferred item allocation'])
  THEN RETURN(FALSE);
  END_IF;
  IF NOT( (pdr.related_property_definition.definition\
        shape_aspect_relationship.name
        = 'terminal allocation')
        AND
        (pdr.relatng_property_definition.definition\
        product_definition_relationship.name
        = 'functional unit allocation') )
  THEN RETURN(FALSE);
  END_IF;
  IF NOT( (pdr.related_property_definition.definition\
        shape_aspect_relationship.name
        = 'preferred item terminal allocation')
        AND
        (pdr.relatng_property_definition.definition\
        product_definition_relationship.name
        = 'preferred item allocation') )
  THEN RETURN(FALSE);
  END_IF;
END;

'parameter association':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE'
        IN TYPEOF(pdr.related_property_definition.definition))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT('ELECTROTECHNICAL_DESIGN.SIGNAL'
        IN
TYPEOF(pdr.relatng_property_definition.definition))
  THEN RETURN(FALSE);
```

```

    END_IF;
  END;

  'preferred equipment':
  BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
          IN TYPEOF(pdr.related_property_definition.definition))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.SIGNAL'
          IN
    TYPEOF(pdr.relatng_property_definition.definition))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(pdr.related_property_definition.definition\
          product_definition.frame_of_reference.name
          IN ['functional definition',
            'part definition'])
    THEN RETURN(FALSE);
    END_IF;
  END;

  'trigger':
  BEGIN
    IF SIZEOF(TYPEOF(pdr.related_property_definition.definition)
    *
          ['ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE',
            'ELECTROTECHNICAL_DESIGN.SIGNAL']
          ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.NOTIFICATION'
          IN
    TYPEOF(pdr.relatng_property_definition.definition))
    THEN RETURN(FALSE);
    END_IF;
  END;

  'validity context':
  BEGIN
    IF SIZEOF(TYPEOF(pdr.relatng_property_definition.definition)
    *
          ['ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS',
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION']
          ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
      IN TYPEOF(pdr.relatng_property_definition.definition)
    THEN IF NOT(pdr.relatng_property_definition.definition\
          product_definition.frame_of_reference.name
          = 'system definition')
      THEN RETURN(FALSE);
      END_IF;
    END_IF;
  END;

```

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```
END;  
  
    OTHERWISE: RETURN (TRUE) ;  
END_CASE ;  
  
RETURN (TRUE) ;  
  
END_FUNCTION ;  
(*
```

Argument definitions:

pdr: the input **property_definition_relationship** to be checked.

5.2.4.24 **property_definition_representation_correlation**

The **property_definition_representation_correlation** function returns true if the **name** attribute value of the **property_definition_representation** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— An instance of **property_definition_representation** that has a **name** of ‘information content’ shall reference

- a) in the role of the **definition** an instance of **property_definition** that has a **name** of ‘information content’;
- b) in the role of the **used_representation** either an instance of **representation** that has a **name** of ‘property value’ or an instance of **note_representation**.

— An instance of **property_definition_representation** that has a **name** of ‘parameter association’ shall reference

- a) in the role of the **definition** an instance of **property_definition** that refers to an instance of **process_variable**;
- b) in the role of the **used_representation** an instance of **representation** that has a **name** of ‘signal value’.

— An instance of **property_definition_representation** that has a **name** of ‘trigger’ shall reference

- a) in the role of the **definition** an instance of **property_definition** that refers to an instance of **notification**;
- b) in the role of the **used_representation** an instance of **representation** that has a **name** of ‘signal value’.

EXPRESS specification:

```
*)  
FUNCTION property_definition_representation_correlation  
    (pdr : property_definition_representation) : BOOLEAN;  
LOCAL  
1960
```

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```

name : STRING;
END_LOCAL;

name := pdr.name;
CASE name OF
  'information content':
    BEGIN
      IF NOT( ('ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION'
              IN TYPEOF(pdr.definition))
            AND
              (pdr.definition\property_definition.name
               = 'information content') )
      THEN RETURN(FALSE);
      END_IF;
      IF NOT( ('ELECTROTECHNICAL_DESIGN.NOTE_REPRESENTATION'
              IN TYPEOF(pdr.used_representation))
            XOR
              (pdr.used_representation.name = 'property value') )
      THEN RETURN(FALSE);
      END_IF;
    END;

  'parameter association':
    BEGIN
      IF NOT('ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE'
            IN TYPEOF(pdr.definition.definition))
      THEN RETURN(FALSE);
      END_IF;
      IF NOT(pdr.used_representation.name = 'signal value')
      THEN RETURN(FALSE);
      END_IF;
    END;

  'trigger':
    BEGIN
      IF NOT('ELECTROTECHNICAL_DESIGN.NOTIFICATION'
            IN TYPEOF(pdr.definition.definition))
      THEN RETURN(FALSE);
      END_IF;
      IF NOT(pdr.used_representation.name = 'signal value')
      THEN RETURN(FALSE);
      END_IF;
    END;

  OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

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pdr: the input **property_definition_representation** to be checked.

5.2.4.25 representation_correlation

The **representation_correlation** function returns true if the **name** attribute value of the **representation** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **representation** that has a **name** of ‘admitted qualifier’ shall
 - a) contain in its set of **items** exactly one element;
 - b) contain in its set of **items** an instance of **qualified_representation_item** that references in the role of the **qualifiers** only instances of **type_qualifier** with a **name** of either ‘nominal’, ‘specified’, or ‘typical’;
 - c) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘allowed units’ shall
 - a) reference in the role of the **context_of_items** an instance of **global_unit_assigned_context**;
 - b) be only the representation of instances of **general_property**;
 - c) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘cable pull information’ shall
 - a) be the representation of at least one instance of **shape_aspect_relationship**;
 - b) be the representation of only those instances of **shape_aspect_relationship** that have a **name** of ‘arrangement sequence’;
 - c) not be instantiated as any of its subtypes;
 - d) be referenced by at most one instance of **applied_identification_assignment** that has an associated **identification_role** with a **name** of ‘version’.
- An instance of **representation** that has a **name** of ‘direction range’ shall
 - a) contain in its set of **items** exactly two elements;
 - b) contain in its set of **items** only instances of **plane_angle_measure_with_unit**;
 - c) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘maximum angle’;
 - d) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘minimum angle’;

- e) participate as the **rep_1** in exactly one instance of **representation_relationship** that has a **name** of ‘connect area’;
 - f) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘final item characteristics’ shall
- a) contain in its set of **items** exactly two elements;
 - b) contain in its set of **items** only instances of **descriptive_representation_item**;
 - c) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘final item status’;
 - d) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘final specification’;
 - e) be the representation of instances of **product_definition** that have a **name** of either ‘final’, ‘supplier final’, ‘technical final’, or ‘technical supplier final’;
 - f) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘gis position’ shall
- a) contain in its set of **items** exactly seven elements;
 - b) contain in its set of **items** exactly one instance of **measure_representation_item** that has a **name** of ‘height’;
 - c) contain in its set of **items** exactly one instance of **measure_representation_item** that has a **name** of ‘scale’;
 - d) contain in its set of **items** exactly one instance of **measure_representation_item** that has a **name** of ‘x-axis delta x’;
 - e) contain in its set of **items** exactly one instance of **measure_representation_item** that has a **name** of ‘x-axis delta y’;
 - f) contain in its set of **items** exactly one instance of **measure_representation_item** that has a **name** of ‘x coordinate’;
 - g) contain in its set of **items** exactly one instance of **measure_representation_item** that has a **name** of ‘y coordinate’;
 - h) contain in its set of **items** exactly one instance of **descriptive_representation_item** that has a **name** of ‘zone’;
 - i) reference in the role of the **context_of_items** an instance of **geometric_representation_context**;
 - j) be the representation of instances of **installation_location**;

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k) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of ‘grid layout’ shall

a) contain in its set of **items** exactly three elements;

b) contain in its set of **items** only instances of **axis2_placement_2d** or **length_measure_with_unit**;

c) contain in its set of **items** exactly one instance of **length_measure_with_unit** that has a **name** of ‘delta x’;

d) contain in its set of **items** exactly one instance of **length_measure_with_unit** that has a **name** of ‘delta y’;

e) contain in its set of **items** exactly one instance of **axis2_placement_2d** that has a **name** of ‘grid origin’;

f) contain in its set of **items** an instance of **axis2_placement_2d** where the value for **ref_direction** is not present;

g) reference in the role of the **context_of_items** an instance of **geometric_representation_context** that is a 2D coordinate space;

h) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of ‘linear pattern location’ shall

a) contain in its set of **items** exactly two elements;

b) contain in its set of **items** only instances of **axis2_placement_3d** or **length_measure_with_unit**;

c) contain in its set of **items** exactly one instance of **length_measure_with_unit** that has a **name** of ‘pattern location distance’;

d) contain in its set of **items** exactly one instance of **axis2_placement_2d** that has a **name** of ‘pattern start location’;

e) reference in the role of the **context_of_items** an instance of **geometric_representation_context** that is a 3D coordinate space;

f) be the representation of instances of **equipment_marking**;

g) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of ‘marking location’ shall

a) contain in its set of **items** exactly one element;

b) contain in its set of **items** only instances of **axis2_placement_3d**;

- c) reference in the role of the **context_of_items** an instance of **geometric_representation_context** that is a 3D coordinate space;
 - d) be the representation of instances of **equipment_marking**;
 - e) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘notification message’ shall
- a) contain in its set of **items** exactly one element;
 - b) contain in its set of **items** only instances of **descriptive_representation_item**;
 - c) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘message text’;
 - d) be the representation of instances of **notification**;
 - e) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘property specification’ shall
- a) contain in its set of **items** at most three elements;
 - b) contain in its set of **items** only instances of **descriptive_representation_item**;
 - c) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘definition’;
 - d) contain in its set of **items** at most one **representation_item** that has a **name** of ‘note’;
 - e) contain in its set of **items** at most one **representation_item** that has a **name** of ‘remark’;
 - f) be the representation of exactly one instance of **general_property**;
 - g) be referenced by at most one instance of **language_assignment** that has an associated **classification_role** with a **name** of ‘language’ and that has an **assigned_class** with a **description** of ‘ISO 639-2 language code’;
 - h) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘property value’ shall
- a) contain in its set of **items** exactly one element;
 - b) be the representation of exactly one instance of **general_property**;
 - c) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘property value format’ shall
- a) contain in its set of **items** at most three elements;
 - b) contain in its set of **items** only instances of **descriptive_representation_item**;

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- c) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘value format’;
 - d) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘source document’;
 - e) be the representation of exactly one instance of **general_property**;
 - f) be referenced by at most one instance of **language_assignment** that has an associated **classification_role** with a **name** of ‘language’ and a **description** of ‘default’ and that has an **assigned_class** with a **description** of ‘ISO 639-2 language code’;
 - g) be the representation of exactly one instance of **general_property**;
 - h) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘quantity’ shall
- a) contain in its set of **items** exactly one element;
 - b) contain in its set of **items** only instances of **measure_representation_item**;
 - c) contain in its set of **items** exactly one **representation_item** that has a **name** of ‘quantity measure’;
 - d) be the representation of instances of **property_definition** with a **name** of ‘occurrence quantity’ that reference an instance of **product_definition** with a **name** of ‘quantified instance’;
 - e) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘schematic node connect area’ shall
- a) contain in its set of **items** only instances of **cartesian_point**, **composite_curve**, **polyline**, or **trimmed_curve**;
 - b) reference in the role of the **context_of_items** an instance of **geometric_representation_context** that is a 2D coordinate space;
 - c) not be instantiated as any of its subtypes.
- An instance of **representation** that has a **name** of ‘selection criteria’ shall
- a) contain in its set of **items** exactly two elements;
 - b) contain in its set of **items** only instances of **descriptive_representation_item** or **measure_representation_item**;
 - c) contain in its set of **items** exactly one instance of **descriptive_representation_item** that has a **name** of ‘selection control’;
 - d) contain in its set of **items** exactly one instance of either **compound_representation_item** or **measure_representation_item** that has a **name** of ‘selection quantity’;

e) be the representation of instances of **property_definition** with a **name** of ‘occurrence selection control’ that reference either an instance of **assembly_component_usage** with a **name** of ‘selected instance usage’ or an instance of **product_definition** with a **name** of ‘selected instance’;

f) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of ‘section interface parameters’ shall

a) contain in its set of **items** only instances of **area_measure_with_unit** or **ratio_measure_with_unit**;

b) contain in its set of **items** only instances of **area_measure_with_unit** that have a **name** of ‘cross section area’;

c) contain in its set of **items** only instances of **ratio_measure_with_unit** that have a **name** of ‘space factor’;

d) be the representation of instances of **installation_section_interface**;

e) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of ‘section parameters’ shall

a) contain in its set of **items** only instances of **area_measure_with_unit**, **length_measure_with_unit**, or **ratio_measure_with_unit**;

b) contain in its set of **items** only instances of **area_measure_with_unit** that have a **name** of ‘cross section area’;

c) contain in its set of **items** only instances of **length_measure_with_unit** that have a **name** of either ‘bending radius’ or ‘section length’;

d) contain in its set of **items** only instances of **ratio_measure_with_unit** that have a **name** of ‘space factor’;

e) be the representation of instances of **installation_section**;

f) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of ‘signal characteristics’ shall

a) contain in its set of **items** exactly one element;

b) contain in its set of **items** an instance of **descriptive_representation_item** that has a **name** of ‘signal level indicator’;

c) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of ‘signal value’ shall

a) have an associated **id_attribute**;

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- b) be the representation of exactly one instance of **signal**;
- c) be referenced by at most one instance of **property_definition_representation** that has a **name** of 'parameter association';
- d) not be instantiated as any of its subtypes.

— An instance of **representation** that has a **name** of 'supplier probability' shall

- a) contain in its set of **items** exactly one element;
- b) contain in its set of **items** only instances of **ratio_measure_with_unit**;
- c) contain in its set of **items** exactly one **representation_item** that has a **name** of 'probability rate';
- d) be the representation of instances of **product_definition** that have a **name** of either 'supplier', 'supplier final', 'technical supplier', or 'technical supplier final';
- e) not be instantiated as any of its subtypes.

EXPRESS specification:

```
*)
FUNCTION representation_correlation
  (rep : representation) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

name := rep.name;
CASE name OF
  'admitted qualifier':
    BEGIN
      IF SIZEOF(rep.items) <> 1
        THEN RETURN(FALSE);
      END_IF;
      IF
        NOT ('ELECTROTECHNICAL DESIGN.QUALIFIED_REPRESENTATION_ITEM'
          IN TYPEOF(rep.items[1]))
        THEN RETURN(FALSE);
      END_IF;
      IF SIZEOF(QUERY(tq <* rep.items[1]\
        qualified_representation_item.
        qualifiers |
          NOT( ('ELECTROTECHNICAL DESIGN.TYPE_QUALIFIER'
            IN TYPEOF(tq))
            AND
            (tq.name IN ['nominal',
              'specified',
              'typical'])) ) )
        ) > 0
      THEN RETURN(FALSE);
      END_IF;
      IF SIZEOF(TYPEOF(rep) *

```

```

        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION']
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'allowed units':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.GLOBAL_UNIT_ASSIGNED_CONTEXT'
        IN TYPEOF(rep.context_of_items))
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        NOT('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY'
            IN TYPEOF(pdr.definition)) )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION']
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'cable pull information':
BEGIN
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |

```

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```
'ELECTROTECHNICAL_DESIGN.SHAPE_ASPECT_RELATIONSHIP'
    IN TYPEOF(pdr.definition.definition) )
    ) < 1
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
    NOT('ELECTROTECHNICAL_DESIGN.SHAPE_ASPECT_RELATIONSHIP'
        IN TYPEOF(pdr.definition.definition))
    OR
    NOT(pdr.definition.definition\
        shape_aspect_relationship.name
        = 'arrangement sequence') )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION'])
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT.' +
        'ITEMS') |
        i.role.name = 'version')
    ) > 1
    THEN RETURN(FALSE);
    END_IF;
END;

'direction range':
BEGIN
    IF NOT(SIZEOF(rep.items) = 2)
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* rep.items |
        NOT('ELECTROTECHNICAL_DESIGN.' +
        'PLANE_ANGLE_MEASURE_WITH_UNIT'
        IN TYPEOF(i)) )
```



```

    ) > 0
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(max <* rep.items |
                    max.name = 'maximum angle')
          ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(min <* rep.items |
                    min.name = 'minimum angle')
          ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(rr <* USEDIN(rep,
                          'ELECTROTECHNICAL_DESIGN.' +
                          'REPRESENTATION_RELATIONSHIP.'
+
                          'REP_1') |
          rr.name = 'connect area')
        ) <> 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
          ['ELECTROTECHNICAL_DESIGN.' +
           'DRAUGHTING_MODEL',
           'ELECTROTECHNICAL_DESIGN.' +
           'NOTE_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'PRESENTATION_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'REFERENCE_GRID_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'SHAPE_REPRESENTATION'])
        ) > 0
THEN RETURN(FALSE);
END_IF;
END;

'final item characteristics':
BEGIN
  IF NOT(SIZEOF(rep.items) = 2)
  THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* rep.items |
                  NOT('ELECTROTECHNICAL_DESIGN.' +
                      'DESCRIPTIVE_REPRESENTATION_ITEM'
                      IN TYPEOF(i)) )
        ) > 0
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(SIZEOF(QUERY(stat <* rep.items |
                      stat.name = 'final item status')
        ) = 1 )
  THEN RETURN(FALSE);
  END_IF;

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```
IF NOT(SIZEOF(QUERY(spec <* rep.items |
                    spec.name = 'final specification')
                ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                        'USED_REPRESENTATION') |
                NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
                    IN TYPEOF(pdr.definition.definition))
                OR
                NOT(pdr.definition.definition\
                    product_definition.name
                    IN ['final',
                        'supplier final',
                        'technical final',
                        'technical supplier final'])) )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
           ['ELECTROTECHNICAL_DESIGN.' +
            'DRAUGHTING_MODEL',
            'ELECTROTECHNICAL_DESIGN.' +
            'NOTE_REPRESENTATION',
            'ELECTROTECHNICAL_DESIGN.' +
            'PRESENTATION_REPRESENTATION',
            'ELECTROTECHNICAL_DESIGN.' +
            'REFERENCE_GRID_REPRESENTATION',
            'ELECTROTECHNICAL_DESIGN.' +
            'SHAPE_REPRESENTATION']
           ) > 0
THEN RETURN(FALSE);
END_IF;
END;

'gis position':
BEGIN
IF NOT(SIZEOF(rep.items) = 7)
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(i <* rep.items |
                SIZEOF(TYPEOF(i) *
                        ['ELECTROTECHNICAL_DESIGN.' +
                        'DESCRIPTIVE_REPRESENTATION_ITEM',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'MEASURE_REPRESENTATION_ITEM']
                        ) = 0 )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(d <* rep.items |
                    (d.name = 'height')
                )
    ) > 0
THEN RETURN(FALSE);
END_IF;
```

```

AND
  ('ELECTROTECHNICAL_DESIGN.' +
   'MEASURE_REPRESENTATION_ITEM'
   IN TYPEOF(d)) )
) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(d <* rep.items |
  (d.name = 'scale')
  AND
  ('ELECTROTECHNICAL_DESIGN.' +
   'MEASURE_REPRESENTATION_ITEM'
   IN TYPEOF(d)) )
) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(d <* rep.items |
  (d.name = 'x-axis delta x')
  AND
  ('ELECTROTECHNICAL_DESIGN.' +
   'MEASURE_REPRESENTATION_ITEM'
   IN TYPEOF(d)) )
) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(d <* rep.items |
  (d.name = 'x-axis delta y')
  AND
  ('ELECTROTECHNICAL_DESIGN.' +
   'MEASURE_REPRESENTATION_ITEM'
   IN TYPEOF(d)) )
) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(d <* rep.items |
  (d.name = 'x coordinate')
  AND
  ('ELECTROTECHNICAL_DESIGN.' +
   'MEASURE_REPRESENTATION_ITEM'
   IN TYPEOF(d)) )
) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(d <* rep.items |
  (d.name = 'y coordinate')
  AND
  ('ELECTROTECHNICAL_DESIGN.' +
   'MEASURE_REPRESENTATION_ITEM'
   IN TYPEOF(d)) )
) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(z <* rep.items |
  (z.name = 'zone')
  AND

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```
        ('ELECTROTECHNICAL_DESIGN.' +
         'MEASURE_REPRESENTATION_ITEM'
         IN TYPEOF(z) )
    ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT('ELECTROTECHNICAL_DESIGN.' +
       'GEOMETRIC_REPRESENTATION_CONTEXT'
       IN TYPEOF(rep.context_of_items))
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                        'USED_REPRESENTATION') |
NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION'
    IN TYPEOF(pdr.definition.definition) )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
          ['ELECTROTECHNICAL_DESIGN.' +
           'DRAUGHTING_MODEL',
           'ELECTROTECHNICAL_DESIGN.' +
           'NOTE_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'PRESENTATION_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'REFERENCE_GRID_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'SHAPE_REPRESENTATION'])
    ) > 0
THEN RETURN(FALSE);
END_IF;
END;

'grid layout':
BEGIN
  IF NOT(SIZEOF(rep.items) = 3)
  THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* rep.items |
                  SIZEOF(TYPEOF(i) *
                        ['ELECTROTECHNICAL_DESIGN.' +
                         'AXIS2_PLACEMENT_2D',
                         'ELECTROTECHNICAL_DESIGN.' +
                         'LENGTH_MEASURE_WITH_UNIT'])
                  ) = 0 )
    ) > 0
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(SIZEOF(QUERY(x <* rep.items |
                    (x.name = 'delta x')

```

```

        AND
        ('ELECTROTECHNICAL_DESIGN.' +
         'LENGTH_MEASURE_WITH_UNIT'
         IN TYPEOF(x)) )
    ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(y <* rep.items |
                  (y.name = 'delta y')
                  AND
                  ('ELECTROTECHNICAL_DESIGN.' +
                   'LENGTH_MEASURE_WITH_UNIT'
                   IN TYPEOF(y)) )
          ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(o <* rep.items |
                  (o.name = 'grid origin')
                  AND
                  ('ELECTROTECHNICAL_DESIGN.' +
                   'AXIS2_PLACEMENT_2D'
                   IN TYPEOF(o)) )
          ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(o <* rep.items |
                ('ELECTROTECHNICAL_DESIGN.' +
                 'AXIS2_PLACEMENT_2D'
                 IN TYPEOF(o))
                AND
                EXISTS(o\axis2_placement_2d.ref_direction) )
        ) > 0
THEN RETURN(FALSE);
END_IF;
IF NOT('ELECTROTECHNICAL_DESIGN.' +
       'GEOMETRIC_REPRESENTATION_CONTEXT'
       IN TYPEOF(rep.context_of_items))
THEN RETURN(FALSE);
END_IF;
IF NOT(rep.context_of_items\geometric_representation_context.
        coordinate_space_dimension = 2)
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
          ['ELECTROTECHNICAL_DESIGN.' +
           'DRAUGHTING_MODEL',
           'ELECTROTECHNICAL_DESIGN.' +
           'NOTE_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'PRESENTATION_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'REFERENCE_GRID_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'SHAPE_REPRESENTATION'])
        ) > 0

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```
        THEN RETURN(FALSE);
        END_IF;
    END;

'linear pattern location':
BEGIN
    IF NOT(SIZEOF(rep.items) = 2)
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* rep.items |
                    SIZEOF(TYPEOF(i) *
                        ['ELECTROTECHNICAL_DESIGN.' +
                        'AXIS2_PLACEMENT_3D',
                        'ELECTROTECHNICAL_DESIGN.' +
                        'LENGTH_MEASURE_WITH_UNIT']
                    ) = 0 )
        ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(SIZEOF(QUERY(d <* rep.items |
                        (d.name = 'pattern location distance')
                        AND
                        ('ELECTROTECHNICAL_DESIGN.' +
                        'LENGTH_MEASURE_WITH_UNIT'
                        IN TYPEOF(d)) )
        ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(SIZEOF(QUERY(s <* rep.items |
                        (s.name = 'pattern start location')
                        AND
                        ('ELECTROTECHNICAL_DESIGN.' +
                        'AXIS2_PLACEMENT_3D'
                        IN TYPEOF(s)) )
        ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
           'GEOMETRIC_REPRESENTATION_CONTEXT'
           IN TYPEOF(rep.context_of_items))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(rep.context_of_items\geometric_representation_context.
           coordinate_space_dimension = 3)
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                                'ELECTROTECHNICAL_DESIGN.' +
                                'PROPERTY_DEFINITION_REPRESENTATION.' +
                                'USED_REPRESENTATION') |
                NOT('ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING'
                    IN TYPEOF(pdr.definition.definition)) )
        ) > 0
    THEN RETURN(FALSE);
```

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END_IF;
IF SIZEOF(TYPEOF(rep) *
    ['ELECTROTECHNICAL_DESIGN.' +
     'DRAUGHTING_MODEL',
     'ELECTROTECHNICAL_DESIGN.' +
     'NOTE_REPRESENTATION',
     'ELECTROTECHNICAL_DESIGN.' +
     'PRESENTATION_REPRESENTATION',
     'ELECTROTECHNICAL_DESIGN.' +
     'REFERENCE_GRID_REPRESENTATION',
     'ELECTROTECHNICAL_DESIGN.' +
     'SHAPE_REPRESENTATION']
    ) > 0
    THEN RETURN(FALSE);
END_IF;
END;

'marking location':
BEGIN
    IF SIZEOF(rep.items) > 1
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* rep.items |
        NOT('ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT_3D'
            IN TYPEOF(i)) )
        ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
        'GEOMETRIC_REPRESENTATION_CONTEXT'
        IN TYPEOF(rep.context_of_items))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(rep.context_of_items\geometric_representation_context.
        coordinate_space_dimension = 3)
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        NOT('ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING'
            IN TYPEOF(pdr.definition.definition)) )
        ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
         'DRAUGHTING_MODEL',
         'ELECTROTECHNICAL_DESIGN.' +
         'NOTE_REPRESENTATION',
         'ELECTROTECHNICAL_DESIGN.' +
         'PRESENTATION_REPRESENTATION',
         'ELECTROTECHNICAL_DESIGN.' +

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        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION']
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'notification message':
BEGIN
    IF SIZEOF(rep.items) > 1
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* rep.items |
        NOT('ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT_2D'
            IN TYPEOF(i)) )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(SIZEOF(QUERY(t <* rep.items |
        t.name = 'message text')
    ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        NOT('ELECTROTECHNICAL_DESIGN.NOTIFICATION'
            IN TYPEOF(pdr.definition.definition)) )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION'])
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'property specification':
BEGIN
    IF SIZEOF(rep.items) > 3
    THEN RETURN(FALSE);
    END_IF;
END;
```



```

IF SIZEOF(QUERY(i <* rep.items |
                NOT('ELECTROTECHNICAL_DESIGN.' +
                    'DESCRIPTIVE_REPRESENTATION_ITEM'
                    IN TYPEOF(i)) )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(d <* rep.items |
                    d.name = 'definition')
    ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(n <* rep.items |
                n.name = 'note')
    ) > 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(r <* rep.items |
                r.name = 'remark')
    ) > 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                            'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                            'USED_REPRESENTATION') |
                'ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY'
                IN TYPEOF(pdr.definition))
    ) <> 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(la <* USEDIN(rep, 'ELECTROTECHNICAL_DESIGN.'
                            'LANGUAGE_ASSIGNMENT.' +
                            'ITEMS') |
                ('ELECTROTECHNICAL_DESIGN.GROUP'
                IN TYPEOF(la.assigned_class))
                AND
                (la.assigned_class.description
                = 'ISO 639-2 language code')
                AND
                (la.role.name = 'language'))
    ) > 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
          ['ELECTROTECHNICAL_DESIGN.' +
          'DRAUGHTING_MODEL',
          'ELECTROTECHNICAL_DESIGN.' +
          'NOTE_REPRESENTATION',
          'ELECTROTECHNICAL_DESIGN.' +
          'PRESENTATION_REPRESENTATION',
          'ELECTROTECHNICAL_DESIGN.' +
          'REFERENCE_GRID_REPRESENTATION',

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        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION']
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'property value':
BEGIN
    IF SIZEOF(rep.items) <> 1
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr < * USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        'ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY'
    IN TYPEOF(pdr.definition)
    ) <> 1
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION']
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'property value format' :
BEGIN
    IF SIZEOF(rep.items) > 2
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i < * rep.items |
        NOT('ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM'
        IN TYPEOF(i)) )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(SIZEOF(QUERY(vf < * rep.items |
        vf.name = 'value format')
    ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
END;
```

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IF SIZEOF(QUERY(sd <* rep.items |
                sd.name = 'source document')
        ) > 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                            'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                            'USED_REPRESENTATION') |
          'ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY'
          IN TYPEOF(pdr.definition)
        ) <> 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(la <* USEDIN(rep, 'ELECTROTECHNICAL_DESIGN.'
+
                            'LANGUAGE_ASSIGNMENT.' +
                            'ITEMS') |
              ('ELECTROTECHNICAL_DESIGN.GROUP'
              IN TYPEOF(la.assigned_class))
              AND
              (la.assigned_class.description
              = 'ISO 639-2 language code')
              AND
              (la.role.name = 'language')
              AND
              (la.role.description = 'default'))
        ) > 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
          ['ELECTROTECHNICAL_DESIGN.' +
          'DRAUGHTING_MODEL',
          'ELECTROTECHNICAL_DESIGN.' +
          'NOTE_REPRESENTATION',
          'ELECTROTECHNICAL_DESIGN.' +
          'PRESENTATION_REPRESENTATION',
          'ELECTROTECHNICAL_DESIGN.' +
          'REFERENCE_GRID_REPRESENTATION',
          'ELECTROTECHNICAL_DESIGN.' +
          'SHAPE_REPRESENTATION']
        ) > 1
THEN RETURN(FALSE);
END_IF;
END;

'quantity':
BEGIN
IF SIZEOF(rep.items) > 1
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(i <* rep.items |
                NOT('ELECTROTECHNICAL_DESIGN.' +
                    'MEASURE_REPRESENTATION_ITEM')
        ) > 1
THEN RETURN(FALSE);
END_IF;

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        IN TYPEOF(i)) )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(SIZEOF(QUERY(stat <* rep.items |
        stat.name = 'quantity measure')
        ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        NOT('ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION'
            IN TYPEOF(pdr.definition))
        OR
        NOT(pdr.definition\property_definition.name
            = 'occurrence quantity')
        OR
        NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
            IN TYPEOF(pdr.definition.definition))
        OR
        NOT(pdr.definition.definition\
            product_definition.name
            = 'quantified instance') )
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION'])
    ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'schematic node connect area':
BEGIN
    IF SIZEOF(QUERY(i <* rep.items |
        SIZEOF(TYPEOF(i) *
            ['ELECTROTECHNICAL_DESIGN.' +
            'CARTESIAN_POINT',
            'ELECTROTECHNICAL_DESIGN.' +
            'COMPOSITE_CURVE',
            'ELECTROTECHNICAL_DESIGN.' +
            'POLYLINE',
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        'ELECTROTECHNICAL_DESIGN.' +
        'TRIMMED_CURVE']
    ) = 0 )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF NOT('ELECTROTECHNICAL_DESIGN.' +
       'GEOMETRIC_REPRESENTATION_CONTEXT'
       IN TYPEOF(rep.context_of_items))
THEN RETURN(FALSE);
END_IF;
IF NOT(rep.context_of_items\geometric_representation_context.
       coordinate_space_dimension = 2)
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
          ['ELECTROTECHNICAL_DESIGN.' +
           'DRAUGHTING_MODEL',
           'ELECTROTECHNICAL_DESIGN.' +
           'NOTE_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'PRESENTATION_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'REFERENCE_GRID_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'SHAPE_REPRESENTATION'])
    ) > 0
THEN RETURN(FALSE);
END_IF;
END;

'section interface parameters':
BEGIN
  IF SIZEOF(QUERY(i <* rep.items |
                 SIZEOF(TYPEOF(i) *
                        ['ELECTROTECHNICAL_DESIGN.' +
                         'AREA_MEASURE_WITH_UNIT',
                         'ELECTROTECHNICAL_DESIGN.' +
                         'RATIO_MEASURE_WITH_UNIT'])
                ) = 0 )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(c <* rep.items |
                (c.name = 'cross section area')
                AND
                NOT('ELECTROTECHNICAL_DESIGN.' +
                    'AREA_MEASURE_WITH_UNIT'
                    IN TYPEOF(c)))
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(s <* rep.items |
                (s.name = 'space factor')
                AND

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        ('ELECTROTECHNICAL_DESIGN.' +
         'RATIO_MEASURE_WITH_UNIT'
         IN TYPEOF(s)) )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                    'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                    'USED_REPRESENTATION') |
NOT('ELECTROTECHNICAL_DESIGN.' +
    'INSTALLATION_SECTION_INTERFACE'
    IN TYPEOF(pdr.definition.definition)) )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
    ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL',
    'ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'PRESENTATION_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_REPRESENTATION']
    ) > 0
THEN RETURN(FALSE);
END_IF;
END;

'section parameters':
BEGIN
    IF SIZEOF(QUERY(i <* rep.items |
        SIZEOF(TYPEOF(i) *
            ['ELECTROTECHNICAL_DESIGN.' +
            'AREA_MEASURE_WITH_UNIT',
            'ELECTROTECHNICAL_DESIGN.' +
            'LENGTH_MEASURE_WITH_UNIT',
            'ELECTROTECHNICAL_DESIGN.' +
            'RATIO_MEASURE_WITH_UNIT']
        ) = 0 )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(c <* rep.items |
    (c.name = 'cross section area')
    AND
    NOT('ELECTROTECHNICAL_DESIGN.' +
        'AREA_MEASURE_WITH_UNIT'
        IN TYPEOF(c)) )
    ) > 0
THEN RETURN(FALSE);
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END_IF;
IF SIZEOF(QUERY(c <* rep.items |
                (c.name IN ['bending radius',
                            'section length']))
    AND
    NOT('ELECTROTECHNICAL_DESIGN.' +
        'LENGTH_MEASURE_WITH_UNIT'
        IN TYPEOF(c)) )
    > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(s <* rep.items |
                (s.name = 'space factor')
                AND
                ('ELECTROTECHNICAL_DESIGN.' +
                 'RATIO_MEASURE_WITH_UNIT'
                 IN TYPEOF(s)) )
    > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                            'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                            'USED_REPRESENTATION') |
                NOT('ELECTROTECHNICAL_DESIGN.' +
                    'INSTALLATION_SECTION'
                    IN TYPEOF(pdr.definition.definition)) )
    > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
          ['ELECTROTECHNICAL_DESIGN.' +
           'DRAUGHTING_MODEL',
           'ELECTROTECHNICAL_DESIGN.' +
           'NOTE_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'PRESENTATION_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'REFERENCE_GRID_REPRESENTATION',
           'ELECTROTECHNICAL_DESIGN.' +
           'SHAPE_REPRESENTATION'])
    > 0
THEN RETURN(FALSE);
END_IF;
END;

'selection criteria':
BEGIN
  IF NOT(SIZEOF(rep.items) = 2)
  THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY(i <* rep.items |
                  SIZEOF(TYPEOF(i) *
                          ['ELECTROTECHNICAL_DESIGN.' +

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        'COMPOUND_REPRESENTATION_ITEM',
        'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM',
        'ELECTROTECHNICAL_DESIGN.' +
        'MEASURE_REPRESENTATION_ITEM']
    ) = 0 )
    ) > 0
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(c <* rep.items |
    (c.name = 'selection control')
    AND
    ('ELECTROTECHNICAL_DESIGN.' +
    'DESCRIPTIVE_REPRESENTATION_ITEM'
    IN TYPEOF(c)) )
    ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF NOT(SIZEOF(QUERY(q <* rep.items |
    (q.name = 'selection quantity')
    AND
    (SIZEOF(TYPEOF(q) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'COMPOUND_REPRESENTATION_ITEM',
        'ELECTROTECHNICAL_DESIGN.' +
        'MEASURE_REPRESENTATION_ITEM']
    ) = 1 ) )
    ) = 1 )
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY(pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
    'USED_REPRESENTATION') |
    NOT(
    ('ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION'
    IN TYPEOF(pdr.definition))
    AND
    NOT(pdr.definition\property_definition.name
    = 'occurrence selection control')
    AND
    ( ( ('ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_DEFINITION'
    IN TYPEOF(pdr.definition.definition))
    AND
    NOT(pdr.definition.definition\
    product_definition.name
    = 'selected instance') )
    XOR
    ( ('ELECTROTECHNICAL_DESIGN.' +
    'ASSEMBLY_COMPONENT_USAGE'
    IN TYPEOF(pdr.definition.definition))
    AND
    NOT(pdr.definition.definition\

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        product_definition_relationship.name
        = 'selected instance usage') ) ) ) )
    ) > 0
THEN RETURN (FALSE);
END_IF;
IF SIZEOF (TYPEOF (rep) *
    ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL',
    'ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'PRESENTATION_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_REPRESENTATION']
    ) > 0
THEN RETURN (FALSE);
END_IF;
END;

'signal characteristics':
BEGIN
    IF SIZEOF (rep.items) > 1
    THEN RETURN (FALSE);
    END_IF;
    IF NOT (rep.items[1].name = 'signal level indicator')
    THEN RETURN (FALSE);
    END_IF;
    IF
NOT ('ELECTROTECHNICAL_DESIGN.DESRIPTIVE_REPRESENTATION_ITEM'
    IN TYPEOF (rep.items[1]))
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF (TYPEOF (rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION']
        ) > 0
    THEN RETURN (FALSE);
    END_IF;
END;

'signal value':
BEGIN
    IF NOT (SIZEOF (USEDIN (rep, 'ELECTROTECHNICAL_DESIGN.' +
        'ID_ATTRIBUTE.' +
        'IDENTIFIED_ITEM')

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        ) = 1 )
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        'ELECTROTECHNICAL_DESIGN.SIGNAL'
        IN TYPEOF(pdr.definition.definition))
    ) <> 1
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        pdr.name = 'parameter association')
    ) > 1
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_REPRESENTATION'])
    ) > 1
    THEN RETURN (FALSE);
    END_IF;
END;

'supplier probability':
BEGIN
    IF SIZEOF(rep.items) > 1
    THEN RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* rep.items |
        NOT('ELECTROTECHNICAL_DESIGN.' +
        'RATIO_MEASURE_WITH_UNIT'
        IN TYPEOF(i)) )
    ) > 0
    THEN RETURN (FALSE);
    END_IF;
    IF NOT(SIZEOF(QUERY(stat <* rep.items |
        stat.name = 'probability rate')
    ) = 1 )
    THEN RETURN (FALSE);
    END_IF;
END;
```

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IF SIZEOF(QUERY(pdr <* USEDIN(rep,
                    'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
                    'USED_REPRESENTATION') |
NOT('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
    IN TYPEOF(pdr.definition.definition))
OR
NOT(pdr.definition.definition\
    product_definition.name
    IN ['supplier',
        'supplier final',
        'technical supplier',
        'technical supplier final'])) )
) > 0
THEN RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) *
    ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL',
    'ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'PRESENTATION_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_REPRESENTATION']
) > 0
THEN RETURN(FALSE);
END_IF;
END;

OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*

```

Argument definitions:

rep: the input **representation** to be checked.

5.2.4.26 representation_item_correlation

The **representation_item_correlation** function returns true if the **name** attribute value of the **representation_item** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

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— An instance of **representation_item** with a **name** of ‘component colour’ shall be an instance of **colour_representation_item**.

— An instance of **representation_item** with a **name** of either ‘material specification’ or ‘mounting features specification’ shall

- a) be an instance of **descriptive_representation_item**;
- b) not be an instance of **colour_representation_item**.

— An instance of **representation_item** with a **name** of either ‘rated current’, ‘rated power’, or ‘rated voltage’ shall

- a) be an instance of **measure_representation_item** and **qualified_representation_item**;
- b) contain in its set of **qualifiers** at least one and at most two elements;
- c) contain in its set of **qualifiers** only instances of **type_qualifier**.

— An instance of **representation_item** with a **name** of either ‘body breadth’, ‘body height’, ‘body length’, ‘cross section area’, ‘mass’, ‘operating temperature’, ‘storage temperature’, or ‘outside diameter’

- a) shall be an instance of **measure_representation_item**;
- b) shall, if it is an instance of **qualified_representation_item**, contain in its set of **qualifiers** exactly one element that is an instance of **type_qualifier**.

— An instance of **representation_item** with a **name** of either ‘body breadth’, ‘body height’, ‘body length’, ‘component colour’, ‘cross section area’, ‘mass’, ‘material specification’, ‘operating temperature’, ‘storage temperature’, ‘mounting features specification’, ‘outside diameter’, ‘rated current’, ‘rated power’, or ‘rated voltage’ shall

- a) be referenced in the role of **items** by exactly one instance of **representation**;
- b) share its **name** with the instance of **general_property** that is associated to the referencing instance of **representation**.

EXPRESS specification:

```
*)
FUNCTION representation_item_correlation
  (ri : representation_item) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

name := ri.name;
CASE name OF
  'component colour':
    IF NOT('ELECTROTECHNICAL_DESIGN.COLOUR_REPRESENTATION_ITEM'
          IN TYPEOF(ri))
    THEN RETURN(FALSE);
    END_IF;
```

```

'material specification',
'mounting features specification':
  BEGIN
    IF
NOT ('ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM'
      IN TYPEOF(ri))
    THEN RETURN(FALSE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.COLOUR_REPRESENTATION_ITEM'
      IN TYPEOF(ri)
    THEN RETURN(FALSE);
    END_IF;
  END;

'rated current',
'rated power',
'rated voltage':
  BEGIN
    IF SIZEOF(TYPEOF(ri) *
              ['ELECTROTECHNICAL_DESIGN.' +
               'MEASURE_REPRESENTATION_ITEM',
               'ELECTROTECHNICAL_DESIGN.' +
               'QUALIFIED_REPRESENTATION_ITEM']
              ) < 2
    THEN RETURN(FALSE);
    END_IF;
    IF NOT((SIZEOF(ri\qualified_representation_item.qualifiers) >
0)
          AND
          (SIZEOF(ri\qualified_representation_item.qualifiers) <
3))
    THEN RETURN(FALSE);
    END_IF;
  END;

'body breadth',
'body height',
'body length',
'cross section area',
'mass',
'operating temperature',
'storage temperature',
'outside diameter':
  BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
          IN TYPEOF(ri))
    THEN RETURN(FALSE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
      IN TYPEOF(ri)
    THEN BEGIN
      IF
NOT(SIZEOF(ri\qualified_representation_item.qualifiers
          ) = 1)

```

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```
        THEN RETURN(FALSE);
        END_IF;
        IF NOT('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER'
              IN TYPEOF(ri\qualified_representation_item.
                       qualifiers[1]))
        THEN RETURN(FALSE);
        END_IF;
    END;
END_IF;
END;

'body breadth',
'body height',
'body length',
'component colour',
'cross section area',
'mass',
'material specification',
'operating temperature',
'storage temperature',
'mounting features specification',
'outside diameter',
'rated current',
'rated power',
'rated voltage':
BEGIN
    IF NOT(SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
                        'REPRESENTATION.' +
                        'ITEMS')
              ) = 1 )
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(de <* USEDIN(ri,
                              'ELECTROTECHNICAL_DESIGN.' +
                              'REPRESENTATION.' +
                              'ITEMS') |
              SIZEOF(QUERY(pdr <* USEDIN(de,
                              'ELECTROTECHNICAL_DESIGN.' +
                              'PROPERTY_DEFINITION_REPRESENTATION.' +
                              'USED_REPRESENTATION') |
              ('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY'
               IN TYPEOF(pdr.definition))
              AND
              (pdr.definition\general_property.name
               = ri.name) )
              ) = 1 )
        ) = 0
    THEN RETURN(FALSE);
    END_IF;
END;

    OTHERWISE: RETURN(TRUE);
END_CASE;
```

```

RETURN (TRUE) ;

END_FUNCTION;
(*

```

Argument definitions:

ri: the input **representation_item** to be checked.

5.2.4.27 **representation_relationship_correlation**

The **representation_relationship_correlation** function returns true if the **name** attribute value of the **representation_relationship** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

- An instance of **representation_relationship** with a **name** of ‘connect area’ shall
 - a) reference in the role of the **rep_1** an instance of **representation** that has a **name** of ‘direction range’;
 - b) reference in the role of the **rep_2** an instance of **representation** that has a **name** of ‘schematic node connect area’.
- An instance of **representation_relationship** with a **name** of either ‘definitional’, ‘non definitional’, or ‘’ (empty string) shall
 - a) reference in the role of the **rep_1** an instance of **representation** that has a **name** of ‘property value’;
 - b) reference in the role of the **rep_2** either an instance of **drawing_sheet_revision** or **note_representation** or an instance of **representation** that has either a **name** of ‘cable pull information’ or ‘signal value’ or that contains its set of **items** instances of **path** or **vertex**.
- An instance of **representation_relationship** with a **name** of ‘instance placement’ shall
 - a) be an instance of **shape_representation_relationship** and **representation_relationship_with_transformation**;
 - b) reference in the roles of the **rep_1** and the **rep_2** instances of **representation** that are representations of instances of **product_definition**;
 - c) reference in the role of the **rep_1** an instance of **representation** that represents a **product_definition** with a **name** of ‘single instance’;
 - d) reference in the role of the **rep_2** an instance of **representation** that represents a **product_definition** that has an associated **application_context_element** with a **name** of ‘conceptual definition’.
- An instance of **representation_relationship** with a **name** of ‘node area’ shall

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- a) reference in the role of the **rep_1** an instance of **draughting_symbol_representation**;
 - b) reference in the role of the **rep_2** an instance of **representation** that has a **name** of 'schematic node connect area'.
- An instance of **representation_relationship** with a **name** of 'note presentation reference' shall reference
- a) in the role of the **rep_1** an instance of **presentation_with_association**;
 - b) in the role of the **rep_2** an instance of **presentation_with_association**;
 - c) in the role of the **rep_2** an instance of **presentation_with_association** that participates as the **presentation** in a **presented_item_representation** where the **item** references an instance of **presented_item_with_association** that contains in its set of **items** an instance of **note_representation**.
- An instance of **representation_relationship** with a **name** of 'note representation set' shall reference in the roles of the **rep_1** and the **rep_2** instances of **note_representation**.
- An instance of **representation_relationship** with a **name** of 'reference grid' shall
- a) reference in the role of the **rep_1** an instance of **reference_grid_layout**;
 - b) reference in the role of the **rep_2** an instance of **reference_grid_representation**.
- An instance of **representation_relationship** with a **name** of 'schematic node ownership' shall reference in the roles of the **rep_1** and the **rep_2** instances of **representation** that contains in its set of **items** an instance of **annotation_symbol_occurrence**.
- An instance of **representation_relationship** with a **name** of 'schematic text ownership' shall
- a) reference in the role of the **rep_1** an instance of **annotation_text_occurrence**;
 - b) reference in the role of the **rep_2** an instance of **representation** that contains in its set of **items** an instance of **annotation_symbol_occurrence**.

EXPRESS specification:

```
*)
FUNCTION representation_relationship_correlation
  (rr : representation_relationship) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

name := rr.name;
CASE name OF
  'connect area':
    BEGIN
      IF NOT(rr.rep_1.name = 'direction range')
        THEN RETURN(FALSE);
      END_IF;
      IF NOT(rr.rep_2.name = 'schematic node connect area')
```



```

    THEN RETURN(FALSE);
    END_IF;
END;

'definitional', 'non definitional', ':
BEGIN
    IF NOT(rr.rep_1.name = 'property value')
    THEN RETURN(FALSE);
    END_IF;
    IF NOT((SIZEOF(TYPEOF(rr.rep_2) *
['ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION',
'ELECTROTECHNICAL_DESIGN.NOTE_REPRESENTATION']
    ) = 1 )
    XOR
    (rr.rep_2.name IN ['cable pull information',
    'signal value']))
    XOR
    (SIZEOF(QUERY(i <* rr.rep_2.items |
    SIZEOF(TYPEOF(i) *
    ['ELECTROTECHNICAL_DESIGN.PATH',
    'ELECTROTECHNICAL_DESIGN.VERTEX']
    ) = 1 )
    ) > 0 ) )
    THEN RETURN(FALSE);
    END_IF;
END;

'instance placement':
BEGIN
    IF NOT(SIZEOF(TYPEOF(rr) *
    ['ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_REPRESENTATION_RELATIONSHIP',
    'ELECTROTECHNICAL_DESIGN.' +
'REPRESENTATION_RELATIONSHIP_WITH_TRANSFORMATION']
    ) = 2 )
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rr.rep_1,
    'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
    'USED_REPRESENTATION') |
    'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
    IN TYPEOF(pdr.definition.definition) )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rr.rep_2,
    'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
    'USED_REPRESENTATION') |

```

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```
        'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
        IN TYPEOF(pdr.definition.definition) )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rr.rep_1,
        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
        IN TYPEOF(pdr.definition.definition))
        AND
(pdr.definition.definition\product_definition.name
        = 'single instance') )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pdr <* USEDIN(rr.rep_2,
        'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION') |
        ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
        IN TYPEOF(pdr.definition.definition))
        AND
(pdr.definition.definition\product_definition.
        frame_of_reference.name = 'conceptual
definition') )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    END;

'node area':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_SYMBOL_REPRESENTATION'
        IN TYPEOF(rr.rep_1))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(rr.rep_2.name = 'schematic node connect area')
    THEN RETURN(FALSE);
    END_IF;
    END;

'note presentation reference':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_WITH_ASSOCIATION'
        IN TYPEOF(rr.rep_1))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
```

```

        'PRESENTATION_WITH_ASSOCIATION'
        IN TYPEOF(rr.rep_2))
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(pir <* USEDIN(rr.rep_2,
        'ELECTROTECHNICAL_DESIGN.' +
'PRESENTED_ITEM_REPRESENTATION.' +
        'PRESENTATION') |
        SIZEOF(QUERY(i <* pir.item\
presented_item_with_association.
        items |
        'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION'
        IN TYPEOF(i) )
        ) = 0 )
        ) > 0
    THEN RETURN(FALSE);
    END_IF;
END;

'note representation set':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION'
        IN TYPEOF(rr.rep_1))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION'
        IN TYPEOF(rr.rep_2))
    THEN RETURN(FALSE);
    END_IF;
END;

'reference grid':
BEGIN
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_LAYOUT'
        IN TYPEOF(rr.rep_1))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.' +
        'REFERENCE_GRID_REPRESENTATION'
        IN TYPEOF(rr.rep_2))
    THEN RETURN(FALSE);
    END_IF;
END;

'schematic node ownership':
BEGIN
    IF SIZEOF(QUERY(sn <* rr.rep_1.items |
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_SYMBOL_OCCURRENCE'

```

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```
        IN TYPEOF(sn) )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(uds <* rr.rep_2.items |
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_SYMBOL_OCCURRENCE'
        IN TYPEOF(uds) )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    END;

'schematic text ownership':
BEGIN
    IF SIZEOF(QUERY(sn <* rr.rep_1.items |
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_TEXT_OCCURRENCE'
        IN TYPEOF(sn) )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY(i <* rr.rep_2.items |
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_SYMBOL_OCCURRENCE'
        IN TYPEOF(i) )
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    END;

    OTHERWISE: RETURN(TRUE);
END_CASE;

RETURN(TRUE);

END_FUNCTION;
(*
```

Argument definitions:

rr: the input **representation_relationship** to be checked.

5.2.4.28 shape_aspect_relationship_correlation

The **shape_aspect_relationship_correlation** function returns true if the **name** attribute value of the **shape_aspect_relationship** entity is coordinated with other elements of product data required to satisfy the information requirements of this part of ISO 10303.

In particular, this function returns true, if the following constraints are satisfied:

— For an instance of **shape_aspect_relationship** with a **name** of ‘arrangement sequence’

- a) the **related_shape_aspect** shall be an instance of either **free_segment** or **routed_segment**;

- b) the **relating_shape_aspect** shall be either an instance of **connectivity_definition** or an instance of **shape_aspect** that is associated to a **product_definition** that has an associated **application_context_element** with a **name** of either ‘conceptual definition’, ‘functional occurrence’, ‘part occurrence’, or ‘physical occurrence’.
- For an instance of **shape_aspect_relationship** with a **name** of ‘connectivity’
- a) the **relating_shape_aspect** shall be an instance of **connectivity_definition**;
- b) the **related_shape_aspect** shall be an instance of **terminal**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘connectivity allocation’
- a) the **relating_shape_aspect** shall be an instance of **connectivity_definition** that is the **shape_aspect** of a **product_definition** that has an associated **application_context_element** with a **name** of ‘functional definition’;
- b) the **related_shape_aspect** shall be an instance of **connectivity_definition** that is the **shape_aspect** of a **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’.
- For an instance of **shape_aspect_relationship** with a **name** of ‘course sequence’
- a) the **related_shape_aspect** shall be an instance of either **installation_node**, **installation_route**, **installation_section**, or **installation_section_interface**;
- b) the **relating_shape_aspect** shall be an instance of **routed_segment**.
- An instance of **shape_aspect_relationship** with a **name** of ‘correspondence’ shall
- a) reference in the role of both the **related_shape_aspect** and the **relating_shape_aspect** instances of **terminal**;
- b) reference in the role of the **related_shape_aspect** a **shape_aspect** of an instance of **product_definition** that has a **name** of ‘single instance’.
- c) either reference in the role of the **relating_shape_aspect** a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional definition’ and in the role of the **related_shape_aspect** a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional occurrence’ or shall reference in the role of the **relating_shape_aspect** a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’ and in the role of the **related_shape_aspect** a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part occurrence’.
- For an instance of **shape_aspect_relationship** with a **name** of ‘decomposition hierarchy’ both the **related_shape_aspect** and the **relating_shape_aspect** shall reference instances of **installation_location**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘node residence’

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- a) the **related_shape_aspect** shall be an instance of **installation_location**;
- b) the **relating_shape_aspect** shall be an instance of **installation_node**.

— For an instance of **shape_aspect_relationship** with a **name** of ‘external access’

- a) the **related_shape_aspect** shall be an instance of **terminal**;
- b) the **relating_shape_aspect** shall be an instance of **interface**;
- c) the **related_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of either ‘functional definition’ or ‘part definition’;
- d) the **relating_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of either ‘functional definition’ or ‘part definition’;
- e) the **relating_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional definition’ if the **related_shape_aspect** is a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional definition’ and vice versa;
- f) the **relating_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’ if the **related_shape_aspect** is a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part definition’ and vice versa;

— For an instance of **shape_aspect_relationship** with a **name** of ‘preferred item terminal allocation’

- a) the **related_shape_aspect** shall be an instance of **terminal**;
- b) the **relating_shape_aspect** shall be an instance of **terminal**;
- c) the **relating_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has a **name** of ‘single instance’;
- d) the **related_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of either ‘functional definition’ or ‘part definition’;
- f) the **relating_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional occurrence’;
- g) there shall be exactly one instance of **property_definition_relationship** with a **name** of ‘item allocation’ where the **related_property_definition** references an instance of **property_definition** that refers to this instance of **shape_aspect_relationship**.

— For an instance of **shape_aspect_relationship** with a **name** of ‘route course sequence’

- a) the **related_shape_aspect** shall be an instance of either **installation_node**, **installation_section**, or **installation_section_interface**;

- b) the **relating_shape_aspect** shall be an instance of **installation_route**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘section end residence’
 - a) the **related_shape_aspect** shall be an instance of **installation_node**;
 - b) the **relating_shape_aspect** shall be an instance of **installation_section_end**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘section interface residence’
 - a) the **related_shape_aspect** shall be an instance of **installation_node**;
 - b) the **relating_shape_aspect** shall be an instance of **installation_section_interface**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘section join’
 - a) the **related_shape_aspect** shall be an instance of **installation_section_end**;
 - b) the **relating_shape_aspect** shall be an instance of **installation_section_interface**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘section termination’
 - a) the **related_shape_aspect** shall be an instance of **installation_section**;
 - b) the **relating_shape_aspect** shall be an instance of **installation_section_end**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘segment termination’
 - a) the **related_shape_aspect** shall be an instance of **installation_node**;
 - b) the **relating_shape_aspect** shall be an instance of **free_segment**.
- For an instance of **shape_aspect_relationship** with a **name** of ‘terminal allocation’
 - a) the **related_shape_aspect** shall be an instance of **terminal**;
 - b) the **relating_shape_aspect** shall be an instance of **terminal**;
 - c) the **related_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has a **name** of ‘single instance’;
 - d) the **relating_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has a **name** of ‘single instance’;
 - e) the **related_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘part occurrence’;
 - f) the **relating_shape_aspect** shall be a **shape_aspect** of an instance of **product_definition** that has an associated **application_context_element** with a **name** of ‘functional occurrence’;
 - g) there shall be at most one instance of **property_definition_relationship** with a **name** of ‘item allocation’ where the **related_property_definition** references an instance of **property_definition** that refers to this instance of **shape_aspect_relationship**.

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EXPRESS specification:

```
*)
FUNCTION shape_aspect_relationship_correlation
  (sar : shape_aspect_relationship) : BOOLEAN;
LOCAL
  name : STRING;
END_LOCAL;

name := sar.name;
CASE name OF
  'arrangement sequence':
    BEGIN
      IF SIZEOF(TYPEOF(sar.related_shape_aspect) *
        ['ELECTROTECHNICAL_DESIGN.' +
         'FREE_SEGMENT',
         'ELECTROTECHNICAL_DESIGN.' +
         'ROUTED_SEGMENT']
      ) = 0
      THEN RETURN(FALSE);
      END_IF;
      IF NOT( ('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
        IN TYPEOF(sar.relatng_shape_aspect))
        OR
        (
        NOT('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
          IN TYPEOF(sar.relatng_shape_aspect))
          AND
          ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
            IN
            TYPEOF(sar.relatng_shape_aspect.of_shape.definition))
            AND
            (sar.relatng_shape_aspect.of_shape.definition\
              product_definition.frame_of_reference.name
              IN ['conceptual definition',
                'functional occurrence',
                'part occurrence',
                'physical occurrence'])) ) )
      THEN RETURN(FALSE);
      END_IF;
    END;
  'connectivity':
    BEGIN
      IF NOT('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
        IN TYPEOF(sar.relatng_shape_aspect))
      THEN RETURN(FALSE);
      END_IF;
      IF SIZEOF(TYPEOF(sar.related_shape_aspect) *
        ['ELECTROTECHNICAL_DESIGN.TERMINAL']
      ) = 0
      THEN RETURN(FALSE);
      END_IF;
    END;
```



```

'connectivity allocation':
BEGIN
  IF NOT( ('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
    IN TYPEOF(sar.relatng_shape_aspect))
    AND
    (sar.relatng_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name
    = 'functional definition') )
  THEN RETURN(FALSE);
END_IF;
  IF NOT( ('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
    IN TYPEOF(sar.related_shape_aspect))
    AND
    (sar.related_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name
    = 'part definition') )
  THEN RETURN(FALSE);
END_IF;
END;

'course sequence':
BEGIN
  IF SIZEOF(TYPEOF(sar.related_shape_aspect) *
    ['ELECTROTECHNICAL_DESIGN.' +
    'INSTALLATION_NODE',
    'ELECTROTECHNICAL_DESIGN.' +
    'INSTALLATION_ROUTE',
    'ELECTROTECHNICAL_DESIGN.' +
    'INSTALLATION_SECTION',
    'ELECTROTECHNICAL_DESIGN.' +
    'INSTALLATION_SECTION_INTERFACE']
    ) = 0
  THEN RETURN(FALSE);
END_IF;
  IF NOT('ELECTROTECHNICAL_DESIGN.ROUTED_SEGMENT'
    IN TYPEOF(sar.relatng_shape_aspect))
  THEN RETURN(FALSE);
END_IF;
END;

'correspondence',
'definition usage':
BEGIN
  IF NOT( ( ('ELECTROTECHNICAL_DESIGN.TERMINAL'
    IN TYPEOF(sar.related_shape_aspect))
    AND
    ('ELECTROTECHNICAL_DESIGN.TERMINAL'
    IN TYPEOF(sar.relatng_shape_aspect)) ) )
  THEN RETURN(FALSE);
END_IF;
  IF NOT(sar.related_shape_aspect.of_shape.definition\
    product_definition.name = 'single instance')
  THEN RETURN(FALSE);
END_IF;
  IF NOT( ( (sar.relatng_shape_aspect.of_shape.definition\

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```
        product_definition.frame_of_reference.name
        = 'functional definition')
    AND
    (sar.related_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name
    = 'functional occurrence') )
XOR
    ( (sar.relating_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name
    = 'part definition')
    AND
    (sar.related_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name
    = 'part occurrence') ) )
    THEN RETURN(FALSE);
    END_IF;
END;
```

'decomposition hierarchy',
'neighbourhood':

```
    IF NOT( ('ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION'
            IN TYPEOF(sar.related_shape_aspect))
            AND
            ('ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION'
            IN TYPEOF(sar.relating_shape_aspect)))
    THEN RETURN(FALSE);
    END_IF;
```

'external access':

```
    BEGIN
        IF SIZEOF(TYPEOF(sar.related_shape_aspect) *
                ['ELECTROTECHNICAL_DESIGN.TERMINAL'])
            = 0
        THEN RETURN(FALSE);
        END_IF;
        IF NOT('ELECTROTECHNICAL_DESIGN.INTERFACE'
                IN TYPEOF(sar.relating_shape_aspect))
        THEN RETURN(FALSE);
        END_IF;
        IF NOT(sar.related_shape_aspect.of_shape.definition\
                product_definition.frame_of_reference.name
                IN ['functional definition', 'part definition'])
        THEN RETURN(FALSE);
        END_IF;
        IF NOT(sar.relating_shape_aspect.of_shape.definition\
                product_definition.frame_of_reference.name
                IN ['functional definition', 'part definition'])
        THEN RETURN(FALSE);
        END_IF;
        IF NOT( (sar.related_shape_aspect.of_shape.definition\
                product_definition.frame_of_reference.name
                = 'functional definition')
                AND
                (sar.relating_shape_aspect.of_shape.definition\
                product_definition.frame_of_reference.name
```

```

        = 'functional definition') )
THEN RETURN(FALSE);
END_IF;
IF NOT( (sar.related_shape_aspect.of_shape.definition\
        product_definition.frame_of_reference.name
        = 'part definition')
        AND
        (sar.relatng_shape_aspect.of_shape.definition\
        product_definition.frame_of_reference.name
        = 'part definition') )
THEN RETURN(FALSE);
END_IF;
END;

'node residence':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION'
        IN TYPEOF(sar.related_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE'
        IN TYPEOF(sar.relatng_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
END;

'preferred item terminal allocation':
BEGIN
  IF SIZEOF(TYPEOF(sar.related_shape_aspect) *
            ['ELECTROTECHNICAL_DESIGN.TERMINAL'])
    = 0
  THEN RETURN(FALSE);
  END_IF;
  IF SIZEOF(TYPEOF(sar.relatng_shape_aspect) *
            ['ELECTROTECHNICAL_DESIGN.TERMINAL'])
    = 0
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(sar.relatng_shape_aspect.of_shape.definition\
        product_definition.name = 'single instance')
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(sar.related_shape_aspect.of_shape.definition\
        product_definition.frame_of_reference.name
        IN ['functional definition', 'part definition'])
  THEN RETURN(FALSE);
  END_IF;
  IF NOT(sar.relatng_shape_aspect.of_shape.definition\
        product_definition.frame_of_reference.name
        = 'functional occurrence')
  THEN RETURN(FALSE);
  END_IF;
  IF (SIZEOF(QUERY(pd <* USEDIN(sar,
                              'ELECTROTECHNICAL_DESIGN.' +
                              'PROPERTY_DEFINITION.' +

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```

        'DEFINITION') |
    SIZEOF(QUERY(pdr <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_RELATIONSHIP.'
+
        'RELATED_PROPERTY_DEFINITION') |
        pdr.name = 'item allocation')
    ) > 1 )
    ) > 0 )
OR
    (SIZEOF(QUERY(pd <* USEDIN(sar,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION.' +
        'DEFINITION') |
    SIZEOF(QUERY(pdr <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_RELATIONSHIP.'
+
        'RELATED_PROPERTY_DEFINITION') |
        pdr.name = 'item allocation')
    ) = 1 )
    ) = 0 )
OR
    (SIZEOF(QUERY(pd <* USEDIN(sar,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION.' +
        'DEFINITION') |
    SIZEOF(QUERY(pdr <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_RELATIONSHIP.'
+
        'RELATED_PROPERTY_DEFINITION') |
        pdr.name = 'item allocation')
    ) = 1 )
    ) > 1 )
    THEN RETURN(FALSE);
    END_IF;
END;
```

'route course sequence':

```

BEGIN
    IF SIZEOF(TYPEOF(sar.related_shape_aspect) *
        ['ELECTROTECHNICAL_DESIGN.' +
        'INSTALLATION_NODE',
        'ELECTROTECHNICAL_DESIGN.' +
        'INSTALLATION_SECTION',
        'ELECTROTECHNICAL_DESIGN.' +
        'INSTALLATION_SECTION_INTERFACE']
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE'
        IN TYPEOF(sar.relatng_shape_aspect))
    THEN RETURN(FALSE);
    END_IF;
```

```

END;

'section end residence':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE'
        IN TYPEOF(sar.related_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END'
        IN TYPEOF(sar.relatng_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
END;

'section interface residence':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE'
        IN TYPEOF(sar.related_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
  IF
NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_INTERFACE'
    IN TYPEOF(sar.relatng_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
END;

'section join':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END'
        IN TYPEOF(sar.related_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
  IF
NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_INTERFACE'
    IN TYPEOF(sar.relatng_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
END;

'section termination':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION'
        IN TYPEOF(sar.related_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END'
        IN TYPEOF(sar.relatng_shape_aspect))
  THEN RETURN(FALSE);
  END_IF;
END;

'segment termination':
BEGIN
  IF NOT('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE'

```

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```
        IN TYPEOF(sar.related_shape_aspect))
    THEN RETURN(FALSE);
    END_IF;
    IF NOT('ELECTROTECHNICAL_DESIGN.FREE_SEGMENT'
        IN TYPEOF(sar.relatng_shape_aspect))
    THEN RETURN(FALSE);
    END_IF;
    END;

'terminal allocation':
BEGIN
    IF SIZEOF(TYPEOF(sar.related_shape_aspect) *
        ['ELECTROTECHNICAL_DESIGN.TERMINAL']
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(sar.relatng_shape_aspect) *
        ['ELECTROTECHNICAL_DESIGN.TERMINAL']
    ) = 0
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(sar.related_shape_aspect.of_shape.definition\
        product_definition.name = 'single instance')
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(sar.relatng_shape_aspect.of_shape.definition\
        product_definition.name = 'single instance')
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(sar.related_shape_aspect.of_shape.definition\
        product_definition.frame_of_reference.name
        = 'part occurrence')
    THEN RETURN(FALSE);
    END_IF;
    IF NOT(sar.relatng_shape_aspect.of_shape.definition\
        product_definition.frame_of_reference.name
        = 'functional occurrence')
    THEN RETURN(FALSE);
    END_IF;
    IF (SIZEOF(QUERY(pd <* USEDIN(sar,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION.' +
        'DEFINITION') |
        SIZEOF(QUERY(pdr <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_RELATIONSHIP.'
+
        'RELATED_PROPERTY_DEFINITION') |
        pdr.name = 'item allocation')
    ) > 1 )
    ) > 0 )
    OR
    (SIZEOF(QUERY(pd <* USEDIN(sar,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION.' +
```

```

        'DEFINITION') |
        sizeof(QUERY(pdr <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_RELATIONSHIP.'
+
        'RELATED_PROPERTY_DEFINITION') |
        pdr.name = 'item allocation')
        ) = 1 )
        ) > 1 )
        THEN RETURN(FALSE);
        END_IF;
        END;

        OTHERWISE: RETURN(TRUE);
        END_CASE;

        RETURN(TRUE);

    END_FUNCTION;
    (*

```

Argument definitions:

sar: the input **shape_aspect_relationship** to be checked.

5.2.4.29 value_range_wr1

The **value_range_wr1** function accepts an AGGREGATE of **representation_item** and returns a boolean result. The function will return TRUE if the AGGREGATE contains either exactly two **measure_representation_items** or two **value_representation_items**. Else it will return FALSE.

NOTE - This function realizes the first local rule of **value_range**.

EXPRESS specification:

```

*)
FUNCTION value_range_wr1(
    agg: AGGREGATE OF representation_item): BOOLEAN;
BEGIN
    IF (sizeof(agg) = 2) AND ((sizeof(QUERY ( i1 <* agg | (
    'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM' IN TYPEOF
    (i1)) ))
    = 2) OR (sizeof(QUERY ( i2 <* agg | (
    'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM' IN TYPEOF
    (i2)) ))
    = 2)) THEN
        RETURN(TRUE);
    ELSE
        RETURN(FALSE);
    END_IF;
END;

END_FUNCTION; -- value_range_wr1
    (*

```

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Argument definitions:

agg: The **agg** identifies the AGGREGATE of **representation_items** which are tested.

5.2.4.30 value_range_wr2

The **value_range_wr2** function accepts an AGGREGATE of **representation_item** and returns a boolean result. The function will return TRUE if the AGGREGATE contains two **representation_items** that have a **name** of 'upper limit' and 'lower limit'. Else it will return FALSE.

NOTE - This function realizes the second local rule of **value_range**.

EXPRESS specification:

```
*)
FUNCTION value_range_wr2(
    agg: AGGREGATE OF representation_item): BOOLEAN;
BEGIN
    IF (SIZEOF(QUERY ( i <* agg | (i.name = 'upper limit')
    )) = 1)
    AND (SIZEOF(QUERY ( i <* agg | (i.name = 'lower limit')
    )) = 1)
    THEN
        RETURN(TRUE);
    ELSE
        RETURN(FALSE);
    END_IF;
END;

END_FUNCTION; -- value_range_wr2
(*
```

Argument definitions:

agg: The **agg** identifies the AGGREGATE of **representation_items** which are tested.

5.2.4.31 value_range_wr3

The **value_range_wr3** function accepts an AGGREGATE of **representation_item** and returns a boolean result. The function will return TRUE if the AGGREGATE contains two **measure_representation_items** that reference the same **unit_component**. Else it will return FALSE.

NOTE - This function realizes the third local rule of **value_range**.

EXPRESS specification:

```
*)
FUNCTION value_range_wr3(
    agg: AGGREGATE OF representation_item): BOOLEAN;
BEGIN
    IF (SIZEOF(QUERY ( i <* agg | (
    'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM' IN
    TYPEOF(i) ) )
```

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```

<> 2) OR (SIZEOF(QUERY ( i1 <* agg |
('ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN TYPEOF (i1))
AND
(SIZEOF(QUERY ( i2 <* agg
| ((i1\measure_with_unit.unit_component
:=: i2\measure_with_unit.unit_component) OR
(i1\measure_with_unit.unit_component :=:
i2\measure_with_unit.unit_component)) ))
= 2) )) = 2) THEN
RETURN(TRUE);
ELSE
RETURN(FALSE);
END_IF;
END;

```

```

END_FUNCTION; -- value_range_wr3
(*

```

Argument definitions:

agg: The **agg** identifies the AGGREGATE of **representation_items** which are tested.

```

*)
END_SCHEMA; -- electrotechnical_design
(*

```

6 Conformance requirements

Conformance to this part of ISO 10303 includes satisfying the requirements stated in this part, the requirements of the implementation methods supported, and the relevant requirements of the normative references.

An implementation shall support at least one of the following implementation methods:

- ISO 10303-21;
- ISO 10303-22.

Requirements with respect to implementation are specified in annex C.

The Protocol Information Conformance Statement (PICS) proforma lists the options or the combinations of options that may be included in the implementation. The PICS proforma is provided in annex D.

This part of ISO 10303 provides for a number of options that may be supported by an implementation. These options have been grouped into the following conformance classes:

- Class 1: Design_physical_characterization;
- Class 2: Design_characterization;
- Class 3: Spatial_arrangement;
- Class 4: Design_characterization_and_spatial_arrangement;
- Class 5: Spatial_arrangement_and_configuration_data;
- Class 6: Documented_design_characterization;
- Class 7: Documented_item_characterization;
- Class 8: Complete_system_characterization;
- Class 9: Product_structure_and_work_management_data;
- Class 10: Design_structure_and_work_management_data;
- Class 11: Location_information_and_work_management_data;
- Class 12: Design_structure_and_configuration_data;
- Class 13: Item_structure_and_configuration_data;
- Class 14: Documented_design_structure_and_configuration_data;
- Class 15: Documented_item_structure_and_configuration_data.

Support for a particular conformance class requires support of all the options specified in that class. All entities specified, either directly or indirectly, by required attributes of the required AIM entities shall be supported.

Conformance to a particular class requires that all AIM elements defined as part of that class be supported. Table 29 defines the classes to which each AIM element belongs.

Table 28 specifies the combinations of UoFs supporting each conformance class.

NOTE ISO 10303-312¹⁾ defines the abstract test suite to be used in the assessment of conformance. ISO 10303-32 describes the conformance assessment process.

The conformance classes are characterized as follows:

6.1 Design_physical_characterization (CC 1)

This data includes all of the information about the assembly structure of pieces of equipment, including its connectivity, classification information, properties and references to external documentation. Data about the organizations involved, approval status, date and time stamps is also included. References to shape information is part of the scope of this conformance class.

6.2 Design_characterization (CC 2)

The scope and content of CC 2 is additionally to the content of CC 1. It adds data about function hierarchy, functional connectivity, and the allocation between the physical and functional aspect of a product. Information about the design rationale is provided. The information flow within the system is also part of the scope of this conformance class.

6.3 Spatial_arrangement (CC 3)

The scope and content of CC 3 is additionally to the content of CC 1. It adds data about the arrangement of products. This includes information about routes and cabletrays, positioning data, and site information. Information about the design rationale is provided.

6.4 Design_characterization_and_spatial_arrangement (CC 4)

The scope and content of CC 4 is additionally to the content of CC 2. It adds data about the arrangement of products. This includes information about routes and cabletrays, positioning data, and site information. This conformance class provides a complete specification of a technical system that comprises the functional and physical aspects of a system including location related data. Work flow related information and configuration controlled design data are not in the scope of this conformance class.

6.5 Spatial_arrangement_and_configuration_data (CC 5)

The scope and content of CC 5 is additionally to the content of CC 3. It adds data for configuration controlled design, effectivity data, and work flow related information.

¹⁾ To be published.

6.6 Documented_design_characterization (CC 6)

The scope and content of CC 6 is additionally to the content of CC 2. It adds data that are needed for the pictorial representation of the systems design. Documentation that uses two-dimensional schematic diagrams is included in the scope of this conformance class.

6.7 Documented_item_characterization (CC 7)

The scope and content of CC 7 is additionally to the content of CC 4. It adds data that are needed for the pictorial representation of the systems design. Documentation that uses two-dimensional dimensioned drawings is included in the scope of this conformance class.

6.8 Complete_system_characterization (CC 8)

The scope and content of CC 8 is additionally to the content of CC 7. It adds work flow related information, effectivity_data, and configuration controlled design data. This conformance class comprises the full functionality of this part of ISO 10303.

6.9 Product_structure_and_work_management_data (CC 9)

This data includes all of the information about the assembly structure of pieces of equipment, including classification information, properties and references to external documentation. Data about the organizations involved, approval status, date and time stamps is also included. References to shape information and work flow related data is part of the scope of this conformance class. Connectivity information is not in the scope of this conformance class.

6.10 Design_structure_and_work_management_data (CC 10)

The scope and content of CC 10 is additionally to the content of CC 9. It adds data about function hierarchy and the allocation between the physical and functional aspect of a product. Information about the design rationale and the information flow within the system is not part of the scope of this conformance class.

6.11 Location_information_and_work_management_data (CC 11)

The scope and content of CC 11 is additionally to the content of CC 9. It adds data about the location of products. This includes positioning data and site information. Routing information is not part of the scope of this conformance class.

6.12 Design_structure_and_configuration_data (CC 12)

The scope and content of CC 12 is additionally to the content of CC 10. It adds configuration controlled design data.

6.13 Item_structure_and_configuration_data (CC 13)

The scope and content of CC 13 is additionally to the content of CC 12. It adds data about the location of products.

6.14 Documented_design_structure_and_configuration_data (CC 14)

The scope and content of CC 14 is additionally to the content of CC 12. It adds data that are needed for the pictorial representation of the system design. Documentation that uses two-dimensional schematic diagrams is included in the scope of this conformance class.

6.15 Documented_item_structure_and_configuration_data (CC 15)

The scope and content of CC 15 is additionally to the content of CC 13. It adds data that are needed for the pictorial representation of the system design. Documentation that uses two-dimensional dimensioned drawings is included in the scope of this conformance class.

Table 28 - Usage of UoFs in conformance classes

Unit of Functionality	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
allocation		x		x	x	x
classification	x	x	x	x	x	x
conditions		x	x	x	x	x
configuration_management					x	
course			x	x	x	
designation	x	x	x	x	x	x
dimensioned_documentation						
documentation						x

Table 28 - Usage of UoFs in conformance classes (continued)

Unit of Functionality	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
effectivity_data					X	
external_reference	X	X	X	X	X	X
function_structure		X		X	X	X
network_allocation		X		X	X	X
organizational_data	X	X	X	X	X	X
physical_connectivity	X	X	X	X	X	X
product_structure	X	X	X	X	X	X
properties	X	X	X	X	X	X
remark		X	X	X	X	X
schematic_documentation						X
site			X	X	X	
work_management					X	

Table 28 - Usage of UoFs in conformance classes (continued)

Unit of Functionality	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
allocation	x	x		x		x
classification	x	x	x	x	x	x
conditions	x	x				
configuration_management		x				x
course	x	x				
dimensioned_documentation	x	x				
documentation	x	x				
effectivity		x	x	x	x	x
external_reference	x	x	x	x	x	x
function_structure	x	x		x		x
functional_connectivity	x	x				
installation	x	x				
designation	x	x	x	x	x	x
messages	x	x				
network_allocation	x	x				
organizational_data	x	x	x	x	x	x
physical_connectivity	x	x				
product_structure	x	x	x	x	x	x
properties	x	x	x	x	x	x
remark	x	x	x	x	x	x
schematic_documentation	x	x				
site	x	x			x	
work_management		x	x	x	x	x

Table 28 - Usage of UoFs in conformance classes (concluded)

Unit of Functionality	CC 13	CC 14	CC 15
allocation	x	x	x
classification	x	x	x
conditions			
configuration_management	x	x	x
course			
dimensioned_documentation			x
documentation		x	x
effectivity	x	x	x
external_reference	x	x	x
function_structure	x	x	x
functional_connectivity			
installation			
designation			
messages	x	x	x
network_allocation			
organizational_data	x	x	x
physical_connectivity			
product_structure	x	x	x
properties	x	x	x
remark	x	x	x
schematic_documentation		x	x
site	x		x
work_management	x	x	x

Table 29 - Usage of AIM elements in Conformance Classes

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
abs_function						
acos_function						
action					X	
action_assignment					X	
action_directive					X	
action_method					X	
action_property	X	X	X	X	X	X
action_property_representation	X	X	X	X	X	X
action_relationship					X	
action_request_assignment					X	
action_request_solution					X	
action_request_status					X	
action_status					X	
address	X	X	X	X	X	X
alternate_product_relationship	X	X	X	X	X	X
amount_of_substance_measure_with_unit	X	X	X	X	X	X
amount_of_substance_unit	X	X	X	X	X	X
and_expression						
angular_dimension						
annotation_curve_occurrence						X
annotation_fill_area						X
annotation_fill_area_occurrence						X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
annotation_occurrence						X
annotation_occurrence_associativity						X
annotation_occurrence_relationship						X
annotation_subfigure_occurrence						X
annotation_symbol						X
annotation_symbol_occurrence						X
annotation_text						X
annotation_text_occurrence						X
application_context	X	X	X	X	X	X
application_context_element	X	X	X	X	X	X
application_context_relationship	X	X	X	X	X	X
application_protocol_definition	X	X	X	X	X	X
applied_action_assignment					X	
applied_action_request_assignment					X	
applied_approval_assignment	X	X	X	X	X	X
applied_certification_assignment	X	X	X	X	X	X
applied_classification_assignment	X	X	X	X	X	X
applied_contract_assignment					X	
applied_date_and_time_assignment	X	X	X	X	X	X
applied_date_assignment	X	X	X	X	X	X
applied_document_reference	X	X	X	X	X	X
applied_document_usage_constraint_assignment	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
applied_effectivity_assignment					X	
applied_event_ccurrence_assignment					X	
applied_external_identification_assignment	X	X	X	X	X	X
applied_group_assignment					X	
applied_identification_assignment	X	X	X	X	X	X
applied_ineffectivity_assignment					X	
applied_organization_assignment	X	X	X	X	X	X
applied_organizational_project_assignment					X	
applied_person_and_organization_assignment	X	X	X	X	X	X
applied_presented_item						X
applied_security_classification_assignment	X	X	X	X	X	X
applied_time_interval_assignment					X	
approval	X	X	X	X	X	X
approval_assignment	X	X	X	X	X	X
approval_date_time	X	X	X	X	X	X
approval_person_organization	X	X	X	X	X	X
approval_relationship	X	X	X	X	X	X
approval_role	X	X	X	X	X	X
approval_status	X	X	X	X	X	X
area_in_set						X
area_measure_with_unit	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
area_unit	X	X	X	X	X	X
asin_function						
assembly_component_usage	X	X	X	X	X	X
assembly_component_usage_substitute	X	X	X	X	X	X
atan_function						
attribute_classification_assignment	X	X	X	X	X	X
attribute_language_assignment	X	X	X	X	X	X
attribute_value_assignment	X	X	X	X	X	X
attribute_value_role	X	X	X	X	X	X
axis2_placement_2d						X
axis2_placement_3d			X	X	X	
b_spline_curve			X	X	X	
b_spline_curve_with_knots			X	X	X	
bezier_curve			X	X	X	
binary_boolean_expression						
binary_function_call						
binary_generic_expression	X	X	X	X	X	X
binary_numeric_expression						
boolean_expression						
boolean_literal						
boolean_variable						

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
bounded_curve			X	X	X	
calendar_date	X	X	X	X	X	X
camera_image						X
camera_image_2d_with_scale						X
camera_model						X
camera_model_d2						X
camera_usage						X
cartesian_point			X	X	X	X
cartesian_transformation_operator	X	X	X	X	X	X
cartesian_transformation_operator_3d	X	X	X	X	X	X
certification	X	X	X	X	X	X
certification_assignment	X	X	X	X	X	X
certification_type	X	X	X	X	X	X
characterized_class	X	X	X	X	X	X
characterized_object	X	X	X	X	X	X
characterized_object_relationship		X		X	X	X
circle			X	X	X	
class	X	X	X	X	X	X
class_system	X	X	X	X	X	X
class_usage_effectivity_context_assignment					X	
classification_assignment	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
classification_role	X	X	X	X	X	X
colour						X
colour_representation_item	X	X	X	X	X	X
colour_rgb						X
colour_specification						X
comparison_equal						
comparison_expression						
comparison_greater						
comparison_greater_equal						
comparison_less						
comparison_less_equal						
comparison_not_equal						
composite_curve			X	X	X	
composite_curve_segment			X	X	X	
composite_text						X
composite_text_with_associated_curves						X
composite_text_with_blanking_box						X
composite_text_with_extent						X
compound_representation_item	X	X	X	X	X	X
concat_expression						
concept_feature_operator					X	

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
concept_feature_relationship					X	
concept_feature_relationship_with_condition					X	
conditional_concept_feature					X	
configurable_item					X	
configuration_design					X	
configuration_effectivity					X	
configuration_item					X	
configured_effectivity_assignment					X	
configured_effectivity_context_assignment					X	
conic			X	X	X	
connecting_line_group						X
connecting_line_group_assignment						X
connectivity_definition	X	X	X	X	X	X
context_dependent_invisibility						X
context_dependent_over_riding_styled_item						X
context_dependent_unit	X	X	X	X	X	X
contract					X	
contract_assignment					X	
contract_type					X	
conversion_based_unit	X	X	X	X	X	X
coordinated_universal_time_offset	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
cos_function						
curve			X	X	X	
curve_dimension						
curve_style						X
curve_style_font						X
curve_style_font_pattern						X
curve_style_with_ends_and_corners						X
date	X	X	X	X	X	X
date_and_time	X	X	X	X	X	X
date_and_time_assignment	X	X	X	X	X	X
date_assignment	X	X	X	X	X	X
date_role	X	X	X	X	X	X
date_time_role	X	X	X	X	X	X
dated_effectivity					X	
datum_feature_callout						
datum_target_callout						
defined_character_glyph						X
defined_symbol						X
derived_unit	X	X	X	X	X	X
derived_unit_element	X	X	X	X	X	X
derived_unit_variable	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
description_attribute	X	X	X	X	X	X
descriptive_representation_item	X	X	X	X	X	X
diameter_dimension						
dimension_callout_component_relations hip						
dimension_callout_relationship						
dimension_curve						
dimension_curve_directed_callout						
dimension_curve_terminator						
dimension_pair						
dimensional_exponents	X	X	X	X	X	X
directed_action					X	
direction			X	X	X	
div_expression						
document	X	X	X	X	X	X
document_designation_assignment	X	X	X	X	X	X
document_file	X	X	X	X	X	X
document_product_association	X	X	X	X	X	X
document_product_equivalence	X	X	X	X	X	X
document_reference	X	X	X	X	X	X
document_relationship	X	X	X	X	X	X
document_representation_type	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
document_type	X	X	X	X	X	X
document_usage_constraint	X	X	X	X	X	X
document_usage_constraint_assignment	X	X	X	X	X	X
document_usage_role	X	X	X	X	X	X
draughting_annotation_occurrence						X
draughting_callout						X
draughting_callout_relationship						X
draughting_elements						X
draughting_group_elements_assignment						X
draughting_model						X
draughting_pre_defined_colour						X
draughting_pre_defined_curve_font						X
draughting_pre_defined_text_font						X
draughting_presented_item						X
draughting_specification_reference						X
draughting_subfigure_representation						X
draughting_symbol_representation						X
draughting_text_literal_with_delineation						X
draughting_title						X
drawing_definition						X
drawing_revision						X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
drawing_revision_sequence						X
drawing_sheet_layout						X
drawing_sheet_revision						X
drawing_sheet_revision_usage						X
edge			X	X	X	
edge_curve			X	X	X	
effectivity					X	
effectivity_assignment					X	
effectivity_context_assignment					X	
effectivity_context_role					X	
effectivity_relationship					X	
electric_current_measure_with_unit	X	X	X	X	X	X
electric_current_unit	X	X	X	X	X	X
ellipse			X	X	X	
environment	X	X	X	X	X	X
equals_expression						
equipment_marking		X	X	X	X	X
event_occurrence					X	
event_occurrence_assignment					X	
event_occurrence_role					X	
exclusive_product_concept_feature - category					X	

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
executed_action					X	
exp_function						
expression						
expression_conversion_based_unit	X	X	X	X	X	X
external_identification_assignment	X	X	X	X	X	X
external_source	X	X	X	X	X	X
externally_defined_character_glyph						X
externally_defined_class	X	X	X	X	X	X
externally_defined_curve_font						X
externally_defined_general_property	X	X	X	X	X	X
externally_defined_hatch_style						X
externally_defined_item	X	X	X	X	X	X
externally_defined_item_relationship	X	X	X	X	X	X
externally_defined_style						X
externally_defined_symbol						X
externally_defined_text_font						X
externally_defined_tile_style						X
fill_area_style						X
fill_area_style_colour						X
fill_area_style_hatching						X
fill_area_style_tile_symbol_with_style						X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
fill_area_style_tiles						X
format_function						
founded_item			X	X	X	
free_segment			X	X	X	
functionally_defined_transformation	X	X	X	X	X	X
general_property	X	X	X	X	X	X
general_property_association	X	X	X	X	X	X
general_property_relationship	X	X	X	X	X	X
generic_expression	X	X	X	X	X	X
generic_literal						
generic_variable						
geometric_representation_context	X	X	X	X	X	X
geometric_representation_item	X	X	X	X	X	X
geometrical_tolerance_callout	X	X	X	X	X	X
global_uncertainty_assigned_context	X	X	X	X	X	X
global_unit_assigned_context	X	X	X	X	X	X
group	X	X	X	X	X	X
group_assignment	X	X	X	X	X	X
group_relationship	X	X	X	X	X	X
hyperbola		X	X	X		
id_attribute	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
identification_assignment	X	X	X	X	X	X
identification_assignment_relationship	X	X	X	X	X	X
identification_role	X	X	X	X	X	X
inclusion_product_concept_feature					X	
index_expression						
installation_location			X	X	X	
installation_node			X	X	X	
installation_route			X	X	X	
installation_section			X	X	X	
installation_section_end			X	X	X	
installation_section_interface			X	X	X	
installation_segment			X	X	X	
int_literal						
int_numeric_variable						
int_value_function						
interface	X	X	X	X	X	X
interval_expression						
invisibility						X
item_defined_transformation	X	X	X	X	X	X
item_designation_assignment	X	X	X	X	X	X
known_source	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
language	X	X	X	X	X	X
language_assignment	X	X	X	X	X	X
leader_curve						
leader_directed_callout						
leader_directed_dimension						
leader_terminator						
length_function						
length_measure_with_unit	X	X	X	X	X	X
length_unit	X	X	X	X	X	X
like_expression						
line			X	X	X	
linear_dimension						
literal_number						
local_time	X	X	X	X	X	X
log_function						
log10_function						
log2_function						
lot_effectivity					X	
luminous_intensity_measure_with_unit	X	X	X	X	X	X
luminous_intensity_unit	X	X	X	X	X	X
mapped_item	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
mass_measure_with_unit	X	X	X	X	X	X
mass_unit	X	X	X	X	X	X
maximum_function						
measure_representation_item	X	X	X	X	X	X
measure_with_unit	X	X	X	X	X	X
minimum_function						
minus_expression						
minus_function						
mod_expression						
mult_expression						
multi_language_attribute_assignment	X	X	X	X	X	X
multiple_arity_boolean_expression						
multiple_arity_function_call						
multiple_arity_generic_expression						
multiple_arity_numeric_expression						
name_attribute	X	X	X	X	X	X
named_unit	X	X	X	X	X	X
named_unit_variable	X	X	X	X	X	X
next_assembly_usage_occurrence	X	X	X	X	X	X
not_expression						
note_representation		X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
notification		X		X	X	X
numeric_expression						
numeric_variable						
object_reference_designation_- assignment	X	X	X	X	X	X
object_role	X	X	X	X	X	X
odd_function						
one_direction_repeat_factor						X
or_expression						
ordinate_dimension						
organization	X	X	X	X	X	X
organization_assignment	X	X	X	X	X	X
organization_relationship	X	X	X	X	X	X
organization_role	X	X	X	X	X	X
organizational_address	X	X	X	X	X	X
organizational_project					X	
organizational_project_assignment					X	
organizational_project_relationship					X	
organizational_project_role					X	
oriented_edge			X	X	X	
over_riding_styled_item						X
package_product_concept_feature					X	

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
page_connector_group						X
page_connector_presentation_group						X
page_connector_reference_group						X
page_connector_reference_group - assignment						X
parabola			X	X	X	
path			X	X	X	
person	X	X	X	X	X	X
person_and_organization	X	X	X	X	X	X
person_and_organization_address	X	X	X	X	X	X
person_and_organization_assignment	X	X	X	X	X	X
person_and_organization_role	X	X	X	X	X	X
personal_address	X	X	X	X	X	X
physically_modelled_product_definition	X	X	X	X	X	X
placement	X	X	X	X	X	X
planar_box						X
planar_extent						X
plane_angle_measure_with_unit	X	X	X	X	X	X
plane_angle_unit	X	X	X	X	X	X
plus_expression						
point						X
polyline			X	X	X	

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
power_expression						
pre_defined_colour						X
pre_defined_curve_font						X
pre_defined_dimension_symbol						
pre_defined_geometrical_tolerance_symbol						
pre_defined_item	X	X	X	X	X	X
pre_defined_point_marker_symbol						
pre_defined_symbol						X
pre_defined_terminator_symbol						
pre_defined_text_font						X
precision_qualifier	X	X	X	X	X	X
predefined_connectivity_definition	X	X	X	X	X	X
presentation_area						X
presentation_layer_assignment						X
presentation_representation						X
presentation_set						X
presentation_size						X
presentation_style_assignment						X
presentation_style_by_context						X
presentation_view						X
presentation_with_association						X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
presented_item						X
presented_item_representation						X
presented_item_with_association						X
process_variable		X		X	X	X
product	X	X	X	X	X	X
product_category	X	X	X	X	X	X
product_category_relationship	X	X	X	X	X	X
product_class					X	
product_concept					X	
product_concept_context					X	
product_concept_feature					X	
product_concept_feature_association					X	
product_concept_feature_category					X	
product_concept_feature_category_usage					X	
product_concept_relationship					X	
product_context	X	X	X	X	X	X
product_definition	X	X	X	X	X	X
product_definition_context	X	X	X	X	X	X
product_definition_context_association	X	X	X	X	X	X
product_definition_context_role	X	X	X	X	X	X
product_definition_effectivity					X	

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
product_definition_formation	X	X	X	X	X	X
product_definition_formation_- relationship	X	X	X	X	X	X
product_definition_formation_with_- specified_source	X	X	X	X	X	X
product_definition_occurrence_- relationship	X	X	X	X	X	X
product_definition_relationship	X	X	X	X	X	X
product_definition_shape	X	X	X	X	X	X
product_definition_substitute					X	
product_definition_usage	X	X	X	X	X	X
product_definition_with_associated_- documents	X	X	X	X	X	X
product_identification					X	
product_related_product_category	X	X	X	X	X	X
product_specification	X	X	X	X	X	X
projection_curve						
projection_directed_callout						
promissory_usage_occurrence	X	X	X	X	X	X
property_definition	X	X	X	X	X	X
property_definition_relationship	X	X	X	X	X	X
property_definition_representation	X	X	X	X	X	X
qualified_representation_item	X	X	X	X	X	X
quantified_assembly_component_usage	X	X	X	X	X	X
quasi_uniform_curve			X	X	X	

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
radius_dimension						
ratio_measure_with_unit	X	X	X	X	X	X
ratio_unit	X	X	X	X	X	X
rational_b_spline_curve			X	X	X	
real_literal						
real_numeric_variable						
reference_grid_layout						X
reference_grid_representation						X
relative_event_occurrence					X	
representation	X	X	X	X	X	X
representation_context	X	X	X	X	X	X
representation_item	X	X	X	X	X	X
representation_item_relationship	X	X	X	X	X	X
representation_map	X	X	X	X	X	X
representation_relationship	X	X	X	X	X	X
representation_relationship_with_- transformation	X	X	X	X	X	X
retention					X	
role_association	X	X	X	X	X	X
routed_segment			X	X	X	
security_classification	X	X	X	X	X	X
security_classification_assignment	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
security_classification_level	X	X	X	X	X	X
serial_numbered_effectivity					X	
shape_aspect	X	X	X	X	X	X
shape_aspect_relationship	X	X	X	X	X	X
shape_definition_representation			X	X	X	
shape_representation			X	X	X	
shape_representation_relationship			X	X		
si_unit	X	X	X	X	X	X
signal		X		X	X	X
signal_designation_assignment		X		X	X	X
simple_boolean_expression						
simple_generic_expression	X	X	X	X	X	X
simple_numeric_expression						
simple_string_expression						
sin_function						
slash_expression						
solid_angle_measure_with_unit	X	X	X	X	X	X
solid_angle_unit	X	X	X	X	X	X
specified_higher_usage_occurrence	X	X	X	X	X	X
square_root_function						
string_expression						

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
string_literal						
string_variable						
structured_dimension_callout						
styled_item						X
substring_expression						
symbol_colour						X
symbol_representation						X
symbol_representation_map						X
symbol_style						X
symbol_target						X
tan_function						
terminal	X	X	X	X	X	X
terminal_designation_assignment	X	X	X	X	X	X
terminator_symbol						
text_literal						X
text_literal_with_associated_curves						X
text_literal_with_blanking_box						X
text_literal_with_delineation						X
text_literal_with_extent						X
text_style						X
text_style_for_defined_font						X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
text_style_with_box_characteristics						X
text_style_with_mirror						X
text_style_with_spacing						X
thermodynamic_temperature_measure_with_unit	X	X	X	X	X	X
thermodynamic_temperature_unit	X	X	X	X	X	X
time_interval					X	
time_interval_assignment					X	
time_interval_based_effectivity					X	
time_interval_role					X	
time_interval_with_bounds					X	
time_measure_with_unit	X	X	X	X	X	X
time_unit	X	X	X	X	X	X
topological_representation_item			X	X	X	
trimmed_curve			X	X	X	
two_direction_repeat_factor						X
type_qualifier	X	X	X	X	X	X
unary_boolean_expression						
unary_function_call						
unary_generic_expression	X	X	X	X	X	X
unary_numeric_expression						
uncertainty_measure_with_unit	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
uniform_curve			X	X	X	
value_function						
value_range	X	X	X	X	X	X
value_representation_item	X	X	X	X	X	X
variable						
variable_semantics	X	X	X	X	X	X
vector			X	X	X	
versioned_action_request					X	
vertex			X	X	X	
vertex_point			X	X	X	
volume_measure_with_unit	X	X	X	X	X	X
volume_unit	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
abs_function		X				
acos_function		X				
action		X	X	X	X	X
action_assignment		X	X	X	X	X
action_directive		X	X	X	X	X
action_method		X	X	X	X	X
action_property	X	X	X	X	X	X
action_property_representation	X	X	X	X	X	X
action_relationship		X	X	X	X	X
action_request_assignment		X	X	X	X	X
action_request_solution		X	X	X	X	X
action_request_status		X	X	X	X	X
action_status		X	X	X	X	X
address	X	X	X	X	X	X
alternate_product_relationship	X	X	X	X	X	X
amount_of_substance_measure_with_unit	X	X	X	X	X	X
amount_of_substance_unit	X	X	X	X	X	X
and_expression		X				
angular_dimension	X	X				
annotation_curve_occurrence	X	X				
annotation_fill_area	X	X				
annotation_fill_area_occurrence	X	X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
annotation_occurrence	X	X				
annotation_occurrence_associativity	X	X				
annotation_occurrence_relationship	X	X				
annotation_subfigure_occurrence	X	X				
annotation_symbol	X	X				
annotation_symbol_occurrence	X	X				
annotation_text	X	X				
annotation_text_occurrence	X	X				
application_context	X	X	X	X	X	X
application_context_element	X	X	X	X	X	X
application_context_relationship	X	X	X	X	X	X
application_protocol_definition	X	X	X	X	X	X
applied_action_assignment		X	X	X	X	X
applied_action_request_assignment		X	X	X	X	X
applied_approval_assignment	X	X	X	X	X	X
applied_certification_assignment	X	X	X	X	X	X
applied_classification_assignment	X	X	X	X	X	X
applied_contract_assignment		X	X	X	X	X
applied_date_and_time_assignment	X	X	X	X	X	X
applied_date_assignment	X	X	X	X	X	X
applied_document_reference	X	X	X	X	X	X
applied_document_usage_constraint_assignment	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
applied_effectivity_assignment		X	X	X	X	X
applied_event_ccurrence_assignment		X	X	X	X	X
applied_external_identification_assignment	X	X	X	X	X	X
applied_group_assignment		X				X
applied_identification_assignment	X	X	X	X	X	X
applied_ineffectivity_assignment		X	X	X	X	X
applied_organization_assignment	X	X	X	X	X	X
applied_organizational_project_assignment		X	X	X	X	X
applied_person_and_organization_assignment	X	X	X	X	X	X
applied_presented_item	X	X				
applied_security_classification_assignment	X	X	X	X	X	X
applied_time_interval_assignment		X	X	X	X	X
approval	X	X	X	X	X	X
approval_assignment	X	X	X	X	X	X
approval_date_time	X	X	X	X	X	X
approval_person_organization	X	X	X	X	X	X
approval_relationship	X	X	X	X	X	X
approval_role	X	X	X	X	X	X
approval_status	X	X	X	X	X	X
area_in_set	X	X				
area_measure_with_unit	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
area_unit	X	X	X	X	X	X
asin_function		X				
assembly_component_usage	X	X	X	X	X	X
assembly_component_usage_substitute	X	X	X	X	X	X
atan_function		X				
attribute_classification_assignment	X	X	X	X	X	X
attribute_language_assignment	X	X	X	X	X	X
attribute_value_assignment	X	X	X	X	X	X
attribute_value_role	X	X	X	X	X	X
axis2_placement_2d	X	X				
axis2_placement_3d	X	X				
b_spline_curve	X	X				
b_spline_curve_with_knots	X	X				
bezier_curve	X	X				
binary_boolean_expression		X				
binary_function_call		X				
binary_generic_expression	X	X	X	X	X	X
binary_numeric_expression		X				
boolean_expression		X				
boolean_literal		X				
boolean_variable		X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
bounded_curve	X	X				
calendar_date	X	X	X	X	X	X
camera_image	X	X				
camera_image_2d_with_scale	X	X				
camera_model	X	X				
camera_model_d2	X	X				
camera_usage	X	X				
cartesian_point	X	X			X	
cartesian_transformation_operator	X	X	X	X	X	X
cartesian_transformation_operator_3d	X	X	X	X	X	X
certification	X	X	X	X	X	X
certification_assignment	X	X	X	X	X	X
certification_type	X	X	X	X	X	X
characterized_class	X	X	X	X	X	X
characterized_object	X	X	X	X	X	X
characterized_object_relationship	X	X				
circle	X	X				
class	X	X	X	X	X	X
class_system	X	X	X	X	X	X
class_usage_effectivity_context_assignment		X				X
classification_assignment	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
classification_role	X	X	X	X	X	X
colour	X	X				
colour_representation_item	X	X	X	X	X	X
colour_rgb	X	X				
colour_specification	X	X				
comparison_equal		X				
comparison_expression		X				
comparison_greater		X				
comparison_greater_equal		X				
comparison_less		X				
comparison_less_equal		X				
comparison_not_equal		X				
composite_curve	X	X				
composite_curve_segment	X	X				
composite_text	X	X				
composite_text_with_associated_curves	X	X				
composite_text_with_blanking_box	X	X				
composite_text_with_extent	X	X				
compound_representation_item	X	X	X	X	X	X
concat_expression		X				
concept_feature_operator		X				X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
concept_feature_relationship		X				X
concept_feature_relationship_with_condition		X				X
conditional_concept_feature		X				X
configurable_item		X				X
configuration_design		X				X
configuration_effectivity		X				X
configuration_item		X				X
configured_effectivity_assignment		X				X
configured_effectivity_context_assignment		X				X
conic	X	X				
connecting_line_group	X	X				
connecting_line_group_assignment	X	X				
connectivity_definition	X	X				
context_dependent_invisibility	X	X				
context_dependent_over_riding_styled_item	X	X				
context_dependent_unit	X	X	X	X	X	X
contract		X	X	X	X	X
contract_assignment		X	X	X	X	X
contract_type		X	X	X	X	X
conversion_based_unit	X	X	X	X	X	X
coordinated_universal_time_offset	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
cos_function		X				
curve	X	X				
curve_dimension	X	X				
curve_style	X	X				
curve_style_font	X	X				
curve_style_font_pattern	X	X				
curve_style_with_ends_and_corners	X	X				
date	X	X	X	X	X	X
date_and_time	X	X	X	X	X	X
date_and_time_assignment	X	X	X	X	X	X
date_assignment	X	X	X	X	X	X
date_role	X	X	X	X	X	X
date_time_role	X	X	X	X	X	X
dated_effectivity		X	X	X	X	X
datum_feature_callout	X	X				
datum_target_callout	X	X				
defined_character_glyph	X	X				
defined_symbol	X	X				
derived_unit	X	X	X	X	X	X
derived_unit_element	X	X	X	X	X	X
derived_unit_variable	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
description_attribute	X	X	X	X	X	X
descriptive_representation_item	X	X	X	X	X	X
diameter_dimension	X	X				
dimension_callout_component_relationship	X	X				
dimension_callout_relationship	X	X				
dimension_curve	X	X				
dimension_curve_directed_callout	X	X				
dimension_curve_terminator	X	X				
dimension_pair	X	X				
dimensional_exponents	X	X	X	X	X	X
directed_action		X	X	X	X	X
direction	X	X				
div_expression		X				
document	X	X	X	X	X	X
document_designation_assignment	X	X	X	X	X	X
document_file	X	X	X	X	X	X
document_product_association	X	X	X	X	X	X
document_product_equivalence	X	X	X	X	X	X
document_reference	X	X	X	X	X	X
document_relationship	X	X	X	X	X	X
document_representation_type	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
document_type	X	X	X	X	X	X
document_usage_constraint	X	X	X	X	X	X
document_usage_constraint_assignment	X	X	X	X	X	X
document_usage_role	X	X	X	X	X	X
draughting_annotation_occurrence	X	X				
draughting_callout	X	X				
draughting_callout_relationship	X	X				
draughting_elements	X	X				
draughting_group_elements_assignment	X	X				
draughting_model	X	X				
draughting_pre_defined_colour	X	X				
draughting_pre_defined_curve_font	X	X				
draughting_pre_defined_text_font	X	X				
draughting_presented_item	X	X				
draughting_specification_reference	X	X				
draughting_subfigure_representation	X	X				
draughting_symbol_representation	X	X				
draughting_text_literal_with_delineation	X	X				
draughting_title	X	X				
drawing_definition	X	X				
drawing_revision	X	X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
drawing_revision_sequence	X	X				
drawing_sheet_layout	X	X				
drawing_sheet_revision	X	X				
drawing_sheet_revision_usage	X	X				
edge	X	X				
edge_curve	X	X				
effectivity		X	X	X	X	X
effectivity_assignment		X	X	X	X	X
effectivity_context_assignment		X	X	X	X	X
effectivity_context_role		X	X	X	X	X
effectivity_relationship		X	X	X	X	X
electric_current_measure_with_unit	X	X	X	X	X	X
electric_current_unit	X	X	X	X	X	X
ellipse	X	X				
environment	X	X	X	X	X	X
equals_expression		X				
equipment_marking	X	X	X	X	X	X
event_occurrence		X	X	X	X	X
event_occurrence_assignment		X	X	X	X	X
event_occurrence_role		X	X	X	X	X
exclusive_product_concept_feature_- category		X				X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
executed_action		X	X	X	X	X
exp_function		X				
expression		X				
expression_conversion_based_unit	X	X	X	X	X	X
external_identification_assignment	X	X	X	X	X	X
external_source	X	X	X	X	X	X
externally_defined_character_glyph	X	X				
externally_defined_class	X	X	X	X	X	X
externally_defined_curve_font	X	X				
externally_defined_general_property	X	X	X	X	X	X
externally_defined_hatch_style	X	X				
externally_defined_item	X	X	X	X	X	X
externally_defined_item_relationship	X	X	X	X	X	X
externally_defined_style	X	X				
externally_defined_symbol	X	X				
externally_defined_text_font	X	X				
externally_defined_tile_style	X	X				
fill_area_style	X	X				
fill_area_style_colour	X	X				
fill_area_style_hatching	X	X				
fill_area_style_tile_symbol_with_style	X	X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
fill_area_style_tiles	X	X				
format_function		X				
founded_item	X	X				
free_segment	X	X				
functionally_defined_transformation	X	X	X	X	X	X
general_property	X	X	X	X	X	X
general_property_association	X	X	X	X	X	X
general_property_relationship	X	X	X	X	X	X
generic_expression	X	X	X	X	X	X
generic_literal		X				
generic_variable		X				
geometric_representation_context	X	X	X	X	X	X
geometric_representation_item	X	X	X	X	X	X
geometrical_tolerance_callout	X	X	X	X	X	X
global_uncertainty_assigned_context	X	X	X	X	X	X
global_unit_assigned_context	X	X	X	X	X	X
group	X	X	X	X	X	X
group_assignment	X	X	X	X	X	X
group_relationship	X	X	X	X	X	X
hyperbola	X	X				
id_attribute	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
identification_assignment	X	X	X	X	X	X
identification_assignment_relationship	X	X	X	X	X	X
identification_role	X	X	X	X	X	X
inclusion_product_concept_feature		X				
index_expression		X				
installation_location	X	X			X	
installation_node	X	X				
installation_route	X	X				
installation_section	X	X				
installation_section_end	X	X				
installation_section_interface	X	X				
installation_segment	X	X				
int_literal		X				
int_numeric_variable		X				
int_value_function		X				
interface	X	X	X	X	X	X
interval_expression		X				
invisibility	X	X				
item_defined_transformation	X	X	X	X	X	X
item_designation_assignment	X	X	X	X	X	X
known_source	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
language	X	X	X	X	X	X
language_assignment	X	X	X	X	X	X
leader_curve	X	X				
leader_directed_callout	X	X				
leader_directed_dimension	X	X				
leader_terminator	X	X				
length_function		X				
length_measure_with_unit	X	X	X	X	X	X
length_unit	X	X	X	X	X	X
like_expression		X				
line	X	X				
linear_dimension	X	X				
literal_number		X				
local_time	X	X	X	X	X	X
log_function		X				
log10_function		X				
log2_function		X				
lot_effectivity		X	X	X	X	X
luminous_intensity_measure_with_unit	X	X	X	X	X	X
luminous_intensity_unit	X	X	X	X	X	X
mapped_item	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
mass_measure_with_unit	X	X	X	X	X	X
mass_unit	X	X	X	X	X	X
maximum_function		X				
measure_representation_item	X	X	X	X	X	X
measure_with_unit	X	X	X	X	X	X
minimum_function		X				
minus_expression		X				
minus_function		X				
mod_expression		X				
mult_expression		X				
multi_language_attribute_assignment	X	X	X	X	X	X
multiple_arity_boolean_expression		X				
multiple_arity_function_call		X				
multiple_arity_generic_expression		X				
multiple_arity_numeric_expression		X				
name_attribute	X	X	X	X	X	X
named_unit	X	X	X	X	X	X
named_unit_variable	X	X	X	X	X	X
next_assembly_usage_occurrence	X	X	X	X	X	X
not_expression		X				
note_representation	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
notification	X	X				
numeric_expression		X				
numeric_variable		X				
object_reference_designation_assignment	X	X	X	X	X	X
object_role	X	X	X	X	X	X
odd_function		X				
one_direction_repeat_factor	X	X				
or_expression		X				
ordinate_dimension	X	X				
organization	X	X	X	X	X	X
organization_assignment	X	X	X	X	X	X
organization_relationship	X	X	X	X	X	X
organization_role	X	X	X	X	X	X
organizational_address	X	X	X	X	X	X
organizational_project		X	X	X	X	X
organizational_project_assignment		X	X	X	X	X
organizational_project_relationship		X	X	X	X	X
organizational_project_role		X	X	X	X	X
oriented_edge	X	X				
over_riding_styled_item	X	X				
package_product_concept_feature		X				X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
page_connector_group	X	X				
page_connector_presentation_group	X	X				
page_connector_reference_group	X	X				
page_connector_reference_group_-_assignment	X	X				
parabola	X	X				
path	X	X				
person	X	X	X	X	X	X
person_and_organization	X	X	X	X	X	X
person_and_organization_address	X	X	X	X	X	X
person_and_organization_assignment	X	X	X	X	X	X
person_and_organization_role	X	X	X	X	X	X
personal_address	X	X	X	X	X	X
physically_modelled_product_definition	X	X	X	X	X	X
placement	X	X	X	X	X	X
planar_box	X	X				
planar_extent	X	X				
plane_angle_measure_with_unit	X	X	X	X	X	X
plane_angle_unit	X	X	X	X	X	X
plus_expression		X				
point	X	X				
polyline	X	X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
power_expression		X				
pre_defined_colour	X	X				
pre_defined_curve_font	X	X				
pre_defined_dimension_symbol	X	X				
pre_defined_geometrical_tolerance_symbol	X	X				
pre_defined_item	X	X	X	X	X	X
pre_defined_point_marker_symbol	X	X				
pre_defined_symbol	X	X				
pre_defined_terminator_symbol	X	X				
pre_defined_text_font	X	X				
precision_qualifier	X	X	X	X	X	X
predefined_connectivity_definition	X	X				
presentation_area	X	X				
presentation_layer_assignment	X	X				
presentation_representation	X	X				
presentation_set	X	X				
presentation_size	X	X				
presentation_style_assignment	X	X				
presentation_style_by_context	X	X				
presentation_view	X	X				
presentation_with_association	X	X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
presented_item	X	X				
presented_item_representation	X	X				
presented_item_with_association	X	X				
process_variable	X	X				
product	X	X	X	X	X	X
product_category	X	X	X	X	X	X
product_category_relationship	X	X	X	X	X	X
product_class		X				X
product_concept		X				X
product_concept_context		X				X
product_concept_feature		X				X
product_concept_feature_association		X				X
product_concept_feature_category		X				X
product_concept_feature_category_usage		X				X
product_concept_relationship		X				X
product_context	X	X	X	X	X	X
product_definition	X	X	X	X	X	X
product_definition_context	X	X	X	X	X	X
product_definition_context_association	X	X	X	X	X	X
product_definition_context_role	X	X	X	X	X	X
product_definition_effectivity		X				X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
product_definition_formation	X	X	X	X	X	X
product_definition_formation_ - relationship	X	X	X	X	X	X
product_definition_formation_with_ - specified_source	X	X	X	X	X	X
product_definition_occurrence_ - relationship	X	X	X	X	X	X
product_definition_relationship	X	X	X	X	X	X
product_definition_shape	X	X	X	X	X	X
product_definition_substitute		X				X
product_definition_usage	X	X	X	X	X	X
product_definition_with_associated_ - documents	X	X	X	X	X	X
product_identification		X				X
product_related_product_category	X	X	X	X	X	X
product_specification	X	X	X	X	X	X
projection_curve	X	X				
projection_directed_callout	X	X				
promissory_usage_occurrence	X	X	X	X	X	X
property_definition	X	X	X	X	X	X
property_definition_relationship	X	X	X	X	X	X
property_definition_representation	X	X	X	X	X	X
qualified_representation_item	X	X	X	X	X	X
quantified_assembly_component_usage	X	X	X	X	X	X
quasi_uniform_curve	X	X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
radius_dimension	X	X				
ratio_measure_with_unit	X	X	X	X	X	X
ratio_unit	X	X	X	X	X	X
rational_b_spline_curve	X	X				
real_literal		X				
real_numeric_variable		X				
reference_grid_layout	X	X				
reference_grid_representation	X	X				
relative_event_occurrence		X	X	X	X	X
representation	X	X	X	X	X	X
representation_context	X	X	X	X	X	X
representation_item	X	X	X	X	X	X
representation_item_relationship	X	X	X	X	X	X
representation_map	X	X	X	X	X	X
representation_relationship	X	X	X	X	X	X
representation_relationship_with_transformation	X	X	X	X	X	X
retention		X	X	X	X	X
role_association	X	X	X	X	X	X
routed_segment	X	X				
security_classification	X	X	X	X	X	X
security_classification_assignment	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
security_classification_level	X	X	X	X	X	X
serial_numbered_effectivity		X	X	X	X	X
shape_aspect	X	X	X	X	X	X
shape_aspect_relationship	X	X	X	X	X	X
shape_definition_representation	X	X			X	
shape_representation	X	X			X	
shape_representation_relationship	X	X			X	
si_unit	X	X	X	X	X	X
signal	X	X				
signal_designation_assignment	X	X				
simple_boolean_expression		X				
simple_generic_expression	X	X	X	X	X	X
simple_numeric_expression		X				
simple_string_expression		X				
sin_function		X				
slash_expression		X				
solid_angle_measure_with_unit	X	X	X	X	X	X
solid_angle_unit	X	X	X	X	X	X
specified_higher_usage_occurrence	X	X	X	X	X	X
square_root_function			X			
string_expression			X			

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
string_literal			X			
string_variable			X			
structured_dimension_callout	X	X				
styled_item	X	X				
substring_expression			X			
symbol_colour	X	X				
symbol_representation	X	X				
symbol_representation_map	X	X				
symbol_style	X	X				
symbol_target	X	X				
tan_function			X			
terminal	X	X				
terminal_designation_assignment	X	X				
terminator_symbol	X	X				
text_literal	X	X				
text_literal_with_associated_curves	X	X				
text_literal_with_blanking_box	X	X				
text_literal_with_delineation	X	X				
text_literal_with_extent	X	X				
text_style	X	X				
text_style_for_defined_font	X	X				

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
text_style_with_box_characteristics	X	X				
text_style_with_mirror	X	X				
text_style_with_spacing	X	X				
thermodynamic_temperature_measure_with_unit	X	X	X	X	X	X
thermodynamic_temperature_unit	X	X	X	X	X	X
time_interval		X	X	X	X	X
time_interval_assignment		X	X	X	X	X
time_interval_based_effectivity		X	X	X	X	X
time_interval_role		X	X	X	X	X
time_interval_with_bounds		X	X	X	X	X
time_measure_with_unit	X	X	X	X	X	X
time_unit	X	X	X	X	X	X
topological_representation_item	X	X				
trimmed_curve	X	X				
two_direction_repeat_factor	X	X				
type_qualifier	X	X	X	X	X	X
unary_boolean_expression		X				
unary_function_call		X				
unary_generic_expression	X	X	X	X	X	X
unary_numeric_expression		X				
uncertainty_measure_with_unit	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class					
	CC 7	CC 8	CC 9	CC 10	CC 11	CC 12
uniform_curve	X	X				
value_function		X				
value_range	X	X	X	X	X	X
value_representation_item	X	X	X	X	X	X
variable		X				
variable_semantics	X	X	X	X	X	X
vector	X	X				
versioned_action_request		X	X	X	X	X
vertex	X	X				
vertex_point	X	X				
volume_measure_with_unit	X	X	X	X	X	X
volume_unit	X	X	X	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
abs_function			
acos_function			
action	X	X	X
action_assignment	X	X	X
action_directive	X	X	X
action_method	X	X	X
action_property	X	X	X
action_property_representation	X	X	X
action_relationship	X	X	X
action_request_assignment	X	X	X
action_request_solution	X	X	X
action_request_status	X	X	X
action_status	X	X	X
address	X	X	X
alternate_product_relationship	X	X	X
amount_of_substance_measure_with_ unit	X	X	X
amount_of_substance_unit	X	X	X
and_expression			
angular_dimension			X
annotation_curve_occurrence		X	X
annotation_fill_area		X	X
annotation_fill_area_occurrence		X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
annotation_occurrence		X	X
annotation_occurrence_associativity		X	X
annotation_occurrence_relationship		X	X
annotation_subfigure_occurrence		X	X
annotation_symbol		X	X
annotation_symbol_occurrence		X	X
annotation_text		X	X
annotation_text_occurrence		X	X
application_context	X	X	X
application_context_element	X	X	X
application_context_relationship	X	X	X
application_protocol_definition	X	X	X
applied_action_assignment	X	X	X
applied_action_request_assignment	X	X	X
applied_approval_assignment	X	X	X
applied_certification_assignment	X	X	X
applied_classification_assignment	X	X	X
applied_contract_assignment	X	X	X
applied_date_and_time_assignment	X	X	X
applied_date_assignment	X	X	X
applied_document_reference	X	X	X
applied_document_usage_constraint - assignment	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
applied_effectivity_assignment	X	X	X
applied_event_ccurrence_assignment	X	X	X
applied_external_identification_ assignment	X	X	X
applied_group_assignment	X	X	X
applied_identification_assignment	X	X	X
applied_ineffectivity_assignment	X	X	X
applied_organization_assignment	X	X	X
applied_organizational_project_ assignment	X	X	X
applied_person_and_organization_ assignment	X	X	X
applied_presented_item		X	X
applied_security_classification_ assignment	X	X	X
applied_time_interval_assignment	X	X	X
approval	X	X	X
approval_assignment	X	X	X
approval_date_time	X	X	X
approval_person_organization	X	X	X
approval_relationship	X	X	X
approval_role	X	X	X
approval_status	X	X	X
area_in_set		X	X
area_measure_with_unit	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
area_unit	X	X	X
asin_function			
assembly_component_usage	X	X	X
assembly_component_usage_substitute	X	X	X
atan_function			
attribute_classification_assignment	X	X	X
attribute_language_assignment	X	X	X
attribute_value_assignment	X	X	X
attribute_value_role	X	X	X
axis2_placement_2d		X	X
axis2_placement_3d		X	X
b_spline_curve			
b_spline_curve_with_knots			
bezier_curve			
binary_boolean_expression			
binary_unction_call			
binary_generic_expression	X	X	X
binary_numeric_expression			
boolean_expression			
boolean_literal			
boolean_variable			

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
bounded_curve			
calendar_date	X	X	X
camera_image		X	X
camera_image_2d_with_scale		X	X
camera_model		X	X
camera_model_d2		X	X
camera_usage		X	X
cartesian_point	X	X	X
cartesian_transformation_operator	X	X	X
cartesian_transformation_operator_3d	X	X	X
certification	X	X	X
certification_assignment	X	X	X
certification_type	X	X	X
characterized_class	X	X	X
characterized_object	X	X	X
characterized_object_relationship	X	X	X
circle			
class	X	X	X
class_system	X	X	X
class_usage_effectivity_context_ assignment	X	X	X
classification_assignment	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
classification_role	X	X	X
colour		X	X
colour_representation_item	X	X	X
colour_rgb		X	X
colour_specification		X	X
comparison_equal			
comparison_expression			
comparison_greater			
comparison_greater_equal			
comparison_less			
comparison_less_equal			
comparison_ot_equal			
composite_curve			
composite_curve_segment			
composite_text		X	X
composite_text_with_associated_curves		X	X
composite_text_with_blanking_box		X	X
composite_text_with_extent		X	X
compound_representation_item	X	X	X
concat_expression			
concept_feature_operator	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
concept_feature_relationship	X	X	X
concept_feature_relationship_with_ - condition	X	X	X
conditional_concept_feature	X	X	X
configurable_item	X	X	X
configuration_design	X	X	X
configuration_effectivity	X	X	X
configuration_item	X	X	X
configured_effectivity_assignment	X	X	X
configured_effectivity_context_ - assignment	X	X	X
conic			
connecting_line_group		X	X
connecting_line_group_assignment		X	
connectivity_definition			
context_dependent_invisibility		X	X
context_dependent_over_riding_ - styled_item		X	X
context_dependent_unit	X	X	X
contract	X	X	X
contract_assignment	X	X	X
contract_type	X	X	X
conversion_based_unit	X	X	X
coordinated_universal_time_offset	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
cos_function			
curve			
curve_dimension			X
curve_style		X	X
curve_style_font		X	X
curve_style_font_pattern		X	X
curve_style_with_ends_and_corners		X	X
date	X	X	X
date_and_time	X	X	X
date_and_time_assignment	X	X	X
date_assignment	X	X	X
date_role	X	X	X
date_time_role	X	X	X
dated_effectivity	X	X	X
datum_feature_callout			X
datum_target_callout			X
defined_character_glyph		X	X
defined_symbol		X	X
derived_unit	X	X	X
derived_unit_element	X	X	X
derived_unit_variable	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
description_attribute	X	X	X
descriptive_representation_item	X	X	X
diameter_dimension			X
dimension_callout_component_relationship			X
dimension_callout_relationship			X
dimension_curve			X
dimension_curve_directed_callout			X
dimension_curve_terminator			X
dimension_pair			X
dimensional_exponents	X	X	X
directed_action	X	X	X
direction			
div_expression			
document	X	X	X
document_designation_assignment	X	X	X
document_file	X	X	X
document_product_association	X	X	X
document_product_equivalence	X	X	X
document_reference	X	X	X
document_relationship	X	X	X
document_representation_type	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
document_type	X	X	X
document_usage_constraint	X	X	X
document_usage_constraint_assignment	X	X	X
document_usage_role	X	X	X
draughting_annotation_occurrence		X	X
draughting_callout		X	X
draughting_callout_relationship		X	X
draughting_elements		X	X
draughting_group_elements_assignment		X	X
draughting_model		X	X
draughting_pre_defined_colour		X	X
draughting_pre_defined_curve_font		X	X
draughting_pre_defined_text_font		X	X
draughting_presented_item		X	X
draughting_specification_reference		X	X
draughting_subfigure_representation		X	X
draughting_symbol_representation		X	X
draughting_text_literal_with_delineation		X	X
draughting_title		X	X
drawing_definition		X	X
drawing_revision		X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
drawing_revision_sequence		X	X
drawing_sheet_layout		X	X
drawing_sheet_revision		X	X
drawing_sheet_revision_usage		X	X
edge			
edge_curve			
effectivity	X	X	X
effectivity_assignment	X	X	X
effectivity_context_assignment	X	X	X
effectivity_context_role	X	X	X
effectivity_relationship	X	X	X
electric_current_measure_with_unit	X	X	X
electric_current_unit	X	X	X
ellipse			
environment	X	X	X
equals_expression			
equipment_marking	X	X	X
event_occurrence	X	X	X
event_occurrence_assignment	X	X	X
event_occurrence_role	X	X	X
exclusive_product_concept_feature_- category	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
executed_action	X	X	X
exp_function			
expression			
expression_conversion_based_unit	X	X	X
external_identification_assignment	X	X	X
external_source	X	X	X
externally_defined_character_glyph		X	X
externally_defined_class	X	X	X
externally_defined_curve_font		X	X
externally_defined_general_property	X	X	X
externally_defined_hatch_style		X	X
externally_defined_item	X	X	X
externally_defined_item_relationship	X	X	X
externally_defined_style		X	X
externally_defined_symbol		X	X
externally_defined_text_font		X	X
externally_defined_tile_style		X	X
fill_area_style		X	X
fill_area_style_colour		X	X
fill_area_style_hatching		X	X
fill_area_style_tile_symbol_with_style		X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
fill_area_style_tiles		X	X
format_function			
founded_item			
free_segment			
functionally_defined_transformation	X	X	X
general_property	X	X	X
general_property_association	X	X	X
general_property_relationship	X	X	X
generic_expression	X	X	X
generic_literal			
generic_variable			
geometric_representation_context	X	X	X
geometric_representation_item	X	X	X
geometrical_tolerance_callout	X	X	X
global_uncertainty_assigned_context	X	X	X
global_unit_assigned_context	X	X	X
group	X	X	X
group_assignment	X	X	X
group_relationship	X	X	X
hyperbola			
id_attribute	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
identification_assignment	X	X	X
identification_assignment_relationship	X	X	X
identification_role	X	X	X
inclusion_product_concept_feature	X	X	X
index_expression			
installation_location	X		X
installation_node			
installation_route			
installation_section			
installation_section_end			
installation_section_interface			
installation_segment			
int_literal			
int_numeric_variable			
int_value_function			
interface	X	X	X
interval_expression			
invisibility		X	X
item_defined_transformation	X	X	X
item_designation_assignment	X	X	X
known_source	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
language	X	X	X
language_assignment	X	X	X
leader_curve			X
leader_directed_callout			X
leader_directed_dimension			X
leader_terminator			X
length_function			
length_measure_with_unit	X	X	X
length_unit	X	X	X
like_expression			
line			
linear_dimension			X
literal_number			
local_time	X	X	X
log_function			
log10_function			
log2_function			
lot_effectivity	X	X	X
luminous_intensity_measure_with_unit	X	X	X
luminous_intensity_unit	X	X	X
mapped_item	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
mass_measure_with_unit	X	X	X
mass_unit	X	X	X
maximum_function			
measure_representation_item	X	X	X
measure_with_unit	X	X	X
minimum_function			
minus_expression			
minus_function			
mod_expression			
mult_expression			
multi_language_attribute_assignment	X	X	X
multiple_arity_boolean_expression			
multiple_arity_function_call			
multiple_arity_generic_expression			
multiple_arity_numeric_expression			
name_attribute	X	X	X
named_unit	X	X	X
named_unit_variable	X	X	X
next_assembly_usage_occurrence	X	X	X
not_expression			
note_representation	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
notification	X	X	X
numeric_expression			
numeric_variable			
object_reference_designation_ - assignment	X	X	X
object_role	X	X	X
odd_function			
one_direction_repeat_factor		X	X
or_expression			
ordinate_dimension			X
organization	X	X	X
organization_assignment	X	X	X
organization_relationship	X	X	X
organization_role	X	X	X
organizational_address	X	X	X
organizational_project	X	X	X
organizational_project_assignment	X	X	X
organizational_project_relationship	X	X	X
organizational_project_role	X	X	X
oriented_edge			
over_riding_styled_item		X	X
package_product_concept_feature	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
page_connector_group		X	X
page_connector_presentation_group		X	X
page_connector_reference_group		X	X
page_connector_reference_group_- assignment		X	X
parabola			
path			
person	X	X	X
person_and_organization	X	X	X
person_and_organization_address	X	X	X
person_and_organization_assignment	X	X	X
person_and_organization_role	X	X	X
personal_address	X	X	X
physically_modelled_product_definition	X	X	X
placement	X	X	X
planar_box		X	X
planar_extent		X	X
plane_angle_measure_with_unit	X	X	X
plane_angle_unit	X	X	X
plus_expression			
point		X	X
polyline			

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
power_expression			
pre_defined_colour		X	X
pre_defined_curve_font		X	X
pre_defined_dimension_symbol			X
pre_defined_geometrical_tolerance_symbol			X
pre_defined_item	X	X	X
pre_defined_point_marker_symbol			X
pre_defined_symbol		X	X
pre_defined_terminator_symbol			X
pre_defined_text_font		X	X
precision_qualifier	X	X	X
predefined_connectivity_definition			
presentation_area		X	X
presentation_layer_assignment		X	X
presentation_representation		X	X
presentation_set		X	X
presentation_size		X	X
presentation_style_assignment		X	X
presentation_style_by_context		X	X
presentation_view		X	X
presentation_with_association		X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
presented_item		X	X
presented_item_representation		X	X
presented_item_with_association		X	X
process_variable	X	X	X
product	X	X	X
product_category	X	X	X
product_category_relationship	X	X	X
product_class	X	X	X
product_concept	X	X	X
product_concept_context	X	X	X
product_concept_feature	X	X	X
product_concept_feature_association	X	X	X
product_concept_feature_category	X	X	X
product_concept_feature_category_- usage	X	X	X
product_concept_relationship	X	X	X
product_context	X	X	X
product_definition	X	X	X
product_definition_context	X	X	X
product_definition_context_association	X	X	X
product_definition_context_role	X	X	X
product_definition_effectivity	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
product_definition_formation	X	X	X
product_definition_formation_- relationship	X	X	X
product_definition_formation_with_- specified_source	X	X	X
product_definition_occurrence_- relationship	X	X	X
product_definition_relationship	X	X	X
product_definition_shape	X	X	X
product_definition_substitute	X	X	X
product_definition_usage	X	X	X
product_definition_with_associated_- documents	X	X	X
product_identification	X	X	X
product_related_product_category	X	X	X
product_specification	X	X	X
projection_curve			X
projection_directed_callout			X
promissory_usage_occurrence	X	X	X
property_definition	X	X	X
property_definition_relationship	X	X	X
property_definition_representation	X	X	X
qualified_representation_item	X	X	X
quantified_assembly_component_usage	X	X	X
quasi_uniform_curve			

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
radius_dimension			X
ratio_measure_with_unit	X	X	X
ratio_unit	X	X	X
rational_b_spline_curve			
real_literal			
real_numeric_variable			
reference_grid_layout		X	X
reference_grid_representation		X	X
relative_event_occurrence	X	X	X
representation	X	X	X
representation_context	X	X	X
representation_item	X	X	X
representation_item_relationship	X	X	X
representation_map	X	X	X
representation_relationship	X	X	X
representation_relationship_with_ - transformation	X	X	X
retention	X	X	X
role_association	X	X	X
routed_segment			
security_classification	X	X	X
security_classification_assignment	X	X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
security_classification_level	X	X	X
serial_numbered_effectivity	X	X	X
shape_aspect	X	X	X
shape_aspect_relationship	X	X	X
shape_definition_representation	X		X
shape_representation	X		X
shape_representation_relationship	X		X
si_unit	X	X	X
signal	X	X	X
signal_designation_assignment	X	X	X
simple_boolean_expression			
simple_generic_expression	X	X	X
simple_numeric_expression			
simple_string_expression			
sin_function			
slash_expression			
solid_angle_measure_with_unit	X	X	X
solid_angle_unit	X	X	X
specified_higher_usage_occurrence	X	X	X
square_root_function			
string_expression			

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
string_literal			
string_variable			
structured_dimension_callout			X
styled_item		X	X
substring_expression			
symbol_colour		X	X
symbol_representation		X	X
symbol_representation_map		X	X
symbol_style		X	X
symbol_target		X	X
tan_function			
terminal			
terminal_designation_assignment			
terminator_symbol			X
text_literal		X	X
text_literal_with_associated_curves		X	X
text_literal_with_blanking_box		X	X
text_literal_with_delineation		X	X
text_literal_with_extent		X	X
text_style		X	X
text_style_for_defined_font		X	X

Table 29 - Usage of Aim elements in conformance classes (continued)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
text_style_with_box_characteristics		X	X
text_style_with_mirror		X	X
text_style_with_spacing		X	X
thermodynamic_temperature_measure_with_unit	X	X	X
thermodynamic_temperature_unit	X	X	X
time_interval	X	X	X
time_interval_assignment	X	X	X
time_interval_based_effectivity	X	X	X
time_interval_role	X	X	X
time_interval_with_bounds	X	X	X
time_measure_with_unit	X	X	X
time_unit	X	X	X
topological_representation_item			
trimmed_curve			
two_direction_repeat_factor		X	X
type_qualifier	X	X	X
unary_boolean_expression			
unary_function_call			
unary_generic_expression	X	X	X
unary_numeric_expression			
uncertainty_measure_with_unit	X	X	X

Table 29 - Usage of Aim elements in conformance classes (concluded)

AIM element	Conformance class		
	CC 13	CC 14	CC 15
uniform_curve			
value_function			
value_range	X	X	X
value_representation_item	X	X	X
variable			
variable_semantics	X	X	X
vector			
versioned_action_request	X	X	X
vertex			
vertex_point			
volume_measure_with_unit	X	X	X
volume_unit	X	X	X

Annex A

(normative)

AIM EXPRESS expanded listing

The following EXPRESS is the expanded form of the short form schema given in 5.2. In the event of any discrepancy between the short form and this expanded listing, the expanded listing shall be used.

```

SCHEMA electrotechnical_design;

  CONSTANT
    dummy_gri : geometric_representation_item :=
representation_item('') ||
                geometric_representation_item();
  END_CONSTANT;

  TYPE action_item = SELECT
    (action_directive,
     action_method,
     action_property,
     action_relationship,
     action_request_solution,
     alternate_product_relationship,
     applied_action_assignment,
     applied_classification_assignment,
     applied_document_reference,
     applied_person_and_organization_assignment,
     applied_presented_item,
     approval_status,
     assembly_component_usage_substitute,
     certification,
     characterized_object_relationship,
     class,
     class_system,
     configuration_design,
     configuration_effectivity,
     configuration_item,
     configured_effectivity_assignment,
     connectivity_definition,
     contract,
     descriptive_representation_item,
     document_file,
     document_relationship,
     drawing_revision,
     drawing_revision_sequence,
     drawing_sheet_revision,
     equipment_marking,
     executed_action,
     general_property,
     installation_location,
     installation_node,
     installation_route,

```

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```
    installation_section,  
    installation_section_end,  
    installation_section_interface,  
    installation_segment,  
    interface,  
    note_representation,  
    notification,  
    organization_relationship,  
    organizational_project,  
    path,  
    person_and_organization,  
    process_variable,  
    product,  
    product_concept,  
    product_concept_feature,  
    product_concept_feature_association,  
    product_concept_feature_category,  
    product_concept_feature_category_usage,  
    product_definition,  
    product_definition_formation,  
    product_definition_formation_relationship,  
    product_definition_relationship,  
    product_definition_substitute,  
    property_definition,  
    property_definition_relationship,  
    representation,  
    representation_item_relationship,  
    representation_relationship,  
    security_classification,  
    security_classification_level,  
    shape_aspect_relationship,  
    signal,  
    terminal,  
    versioned_action_request,  
    vertex);  
END_TYPE; -- action_item  
  
TYPE action_request_item = SELECT  
    (action_method,  
    action_property,  
    alternate_product_relationship,  
    assembly_component_usage_substitute,  
    characterized_object_relationship,  
    class_system,  
    configuration_design,  
    configuration_effectivity,  
    configuration_item,  
    configured_effectivity_assignment,  
    connectivity_definition,  
    document_file,  
    document_relationship,  
    drawing_revision,  
    drawing_sheet_revision,  
    equipment_marking,  
    general_property,
```



```

installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
interface,
note_representation,
notification,
path,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
representation,
representation_item_relationship,
representation_relationship,
shape_aspect_relationship,
signal,
terminal,
vertex);
END_TYPE; -- action_request_item

TYPE ahead_or_behind = ENUMERATION OF
  (ahead,
   exact,
   behind);
END_TYPE; -- ahead_or_behind

TYPE amount_of_substance_measure = REAL;
END_TYPE; -- amount_of_substance_measure

TYPE approval_item = SELECT
  (action,
   action_directive,
   action_property,
   action_relationship,
   action_request_solution,
   alternate_product_relationship,
   applied_action_assignment,
   applied_classification_assignment,
   assembly_component_usage,
   assembly_component_usage_substitute,
   characterized_object_relationship,
   certification,
   class,

```

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```
class_system,  
configuration_design,  
configuration_effectivity,  
configuration_item,  
configured_effectivity_assignment,  
connectivity_definition,  
contract,  
descriptive_representation_item,  
document_file,  
document_relationship,  
drawing_revision,  
drawing_revision_sequence,  
drawing_sheet_revision,  
equipment_marking,  
general_property,  
installation_location,  
installation_node,  
installation_route,  
installation_section,  
installation_section_end,  
installation_section_interface,  
interface,  
note_representation,  
notification,  
organizational_project,  
path,  
process_variable,  
product,  
product_concept,  
product_concept_feature,  
product_concept_feature_association,  
product_concept_feature_category,  
product_concept_feature_category_usage,  
product_definition,  
product_definition_formation,  
product_definition_formation_relationship,  
product_definition_relationship,  
product_definition_substitute,  
property_definition,  
property_definition_relationship,  
representation,  
representation_item_relationship,  
representation_relationship,  
security_classification,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE; -- approval_item  
  
TYPE area_measure = REAL;  
END_TYPE; -- area_measure  
  
TYPE area_or_view = SELECT
```

```

    (presentation_area,
     presentation_view);
END_TYPE; -- area_or_view

TYPE associated_item = SELECT
    (action,
     action_directive,
     annotation_occurrence_relationship,
     applied_action_assignment,
     applied_classification_assignment,
     applied_identification_assignment,
     class,
     class_system,
     connecting_line_group,
     connectivity_definition,
     general_property,
     installation_location,
     installation_node,
     installation_route,
     installation_section,
     installation_section_end,
     installation_section_interface,
     installation_segment,
     interface,
     item_designation_assignment,
     note_representation,
     notification,
     organizational_project,
     page_connector_presentation_group,
     page_connector_reference_group,
     path,
     process_variable,
     product,
     product_definition,
     product_definition_formation,
     product_definition_relationship,
     property_definition,
     representation,
     representation_relationship,
     security_classification,
     security_classification_level,
     signal,
     terminal,
     versioned_action_request,
     vertex);
END_TYPE; -- associated_item

TYPE attribute_language_item = SELECT
    (action,
     action_directive,
     action_method,
     action_property,
     action_relationship,
     alternate_product_relationship,
     application_context,

```

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approval_relationship,
assembly_component_usage_substitute,
attribute_value_assignment,
certification,
class_system,
conditional_concept_feature,
configuration_design,
configuration_item,
configured_effectivity_assignment,
connectivity_definition,
contract,
descriptive_representation_item,
document_file,
document_relationship,
draughting_title,
drawing_sheet_revision,
effectivity,
effectivity_relationship,
equipment_marking,
event_occurrence,
external_source,
free_segment,
general_property,
general_property_relationship,
group,
identification_role,
inclusion_product_concept_feature,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
interface,
notification,
organization_relationship,
organizational_project,
organizational_project_relationship,
path,
presentation_view,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category_usage,
product_concept_relationship,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
product_related_product_category,
product_specification,
property_definition,

```

    representation,
    representation_relationship,
    routed_segment,
    shape_aspect_relationship,
    signal,
    terminal,
    versioned_action_request,
    vertex);
END_TYPE; -- attribute_language_item

TYPE attribute_type = SELECT
    (label,
     text);
END_TYPE; -- attribute_type

TYPE axis2_placement = SELECT
    (axis2_placement_2d,
     axis2_placement_3d);
END_TYPE; -- axis2_placement

TYPE b_spline_curve_form = ENUMERATION OF
    (polyline_form,
     circular_arc,
     elliptic_arc,
     parabolic_arc,
     hyperbolic_arc,
     unspecified);
END_TYPE; -- b_spline_curve_form

TYPE box_characteristic_select = SELECT
    (box_height,
     box_width,
     box_slant_angle,
     box_rotate_angle);
END_TYPE; -- box_characteristic_select

TYPE box_height = positive_ratio_measure;
END_TYPE; -- box_height

TYPE box_rotate_angle = plane_angle_measure;
END_TYPE; -- box_rotate_angle

TYPE box_slant_angle = plane_angle_measure;
END_TYPE; -- box_slant_angle

TYPE box_width = positive_ratio_measure;
END_TYPE; -- box_width

TYPE category_usage_item = SELECT
    (product_class);
END_TYPE; -- category_usage_item

TYPE celsius_temperature_measure = REAL;
END_TYPE; -- celsius_temperature_measure

```

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```
TYPE certification_item = SELECT
  (product_definition,
   product_definition_formation,
   product_definition_formation_relationship,
   product_definition_relationship);
END_TYPE; -- certification_item

TYPE character_spacing_select = SELECT
  (length_measure,
   ratio_measure,
   measure_with_unit,
   descriptive_measure);
END_TYPE; -- character_spacing_select

TYPE character_style_select = SELECT
  (text_style_for_defined_font);
END_TYPE; -- character_style_select

TYPE characterized_action_definition = SELECT
  (action,
   action_method,
   action_relationship);
END_TYPE; -- characterized_action_definition

TYPE characterized_definition = SELECT
  (characterized_object,
   characterized_product_definition,
   shape_definition);
END_TYPE; -- characterized_definition

TYPE characterized_product_definition = SELECT
  (product_definition,
   product_definition_relationship);
END_TYPE; -- characterized_product_definition

TYPE class_usage_effectivity_context_item = SELECT
  (product_definition);
END_TYPE; -- class_usage_effectivity_context_item

TYPE classification_item = SELECT
  (action_directive,
   action_method,
   applied_identification_assignment,
   approval,
   approval_status,
   class,
   colour_representation_item,
   configuration_item,
   connectivity_definition,
   contract,
   document_file,
   document_type,
   drawing_revision,
   drawing_sheet_revision,
   equipment_marking,
```

```

    executed_action,
    general_property,
    installation_location,
    installation_route,
    installation_section,
    installation_section_interface,
    item_designation_assignment,
    organizational_project,
    path,
    planar_extent,
    product,
    product_concept,
    product_concept_feature_category,
    product_definition,
    product_definition_formation,
    product_definition_relationship,
    property_definition,
    representation,
    security_classification_level,
    signal,
    symbol_representation_map,
    terminal,
    versioned_action_request,
    vertex);
END_TYPE; -- classification_item

TYPE compound_item_definition = SELECT
    (list_representation_item,
     set_representation_item);
END_TYPE; -- compound_item_definition

TYPE configuration_design_item = SELECT
    (product_definition,
     product_definition_formation);
END_TYPE; -- configuration_design_item

TYPE configured_effectivity_context_item = SELECT
    (product_concept_feature_association);
END_TYPE; -- configured_effectivity_context_item

TYPE configured_effectivity_item = SELECT
    (connectivity_definition,
     installation_location,
     product_definition,
     signal);
END_TYPE; -- configured_effectivity_item

TYPE connecting_line_item = SELECT
    (connectivity_definition);
END_TYPE; -- connecting_line_item

TYPE context_dependent_measure = REAL;
END_TYPE; -- context_dependent_measure

TYPE contract_item = SELECT

```

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```
(action_directive,  
  installation_location,  
  installation_node,  
  installation_route,  
  installation_section,  
  installation_section_end,  
  installation_section_interface,  
  notification,  
  organizational_project,  
  path,  
  process_variable,  
  product_definition,  
  product_definition_formation,  
  product_definition_relationship,  
  representation,  
  signal,  
  versioned_action_request,  
  vertex);  
END_TYPE; -- contract_item  
  
TYPE count_measure = NUMBER;  
END_TYPE; -- count_measure  
  
TYPE curve_font_or_scaled_curve_font_select = SELECT  
  (curve_style_font_select);  
END_TYPE; -- curve_font_or_scaled_curve_font_select  
  
TYPE curve_or_annotation_curve_occurrence = SELECT  
  (curve,  
  annotation_curve_occurrence);  
END_TYPE; -- curve_or_annotation_curve_occurrence  
  
TYPE curve_or_render = SELECT  
  (curve_style);  
END_TYPE; -- curve_or_render  
  
TYPE curve_style_font_select = SELECT  
  (curve_style_font,  
  pre_defined_curve_font,  
  externally_defined_curve_font);  
END_TYPE; -- curve_style_font_select  
  
TYPE date_and_time_item = SELECT  
  (action,  
  action_directive,  
  action_property,  
  action_relationship,  
  action_request_solution,  
  alternate_product_relationship,  
  applied_action_assignment,  
  applied_classification_assignment,  
  applied_document_reference,  
  applied_organization_assignment,  
  applied_person_and_organization_assignment,  
  applied_presented_item,
```


approval_person_organization,
approval_status,
assembly_component_usage_substitute,
characterized_object_relationship,
certification,
class,
class_system,
configuration_item,
configuration_design,
configured_effectivity_assignment,
connectivity_definition,
contract,
descriptive_representation_item,
document_file,
document_relationship,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
effectivity,
event_occurrence,
executed_action,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
note_representation,
notification,
organization_relationship,
organizational_project,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
security_classification_level,

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```
    shape_aspect_relationship,  
    signal,  
    terminal,  
    versioned_action_request,  
    vertex);  
END_TYPE; -- date_and_time_item  
  
TYPE date_item = SELECT  
    (action,  
    action_directive,  
    action_property,  
    action_relationship,  
    action_request_solution,  
    alternate_product_relationship,  
    applied_action_assignment,  
    applied_classification_assignment,  
    applied_document_reference,  
    applied_organization_assignment,  
    applied_person_and_organization_assignment,  
    applied_presented_item,  
    approval_person_organization,  
    approval_status,  
    assembly_component_usage_substitute,  
    characterized_object_relationship,  
    certification,  
    class,  
    class_system,  
    configuration_item,  
    configuration_design,  
    configured_effectivity_assignment,  
    connectivity_definition,  
    contract,  
    descriptive_representation_item,  
    document_file,  
    document_relationship,  
    drawing_revision,  
    drawing_revision_sequence,  
    drawing_sheet_revision,  
    effectivity,  
    event_occurrence,  
    executed_action,  
    general_property,  
    installation_location,  
    installation_node,  
    installation_route,  
    installation_section,  
    installation_section_end,  
    installation_section_interface,  
    installation_segment,  
    interface,  
    note_representation,  
    notification,  
    organization_relationship,  
    organizational_project,  
    path,
```

```

    person_and_organization,
    process_variable,
    product,
    product_concept,
    product_concept_feature,
    product_concept_feature_association,
    product_concept_feature_category,
    product_concept_feature_category_usage,
    product_definition,
    product_definition_formation,
    product_definition_formation_relationship,
    product_definition_relationship,
    product_definition_substitute,
    property_definition,
    property_definition_relationship,
    representation,
    representation_item_relationship,
    representation_relationship,
    security_classification,
    security_classification_level,
    shape_aspect_relationship,
    signal,
    terminal,
    versioned_action_request,
    vertex);
END_TYPE; -- date_item

TYPE date_time_or_event_occurrence = SELECT
    (date_time_select,
     event_occurrence);
END_TYPE; -- date_time_or_event_occurrence

TYPE date_time_select = SELECT
    (date,
     local_time,
     date_and_time);
END_TYPE; -- date_time_select

TYPE day_in_month_number = INTEGER;
WHERE
    wr1: ((1 <= SELF) AND (SELF <= 31));
END_TYPE; -- day_in_month_number

TYPE defined_glyph_select = SELECT
    (externally_defined_character_glyph);
END_TYPE; -- defined_glyph_select

TYPE defined_symbol_select = SELECT
    (pre_defined_symbol,
     externally_defined_symbol);
END_TYPE; -- defined_symbol_select

TYPE derived_property_select = SELECT
    (property_definition,
     action_property);

```

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```
END_TYPE; -- derived_property_select

TYPE description_attribute_select = SELECT
  (action_request_solution,
   application_context,
   approval_role,
   configuration_design,
   date_role,
   date_time_role,
   effectivity,
   external_source,
   organization_role,
   person_and_organization_role,
   person_and_organization,
   property_definition_representation,
   representation);
END_TYPE; -- description_attribute_select

TYPE descriptive_measure = STRING;
END_TYPE; -- descriptive_measure

TYPE dimension_count = INTEGER;
WHERE
  wr1: (SELF > 0);
END_TYPE; -- dimension_count

TYPE dimension_extent_usage = ENUMERATION OF
  (origin,
   target);
END_TYPE; -- dimension_extent_usage

TYPE document_reference_item = SELECT
  (action,
   action_directive,
   action_method,
   address,
   applied_action_assignment,
   applied_classification_assignment,
   applied_identification_assignment,
   approval,
   approval_status,
   certification,
   class,
   class_system,
   configuration_item,
   connectivity_definition,
   contract,
   drawing_revision,
   drawing_sheet_revision,
   equipment_marking,
   executed_action,
   general_property,
   installation_location,
   installation_node,
   installation_route,
```

```

installation_section,
installation_section_end,
installation_section_interface,
interface,
item_designation_assignment,
note_representation,
notification,
organization,
organizational_project,
path,
person,
presentation_view,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_relationship,
property_definition,
representation,
security_classification,
security_classification_level,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE; -- document_reference_item

TYPE draughting_callout_element = SELECT
(annotation_text_occurrence,
annotation_symbol_occurrence,
annotation_curve_occurrence);
END_TYPE; -- draughting_callout_element

TYPE draughting_group_element = SELECT
(draughting_annotation_occurrence,
draughting_elements);
END_TYPE; -- draughting_group_element

TYPE draughting_presented_item_select = SELECT
(product_definition_formation);
END_TYPE; -- draughting_presented_item_select

TYPE draughting_titled_item = SELECT
(drawing_revision,
drawing_sheet_revision);
END_TYPE; -- draughting_titled_item

TYPE effectivity_item = SELECT
(action_property,
alternate_product_relationship,

```

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```
    applied_action_assignment,  
    assembly_component_usage,  
    assembly_component_usage_substitute,  
    characterized_object_relationship,  
    class_system,  
    configuration_design,  
    configuration_item,  
    configured_effectivity_assignment,  
    connectivity_definition,  
    document_file,  
    document_relationship,  
    drawing_revision,  
    drawing_revision_sequence,  
    drawing_sheet_revision,  
    equipment_marking,  
    general_property,  
    installation_location,  
    installation_node,  
    installation_route,  
    installation_section,  
    installation_section_end,  
    installation_section_interface,  
    interface,  
    note_representation,  
    notification,  
    path,  
    process_variable,  
    product,  
    product_concept,  
    product_concept_feature,  
    product_concept_feature_association,  
    product_concept_feature_category,  
    product_concept_feature_category_usage,  
    product_definition,  
    product_definition_formation,  
    product_definition_formation_relationship,  
    product_definition_relationship,  
    product_definition_substitute,  
    property_definition,  
    representation,  
    representation_item_relationship,  
    representation_relationship,  
    security_classification,  
    shape_aspect_relationship,  
    signal,  
    terminal,  
    vertex);  
END_TYPE; -- effectivity_item  
  
TYPE electric_current_measure = REAL;  
END_TYPE; -- electric_current_measure  
  
TYPE event_occurrence_item = SELECT  
    (action,  
     action_directive,
```

action_property,
 action_relationship,
 action_request_solution,
 alternate_product_relationship,
 applied_action_assignment,
 applied_classification_assignment,
 applied_document_reference,
 applied_person_and_organization_assignment,
 applied_presented_item,
 approval_status,
 assembly_component_usage_substitute,
 certification,
 characterized_object_relationship,
 class,
 class_system,
 configuration_design,
 configuration_item,
 configured_effectivity_assignment,
 connectivity_definition,
 contract,
 document_file,
 document_relationship,
 drawing_revision,
 drawing_revision_sequence,
 drawing_sheet_revision,
 equipment_marking,
 executed_action,
 general_property,
 installation_location,
 installation_node,
 installation_route,
 installation_section,
 installation_section_end,
 installation_section_interface,
 installation_segment,
 interface,
 note_representation,
 notification,
 organization_relationship,
 organizational_project,
 path,
 person_and_organization,
 process_variable,
 product,
 product_concept,
 product_concept_feature,
 product_concept_feature_association,
 product_concept_feature_category,
 product_concept_feature_category_usage,
 product_definition,
 product_definition_formation,
 product_definition_formation_relationship,
 product_definition_relationship,
 product_definition_substitute,
 property_definition,

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```
property_definition_relationship,  
representation,  
representation_item_relationship,  
representation_relationship,  
security_classification,  
security_classification_level,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE; -- event_occurrence_item  
  
TYPE external_identification_item = SELECT  
  (document_file,  
   drawing_revision,  
   externally_defined_class,  
   externally_defined_general_property,  
   product_definition);  
END_TYPE; -- external_identification_item  
  
TYPE fill_area_style_tile_shape_select = SELECT  
  (fill_area_style_tile_symbol_with_style);  
END_TYPE; -- fill_area_style_tile_shape_select  
  
TYPE fill_style_select = SELECT  
  (fill_area_style_colour,  
   externally_defined_tile_style,  
   fill_area_style_tiles,  
   externally_defined_hatch_style,  
   fill_area_style_hatching);  
END_TYPE; -- fill_style_select  
  
TYPE font_select = SELECT  
  (pre_defined_text_font,  
   externally_defined_text_font);  
END_TYPE; -- font_select  
  
TYPE founded_item_select = SELECT  
  (founded_item,  
   representation_item);  
END_TYPE; -- founded_item_select  
  
TYPE group_item = SELECT  
  (characterized_object,  
   class_system,  
   drawing_sheet_revision,  
   installation_route,  
   note_representation,  
   notification,  
   path,  
   presentation_view,  
   process_variable,  
   product,  
   product_class,
```



```

product_concept,
product_concept_feature,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
representation,
shape_aspect,
shape_aspect_relationship,
signal,
terminal,
vertex);
END_TYPE; -- group_item

TYPE hiding_or_blanking_select = SELECT
(presentation_area,
presentation_view,
annotation_fill_area);
END_TYPE; -- hiding_or_blanking_select

TYPE hour_in_day = INTEGER;
WHERE
wrl: ((0 <= SELF) AND (SELF <= 24));
END_TYPE; -- hour_in_day

TYPE id_attribute_select = SELECT
(action,
address,
product_category,
property_definition,
shape_aspect,
shape_aspect_relationship,
application_context,
group,
organizational_project,
representation);
END_TYPE; -- id_attribute_select

TYPE identification_item = SELECT
(action_directive,
approval_status,
class,
class_system,
colour_representation_item,
configuration_item,
connectivity_definition,
document_file,
document_type,
drawing_revision,
drawing_sheet_revision,
effectivity,
general_property,
identification_assignment,
installation_location,

```

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```
    installation_node,  
    installation_route,  
    installation_section,  
    installation_section_interface,  
    notification,  
    organization,  
    path,  
    person_and_organization,  
    process_variable,  
    product,  
    product_concept,  
    product_concept_feature,  
    product_concept_feature_category,  
    product_definition,  
    product_definition_formation,  
    product_definition_relationship,  
    property_definition,  
    representation,  
    security_classification_level,  
    signal,  
    terminal,  
    vertex);  
END_TYPE; -- identification_item  
  
TYPE identifier = STRING;  
END_TYPE; -- identifier  
  
TYPE invisibility_context = SELECT  
    (presentation_representation,  
     presentation_set);  
END_TYPE; -- invisibility_context  
  
TYPE invisible_item = SELECT  
    (styled_item,  
     presentation_layer_assignment,  
     representation);  
END_TYPE; -- invisible_item  
  
TYPE item_designation_item = SELECT  
    (assembly_component_usage,  
     drawing_revision,  
     drawing_sheet_revision,  
     installation_location,  
     product,  
     product_definition,  
     product_definition_formation,  
     signal,  
     terminal);  
END_TYPE; -- item_designation_item  
  
TYPE knot_type = ENUMERATION OF  
    (uniform_knots,  
     quasi_uniform_knots,  
     piecewise_bezier_knots,  
     unspecified);
```

```

END_TYPE; -- knot_type

TYPE label = STRING;
END_TYPE; -- label

TYPE language_item = SELECT
  (annotation_text_occurrence,
   descriptive_representation_item,
   notification,
   representation);
END_TYPE; -- language_item

TYPE layered_item = SELECT
  (presentation_representation,
   representation_item);
END_TYPE; -- layered_item

TYPE length_measure = REAL;
END_TYPE; -- length_measure

TYPE list_representation_item = LIST [1:?] OF representation_item;
END_TYPE; -- list_representation_item

TYPE luminous_intensity_measure = REAL;
END_TYPE; -- luminous_intensity_measure

TYPE mass_measure = REAL;
END_TYPE; -- mass_measure

TYPE measure_value = SELECT
  (length_measure,
   mass_measure,
   time_measure,
   electric_current_measure,
   thermodynamic_temperature_measure,
   celsius_temperature_measure,
   amount_of_substance_measure,
   luminous_intensity_measure,
   plane_angle_measure,
   solid_angle_measure,
   area_measure,
   volume_measure,
   ratio_measure,
   parameter_value,
   numeric_measure,
   context_dependent_measure,
   descriptive_measure,
   positive_length_measure,
   positive_plane_angle_measure,
   positive_ratio_measure,
   count_measure);
END_TYPE; -- measure_value

TYPE minute_in_hour = INTEGER;
WHERE

```

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```
wr1: ((0 <= SELF) AND (SELF <= 59));
END_TYPE; -- minute_in_hour

TYPE month_in_year_number = INTEGER;
WHERE
  wr1: ((1 <= SELF) AND (SELF <= 12));
END_TYPE; -- month_in_year_number

TYPE multi_language_attribute_item = SELECT
  (action,
   action_directive,
   action_method,
   action_relationship,
   alternate_product_relationship,
   application_context,
   approval_relationship,
   assembly_component_usage_substitute,
   certification,
   class_system,
   conditional_concept_feature,
   configuration_design,
   configuration_item,
   configured_effectivity_assignment,
   connectivity_definition,
   contract,
   descriptive_representation_item,
   document_file,
   drawing_sheet_revision,
   effectivity,
   effectivity_relationship,
   equipment_marking,
   event_occurrence,
   external_source,
   free_segment,
   general_property,
   general_property_relationship,
   group,
   identification_role,
   inclusion_product_concept_feature,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   notification,
   organization_relationship,
   organizational_project,
   organizational_project_relationship,
   path,
   presentation_view,
   process_variable,
   product,
   product_concept,
```

```

product_concept_feature,
product_concept_feature_association,
product_concept_feature_category_usage,
product_concept_relationship,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
product_related_product_category,
product_specification,
property_definition,
representation,
routed_segment,
shape_aspect_relationship,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE; -- multi_language_attribute_item

TYPE name_attribute_select = SELECT
(action_request_solution,
address,
configuration_design,
derived_unit,
effectivity,
person_and_organization,
product_definition,
product_definition_substitute,
property_definition_representation);
END_TYPE; -- name_attribute_select

TYPE null_style = ENUMERATION OF
(null);
END_TYPE; -- null_style

TYPE numeric_measure = NUMBER;
END_TYPE; -- numeric_measure

TYPE organization_item = SELECT
(action,
action_directive,
action_property,
action_relationship,
action_request_solution,
alternate_product_relationship,
applied_action_assignment,
applied_classification_assignment,
applied_document_reference,
applied_identification_assignment,
applied_organization_assignment,
applied_person_and_organization_assignment,
applied_presented_item,
approval,

```

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approval_status,
assembly_component_usage_substitute,
certification,
characterized_object_relationship,
class,
class_system,
configuration_design,
configuration_item,
configured_effectivity_assignment,
connectivity_definition,
contract,
descriptive_representation_item,
document_file,
document_relationship,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
effectivity,
event_occurrence,
executed_action,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
item_designation_assignment,
note_representation,
notification,
organization_relationship,
organizational_project,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
security_classification_level,

```

    shape_aspect_relationship,
    signal,
    terminal,
    versioned_action_request,
    vertex);
END_TYPE; -- organization_item

TYPE organizational_project_item = SELECT
    (action,
     product_concept);
END_TYPE; -- organizational_project_item

TYPE page_connector_reference_item = SELECT
    (page_connector_group,
     page_connector_presentation_group);
END_TYPE; -- page_connector_reference_item

TYPE parameter_value = REAL;
END_TYPE; -- parameter_value

TYPE person_and_organization_item = SELECT
    (action,
     action_directive,
     action_property,
     action_relationship,
     action_request_solution,
     alternate_product_relationship,
     applied_action_assignment,
     applied_classification_assignment,
     applied_document_reference,
     applied_organization_assignment,
     applied_person_and_organization_assignment,
     applied_presented_item,
     approval_status,
     assembly_component_usage_substitute,
     certification,
     characterized_object_relationship,
     class,
     class_system,
     configuration_design,
     configuration_item,
     configured_effectivity_assignment,
     connectivity_definition,
     contract,
     descriptive_representation_item,
     document_file,
     document_relationship,
     drawing_revision,
     drawing_revision_sequence,
     drawing_sheet_revision,
     event_occurrence,
     executed_action,
     general_property,
     installation_location,
     installation_node,

```

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```
    installation_route,  
    installation_section,  
    installation_section_end,  
    installation_section_interface,  
    installation_segment,  
    interface,  
    note_representation,  
    notification,  
    organization_relationship,  
    organizational_project,  
    path,  
    person_and_organization,  
    process_variable,  
    product,  
    product_concept,  
    product_concept_feature,  
    product_concept_feature_association,  
    product_concept_feature_category,  
    product_concept_feature_category_usage,  
    product_definition,  
    product_definition_formation,  
    product_definition_formation_relationship,  
    product_definition_relationship,  
    product_definition_substitute,  
    property_definition,  
    property_definition_relationship,  
    representation,  
    representation_item_relationship,  
    representation_relationship,  
    security_classification,  
    security_classification_level,  
    shape_aspect_relationship,  
    signal,  
    terminal,  
    versioned_action_request,  
    vertex);  
END_TYPE; -- person_and_organization_item  
  
TYPE person_organization_select = SELECT  
    (person,  
     organization,  
     person_and_organization);  
END_TYPE; -- person_organization_select  
  
TYPE plane_angle_measure = REAL;  
END_TYPE; -- plane_angle_measure  
  
TYPE positive_length_measure = length_measure;  
WHERE  
    wr1: (SELF > 0);  
END_TYPE; -- positive_length_measure  
  
TYPE positive_plane_angle_measure = plane_angle_measure;  
WHERE  
    wr1: (SELF > 0);
```



```

END_TYPE; -- positive_plane_angle_measure

TYPE positive_ratio_measure = ratio_measure;
WHERE
  wr1: (SELF > 0);
END_TYPE; -- positive_ratio_measure

TYPE presentable_text = STRING;
END_TYPE; -- presentable_text

TYPE presentation_representation_select = SELECT
  (presentation_representation,
   presentation_set);
END_TYPE; -- presentation_representation_select

TYPE presentation_size_assignment_select = SELECT
  (presentation_view,
   presentation_area,
   area_in_set);
END_TYPE; -- presentation_size_assignment_select

TYPE presentation_style_select = SELECT
  (curve_style,
   symbol_style,
   fill_area_style,
   text_style,
   externally_defined_style,
   null_style);
END_TYPE; -- presentation_style_select

TYPE presented_item_select = SELECT
  (action,
   action_directive,
   address,
   applied_identification_assignment,
   approval,
   approval_status,
   assembly_component_usage,
   class,
   class_system,
   configuration_item,
   connectivity_definition,
   contract,
   equipment_marking,
   executed_action,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   item_designation_assignment,
   note_representation,

```

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```
notification,
organization,
organizational_project,
path,
person,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
property_definition,
representation,
security_classification,
security_classification_level,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE; -- presented_item_select

TYPE product_or_formation_or_definition = SELECT
(product,
product_definition_formation,
product_definition);
END_TYPE; -- product_or_formation_or_definition

TYPE property_or_shape_select = SELECT
(property_definition,
shape_definition);
END_TYPE; -- property_or_shape_select

TYPE ratio_measure = REAL;
END_TYPE; -- ratio_measure

TYPE represented_definition = SELECT
(general_property,
property_definition,
property_definition_relationship,
shape_aspect,
shape_aspect_relationship);
END_TYPE; -- represented_definition

TYPE reversible_topology = SELECT
(reversible_topology_item);
END_TYPE; -- reversible_topology

TYPE reversible_topology_item = SELECT
(edge,
path);
END_TYPE; -- reversible_topology_item
```

```

TYPE role_select = SELECT
  (action_assignment,
   action_request_assignment,
   approval_assignment,
   approval_date_time,
   certification_assignment,
   contract_assignment,
   document_reference,
   effectivity_assignment,
   group_assignment,
   security_classification_assignment);
END_TYPE; -- role_select

TYPE second_in_minute = REAL;
WHERE
  wr1: ((0 <= SELF) AND (SELF <= 60));
END_TYPE; -- second_in_minute

TYPE security_classification_item = SELECT
  (action,
   action_directive,
   action_property,
   action_relationship,
   action_request_solution,
   alternate_product_relationship,
   applied_action_assignment,
   assembly_component_usage_substitute,
   characterized_object_relationship,
   class_system,
   configuration_design,
   configuration_effectivity,
   configuration_item,
   configured_effectivity_assignment,
   connectivity_definition,
   contract,
   document_file,
   document_relationship,
   drawing_revision,
   drawing_revision_sequence,
   drawing_sheet_revision,
   equipment_marking,
   general_property,
   installation_location,
   installation_node,
   installation_route,
   installation_section,
   installation_section_end,
   installation_section_interface,
   interface,
   note_representation,
   notification,
   organizational_project,
   path,
   process_variable,
   product,

```

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```
product_concept,  
product_concept_feature,  
product_concept_feature_category,  
product_definition,  
product_definition_formation,  
product_definition_formation_relationship,  
product_definition_relationship,  
product_definition_substitute,  
property_definition,  
property_definition_relationship,  
representation,  
representation_item_relationship,  
representation_relationship,  
shape_aspect_relationship,  
signal,  
terminal,  
versioned_action_request,  
vertex);  
END_TYPE; -- security_classification_item  
  
TYPE set_representation_item = SET [1:?] OF representation_item;  
END_TYPE; -- set_representation_item  
  
TYPE shape_definition = SELECT  
  (product_definition_shape,  
   shape_aspect,  
   shape_aspect_relationship);  
END_TYPE; -- shape_definition  
  
TYPE si_prefix = ENUMERATION OF  
  (exa,  
   peta,  
   tera,  
   giga,  
   mega,  
   kilo,  
   hecto,  
   deca,  
   deci,  
   centi,  
   milli,  
   micro,  
   nano,  
   pico,  
   femto,  
   atto);  
END_TYPE; -- si_prefix  
  
TYPE si_unit_name = ENUMERATION OF  
  (metre,  
   gram,  
   second,  
   ampere,  
   kelvin,  
   mole,
```

```

    candela,
    radian,
    steradian,
    hertz,
    newton,
    pascal,
    joule,
    watt,
    coulomb,
    volt,
    farad,
    ohm,
    siemens,
    weber,
    tesla,
    henry,
    degree_celsius,
    lumen,
    lux,
    becquerel,
    gray,
    sievert);
END_TYPE; -- si_unit_name

TYPE size_select = SELECT
    (positive_length_measure,
     measure_with_unit,
     descriptive_measure);
END_TYPE; -- size_select

TYPE solid_angle_measure = REAL;
END_TYPE; -- solid_angle_measure

TYPE source = ENUMERATION OF
    (made,
     bought,
     not_known);
END_TYPE; -- source

TYPE source_item = SELECT
    (identifier);
END_TYPE; -- source_item

TYPE specified_item = SELECT
    (drawing_revision);
END_TYPE; -- specified_item

TYPE squared_or_rounded = ENUMERATION OF
    (squared,
     rounded);
END_TYPE; -- squared_or_rounded

TYPE style_context_select = SELECT
    (group,
     presentation_layer_assignment,

```

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```
        representation,  
        representation_item,  
        presentation_set);  
END_TYPE; -- style_context_select  
  
TYPE supported_item = SELECT  
    (action_directive,  
     action,  
     action_method);  
END_TYPE; -- supported_item  
  
TYPE symbol_style_select = SELECT  
    (symbol_colour);  
END_TYPE; -- symbol_style_select  
  
TYPE text = STRING;  
END_TYPE; -- text  
  
TYPE text_alignment = label;  
END_TYPE; -- text_alignment  
  
TYPE text_delineation = label;  
END_TYPE; -- text_delineation  
  
TYPE text_or_character = SELECT  
    (annotation_text,  
     defined_character_glyph,  
     composite_text,  
     text_literal);  
END_TYPE; -- text_or_character  
  
TYPE text_path = ENUMERATION OF  
    (left,  
     right,  
     up,  
     down);  
END_TYPE; -- text_path  
  
TYPE thermodynamic_temperature_measure = REAL;  
END_TYPE; -- thermodynamic_temperature_measure  
  
TYPE time_interval_item = SELECT  
    (action,  
     action_directive,  
     action_property,  
     action_relationship,  
     action_request_solution,  
     alternate_product_relationship,  
     applied_action_assignment,  
     applied_classification_assignment,  
     applied_document_reference,  
     applied_person_and_organization_assignment,  
     applied_presented_item,  
     approval_status,  
     assembly_component_usage_substitute,
```

```

certification,
characterized_object_relationship,
class,
class_system,
configuration_design,
configuration_item,
configured_effectivity_assignment,
connectivity_definition,
contract,
descriptive_representation_item,
document_file,
document_relationship,
drawing_revision,
drawing_revision_sequence,
drawing_sheet_revision,
general_property,
installation_location,
installation_node,
installation_route,
installation_section,
installation_section_end,
installation_section_interface,
installation_segment,
interface,
note_representation,
notification,
organization_relationship,
organizational_project,
path,
person_and_organization,
process_variable,
product,
product_concept,
product_concept_feature,
product_concept_feature_association,
product_concept_feature_category,
product_concept_feature_category_usage,
product_definition,
product_definition_formation,
product_definition_formation_relationship,
product_definition_relationship,
product_definition_substitute,
property_definition,
property_definition_relationship,
representation,
representation_item_relationship,
representation_relationship,
security_classification,
security_classification_level,
shape_aspect_relationship,
signal,
terminal,
versioned_action_request,
vertex);
END_TYPE; -- time_interval_item

```

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```
TYPE time_measure = REAL;
END_TYPE; -- time_measure

TYPE transformation = SELECT
  (item_defined_transformation,
   functionally_defined_transformation);
END_TYPE; -- transformation

TYPE transition_code = ENUMERATION OF
  (discontinuous,
   continuous,
   cont_same_gradient,
   cont_same_gradient_same_curvature);
END_TYPE; -- transition_code

TYPE trimming_preference = ENUMERATION OF
  (cartesian,
   parameter,
   unspecified);
END_TYPE; -- trimming_preference

TYPE trimming_select = SELECT
  (cartesian_point,
   parameter_value);
END_TYPE; -- trimming_select

TYPE unit = SELECT
  (named_unit,
   derived_unit);
END_TYPE; -- unit

TYPE value_qualifier = SELECT
  (precision_qualifier,
   type_qualifier);
END_TYPE; -- value_qualifier

TYPE vector_or_direction = SELECT
  (vector,
   direction);
END_TYPE; -- vector_or_direction

TYPE volume_measure = REAL;
END_TYPE; -- volume_measure

TYPE year_number = INTEGER;
END_TYPE; -- year_number

ENTITY abs_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- abs_function

ENTITY acos_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- acos_function
```



```

ENTITY action;
  name          : label;
  description   : OPTIONAL text;
  chosen_method : action_method;
  DERIVE
    id : identifier := get_id_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- action

ENTITY action_assignment
  ABSTRACT SUPERTYPE;
  assigned_action : action;
  DERIVE
    role : object_role := get_role(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- action_assignment

ENTITY action_directive;
  name          : label;
  description   : OPTIONAL text;
  analysis      : text;
  comment       : text;
  requests      : SET [1:?] OF versioned_action_request;
END_ENTITY; -- action_directive

ENTITY action_method;
  name          : label;
  description   : OPTIONAL text;
  consequence   : text;
  purpose       : text;
END_ENTITY; -- action_method

ENTITY action_property;
  name          : label;
  description   : text;
  definition    : characterized_action_definition;
END_ENTITY; -- action_property

ENTITY action_property_representation;
  name          : label;
  description   : text;
  property      : action_property;
  representation : representation;
END_ENTITY; -- action_property_representation

ENTITY action_relationship;
  name          : label;
  description   : OPTIONAL text;
  relating_action : action;
  related_action : action;

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```
END_ENTITY; -- action_relationship

ENTITY action_request_assignment
  ABSTRACT SUPERTYPE;
  assigned_action_request : versioned_action_request;
  DERIVE
    role : object_role := get_role(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- action_request_assignment

ENTITY action_request_solution;
  method : action_method;
  request : versioned_action_request;
  DERIVE
    description : text := get_description_value(SELF);
    name : label := get_name_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
    wr2: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1);
END_ENTITY; -- action_request_solution

ENTITY action_request_status;
  status : label;
  assigned_request : versioned_action_request;
END_ENTITY; -- action_request_status

ENTITY action_status;
  status : label;
  assigned_action : executed_action;
END_ENTITY; -- action_status

ENTITY address;
  internal_location : OPTIONAL label;
  street_number : OPTIONAL label;
  street : OPTIONAL label;
  postal_box : OPTIONAL label;
  town : OPTIONAL label;
  region : OPTIONAL label;
  postal_code : OPTIONAL label;
  country : OPTIONAL label;
  facsimile_number : OPTIONAL label;
  telephone_number : OPTIONAL label;
  electronic_mail_address : OPTIONAL label;
  telex_number : OPTIONAL label;
  DERIVE
    name : label := get_name_value(SELF);
    url : identifier := get_id_value(SELF);
  WHERE
    wr1: (EXISTS(internal_location) OR EXISTS(street_number) OR
  EXISTS(
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        street) OR EXISTS(postal_box) OR EXISTS(town) OR
EXISTS (
        region) OR EXISTS(postal_code) OR EXISTS(country) OR
EXISTS (
        facsimile_number) OR EXISTS(telephone_number) OR
EXISTS (
        electronic_mail_address) OR EXISTS(telex_number));
END_ENTITY; -- address

ENTITY alternate_product_relationship;
    name      : label;
    definition : OPTIONAL text;
    alternate  : product;
    base       : product;
    basis      : text;
UNIQUE
    url : alternate, base;
WHERE
    wr1: (alternate :<>: base);
END_ENTITY; -- alternate_product_relationship

ENTITY amount_of_substance_measure_with_unit
    SUBTYPE OF (measure_with_unit);
WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.AMOUNT_OF_SUBSTANCE_UNIT' IN
        TYPEOF(SELF\measure_with_unit.unit_component));
END_ENTITY; -- amount_of_substance_measure_with_unit

ENTITY amount_of_substance_unit
    SUBTYPE OF (named_unit);
WHERE
    wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
(SELF\
        named_unit.dimensions.mass_exponent = 0) AND (SELF\
        named_unit.dimensions.time_exponent = 0) AND (SELF\
        named_unit.dimensions.electric_current_exponent = 0)
AND (
        SELF\named_unit.dimensions.
        thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
        .dimensions.amount_of_substance_exponent = 1) AND
(SELF\
        named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- amount_of_substance_unit

ENTITY and_expression
    SUBTYPE OF (multiple_arity_boolean_expression);
END_ENTITY; -- and_expression

ENTITY angular_dimension
    SUBTYPE OF (dimension_curve_directed_callout);
END_ENTITY; -- angular_dimension

ENTITY annotation_curve_occurrence

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```
SUBTYPE OF (annotation_occurrence);
WHERE
  wr1: ('ELECTROTECHNICAL_DESIGN.CURVE' IN TYPEOF(SELf\
        styled_item.item));
END_ENTITY; -- annotation_curve_occurrence

ENTITY annotation_fill_area
  SUBTYPE OF (geometric_representation_item);
  boundaries : SET [1:?] OF curve;
END_ENTITY; -- annotation_fill_area

ENTITY annotation_fill_area_occurrence
  SUBTYPE OF (annotation_occurrence);
  fill_style_target : point;
WHERE
  wr1: ('ELECTROTECHNICAL_DESIGN.ANNOTATION_FILL_AREA' IN
TYPEOF(
        SELF.item));
END_ENTITY; -- annotation_fill_area_occurrence

ENTITY annotation_occurrence
  SUPERTYPE OF (ONEOF (annotation_curve_occurrence,
        annotation_fill_area_occurrence, annotation_text_occurrence,
        annotation_symbol_occurrence))
  SUBTYPE OF (styled_item);
WHERE
  wr1: ('ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_ITEM'
        IN TYPEOF(SELf));
END_ENTITY; -- annotation_occurrence

ENTITY annotation_occurrence_associativity
  SUBTYPE OF (annotation_occurrence_relationship);
WHERE
  wr1: (SIZEOF(TYPEOF(SELf.related_annotation_occurrence) *
['ELECTROTECHNICAL_DESIGN.ANNOTATION_FILL_AREA_OCCURRENCE',
  'ELECTROTECHNICAL_DESIGN.PROJECTION_CURVE',
  'ELECTROTECHNICAL_DESIGN.LEADER_CURVE']) = 1);
END_ENTITY; -- annotation_occurrence_associativity

ENTITY annotation_occurrence_relationship;
  name : label;
  description : text;
  relating_annotation_occurrence : annotation_occurrence;
  related_annotation_occurrence : annotation_occurrence;
END_ENTITY; -- annotation_occurrence_relationship

ENTITY annotation_subfigure_occurrence
  SUBTYPE OF (annotation_symbol_occurrence);
WHERE
  wr1: (SIZEOF(QUERY ( sty <* SELf.styles | (NOT
(SIZEOF(sty.styles) =
  1)) )) = 0);
  wr2: (SIZEOF(QUERY ( sty <* SELf.styles | (NOT (
  'ELECTROTECHNICAL_DESIGN.NULL_STYLE' IN TYPEOF(sty.
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        styles[1])))) )) = 0);
wr3: ('ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL' IN TYPEOF(
        SELF.item));
wr4:
('ELECTROTECHNICAL_DESIGN.DRAUGHTING_SUBFIGURE_REPRESENTATION'
        IN TYPEOF(SELF.item\mapped_item.mapping_source.
        mapped_representation));
END_ENTITY; -- annotation_subfigure_occurrence

ENTITY annotation_symbol
SUBTYPE OF (mapped_item);
WHERE
wr1: ('ELECTROTECHNICAL_DESIGN.SYMBOL_REPRESENTATION_MAP' IN
        TYPEOF(SELF\mapped_item.mapping_source));
wr2: ('ELECTROTECHNICAL_DESIGN.SYMBOL_TARGET' IN TYPEOF(SELF\
        mapped_item.mapping_target));
wr3: ('ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_ITEM'
        IN TYPEOF(SELF));
END_ENTITY; -- annotation_symbol

ENTITY annotation_symbol_occurrence
SUBTYPE OF (annotation_occurrence);
WHERE
wr1: (SIZEOF(['ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL',
        'ELECTROTECHNICAL_DESIGN.DEFINED_SYMBOL'] *
TYPEOF(SELF
        \styled_item.item)) > 0);
END_ENTITY; -- annotation_symbol_occurrence

ENTITY annotation_text
SUBTYPE OF (mapped_item);
WHERE
wr1: ('ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT' IN
TYPEOF(SELF\
        mapped_item.mapping_target));
wr2: ('ELECTROTECHNICAL_DESIGN.TEXT_STRING_REPRESENTATION' IN
TYPEOF(SELF\mapped_item.mapping_source.mapped_representation));
wr3: ('ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_ITEM'
        IN TYPEOF(SELF));
END_ENTITY; -- annotation_text

ENTITY annotation_text_occurrence
SUBTYPE OF (annotation_occurrence);
WHERE
wr1: (SIZEOF(['ELECTROTECHNICAL_DESIGN.TEXT_LITERAL',
        'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT',
        'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_CHARACTER',
        'ELECTROTECHNICAL_DESIGN.DEFINED_CHARACTER_GLYPH',
        'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT'] *
TYPEOF(SELF
        \styled_item.item)) > 0);
END_ENTITY; -- annotation_text_occurrence

ENTITY application_context;

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```
        application : label;
DERIVE
    description : text := get_description_value(SELf);
    id          : identifier := get_id_value(SELf);
INVERSE
    context_elements : SET [1:?] OF application_context_element
FOR
        frame_of_reference;
WHERE
    wr1: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
    wr2: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
        'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- application_context

ENTITY application_context_element
    SUPERTYPE OF (ONEOF (product_concept_context, product_context,
        product_definition_context));
    name          : label;
    frame_of_reference : application_context;
END_ENTITY; -- application_context_element

ENTITY application_context_relationship;
    name          : label;
    description   : OPTIONAL text;
    relating_context : application_context;
    related_context  : application_context;
END_ENTITY; -- application_context_relationship

ENTITY application_protocol_definition;
    status          : label;
    application_interpreted_model_schema_name : label;
    application_protocol_year : year_number;
    application      :
application_context;
END_ENTITY; -- application_protocol_definition

ENTITY applied_action_assignment
    SUBTYPE OF (action_assignment);
    items : SET [1:?] OF action_item;
END_ENTITY; -- applied_action_assignment

ENTITY applied_action_request_assignment
    SUBTYPE OF (action_request_assignment);
    items : SET [1:?] OF action_request_item;
END_ENTITY; -- applied_action_request_assignment

ENTITY applied_approval_assignment
    SUBTYPE OF (approval_assignment);
    items : SET [1:?] OF approval_item;
END_ENTITY; -- applied_approval_assignment

ENTITY applied_certification_assignment
    SUBTYPE OF (certification_assignment);
    items : SET [1:?] OF certification_item;
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END_ENTITY; -- applied_certification_assignment

ENTITY applied_classification_assignment
  SUBTYPE OF (classification_assignment);
  items : SET [1:?] OF classification_item;
  WHERE
    wr1: applied_classification_assignment_correlation(SELF);
END_ENTITY; -- applied_classification_assignment

ENTITY applied_contract_assignment
  SUBTYPE OF (contract_assignment);
  items : SET [1:?] OF contract_item;
END_ENTITY; -- applied_contract_assignment

ENTITY applied_date_and_time_assignment
  SUBTYPE OF (date_and_time_assignment);
  items : SET [1:?] OF date_and_time_item;
END_ENTITY; -- applied_date_and_time_assignment

ENTITY applied_date_assignment
  SUBTYPE OF (date_assignment);
  items : SET [1:?] OF date_item;
  WHERE
    wr1: ((NOT (SELF.role.name = 'actual end')) OR
item_correlation(SELF
.items, ['ACTION', 'ORGANIZATIONAL_PROJECT', 'EFFECTIVITY']));
END_ENTITY; -- applied_date_assignment

ENTITY applied_document_reference
  SUBTYPE OF (document_reference);
  items : SET [1:?] OF document_reference_item;
  WHERE
    wr1: applied_document_reference_correlation(SELF);
END_ENTITY; -- applied_document_reference

ENTITY applied_document_usage_constraint_assignment
  SUBTYPE OF (document_usage_constraint_assignment);
  items : SET [1:?] OF document_reference_item;
  WHERE
    wr1:
applied_document_usage_constraint_assignment_correlation(SELF);
END_ENTITY; -- applied_document_usage_constraint_assignment

ENTITY applied_effectivity_assignment
  SUBTYPE OF (effectivity_assignment);
  items : SET [1:?] OF effectivity_item;
  WHERE
    wr1: (SIZEOF(['ELECTROTECHNICAL_DESIGN.' + 'LOT_EFFECTIVITY',
'ELECTROTECHNICAL_DESIGN.' +
'SERIAL_NUMBERED_EFFECTIVITY',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_EFFECTIVITY'] * TYPEOF(SELF.
assigned_effectivity)) = 0);
END_ENTITY; -- applied_effectivity_assignment

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ENTITY applied_event_occurrence_assignment
  SUBTYPE OF (event_occurrence_assignment);
  items : SET [1:?] OF event_occurrence_item;
END_ENTITY; -- applied_event_occurrence_assignment

ENTITY applied_external_identification_assignment
  SUBTYPE OF (external_identification_assignment);
  items : SET [1:?] OF external_identification_item;
  WHERE
    wr1: ((NOT (SELF.role.name = 'alternative document id and
location'))
          OR item_correlation(SELF.items,['DOCUMENT_FILE']));
    wr2: ((NOT (SELF.role.name = 'version')) OR
item_correlation(SELF.
  items,['EXTERNALLY_DEFINED_CLASS',
  'EXTERNALLY_DEFINED_GENERAL_PROPERTY']));
END_ENTITY; -- applied_external_identification_assignment

ENTITY applied_group_assignment
  SUBTYPE OF (group_assignment);
  items : SET [1:?] OF group_item;
  WHERE
    wr1: applied_group_assignment_correlation(SELF);
END_ENTITY; -- applied_group_assignment

ENTITY applied_identification_assignment
  SUBTYPE OF (identification_assignment);
  items : SET [1:?] OF identification_item;
  WHERE
    wr1: applied_identification_assignment_correlation(SELF);
    wr2: (SIZEOF(SELF.items) = 1);
END_ENTITY; -- applied_identification_assignment

ENTITY applied_ineffectivity_assignment
  SUBTYPE OF (effectivity_assignment);
  items : SET [1:?] OF effectivity_item;
  WHERE
    wr1: (SIZEOF(['ELECTROTECHNICAL_DESIGN.' + 'LOT_EFFECTIVITY',
  'ELECTROTECHNICAL_DESIGN.' +
  'SERIAL_NUMBERED_EFFECTIVITY',
  'ELECTROTECHNICAL_DESIGN.' +
  'PRODUCT_DEFINITION_EFFECTIVITY'] * TYPEOF(SELF.
  assigned_effectivity)) = 0);
END_ENTITY; -- applied_ineffectivity_assignment

ENTITY applied_organization_assignment
  SUBTYPE OF (organization_assignment);
  items : SET [1:?] OF organization_item;
  WHERE
    wr1: applied_organization_assignment_correlation(SELF);
END_ENTITY; -- applied_organization_assignment

ENTITY applied_organizational_project_assignment
  SUBTYPE OF (organizational_project_assignment);
```



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    items : SET [1:?] OF organizational_project_item;
END_ENTITY; -- applied_organizational_project_assignment

ENTITY applied_person_and_organization_assignment
  SUBTYPE OF (person_and_organization_assignment);
  items : SET [1:?] OF person_and_organization_item;
  WHERE
    wr1:
applied_person_and_organization_assignment_correlation(SELf);
END_ENTITY; -- applied_person_and_organization_assignment

ENTITY applied_presented_item
  SUBTYPE OF (presented_item);
  items : SET [1:?] OF presented_item_select;
  WHERE
    wr1: (SIZEOF(QUERY ( pir <* USEDIN(SELf,
      'ELECTROTECHNICAL_DESIGN.' +
      'PRESENTED_ITEM_REPRESENTATION.ITEM') | (NOT (
      'ELECTROTECHNICAL_DESIGN.DRAWING_REVISION' IN TYPEOF(
      pir.presentation))) ) ) = 0);
END_ENTITY; -- applied_presented_item

ENTITY applied_security_classification_assignment
  SUBTYPE OF (security_classification_assignment);
  items : SET [1:?] OF security_classification_item;
END_ENTITY; -- applied_security_classification_assignment

ENTITY applied_time_interval_assignment
  SUBTYPE OF (time_interval_assignment);
  items : SET [1:?] OF time_interval_item;
END_ENTITY; -- applied_time_interval_assignment

ENTITY approval;
  status : approval_status;
  level : label;
END_ENTITY; -- approval

ENTITY approval_assignment
  ABSTRACT SUPERTYPE;
  assigned_approval : approval;
  DERIVE
    role : object_role := get_role(SELf);
  WHERE
    wr1: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- approval_assignment

ENTITY approval_date_time;
  date_time : date_time_select;
  dated_approval : approval;
  DERIVE
    role : object_role := get_role(SELf);
  WHERE
    wr1: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL_DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);

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END_ENTITY; -- approval_date_time

ENTITY approval_person_organization;
  person_organization : person_organization_select;
  authorized_approval : approval;
  role                : approval_role;
END_ENTITY; -- approval_person_organization

ENTITY approval_relationship;
  name                : label;
  description         : OPTIONAL text;
  relating_approval  : approval;
  related_approval   : approval;
END_ENTITY; -- approval_relationship

ENTITY approval_role;
  role : label;
  DERIVE
    description : text := get_description_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- approval_role

ENTITY approval_status;
  name : label;
END_ENTITY; -- approval_status

ENTITY area_in_set;
  area      : presentation_area;
  in_set    : presentation_set;
END_ENTITY; -- area_in_set

ENTITY area_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.AREA_UNIT' IN TYPEOF(SELF\
      measure_with_unit.unit_component));
END_ENTITY; -- area_measure_with_unit

ENTITY area_unit
  SUBTYPE OF (named_unit);
  WHERE
    wr1: ((SELF\named_unit.dimensions.length_exponent = 2) AND
(SELF\
      named_unit.dimensions.mass_exponent = 0) AND (SELF\
      named_unit.dimensions.time_exponent = 0) AND (SELF\
      named_unit.dimensions.electric_current_exponent = 0)
AND (
      SELF\named_unit.dimensions.
      thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
      .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
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        named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- area_unit

ENTITY asin_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- asin_function

ENTITY assembly_component_usage
  SUPERTYPE OF (ONEOF (next_assembly_usage_occurrence,
specified_higher_usage_occurrence,promissory_usage_occurrence))
  SUBTYPE OF (product_definition_usage);
  reference_designator : OPTIONAL identifier;
END_ENTITY; -- assembly_component_usage

ENTITY assembly_component_usage_substitute;
  name : label;
  definition : OPTIONAL text;
  base : assembly_component_usage;
  substitute : assembly_component_usage;
  UNIQUE
  url : base, substitute;
  WHERE
  wr1: (base.relatering_product_definition := substitute.
relatering_product_definition);
  wr2: (base :<>: substitute);
END_ENTITY; -- assembly_component_usage_substitute

ENTITY atan_function
  SUBTYPE OF (binary_function_call);
END_ENTITY; -- atan_function

ENTITY attribute_classification_assignment
  ABSTRACT SUPERTYPE;
  assigned_class : group;
  attribute_name : label;
  role : classification_role;
END_ENTITY; -- attribute_classification_assignment

ENTITY attribute_language_assignment
  SUBTYPE OF (attribute_classification_assignment);
  items : SET [1:?] OF attribute_language_item;
  DERIVE
  language : label := SELF\attribute_classification_assignment.
assigned_class.name;
  WHERE
  wr1: (SELF\attribute_classification_assignment.role.name IN [
'primary','translated']);
  wr2: (('ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE') IN
TYPEOF(SELF\
attribute_classification_assignment.assigned_class));
END_ENTITY; -- attribute_language_assignment

ENTITY attribute_value_assignment

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ABSTRACT SUPERTYPE;
  attribute_name : label;
  attribute_value : attribute_type;
  role           : attribute_value_role;
END_ENTITY; -- attribute_value_assignment

ENTITY attribute_value_role;
  name       : label;
  description : OPTIONAL text;
END_ENTITY; -- attribute_value_role

ENTITY axis2_placement_2d
  SUBTYPE OF (placement);
  ref_direction : OPTIONAL direction;
  DERIVE
    p : LIST [2:2] OF direction := build_2axes(ref_direction);
  WHERE
    wr1: (SELF\geometric_representation_item.dim = 2);
END_ENTITY; -- axis2_placement_2d

ENTITY axis2_placement_3d
  SUBTYPE OF (placement);
  axis       : OPTIONAL direction;
  ref_direction : OPTIONAL direction;
  DERIVE
    p : LIST [3:3] OF direction := build_axes(axis,ref_direction);
  WHERE
    wr1: (SELF\placement.location.dim = 3);
    wr2: ((NOT EXISTS(axis)) OR (axis.dim = 3));
    wr3: ((NOT EXISTS(ref_direction)) OR (ref_direction.dim = 3));
    wr4: ((NOT EXISTS(axis)) OR (NOT EXISTS(ref_direction)) OR (
      cross_product(axis,ref_direction).magnitude > 0));
END_ENTITY; -- axis2_placement_3d

ENTITY b_spline_curve
  SUPERTYPE OF (ONEOF (uniform_curve,b_spline_curve_with_knots,
    quasi_uniform_curve,bezier_curve) ANDOR
rational_b_spline_curve)
  SUBTYPE OF (bounded_curve);
  degree           : INTEGER;
  control_points_list : LIST [2:?] OF cartesian_point;
  curve_form       : b_spline_curve_form;
  closed_curve     : LOGICAL;
  self_intersect   : LOGICAL;
  DERIVE
    upper_index_on_control_points : INTEGER := SIZEOF(
      control_points_list) - 1;
    control_points                 : ARRAY [0:
upper_index_on_control_points] OF
      cartesian_point :=
list_to_array(
      control_points_list,0,
upper_index_on_control_points);
```

```

WHERE
  wr1: (('ELECTROTECHNICAL_DESIGN.UNIFORM_CURVE' IN
TYPEOF(SELF))
      OR ('ELECTROTECHNICAL_DESIGN.QUASI_UNIFORM_CURVE' IN
TYPEOF(SELF)) OR (
      'ELECTROTECHNICAL_DESIGN.BEZIER_CURVE' IN
TYPEOF(SELF))
      OR
('ELECTROTECHNICAL_DESIGN.B_SPLINE_CURVE_WITH_KNOTS'
  IN TYPEOF(SELF)));
END_ENTITY; -- b_spline_curve

ENTITY b_spline_curve_with_knots
  SUBTYPE OF (b_spline_curve);
  knot_multiplicities : LIST [2:?] OF INTEGER;
  knots                : LIST [2:?] OF parameter_value;
  knot_spec            : knot_type;
  DERIVE
    upper_index_on_knots : INTEGER := SIZEOF(knots);
  WHERE
    wr1: constraints_param_b_spline(degree, upper_index_on_knots,
upper_index_on_control_points, knot_multiplicities, knots);
    wr2: (SIZEOF(knot_multiplicities) = upper_index_on_knots);
  END_ENTITY; -- b_spline_curve_with_knots

ENTITY bezier_curve
  SUBTYPE OF (b_spline_curve);
END_ENTITY; -- bezier_curve

ENTITY binary_boolean_expression
  ABSTRACT SUPERTYPE OF (ONEOF (xor_expression, equals_expression))
  SUBTYPE OF (boolean_expression, binary_generic_expression);
END_ENTITY; -- binary_boolean_expression

ENTITY binary_function_call
  ABSTRACT SUPERTYPE OF (atan_function)
  SUBTYPE OF (binary_numeric_expression);
END_ENTITY; -- binary_function_call

ENTITY binary_generic_expression
  ABSTRACT SUPERTYPE
  SUBTYPE OF (generic_expression);
  operands : LIST [2:2] OF generic_expression;
END_ENTITY; -- binary_generic_expression

ENTITY binary_numeric_expression
  ABSTRACT SUPERTYPE OF (ONEOF (minus_expression, div_expression,
  mod_expression, slash_expression, power_expression,
  binary_function_call))
  SUBTYPE OF (numeric_expression, binary_generic_expression);
  SELF\binary_generic_expression.operands : LIST [2:2] OF
numeric_expression;
END_ENTITY; -- binary_numeric_expression

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ENTITY boolean_expression
  ABSTRACT SUPERTYPE OF (ONEOF (simple_boolean_expression,
    unary_boolean_expression, binary_boolean_expression,
    multiple_arity_boolean_expression, comparison_expression,
    interval_expression))
  SUBTYPE OF (expression);
END_ENTITY; -- boolean_expression

ENTITY boolean_literal
  SUBTYPE OF (simple_boolean_expression, generic_literal);
  the_value : BOOLEAN;
END_ENTITY; -- boolean_literal

ENTITY boolean_variable
  SUBTYPE OF (simple_boolean_expression, variable);
END_ENTITY; -- boolean_variable

ENTITY bounded_curve
  SUPERTYPE OF (ONEOF (polyline, b_spline_curve, trimmed_curve,
    composite_curve))
  SUBTYPE OF (curve);
END_ENTITY; -- bounded_curve

ENTITY calendar_date
  SUBTYPE OF (date);
  day_component : day_in_month_number;
  month_component : month_in_year_number;
  WHERE
    wr1: valid_calendar_date(SELF);
END_ENTITY; -- calendar_date

ENTITY camera_image
  SUBTYPE OF (mapped_item);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.CAMERA_USAGE' IN TYPEOF(SELF\
    mapped_item.mapping_source));
    wr2: ('ELECTROTECHNICAL_DESIGN.PLANAR_BOX' IN TYPEOF(SELF\
    mapped_item.mapping_target));
    wr3: ('ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_ITEM'
    IN TYPEOF(SELF));
END_ENTITY; -- camera_image

ENTITY camera_image_2d_with_scale
  SUBTYPE OF (camera_image);
  DERIVE
    scale : positive_ratio_measure :=
SELF\mapped_item.mapping_target\
    planar_extent.size_in_x /
SELF\mapped_item.mapping_source.
mapping_origin\camera_model_d2.view_window\planar_extent.
    size_in_x;
  WHERE
```

```

        wr1: ('ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2' IN
TYPEOF(SELF\
        mapped_item.mapping_source.mapping_origin));
        wr2: (aspect_ratio(SELF\mapped_item.mapping_target) =
aspect_ratio(
        SELF\mapped_item.mapping_source.mapping_origin\
        camera_model_d2.view_window));
        wr3:
SELF\mapped_item.mapping_source.mapping_origin\camera_model_d2.
        view_window_clipping;
END_ENTITY; -- camera_image_2d_with_scale

ENTITY camera_model
  SUPERTYPE OF (camera_model_d2)
  SUBTYPE OF (geometric_representation_item);
  WHERE
    wr1: ((SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DEFINED_TRANSFORMATION.' + 'TRANSFORM_ITEM_1'))
+
        SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION_MAP.MAPPING_ORIGIN')) > 0);
    wr2: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
        'STYLED_ITEM.ITEM')) = 0);
END_ENTITY; -- camera_model

ENTITY camera_model_d2
  SUBTYPE OF (camera_model);
  view_window : planar_box;
  view_window_clipping : BOOLEAN;
  WHERE
    wr1: (SELF\geometric_representation_item.dim = 2);
END_ENTITY; -- camera_model_d2

ENTITY camera_usage
  SUBTYPE OF (representation_map);
  WHERE
    wr1: (NOT (
        'ELECTROTECHNICAL_DESIGN.PRESENTATION_REPRESENTATION'
        IN
TYPEOF(SELF\representation_map.mapped_representation));
    wr2: ('ELECTROTECHNICAL_DESIGN.CAMERA_MODEL' IN TYPEOF(SELF\
        representation_map.mapping_origin));
END_ENTITY; -- camera_usage

ENTITY cartesian_point
  SUBTYPE OF (point);
  coordinates : LIST [1:3] OF length_measure;
END_ENTITY; -- cartesian_point

ENTITY cartesian_transformation_operator
  SUPERTYPE OF (ONEOF(cartesian_transformation_operator_2d,
        cartesian_transformation_operator_3d))
  SUBTYPE OF (geometric_representation_item,
        functionally_defined_transformation);
  axis1 : OPTIONAL direction;

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axis2          : OPTIONAL direction;
local_origin  : cartesian_point;
scale         : OPTIONAL REAL;
DERIVE
  scl : REAL := NVL(scale,1);
WHERE
  wr1: (scl > 0);
END_ENTITY; -- cartesian_transformation_operator

ENTITY cartesian_transformation_operator_2d
  SUBTYPE OF (cartesian_transformation_operator);
  DERIVE
    u : LIST[2:2] OF direction := base_axis(2,SELF\
      cartesian_transformation_operator.axis1,SELF\
      cartesian_transformation_operator.axis2,?);
  WHERE
    wr1 : SELF\geometric_representation_item.dim = 2;
END_ENTITY;

ENTITY cartesian_transformation_operator_3d
  SUBTYPE OF (cartesian_transformation_operator);
  axis3 : OPTIONAL direction;
  DERIVE
    u : LIST [3:3] OF direction := base_axis(3,SELF\
      cartesian_transformation_operator.axis1,SELF\
      cartesian_transformation_operator.axis2,axis3);
  WHERE
    wr1: (SELF\geometric_representation_item.dim = 3);
END_ENTITY; -- cartesian_transformation_operator_3d

ENTITY celsius_temperature_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  WHERE
    wr1: ('ELECTROTECHNICAL DESIGN.THERMODYNAMIC_TEMPERATURE_UNIT'
      IN TYPEOF(SELF\measure_with_unit.unit_component));
END_ENTITY; -- celsius_temperature_measure_with_unit

ENTITY certification;
  name      : label;
  purpose   : text;
  kind      : certification_type;
END_ENTITY; -- certification

ENTITY certification_assignment
  ABSTRACT SUPERTYPE;
  assigned_certification : certification;
  DERIVE
    role : object_role := get_role(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- certification_assignment

ENTITY certification_type;
  description : label;
```



```

END_ENTITY; -- certification_type

ENTITY characterized_class
  SUBTYPE OF (characterized_object, class);
END_ENTITY; -- characterized_class

ENTITY characterized_object;
  name      : label;
  description : OPTIONAL text;
END_ENTITY; -- characterized_object

ENTITY characterized_object_relationship;
  name      : label;
  description : OPTIONAL text;
  relating_object : characterized_object;
  related_object  : characterized_object;
END_ENTITY; -- characterized_object_relationship

ENTITY circle
  SUBTYPE OF (conic);
  radius : positive_length_measure;
END_ENTITY; -- circle

ENTITY class
  SUBTYPE OF (group);
END_ENTITY; -- class

ENTITY class_system
  SUBTYPE OF (group);
END_ENTITY; -- class_system

ENTITY class_usage_effectivity_context_assignment
  SUBTYPE OF (effectivity_context_assignment);
  items : SET [1:?] OF class_usage_effectivity_context_item;
  WHERE
    wr1: (SELF.role.name = 'class usage influence');
    wr2: (SIZEOF(QUERY ( i <* SELF.items | (NOT ((
      'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_DEFINITION') IN
      TYPEOF(i))) )) = 0);
    wr3: (((('ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_EFFECTIVITY_ASSIGNMENT') IN TYPEOF(SELF.
      assigned_effectivity_assignment)) AND
    (SIZEOF(TYPEOF(SELF.
    assigned_effectivity_assignment.assigned_effectivity)) = 1)
    AND (SELF.assigned_effectivity_assignment.
    assigned_effectivity.id = 'class usage') AND (SIZEOF(
    QUERY ( i <* SELF.assigned_effectivity_assignment\
    applied_effectivity_assignment.items | (NOT ((
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE') IN
    TYPEOF(i))) ))
    = 0));
END_ENTITY; -- class_usage_effectivity_context_assignment

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```
ENTITY classification_assignment
  ABSTRACT SUPERTYPE;
  assigned_class : group;
  role           : classification_role;
END_ENTITY; -- classification_assignment

ENTITY classification_role;
  name          : label;
  description   : OPTIONAL text;
END_ENTITY; -- classification_role

ENTITY colour;
END_ENTITY; -- colour

ENTITY colour_representation_item
  SUBTYPE OF (descriptive_representation_item);
END_ENTITY; -- colour_representation_item

ENTITY colour_rgb
  SUBTYPE OF (colour_specification);
  red   : REAL;
  green : REAL;
  blue  : REAL;
  WHERE
    wr1: ((0 <= red) AND (red <= 1));
    wr2: ((0 <= green) AND (green <= 1));
    wr3: ((0 <= blue) AND (blue <= 1));
END_ENTITY; -- colour_rgb

ENTITY colour_specification
  SUBTYPE OF (colour);
  name : label;
END_ENTITY; -- colour_specification

ENTITY comparison_equal
  SUBTYPE OF (comparison_expression);
END_ENTITY; -- comparison_equal

ENTITY comparison_expression
  ABSTRACT SUPERTYPE OF (ONEOF
(comparison_equal, comparison_greater,
comparison_greater_equal, comparison_less, comparison_less_equal,
  comparison_not_equal, like_expression))
  SUBTYPE OF (boolean_expression, binary_generic_expression);
  SELF\binary_generic_expression.operands : LIST [2:2] OF
expression;
  WHERE
    wr1: ((( 'ELECTROTECHNICAL_DESIGN.NUMERIC_EXPRESSION' IN
TYPEOF(
  SELF\binary_generic_expression.operands[1])) AND (
  'ELECTROTECHNICAL_DESIGN.NUMERIC_EXPRESSION' IN
TYPEOF(
  SELF\binary_generic_expression.operands[2]))) OR ((
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        'ELECTROTECHNICAL_DESIGN.BOOLEAN_EXPRESSION' IN
TYPEOF(
        SELF\binary_generic_expression.operands[1])) AND (
        'ELECTROTECHNICAL_DESIGN.BOOLEAN_EXPRESSION' IN
TYPEOF(
        SELF\binary_generic_expression.operands[2])) OR ((
        'ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN
TYPEOF(
        SELF\binary_generic_expression.operands[1])) AND (
        'ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN
TYPEOF(
        SELF\binary_generic_expression.operands[2]))));
END_ENTITY; -- comparison_expression

ENTITY comparison_greater
    SUBTYPE OF (comparison_expression);
END_ENTITY; -- comparison_greater

ENTITY comparison_greater_equal
    SUBTYPE OF (comparison_expression);
END_ENTITY; -- comparison_greater_equal

ENTITY comparison_less
    SUBTYPE OF (comparison_expression);
END_ENTITY; -- comparison_less

ENTITY comparison_less_equal
    SUBTYPE OF (comparison_expression);
END_ENTITY; -- comparison_less_equal

ENTITY comparison_not_equal
    SUBTYPE OF (comparison_expression);
END_ENTITY; -- comparison_not_equal

ENTITY composite_curve
    SUBTYPE OF (bounded_curve);
    segments      : LIST [1:?] OF composite_curve_segment;
    self_intersect : LOGICAL;
    DERIVE
        n_segments      : INTEGER := SIZEOF(segments);
        closed_curve    : LOGICAL := segments[n_segments].transition <>
            discontinuous;
    WHERE
        wr1: (((NOT closed_curve) AND (SIZEOF(QUERY ( temp <* segments
| (
            temp.transition = discontinuous) )) = 1)) OR
(closed_curve
    AND (SIZEOF(QUERY ( temp <* segments |
(temp.transition =
            discontinuous) )) = 0)));
END_ENTITY; -- composite_curve

ENTITY composite_curve_segment
    SUBTYPE OF (founded_item);
    transition    : transition_code;

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```
        same_sense      : BOOLEAN;
        parent_curve    : curve;
    INVERSE
        using_curves    : BAG [1:?] OF composite_curve FOR segments;
    WHERE
        wr1: ('ELECTROTECHNICAL_DESIGN.BOUNDED_CURVE' IN TYPEOF(
            parent_curve));
END_ENTITY; -- composite_curve_segment

ENTITY composite_text
    SUBTYPE OF (geometric_representation_item);
    collected_text      : SET [2:?] OF text_or_character;
    WHERE
        wr1: acyclic_composite_text(SELF,SELF.collected_text);
END_ENTITY; -- composite_text

ENTITY composite_text_with_associated_curves
    SUBTYPE OF (composite_text);
    associated_curves   : SET [1:?] OF curve;
END_ENTITY; -- composite_text_with_associated_curves

ENTITY composite_text_with_blanking_box
    SUBTYPE OF (composite_text);
    blanking            : planar_box;
END_ENTITY; -- composite_text_with_blanking_box

ENTITY composite_text_with_extent
    SUBTYPE OF (composite_text);
    extent              : planar_extent;
END_ENTITY; -- composite_text_with_extent

ENTITY compound_representation_item
    SUBTYPE OF (representation_item);
    item_element        : compound_item_definition;
END_ENTITY; -- compound_representation_item

ENTITY concat_expression
    SUBTYPE OF (string_expression,
multiple_arity_generic_expression);
    SELF\multiple_arity_generic_expression.operands :
        LIST [2:?] OF string_expression;
END_ENTITY; -- concat_expression

ENTITY concept_feature_operator;
    name                : label;
    description          : OPTIONAL text;
END_ENTITY; -- concept_feature_operator

ENTITY concept_feature_relationship;
    name                : label;
    description          : OPTIONAL text;
    relating_product_concept_feature : product_concept_feature;
    related_product_concept_feature  : product_concept_feature;
END_ENTITY; -- concept_feature_relationship
```

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ENTITY concept_feature_relationship_with_condition
  SUBTYPE OF (concept_feature_relationship);
  conditional_operator : concept_feature_operator;
END_ENTITY; -- concept_feature_relationship_with_condition

ENTITY conditional_concept_feature
  SUBTYPE OF (product_concept_feature);
  condition : concept_feature_relationship_with_condition;
END_ENTITY; -- conditional_concept_feature

ENTITY configurable_item
  SUBTYPE OF (configuration_item);
  item_concept_feature : SET [1:?] OF
product_concept_feature_association;
END_ENTITY; -- configurable_item

ENTITY configuration_design;
  configuration : configuration_item;
  design       : configuration_design_item;
  DERIVE
  name         : label := get_name_value(SELf);
  description  : text := get_description_value(SELf);
  UNIQUE
  url : configuration, design;
  WHERE
  wr1: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL DESIGN.' +
    'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1);
  wr2: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL DESIGN.' +
    'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- configuration_design

ENTITY configuration_effectivity
  SUBTYPE OF (product_definition_effectivity);
  configuration : configuration_design;
  UNIQUE
  url : configuration, usage, id;
  WHERE
  wr1: ('ELECTROTECHNICAL DESIGN.PRODUCT_DEFINITION_USAGE' IN
    TYPEOF(SELf\product_definition_effectivity.usage));
END_ENTITY; -- configuration_effectivity

ENTITY configuration_item;
  id       : identifier;
  name     : label;
  description : OPTIONAL text;
  item_concept : product_concept;
  purpose  : OPTIONAL label;
END_ENTITY; -- configuration_item

ENTITY configured_effectivity_assignment
  SUBTYPE OF (effectivity_assignment);
  items : SET [1:?] OF configured_effectivity_item;
  WHERE
  wr1: ((SIZEOF(['ELECTROTECHNICAL DESIGN.' + 'EFFECTIVITY'] *

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        TYPEOF(SELF.assigned_effectivity)) = 1) AND (SELF.
        assigned_effectivity.id = 'configuration validity'));
wr2: (SIZEOF(SELF.items) = 1);
wr3: (SIZEOF(QUERY ( i <* SELF.items | ((NOT ((
        'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_DEFINITION') IN
        TYPEOF(i))) OR (NOT
(i\product_definition.frame_of_reference
        .name IN ['conceptual definition','part occurrence',
        'functional definition','alternative definition'])))
)) = 0);
wr4: (SELF.role.name IN ['design','usage']);
wr5: ((SELF.role.name <> 'design') OR (SIZEOF(QUERY ( i <*
SELF.
        items | (((('ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_DEFINITION') IN TYPEOF(i)) AND (i\
        product_definition.frame_of_reference.name =
        'part occurrence')) ) = 0));
wr6: ((SELF.role.name <> 'usage') OR (SIZEOF(QUERY ( i <*
SELF.items
        | (((('ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_DEFINITION')
        IN TYPEOF(i)) AND
(i\product_definition.frame_of_reference.
        name = 'conceptual definition')) ) = 0));
wr7: (SELF.role.description IN
['exception','inherited','local']);
wr8: (SIZEOF(QUERY ( x <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'EFFECTIVITY_CONTEXT_ASSIGNMENT.' +
        'ASSIGNED_EFFECTIVITY_ASSIGNMENT') | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'CONFIGURED_EFFECTIVITY_CONTEXT_ASSIGNMENT') IN
TYPEOF(x)) ))
        = 1);
END_ENTITY; -- configured_effectivity_assignment

ENTITY configured_effectivity_context_assignment
SUBTYPE OF (effectivity_context_assignment);
items : SET [1:?] OF configured_effectivity_context_item;
WHERE
wr1: (('ELECTROTECHNICAL_DESIGN.' +
        'CONFIGURED_EFFECTIVITY_ASSIGNMENT') IN TYPEOF(SELF.
        assigned_effectivity_assignment));
wr2: (SIZEOF(SELF.items) = 1);
END_ENTITY; -- configured_effectivity_context_assignment

ENTITY conic
SUPERTYPE OF (ONEOF (circle,ellipse,hyperbola,parabola))
SUBTYPE OF (curve);
position : axis2_placement;
END_ENTITY; -- conic

ENTITY connecting_line_group
SUBTYPE OF (group);
WHERE

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        wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
            'GROUP_ASSIGNMENT.' + 'ASSIGNED_GROUP'))) = 1);
END_ENTITY; -- connecting_line_group

ENTITY connecting_line_group_assignment
    SUBTYPE OF (group_assignment);
    item : connecting_line_item;
END_ENTITY; -- connecting_line_group_assignment

ENTITY connectivity_definition
    SUBTYPE OF (shape_aspect);
    WHERE
        wr1: (SELF\shape_aspect.product_definitional = UNKNOWN);
        wr2: ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN TYPEOF(
SELF\shape_aspect.of_shape\property_definition.definition));
        wr3:
        (SELF\shape_aspect.of_shape\property_definition.definition.
            frame_of_reference\application_context_element.name
IN [
            'functional definition', 'part definition']);
        wr4: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
            'ELECTROTECHNICAL_DESIGN.' +
            'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | (
            sar.name = 'connectivity') )) = SIZEOF(QUERY ( sar <*
USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
            'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
            sar.name = 'connectivity') AND (((
            'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
            related_shape_aspect)) AND (sar.related_shape_aspect.
of_shape\property_definition.definition.frame_of_reference\
application_context_element.name = 'functional
definition'))
            XOR (('ELECTROTECHNICAL_DESIGN.TERMINAL' IN
TYPEOF(sar.
            related_shape_aspect)) AND (sar.related_shape_aspect.
of_shape\property_definition.definition.frame_of_reference\
application_context_element.name = 'functional
occurrence'))
            XOR (('ELECTROTECHNICAL_DESIGN.TERMINAL' IN
TYPEOF(sar.
            related_shape_aspect)) AND (sar.related_shape_aspect.
of_shape\property_definition.definition.frame_of_reference\
application_context_element.name = 'part
definition')) XOR (
            ('ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
            related_shape_aspect)) AND (sar.related_shape_aspect.
of_shape\property_definition.definition.frame_of_reference\

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        application_context_element.name = 'part
occurrence'))))));
    wr5: (SIZEOF(QUERY ( conn_mem <* QUERY ( sar <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | (
        sar.name = 'connectivity') ) | (NOT (SIZEOF(
        QUERY ( next_conn_mem <* QUERY ( sar <* (USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') -
        conn_mem) | (sar.name = 'connectivity') ) |
(conn_mem.
        related_shape_aspect =
next_conn_mem.related_shape_aspect) ))
        = 0)) )) = 0);
    wr6: (SIZEOF(QUERY ( bund_mem <* QUERY ( sar <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | (
        sar.name = 'decomposition') ) | (NOT (SIZEOF(
        QUERY ( next_bund_mem <* QUERY ( sar <* (USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') -
        bund_mem) | (sar.name = 'decomposition') ) |
(bund_mem.
        related_shape_aspect =
next_bund_mem.related_shape_aspect) ))
        = 0)) )) = 0);
    wr7: (SIZEOF(QUERY ( sar1 <* QUERY ( sar2 <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | (
        sar2.name = 'decomposition') ) | (NOT
        acyclic_shape_aspect_relationship(sar1,[SELF],
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATED_SHAPE_ASPECT')))) =
        0);
    wr8: (SIZEOF(QUERY ( sar1 <* QUERY ( sar2 <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | (
        sar2.name = 'decomposition') ) | (NOT
        acyclic_shape_aspect_relationship(sar1,[SELF],
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATED_SHAPE_ASPECT')))) =
        0);
    wr9: (SIZEOF(QUERY ( i <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
        name = 'version') )) < 2);
```



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END_ENTITY; -- connectivity_definition

ENTITY context_dependent_invisibility
  SUBTYPE OF (invisibility);
  presentation_context : invisibility_context;
END_ENTITY; -- context_dependent_invisibility

ENTITY context_dependent_over_riding_styled_item
  SUBTYPE OF (over_riding_styled_item);
  style_context : SET [1:2] OF style_context_select;
  WHERE
    wr1: ((SIZEOF(QUERY ( sc <* SELF.style_context | (
      'ELECTROTECHNICAL_DESIGN.REPRESENTATION' IN
TYPEOF(sc) ) )
      = 1) AND (SIZEOF(QUERY ( sc <* SELF.style_context | (
      'ELECTROTECHNICAL_DESIGN.REPRESENTATION_ITEM' IN
      TYPEOF(sc) ) ) = 1));
END_ENTITY; -- context_dependent_over_riding_styled_item

ENTITY context_dependent_shape_representation;
  representation_relation : shape_representation_relationship;
  represented_product_relation : product_definition_shape;
  DERIVE
    description : text := get_description_value(SELF);
    name : label := get_name_value(SELF);
  WHERE
    wr1 :
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_RELATIONSHIP' IN
      TYPEOF(SELF.represented_product_relation.definition);
    wr2 : SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1;
    wr3 : SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1;
END_ENTITY;

ENTITY context_dependent_unit
  SUBTYPE OF (named_unit);
  name : label;
END_ENTITY; -- context_dependent_unit

ENTITY contract;
  name : label;
  purpose : text;
  kind : contract_type;
END_ENTITY; -- contract

ENTITY contract_assignment
  ABSTRACT SUPERTYPE;
  assigned_contract : contract;
  DERIVE
    role : object_role := get_role(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- contract_assignment

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ENTITY contract_type;
  description : label;
END_ENTITY; -- contract_type

ENTITY conversion_based_unit
  SUBTYPE OF (named_unit);
  name : label;
  conversion_factor : measure_with_unit;
END_ENTITY; -- conversion_based_unit

ENTITY coordinated_universal_time_offset;
  hour_offset : INTEGER;
  minute_offset : OPTIONAL INTEGER;
  sense : ahead_or_behind;
  DERIVE
    actual_minute_offset : INTEGER := NVL(minute_offset,0);
  WHERE
    wr1: ((0 <= hour_offset) AND (hour_offset <= 24));
    wr2: ((0 <= actual_minute_offset) AND (actual_minute_offset <=
59));
    wr3: (NOT ((hour_offset <> 0) OR (actual_minute_offset <> 0))
AND (
      sense = exact));
END_ENTITY; -- coordinated_universal_time_offset

ENTITY cos_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- cos_function

ENTITY curve
  SUPERTYPE OF (ONEOF (line,conic))
  SUBTYPE OF (geometric_representation_item);
END_ENTITY; -- curve

ENTITY curve_dimension
  SUBTYPE OF (dimension_curve_directed_callout);
END_ENTITY; -- curve_dimension

ENTITY curve_style;
  name : label;
  curve_font : curve_font_or_scaled_curve_font_select;
  curve_width : size_select;
  curve_colour : colour;
END_ENTITY; -- curve_style

ENTITY curve_style_font;
  name : label;
  pattern_list : LIST [1:?] OF curve_style_font_pattern;
END_ENTITY; -- curve_style_font

ENTITY curve_style_font_pattern;
  visible_segment_length : positive_length_measure;
  invisible_segment_length : positive_length_measure;
END_ENTITY; -- curve_style_font_pattern
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ENTITY curve_style_with_ends_and_corners
  SUBTYPE OF (curve_style);
  curve_ends      : squared_or_rounded;
  curve_corners   : squared_or_rounded;
END_ENTITY; -- curve_style_with_ends_and_corners

ENTITY date
  SUPERTYPE OF (calendar_date);
  year_component  : year_number;
END_ENTITY; -- date

ENTITY date_and_time;
  date_component  : date;
  time_component  : local_time;
END_ENTITY; -- date_and_time

ENTITY date_and_time_assignment
  ABSTRACT SUPERTYPE;
  assigned_date_and_time : date_and_time;
  role                   : date_time_role;
END_ENTITY; -- date_and_time_assignment

ENTITY date_assignment
  ABSTRACT SUPERTYPE;
  assigned_date          : date;
  role                   : date_role;
END_ENTITY; -- date_assignment

ENTITY date_role;
  name : label;
  DERIVE
  description : text := get_description_value(SELf);
  WHERE
  wr1: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL DESIGN.' +
    'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- date_role

ENTITY date_time_role;
  name : label;
  DERIVE
  description : text := get_description_value(SELf);
  WHERE
  wr1: (SIZEOF(USEDIN(SELf, 'ELECTROTECHNICAL DESIGN.' +
    'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- date_time_role

ENTITY dated_effectivity
  SUBTYPE OF (effectivity);
  effectivity_end_date : OPTIONAL
date_time_or_event_occurrence;
  effectivity_start_date : date_time_or_event_occurrence;
END_ENTITY; -- dated_effectivity

ENTITY datum_feature_callout

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    SUBTYPE OF (draughting_callout);
END_ENTITY; -- datum_feature_callout

ENTITY datum_target_callout
    SUBTYPE OF (draughting_callout);
END_ENTITY; -- datum_target_callout

ENTITY defined_character_glyph
    SUBTYPE OF (geometric_representation_item);
    definition : defined_glyph_select;
    placement  : axis2_placement;
END_ENTITY; -- defined_character_glyph

ENTITY defined_symbol
    SUBTYPE OF (geometric_representation_item);
    definition : defined_symbol_select;
    target     : symbol_target;
END_ENTITY; -- defined_symbol

ENTITY derived_unit;
    elements : SET [1:?] OF derived_unit_element;
    DERIVE
        name : label := get_name_value(SELF);
    WHERE
        wr1: ((SIZEOF(elements) > 1) OR ((SIZEOF(elements) = 1) AND (
            elements[1].exponent <> 1)));
        wr2: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
            'NAME ATTRIBUTE.NAMED_ITEM')) <= 1);
END_ENTITY; -- derived_unit

ENTITY derived_unit_element;
    unit      : named_unit;
    exponent  : REAL;
END_ENTITY; -- derived_unit_element

ENTITY derived_unit_variable
    SUBTYPE OF (derived_unit, variable_semantics);
    INVERSE
        associated_variable_environment : environment FOR semantics;
END_ENTITY; -- derived_unit_variable

ENTITY description_attribute;
    attribute_value : text;
    described_item  : description_attribute_select;
END_ENTITY; -- description_attribute

ENTITY descriptive_representation_item
    SUBTYPE OF (representation_item);
    description : text;
END_ENTITY; -- descriptive_representation_item

ENTITY diameter_dimension
    SUBTYPE OF (dimension_curve_directed_callout);
END_ENTITY; -- diameter_dimension
```

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ENTITY dimension_callout_component_relationship
  SUBTYPE OF (draughting_callout_relationship);
  WHERE
    wr1: (SELF.name IN ['prefix','suffix']);
    wr2: ('ELECTROTECHNICAL_DESIGN.STRUCTURED_DIMENSION_CALLOUT'
IN
      TYPEOF(SELF.relatng_draughting_callout));
    wr3: (SIZEOF(TYPEOF(SELF.related_draughting_callout) * [
      'ELECTROTECHNICAL_DESIGN.LEADER_DIRECTED_CALLOUT',
'ELECTROTECHNICAL_DESIGN.PROJECTION_DIRECTED_CALLOUT',
'ELECTROTECHNICAL_DESIGN.DIMENSION_CURVE_DIRECTED_CALLOUT',
'ELECTROTECHNICAL_DESIGN.STRUCTURED_DIMENSION_CALLOUT'])
      = 0);
    wr4: ((SELF.related_draughting_callout.contents * SELF.
      relating_draughting_callout.contents) = SELF.
      related_draughting_callout.contents);
    wr5: ((SELF.name = 'prefix') AND (SIZEOF(QUERY ( ato <*
      QUERY ( con <*
SELF.related_draughting_callout.contents | (
      'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN
        TYPEOF(con)) ) | (NOT (ato.name = 'prefix text')) ))
= 0));
    wr6: ((SELF.name = 'suffix') AND (SIZEOF(QUERY ( ato <*
      QUERY ( con <*
SELF.related_draughting_callout.contents | (
      'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN
        TYPEOF(con)) ) | (NOT (ato.name = 'suffix text')) ))
= 0));
  END_ENTITY; -- dimension_callout_component_relationship

ENTITY dimension_callout_relationship
  SUBTYPE OF (draughting_callout_relationship);
  WHERE
    wr1: (SELF.name IN ['primary','secondary']);
    wr2: (SIZEOF(TYPEOF(SELF.relatng_draughting_callout) * [
      'ELECTROTECHNICAL_DESIGN.ANGULAR_DIMENSION',
'ELECTROTECHNICAL_DESIGN.CURVE_DIMENSION',
'ELECTROTECHNICAL_DESIGN.DIAMETER_DIMENSION',
'ELECTROTECHNICAL_DESIGN.LEADER_DIRECTED_DIMENSION',
'ELECTROTECHNICAL_DESIGN.LINEAR_DIMENSION',
'ELECTROTECHNICAL_DESIGN.ORDINATE_DIMENSION',
'ELECTROTECHNICAL_DESIGN.RADIUS_DIMENSION']) >= 1);
    wr3: (SIZEOF(TYPEOF(SELF.related_draughting_callout) *
['ELECTROTECHNICAL_DESIGN.DIMENSION_CURVE_DIRECTED_CALLOUT',
'ELECTROTECHNICAL_DESIGN.PROJECTION_DIRECTED_CALLOUT',
'ELECTROTECHNICAL_DESIGN.LEADER_DIRECTED_CALLOUT']) =
0);
    wr4: ((SELF.related_draughting_callout.contents * SELF.

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        relating draughting_callout.contents) = SELF.
        related draughting_callout.contents);
END_ENTITY; -- dimension_callout_relationship

ENTITY dimension_curve
  SUBTYPE OF (annotation_curve_occurrence);
  WHERE
    wr1: (SIZEOF(QUERY ( dct <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'TERMINATOR_SYMBOL.ANNOTATED_CURVE') | ((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CURVE_TERMINATOR') IN TYPEOF(dct) )) <=
2);
    wr2: (SIZEOF(QUERY ( dcdc <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'DRAUGHTING_CALLOUT.CONTENTENTS') | ((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CURVE_DIRECTED_CALLOUT') IN TYPEOF(dcdc)
)) >= 1);
    wr3: ((SIZEOF(QUERY ( dct1 <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'TERMINATOR_SYMBOL.ANNOTATED_CURVE') | (((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CURVE_TERMINATOR') IN TYPEOF(dct1)) AND
(dct1.
      role = origin))) <= 1) AND (SIZEOF(QUERY ( dct2 <*
USEDIN(
      SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'TERMINATOR_SYMBOL.ANNOTATED_CURVE') | (((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CURVE_TERMINATOR') IN TYPEOF(dct2)) AND
(dct2.
      role = target))) <= 1));
END_ENTITY; -- dimension_curve

ENTITY dimension_curve_directed_callout
  SUBTYPE OF (draughting_callout);
  WHERE
    wr1: (SIZEOF(QUERY ( d_c <* SELF\draughting_callout.contents |
(
      'ELECTROTECHNICAL_DESIGN.DIMENSION_CURVE' IN
TYPEOF(d_c) ))
      = 1);
    wr2: (SIZEOF(SELF\draughting_callout.contents) >= 2);
END_ENTITY; -- dimension_curve_directed_callout

ENTITY dimension_curve_terminator
  SUBTYPE OF (terminator_symbol);
  role : dimension_extent_usage;
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.DIMENSION_CURVE' IN
TYPEOF(SELF\
      terminator_symbol.annotated_curve));
END_ENTITY; -- dimension_curve_terminator
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ENTITY dimension_pair
  SUBTYPE OF (draughting_callout_relationship);
  WHERE
    wr1: (SELF.name IN ['chained','parallel']);
    wr2: (SIZEOF(TYPEOF(SELF.relatering_draughting_callout) * [
      'ELECTROTECHNICAL_DESIGN.ANGULAR_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.CURVE_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.DIAMETER_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.LINEAR_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.ORDINATE_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.RADIUS_DIMENSION']) = 1);
    wr3: (SIZEOF(TYPEOF(SELF.related_draughting_callout) * [
      'ELECTROTECHNICAL_DESIGN.ANGULAR_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.CURVE_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.DIAMETER_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.LINEAR_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.ORDINATE_DIMENSION',
      'ELECTROTECHNICAL_DESIGN.RADIUS_DIMENSION']) = 1);
END_ENTITY; -- dimension_pair

ENTITY dimensional_exponents;
  length_exponent          : REAL;
  mass_exponent            : REAL;
  time_exponent            : REAL;
  electric_current_exponent : REAL;
  thermodynamic_temperature_exponent : REAL;
  amount_of_substance_exponent : REAL;
  luminous_intensity_exponent : REAL;
END_ENTITY; -- dimensional_exponents

ENTITY directed_action
  SUBTYPE OF (executed_action);
  directive : action_directive;
END_ENTITY; -- directed_action

ENTITY direction
  SUBTYPE OF (geometric_representation_item);
  direction_ratios : LIST [2:3] OF REAL;
  WHERE
    wr1: (SIZEOF(QUERY ( tmp <* direction_ratios | (tmp <> 0) )) >
0);
END_ENTITY; -- direction

ENTITY div_expression
  SUBTYPE OF (binary_numeric_expression);
END_ENTITY; -- div_expression

ENTITY document;
  id          : identifier;
  name        : label;
  description : OPTIONAL text;
  kind        : document_type;
  INVERSE
  representation_types : SET [0:?] OF
document_representation_type FOR

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                                represented_document;
END_ENTITY; -- document

ENTITY document_designation_assignment
  SUBTYPE OF (item_designation_assignment);
  WHERE
    wr1: (SIZEOF(QUERY ( i <* SELF.items | (SIZEOF(TYPEOF(i) * [
      'ELECTROTECHNICAL_DESIGN.' + 'DRAWING_REVISION',
      'ELECTROTECHNICAL_DESIGN.' +
'DRAWING_SHEET_REVISION',
      'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_DEFINITION'])) =
0) ))
      = 0);
    wr2: (SIZEOF(QUERY ( despd <* SELF.items | ((
      'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(
      despd)) AND (NOT (despd\product_definition.
      frame_of_reference.name IN ['conceptual definition',
      'functional occurrence', 'part occurrence',
      'system definition']))) )) = 0);
    wr3: (SIZEOF(TYPEOF(SELF) * ['ELECTROTECHNICAL_DESIGN.' +
      'DOCUMENT_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'SIGNAL_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'TERMINAL_DESIGNATION_ASSIGNMENT'])) = 1);
END_ENTITY; -- document_designation_assignment

ENTITY document_file
  SUBTYPE OF (document, characterized_object);
  WHERE
    wr1: (SELF\characterized_object.name = '');
    wr2: (NOT EXISTS(SELF\characterized_object.description));
    wr3: (SIZEOF(QUERY ( drt <* SELF\document.representation_types
| (
      drt.name IN ['digital', 'physical']) )) = 1);
END_ENTITY; -- document_file

ENTITY document_product_association;
  name          : label;
  description    : OPTIONAL text;
  relating_document : document;
  related_product  : product_or_formation_or_definition;
END_ENTITY; -- document_product_association

ENTITY document_product_equivalence
  SUBTYPE OF (document_product_association);
  WHERE
    wr1: (SELF.name = 'equivalence');
    wr2: ((NOT (('ELECTROTECHNICAL_DESIGN.' + 'PRODUCT') IN
TYPEOF(
      SELF.related_product))) OR
((SELF.relying_document.kind.
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        product_data_type = 'configuration controlled
document') AND
        (SIZEOF(QUERY ( prpc <* USEDIN(SELF.related_product,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(prpc.
name = 'document') )) = 1)));
wr3: ((NOT (('ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_FORMATION') IN TYPEOF(SELF.
related_product))) OR ((SELF.relying_document.kind.
product_data_type =
'configuration controlled document version') AND
(SIZEOF(
QUERY ( prpc <* USEDIN(SELF.related_product\
product_definition_formation.of_product,
'ELECTROTECHNICAL_DESIGN.'+
'PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS')
| (prpc.name = 'document') )) = 1)));
wr4: ((NOT (('ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION')
IN TYPEOF(SELF.related_product))) OR ((SELF.
relying_document.kind.product_data_type =
'configuration controlled document definition') AND
(SIZEOF(
QUERY ( prpc <* USEDIN(SELF.related_product\
product_definition.formation.of_product,
'ELECTROTECHNICAL_DESIGN.'+
'PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS')
| (prpc.name = 'document') )) = 1)));
END_ENTITY; -- document_product_equivalence

ENTITY document_reference
ABSTRACT SUPERTYPE;
    assigned_document : document;
    source             : label;
DERIVE
    role : object_role := get_role(SELF);
WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- document_reference

ENTITY document_relationship;
    name           : label;
    description    : OPTIONAL text;
    relating_document : document;
    related_document : document;
END_ENTITY; -- document_relationship

ENTITY document_representation_type;
    name           : label;
    represented_document : document;
END_ENTITY; -- document_representation_type

ENTITY document_type;

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    product_data_type : label;
END_ENTITY; -- document_type

ENTITY document_usage_constraint;
    source              : document;
    subject_element     : label;
    subject_element_value : text;
END_ENTITY; -- document_usage_constraint

ENTITY document_usage_constraint_assignment
    ABSTRACT SUPERTYPE;
    assigned_document_usage : document_usage_constraint;
    role                    : document_usage_role;
END_ENTITY; -- document_usage_constraint_assignment

ENTITY document_usage_role;
    name          : label;
    description   : OPTIONAL text;
END_ENTITY; -- document_usage_role

ENTITY draughting_annotation_occurrence
    SUBTYPE OF (annotation_occurrence);
    WHERE
        wr1 : ((NOT (
'ELECTROTECHNICAL_DESIGN.ANNOTATION_CURVE_OCCURRENCE'
            IN TYPEOF(SELF))) OR (SIZEOF(QUERY ( sty < *
SELF.styles | (
            NOT ((SIZEOF(sty.styles) = 1) AND (
'ELECTROTECHNICAL_DESIGN.CURVE_STYLE' IN TYPEOF(sty.
styles[1])))))) = 0));
        wr2 : ((NOT
('ELECTROTECHNICAL_DESIGN.ANNOTATION_FILL_AREA_OCCURRENCE'
            IN TYPEOF(SELF))) OR (SIZEOF(QUERY ( sty < *
SELF.styles | (
            NOT ((SIZEOF(sty.styles) = 1) AND (
'ELECTROTECHNICAL_DESIGN.FILL_AREA_STYLE' IN TYPEOF(
sty.styles[1])))))) = 0));
        wr3 : ((NOT
('ELECTROTECHNICAL_DESIGN.ANNOTATION_FILL_AREA_OCCURRENCE'
            IN TYPEOF(SELF))) OR (SIZEOF(QUERY ( bound < *
SELF.item\
            annotation_fill_area_boundaries | (NOT (SIZEOF(
QUERY ( si < *
USEDIN(bound, 'ELECTROTECHNICAL_DESIGN.'
            + 'STYLED_ITEM.ITEM') | (('ELECTROTECHNICAL_DESIGN.'
+
            'ANNOTATION_CURVE_OCCURRENCE') IN TYPEOF(si)) )) >
0)) ))
            = 0));
        wr4 : ((NOT
('ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL_OCCURRENCE'
            IN TYPEOF(SELF))) OR (SIZEOF(QUERY ( sty < *
SELF.styles | (
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NOT ((SIZEOF(sty.styles) = 1) AND
(SIZEOF(TYPEOF(sty.styles
[1]) * ['ELECTROTECHNICAL_DESIGN.SYMBOL_STYLE',
'ELECTROTECHNICAL_DESIGN.NULL_STYLE']) = 1))) ) =
0));
wr5 : ((NOT
(('ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL_OCCURRENCE'
IN TYPEOF(SELF)) AND (
'ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL' IN
TYPEOF(
SELF.item)))) OR (SIZEOF(['ELECTROTECHNICAL_DESIGN.'
+
'DRAUGHTING_SYMBOL_REPRESENTATION',
'ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_SUBFIGURE_REPRESENTATION'] *
TYPEOF(SELF.item)\
mapped_item.mapping_source.mapped_representation)) =
1));
wr6 : ((NOT (
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF))) OR (SIZEOF(QUERY ( sty <*
SELF.styles | (
NOT ((SIZEOF(sty.styles) = 1) AND (
'ELECTROTECHNICAL_DESIGN.TEXT_STYLE' IN TYPEOF(sty.
styles[1]))) ) ) = 0));
wr7 : (('ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN
TYPEOF(SELF)) OR (SIZEOF(TYPEOF(SELF.item) * [
'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT',
'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL']) = 1));
wr8 : ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND (
'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT' IN TYPEOF(
SELF.item)))) OR (SIZEOF(QUERY ( t1 <* SELF.item\
composite_text.collected_text | (NOT (
'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL' IN
TYPEOF(t1))) ) )
= 0));
wr9 : ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND (
'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL' IN
TYPEOF(SELF.
item)))) OR (SELF.item\text_literal.alignment IN [
'baseline left','baseline centre','baseline
right']));
wr10 : ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND (
'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT' IN TYPEOF(
SELF.item)))) OR (SIZEOF(QUERY ( t1 <* QUERY ( text
<* SELF
.item\composite_text.collected_text | (

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'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL' IN
TYPEOF(text)) )
| (NOT (tl\text_literal.alignment IN ['baseline
left',
'baseline centre','baseline right'])) ) = 0));
wr11: ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND (
'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT' IN TYPEOF(
SELF.item))) OR check_text_alignment(SELF.item));
wr12: ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND (
'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT' IN TYPEOF(
SELF.item))) OR check_text_font(SELF.item));
wr13: ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND (
'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT' IN TYPEOF(
SELF.item)))) OR (SIZEOF(QUERY ( tl <* QUERY ( text
<* SELF
.item\composite_text.collected_text | (
'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL' IN
TYPEOF(text)) )
| (NOT (SIZEOF(TYPEOF(tl) * [
'ELECTROTECHNICAL_DESIGN.' +
'TEXT_LITERAL_WITH_BLANKING_BOX',
'ELECTROTECHNICAL_DESIGN.' +
'TEXT_LITERAL_WITH_ASSOCIATED_CURVES']) = 0)) )) =
0));
wr14: ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND
('ELECTROTECHNICAL_DESIGN.TEXT_LITERAL_WITH_ASSOCIATED_CURVES'
IN TYPEOF(SELF.item))) OR (SIZEOF(QUERY ( crv <*
SELF.item
\text_literal_with_associated_curves.associated_curves | (
NOT (SIZEOF(QUERY ( si <* USEDIN(crv,
'ELECTROTECHNICAL_DESIGN.STYLED_ITEM.ITEM') | (
'ELECTROTECHNICAL_DESIGN.ANNOTATION_CURVE_OCCURRENCE'
IN TYPEOF(si)) )) > 0)) )) = 0));
wr15: ((NOT ((
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN TYPEOF(SELF)) AND
('ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT_WITH_ASSOCIATED_CURVES'
IN TYPEOF(SELF.item))) OR (SIZEOF(QUERY ( crv <*
SELF.item
\composite_text_with_associated_curves.associated_curves |
(NOT (SIZEOF(QUERY ( si <* USEDIN(crv,
'ELECTROTECHNICAL_DESIGN.STYLED_ITEM.ITEM') | (
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'ELECTROTECHNICAL_DESIGN.ANNOTATION_CURVE_OCCURRENCE'
  IN TYPEOF(si)) )) > 0)) )) = 0));
wr16: (SIZEOF(QUERY ( cs <* QUERY ( sty <* SELF.styles | (
  'ELECTROTECHNICAL_DESIGN.CURVE_STYLE' IN TYPEOF(sty.
  styles[1])) ) | (NOT ((
  'ELECTROTECHNICAL_DESIGN.LENGTH_MEASURE_WITH_UNIT'
IN
  TYPEOF(cs.styles[1]\curve_style.curve_width)) AND (
  'ELECTROTECHNICAL_DESIGN.POSITIVE_LENGTH_MEASURE' IN
  TYPEOF(cs.styles[1]\curve_style.curve_width\
  measure_with_unit.value_component)))))) = 0);
wr17: (SIZEOF(QUERY ( fas <* QUERY ( sty <* SELF.styles | (
  'ELECTROTECHNICAL_DESIGN.FILL_AREA_STYLE' IN TYPEOF(
sty.styles[1])) ) | (NOT ((SIZEOF(QUERY ( fs <*
fas.styles[
  1]\fill_area_style.fill_styles | (
  'ELECTROTECHNICAL_DESIGN.FILL_AREA_STYLE_TILES' IN
  TYPEOF(fs)) )) <= 1) AND (SIZEOF(QUERY ( fst <*
  QUERY ( fs <*
fas.styles[1]\fill_area_style.fill_styles | (
  'ELECTROTECHNICAL_DESIGN.FILL_AREA_STYLE_TILES' IN
  TYPEOF(fs)) ) | (NOT
(SIZEOF(fst\fill_area_style_tiles.
  tiles) = 1)) )) = 0))) )) = 0);
wr18: (SIZEOF(QUERY ( fas <* QUERY ( sty <* SELF.styles | (
  'ELECTROTECHNICAL_DESIGN.FILL_AREA_STYLE' IN TYPEOF(
sty.styles[1])) ) | (NOT (SIZEOF(QUERY ( fsh <*
  QUERY ( fs <*
fas.styles[1]\fill_area_style.fill_styles | (
  'ELECTROTECHNICAL_DESIGN.FILL_AREA_STYLE_HATCHING'
IN
  TYPEOF(fs)) ) | (NOT (fsh\fill_area_style_hatching.
  point_of_reference_hatch_line :=: fsh\
  fill_area_style_hatching.pattern_start)) )) = 0)) ))
= 0);
wr19: (SIZEOF(QUERY ( ts <* QUERY ( sty <* SELF.styles | (
  'ELECTROTECHNICAL_DESIGN.TEXT_STYLE' IN TYPEOF(sty.
  styles[1])) ) | (NOT (('ELECTROTECHNICAL_DESIGN.' +
  'TEXT_STYLE_WITH_BOX_CHARACTERISTICS') IN
  TYPEOF(ts.styles[
  1])))) )) = 0);
wr20: (SIZEOF(QUERY ( ts <* QUERY ( sty <* SELF.styles |
('ELECTROTECHNICAL_DESIGN.TEXT_STYLE_WITH_BOX_CHARACTERISTICS'
  IN TYPEOF(sty.styles[1])) ) | (NOT
(SIZEOF(ts.styles[1]\
  text_style_with_box_characteristics.characteristics)
= 4)) ))
= 0);
END_ENTITY; -- draughting_annotation_occurrence

ENTITY draughting_callout
  SUBTYPE OF (geometric_representation_item);
  contents : SET [1:?] OF draughting_callout_element;

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END_ENTITY; -- draughting_callout

ENTITY draughting_callout_relationship;
  name                : label;
  description         : text;
  relating_draughting_callout : draughting_callout;
  related_draughting_callout  : draughting_callout;
END_ENTITY; -- draughting_callout_relationship

ENTITY draughting_elements
  SUBTYPE OF (draughting_callout);
  WHERE
    wr1: (SIZEOF(QUERY ( l_c <* QUERY ( con <* SELF.contents | (
      'ELECTROTECHNICAL_DESIGN.LEADER_CURVE' IN
TYPEOF(con) )
      | (NOT (SIZEOF(QUERY ( ldc <* USEDIN(l_c,
      'ELECTROTECHNICAL_DESIGN.' +
      'DRAUGHTING_CALLOUT.CONTENTS') | (
      'ELECTROTECHNICAL_DESIGN.LEADER_DIRECTED_CALLOUT' IN
TYPEOF(ldc) ) ) <= 1) ) ) = 0);
    wr2: ((NOT
('ELECTROTECHNICAL_DESIGN.DIMENSION_CURVE_DIRECTED_CALLOUT'
IN TYPEOF(SELF))) OR (SIZEOF(QUERY ( con <*
SELF.contents |
      ('ELECTROTECHNICAL_DESIGN.PROJECTION_CURVE' IN
TYPEOF(
      con) ) ) <= 2));
    wr3: (SIZEOF(QUERY ( rc <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.DRAUGHTING_CALLOUT_' +
      'RELATIONSHIP.RELATING_DRAUGHTING_CALLOUT') | (((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CALLOUT_RELATIONSHIP') IN TYPEOF(rc)) AND
(rc.
      name = 'primary')) ) ) <= 1);
    wr4: (SIZEOF(QUERY ( rc <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.DRAUGHTING_CALLOUT_' +
      'RELATIONSHIP.RELATING_DRAUGHTING_CALLOUT') | (((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CALLOUT_RELATIONSHIP') IN TYPEOF(rc)) AND
(rc.
      name = 'secondary')) ) ) <= 1);
    wr5: (SIZEOF(QUERY ( sec <* QUERY ( rc <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.DRAUGHTING_CALLOUT_' +
      'RELATIONSHIP.RELATING_DRAUGHTING_CALLOUT') | (((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CALLOUT_RELATIONSHIP') IN TYPEOF(rc)) AND
(rc.
      name = 'secondary')) ) | (NOT (SIZEOF(QUERY ( prim <*
USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.DRAUGHTING_CALLOUT_' +
      'RELATIONSHIP.RELATING_DRAUGHTING_CALLOUT') | (((
      'ELECTROTECHNICAL_DESIGN.' +
      'DIMENSION_CALLOUT_RELATIONSHIP') IN TYPEOF(prim))
AND (prim
      .name = 'primary')) ) ) = 1) ) ) = 0);
```

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END_ENTITY; -- draughting_elements

ENTITY draughting_group_elements_assignment
  SUBTYPE OF (group_assignment);
  items : SET [1:?] OF draughting_group_element;
END_ENTITY; -- draughting_group_elements_assignment

ENTITY draughting_model
  SUBTYPE OF (representation);
  UNIQUE
  url : name;
  WHERE
  wr1: (SIZEOF(QUERY ( it <* SELF.items | (NOT (SIZEOF([
    'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM',
    'ELECTROTECHNICAL_DESIGN.STYLED_ITEM',
    'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT'] *
    TYPEOF(it))
    = 1)) )) = 0);
  wr2: (SIZEOF(QUERY ( mi <* QUERY ( it <* SELF.items | (
    'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN TYPEOF(it))
  )
  | (NOT
  ('ELECTROTECHNICAL_DESIGN.SHAPE_REPRESENTATION'
  IN TYPEOF(mi\mapped_item.mapping_source.
  mapped_representation))) )) = 0);
  wr3: (SIZEOF(QUERY ( smi <* QUERY ( si <* QUERY ( it <*
  SELF.items
  | ('ELECTROTECHNICAL_DESIGN.STYLED_ITEM' IN
  TYPEOF(it)) )
  | ('ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN
  TYPEOF(si\
  styled_item.item)) ) | (NOT ((
  'ELECTROTECHNICAL_DESIGN.SHAPE_REPRESENTATION' IN
  TYPEOF(smi\styled_item.item\mapped_item.mapping_source.
  mapped_representation)) AND (SIZEOF(QUERY ( sty <*
  smi\
  styled_item.styles | (NOT (SIZEOF(QUERY ( psa <*
  sty.styles
  | (NOT (('ELECTROTECHNICAL_DESIGN.' + 'CURVE_STYLE')
  IN TYPEOF(psa))) )) = 1)) )) = 1))) )) = 0);
END_ENTITY; -- draughting_model

ENTITY draughting_pre_defined_colour
  SUBTYPE OF (pre_defined_colour);
  WHERE
  wr1: (SELF.name IN
  ['black', 'red', 'green', 'blue', 'yellow', 'magenta',
  'cyan', 'white']);
END_ENTITY; -- draughting_pre_defined_colour

ENTITY draughting_pre_defined_curve_font
  SUBTYPE OF (pre_defined_curve_font);
  WHERE
  wr1: (SELF.name IN ['continuous', 'chain', 'chain double dash',

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        'dashed','dotted']);
END_ENTITY; -- draughting_pre_defined_curve_font

ENTITY draughting_pre_defined_text_font
  SUBTYPE OF (pre_defined_text_font);
  WHERE
    wr1: (SELF.name IN ['ISO 3098-1 font A','ISO 3098-1 font B']);
END_ENTITY; -- draughting_pre_defined_text_font

ENTITY draughting_presented_item
  SUBTYPE OF (presented_item);
  items : SET [1:?] OF draughting_presented_item_select;
  WHERE
    wr1: (SIZEOF(QUERY ( pir <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'PRESENTED_ITEM_REPRESENTATION.ITEM') | (NOT (
      'ELECTROTECHNICAL_DESIGN.DRAWING_REVISION' IN TYPEOF(
      pir.presentation))) ) = 0);
END_ENTITY; -- draughting_presented_item

ENTITY draughting_specification_reference
  SUBTYPE OF (document_reference);
  specified_items : SET [1:?] OF specified_item;
  WHERE
    wr1: (SELF.assigned_document.kind.product_data_type =
      'draughting_specification');
END_ENTITY; -- draughting_specification_reference

ENTITY draughting_subfigure_representation
  SUBTYPE OF (symbol_representation);
  WHERE
    wr1: (SIZEOF(QUERY ( item <* SELF\representation.items | (NOT
(
  SIZEOF(['ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE',
    'ELECTROTECHNICAL_DESIGN.DRAUGHTING_CALLOUT',
    'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT'] * TYPEOF(
    item)) = 1)) ) = 0);
    wr2: (SIZEOF(QUERY ( item <* SELF\representation.items |
(SIZEOF([
      'ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE',
      'ELECTROTECHNICAL_DESIGN.DRAUGHTING_CALLOUT'] *
TYPEOF(
      item)) = 1) )) >= 1);
    wr3: (SIZEOF(QUERY ( srm <* QUERY ( rm <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'REPRESENTATION_MAP.MAPPED_REPRESENTATION') | (
      'ELECTROTECHNICAL_DESIGN.SYMBOL_REPRESENTATION_MAP'
IN
      TYPEOF(rm)) ) | (NOT (SIZEOF(QUERY ( a_s <* QUERY (
mi <*
      srm.map_usage | (
      'ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL' IN
TYPEOF(
      mi)) ) | (NOT (SIZEOF(QUERY ( aso <* USEDIN(a_s,
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        'ELECTROTECHNICAL_DESIGN.' + 'STYLED_ITEM.ITEM') | (
        NOT
('ELECTROTECHNICAL_DESIGN.ANNOTATION_SUBFIGURE_OCCURRENCE'
        IN TYPEOF(aso))) ) = 0)) ) = 0)) ) > 0);
        wr4: (NOT acyclic_mapped_item_usage(SELf));
        wr5: (SIZEOF(SELf.context_of_items.representations_in_context)
= 1);
END_ENTITY; -- draughting_subfigure_representation

ENTITY draughting_symbol_representation
SUBTYPE OF (symbol_representation);
UNIQUE
    url : name;
WHERE
    wr1: (SIZEOF(QUERY ( item <* SELf\representation.items | (NOT
(
        SIZEOF(TYPEOF(item) * [
'ELECTROTECHNICAL_DESIGN.ANNOTATION_CURVE_OCCURRENCE',
'ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL_OCCURRENCE',
'ELECTROTECHNICAL_DESIGN.ANNOTATION_FILL_AREA_OCCURRENCE',
        'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE',
'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT']) = 1)) ))
=
        0);
        wr2: (SIZEOF(QUERY ( item <* SELf\representation.items |
(SIZEOF(
        TYPEOF(item) * [
'ELECTROTECHNICAL_DESIGN.ANNOTATION_CURVE_OCCURRENCE',
'ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL_OCCURRENCE',
'ELECTROTECHNICAL_DESIGN.ANNOTATION_FILL_AREA_OCCURRENCE',
'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'])
        = 1) )) >= 1);
        wr3: (SIZEOF(QUERY ( item <* SELf\representation.items |
('ELECTROTECHNICAL_DESIGN.ANNOTATION_SUBFIGURE_OCCURRENCE'
        IN TYPEOF(item)) ) = 0);
        wr4: (SIZEOF(QUERY ( srm <* QUERY ( rm <* USEDIN(SELf,
        'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION_MAP.MAPPED_REPRESENTATION') | (
        'ELECTROTECHNICAL_DESIGN.SYMBOL_REPRESENTATION_MAP'
IN
        TYPEOF(rm)) ) | (NOT (SIZEOF(QUERY ( a_s <* QUERY (
mi <*
        srm.map_usage | (
        'ELECTROTECHNICAL_DESIGN.ANNOTATION_SYMBOL' IN
TYPEOF(
        mi)) ) | (NOT (SIZEOF(QUERY ( aso <* USEDIN(a_s,
        'ELECTROTECHNICAL_DESIGN.' + 'STYLED_ITEM.ITEM') | (

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NOT (

'ELECTROTECHNICAL_DESIGN_ANNOTATION_SYMBOL_OCCURRENCE'
    IN TYPEOF(aso))) ) = 0)) ) = 0)) ) > 0);
    wr5: (NOT acyclic_mapped_item_usage(SELF));
    wr6: (SIZEOF(SELF.context_of_items.representations_in_context)
= 1);
END_ENTITY; -- draughting_symbol_representation

ENTITY draughting_text_literal_with_delineation
    SUBTYPE OF (text_literal_with_delineation);
    WHERE
        wr1: (SELF.delineation IN ['underline','overline']);
END_ENTITY; -- draughting_text_literal_with_delineation

ENTITY draughting_title;
    items      : SET [1:?] OF draughting_titled_item;
    language   : label;
    contents   : text;
END_ENTITY; -- draughting_title

ENTITY drawing_definition;
    drawing_number : identifier;
    drawing_type   : OPTIONAL label;
END_ENTITY; -- drawing_definition

ENTITY drawing_revision
    SUBTYPE OF (presentation_set);
    revision_identifier : identifier;
    drawing_identifier  : drawing_definition;
    intended_scale      : OPTIONAL text;
    UNIQUE
        url : revision_identifier, drawing_identifier;
END_ENTITY; -- drawing_revision

ENTITY drawing_revision_sequence;
    predecessor : drawing_revision;
    successor   : drawing_revision;
    WHERE
        wr1: (predecessor :<>: successor);
END_ENTITY; -- drawing_revision_sequence

ENTITY drawing_sheet_layout
    SUBTYPE OF (draughting_symbol_representation);
END_ENTITY; -- drawing_sheet_layout

ENTITY drawing_sheet_revision
    SUBTYPE OF (presentation_area);
    revision_identifier : identifier;
    WHERE
        wr1: (SIZEOF(QUERY ( item <* SELF\representation.items | ((
            'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN
TYPEOF(item))
            AND ('ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION'
            IN TYPEOF(item\mapped_item.mapping_source.
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        mapped_representation))) )) = 0);
END_ENTITY; -- drawing_sheet_revision

ENTITY drawing_sheet_revision_usage
  SUBTYPE OF (area_in_set);
  sheet_number : identifier;
  UNIQUE
  url : sheet_number, in_set;
  WHERE
    wr1: (('ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION' IN
          TYPEOF(SELF\area_in_set.area)) AND (
          'ELECTROTECHNICAL_DESIGN.DRAWING_REVISION' IN TYPEOF(
          SELF\area_in_set.in_set)));
END_ENTITY; -- drawing_sheet_revision_usage

ENTITY edge
  SUPERTYPE OF (ONEOF (edge_curve, oriented_edge))
  SUBTYPE OF (topological_representation_item);
  edge_start : vertex;
  edge_end   : vertex;
END_ENTITY; -- edge

ENTITY edge_curve
  SUBTYPE OF (edge, geometric_representation_item);
  edge_geometry : curve;
  same_sense    : BOOLEAN;
END_ENTITY; -- edge_curve

ENTITY effectivity
  SUPERTYPE OF (ONEOF
(serial_numbered_effectivity, dated_effectivity,
 lot_effectivity, time_interval_based_effectivity));
  id : identifier;
  DERIVE
    name      : label := get_name_value(SELF);
    description : text := get_description_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1);
    wr2: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- effectivity

ENTITY effectivity_assignment
  ABSTRACT SUPERTYPE;
  assigned_effectivity : effectivity;
  DERIVE
    role : object_role := get_role(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- effectivity_assignment

ENTITY effectivity_context_assignment
  ABSTRACT SUPERTYPE;

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        assigned_effectivity_assignment : effectivity_assignment;
        role                             : effectivity_context_role;
END_ENTITY; -- effectivity_context_assignment

ENTITY effectivity_context_role;
    name          : label;
    description   : OPTIONAL text;
END_ENTITY; -- effectivity_context_role

ENTITY effectivity_relationship;
    name          : label;
    description   : OPTIONAL text;
    related_effectivity : effectivity;
    relating_effectivity : effectivity;
END_ENTITY; -- effectivity_relationship

ENTITY electric_current_measure_with_unit
    SUBTYPE OF (measure_with_unit);
    WHERE
        wr1: ('ELECTROTECHNICAL_DESIGN.ELECTRIC_CURRENT_UNIT' IN
              TYPEOF(SELF\measure_with_unit.unit_component));
END_ENTITY; -- electric_current_measure_with_unit

ENTITY electric_current_unit
    SUBTYPE OF (named_unit);
    WHERE
        wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
              (SELF\named_unit.dimensions.mass_exponent = 0) AND (SELF\named_unit.dimensions.time_exponent = 0) AND (SELF\named_unit.dimensions.electric_current_exponent = 1)
              AND (
                  SELF\named_unit.dimensions.thermodynamic_temperature_exponent = 0) AND
              (SELF\named_unit.dimensions.amount_of_substance_exponent = 0) AND
              (SELF\named_unit.dimensions.luminous_intensity_exponent =
              0));
END_ENTITY; -- electric_current_unit

ENTITY ellipse
    SUBTYPE OF (conic);
    semi_axis_1 : positive_length_measure;
    semi_axis_2 : positive_length_measure;
END_ENTITY; -- ellipse

ENTITY environment;
    syntactic_representation : generic_variable;
    semantics                 : variable_semantics;
END_ENTITY; -- environment

ENTITY equals_expression
    SUBTYPE OF (binary_boolean_expression);
END_ENTITY; -- equals_expression
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ENTITY equipment_marking
  SUBTYPE OF (shape_aspect);
  WHERE
    wr1: (SIZEOF(QUERY ( pd <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.' +
      'DEFINITION') | (pd.name = 'information content') ))
= 1);
    wr2: (SIZEOF(QUERY ( pd <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.' +
      'DEFINITION') | (SIZEOF(QUERY ( pdr <* USEDIN(pd,
      'ELECTROTECHNICAL_DESIGN.' +
      'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr
location',
      .used_representation.name IN ['linear pattern
      'marking location'])) = 1) )) < 2);
    wr3: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_CLASSIFICATION_ASSIGNMENT.' + 'ITEMS')) =
1);
    wr4: (SIZEOF(QUERY ( aca <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_CLASSIFICATION_ASSIGNMENT.' + 'ITEMS') |
(aca.role.
      name = 'class system membership') )) = 1);
  END_ENTITY; -- equipment_marking

ENTITY event_occurrence;
  id      : identifier;
  name    : label;
  description : OPTIONAL text;
  END_ENTITY; -- event_occurrence

ENTITY event_occurrence_assignment
  ABSTRACT SUPERTYPE;
  assigned_event_occurrence : event_occurrence;
  role                      : event_occurrence_role;
  END_ENTITY; -- event_occurrence_assignment

ENTITY event_occurrence_role;
  name      : label;
  description : OPTIONAL text;
  END_ENTITY; -- event_occurrence_role

ENTITY exclusive_product_concept_feature_category
  SUBTYPE OF (product_concept_feature_category);
  END_ENTITY; -- exclusive_product_concept_feature_category

ENTITY executed_action
  SUBTYPE OF (action);
  END_ENTITY; -- executed_action

ENTITY exp_function
  SUBTYPE OF (unary_function_call);
  END_ENTITY; -- exp_function

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ENTITY expression
  ABSTRACT SUPERTYPE OF (ONEOF
(numeric_expression,boolean_expression,
  string_expression))
  SUBTYPE OF (generic_expression);
END_ENTITY; -- expression

ENTITY expression_conversion_based_unit
  SUBTYPE OF (context_dependent_unit, variable_semantics);
  INVERSE
    associated_variable_environment : environment FOR semantics;
END_ENTITY; -- expression_conversion_based_unit

ENTITY external_identification_assignment
  ABSTRACT SUPERTYPE
  SUBTYPE OF (identification_assignment);
  source : external_source;
END_ENTITY; -- external_identification_assignment

ENTITY external_source;
  source_id : source_item;
  DERIVE
    description : text := get_description_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
      'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- external_source

ENTITY externally_defined_character_glyph
  SUBTYPE OF (externally_defined_item);
END_ENTITY; -- externally_defined_character_glyph

ENTITY externally_defined_class
  SUBTYPE OF (class, externally_defined_item);
  WHERE
    wr1: (SIZEOF(QUERY ( a <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_ORGANIZATION_ASSIGNMENT.' + 'ITEMS') |
(a.role.name
  = 'library supplier') )) = 1);
    wr2: (SIZEOF(QUERY ( a <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.' +
'ITEMS') | (
  a.role.name = 'version') )) = 1);
    wr3: (SIZEOF(QUERY ( a <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.' +
'ITEMS') | (
  (a.role.name = 'version') AND
  (NOT (SELF.source ==: a.source))) )
  = 0);
    wr4: (SIZEOF(QUERY ( a <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
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        'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(a.role.
        name = 'version') )) = 0);
END_ENTITY; -- externally_defined_class

ENTITY externally_defined_curve_font
  SUBTYPE OF (externally_defined_item);
END_ENTITY; -- externally_defined_curve_font

ENTITY externally_defined_general_property
  SUBTYPE OF (general_property, externally_defined_item);
END_ENTITY; -- externally_defined_general_property

ENTITY externally_defined_hatch_style
  SUBTYPE OF (externally_defined_item,
geometric_representation_item);
END_ENTITY; -- externally_defined_hatch_style

ENTITY externally_defined_item;
  item_id : source_item;
  source : external_source;
END_ENTITY; -- externally_defined_item

ENTITY externally_defined_item_relationship;
  name : label;
  description : OPTIONAL text;
  relating_item : externally_defined_item;
  related_item : externally_defined_item;
END_ENTITY; -- externally_defined_item_relationship

ENTITY externally_defined_style
  SUBTYPE OF (externally_defined_item);
END_ENTITY; -- externally_defined_style

ENTITY externally_defined_symbol
  SUBTYPE OF (externally_defined_item);
END_ENTITY; -- externally_defined_symbol

ENTITY externally_defined_text_font
  SUBTYPE OF (externally_defined_item);
END_ENTITY; -- externally_defined_text_font

ENTITY externally_defined_tile_style
  SUBTYPE OF (externally_defined_item,
geometric_representation_item);
END_ENTITY; -- externally_defined_tile_style

ENTITY fill_area_style;
  name : label;
  fill_styles : SET [1:?] OF fill_style_select;
WHERE
  wr1: (SIZEOF(QUERY ( fill_style <* SELF.fill_styles | ((
        'ELECTROTECHNICAL_DESIGN.' +
'FILL_AREA_STYLE_COLOUR')
        IN TYPEOF(fill_style)) )) <= 1);

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END_ENTITY; -- fill_area_style

ENTITY fill_area_style_colour;
    name      : label;
    fill_colour : colour;
END_ENTITY; -- fill_area_style_colour

ENTITY fill_area_style_hatching
    SUBTYPE OF (geometric_representation_item);
    hatch_line_appearance      : curve_style;
    start_of_next_hatch_line   : one_direction_repeat_factor;
    point_of_reference_hatch_line : cartesian_point;
    pattern_start               : cartesian_point;
    hatch_line_angle            : plane_angle_measure;
END_ENTITY; -- fill_area_style_hatching

ENTITY fill_area_style_tile_symbol_with_style
    SUBTYPE OF (geometric_representation_item);
    symbol : annotation_symbol_occurrence;
END_ENTITY; -- fill_area_style_tile_symbol_with_style

ENTITY fill_area_style_tiles
    SUBTYPE OF (geometric_representation_item);
    tiling_pattern : two_direction_repeat_factor;
    tiles          : SET [1:?] OF
fill_area_style_tile_shape_select;
    tiling_scale : positive_ratio_measure;
END_ENTITY; -- fill_area_style_tiles

ENTITY format_function
    SUBTYPE OF (string_expression, binary_generic_expression);
    DERIVE
        value_to_format : generic_expression := SELF\
                                binary_generic_expression.operands[1];
        format_string   : generic_expression := SELF\
                                binary_generic_expression.operands[2];
    WHERE
        wr1: (('ELECTROTECHNICAL DESIGN.NUMERIC_EXPRESSION' IN TYPEOF(
                value_to_format)) AND (
                'ELECTROTECHNICAL DESIGN.STRING_EXPRESSION' IN
TYPEOF(
                format_string)));
END_ENTITY; -- format_function

ENTITY founded_item;
END_ENTITY; -- founded_item

ENTITY free_segment
    SUBTYPE OF (installation_segment);
    WHERE
        wr1: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
                'ELECTROTECHNICAL DESIGN.' +
                'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
                sar.name = 'segment termination') AND (
```



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        'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE' IN
TYPEOF(
        sar.related_shape_aspect))) )) > 0);
END_ENTITY; -- free_segment

ENTITY functionally_defined_transformation;
    name      : label;
    description : OPTIONAL text;
END_ENTITY; -- functionally_defined_transformation

ENTITY general_property;
    id        : identifier;
    name      : label;
    description : OPTIONAL text;
END_ENTITY; -- general_property

ENTITY general_property_association;
    name          : label;
    description   : OPTIONAL text;
    base_definition : general_property;
    derived_definition : derived_property_select;
    WHERE
        wr1: (SIZEOF(USEDIN(derived_definition,
            'ELECTROTECHNICAL_DESIGN.' +
            'GENERAL_PROPERTY_ASSOCIATION.' +
'DERIVED_DEFINITION')) = 1);
        wr2: (derived_definition.name = base_definition.name);
END_ENTITY; -- general_property_association

ENTITY general_property_relationship;
    name          : label;
    description   : OPTIONAL text;
    relating_property : general_property;
    related_property  : general_property;
END_ENTITY; -- general_property_relationship

ENTITY generic_expression
    ABSTRACT SUPERTYPE OF (ONEOF (simple_generic_expression,
        unary_generic_expression, binary_generic_expression,
        multiple_arity_generic_expression));
    WHERE
        wr1: is_acyclic(SELF);
END_ENTITY; -- generic_expression

ENTITY generic_literal
    ABSTRACT SUPERTYPE
    SUBTYPE OF (simple_generic_expression);
END_ENTITY; -- generic_literal

ENTITY generic_variable
    ABSTRACT SUPERTYPE
    SUBTYPE OF (simple_generic_expression);
    INVERSE
        interpretation : environment FOR syntactic_representation;
END_ENTITY; -- generic_variable

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```
ENTITY geometric_representation_context
  SUBTYPE OF (representation_context);
  coordinate_space_dimension : dimension_count;
END_ENTITY; -- geometric_representation_context

ENTITY geometric_representation_item
  SUPERTYPE OF (ONEOF (point,direction,vector,placement,
cartesian_transformation_operator,curve,edge_curve,vertex_point))
  SUBTYPE OF (representation_item);
  DERIVE
    dim : dimension_count := dimension_of(SELF);
  WHERE
    wr1: (SIZEOF(QUERY ( using_rep <* using_representations(SELF)
| (
      NOT
('ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_CONTEXT'
  IN TYPEOF(using_rep.context_of_items))) ) = 0);
END_ENTITY; -- geometric_representation_item

ENTITY geometrical_tolerance_callout
  SUBTYPE OF (draughting_callout);
END_ENTITY; -- geometrical_tolerance_callout

ENTITY global_uncertainty_assigned_context
  SUBTYPE OF (representation_context);
  uncertainty : SET [1:?] OF uncertainty_measure_with_unit;
END_ENTITY; -- global_uncertainty_assigned_context

ENTITY global_unit_assigned_context
  SUBTYPE OF (representation_context);
  units : SET [1:?] OF unit;
END_ENTITY; -- global_unit_assigned_context

ENTITY group;
  name : label;
  description : OPTIONAL text;
  DERIVE
    id : identifier := get_id_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
      'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- group

ENTITY group_assignment
  ABSTRACT SUPERTYPE;
  assigned_group : group;
  DERIVE
    role : object_role := get_role(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
      'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- group_assignment
```

```

ENTITY group_relationship;
    name          : label;
    description    : OPTIONAL text;
    relating_group : group;
    related_group  : group;
END_ENTITY; -- group_relationship

ENTITY hyperbola
    SUBTYPE OF (conic);
    semi_axis      : positive_length_measure;
    semi_imag_axis : positive_length_measure;
END_ENTITY; -- hyperbola

ENTITY id_attribute;
    attribute_value : identifier;
    identified_item : id_attribute_select;
END_ENTITY; -- id_attribute

ENTITY identification_assignment
    ABSTRACT SUPERTYPE;
    assigned_id : identifier;
    role        : identification_role;
END_ENTITY; -- identification_assignment

ENTITY identification_assignment_relationship;
    name          : label;
    description    : OPTIONAL text;
    relating_identification_assignment :
identification_assignment;
    related_identification_assignment :
identification_assignment;
END_ENTITY; -- identification_assignment_relationship

ENTITY identification_role;
    name          : label;
    description    : OPTIONAL text;
END_ENTITY; -- identification_role

ENTITY inclusion_product_concept_feature
    SUBTYPE OF (conditional_concept_feature);
    WHERE
        wr1: (NOT (('ELECTROTECHNICAL_DESIGN.' +
                    'PACKAGE_PRODUCT_CONCEPT_FEATURE') IN TYPEOF(SELF)));
        wr2: ((SIZEOF(QUERY ( cfr <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.CONCEPT_FEATURE_RELATIONSHIP.'
+ 'RELATING_PRODUCT_CONCEPT_FEATURE') | ((
'ELECTROTECHNICAL_DESIGN.' +
'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION') IN
TYPEOF(cfr)) ))
+ SIZEOF(QUERY ( cfr <*
USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.CONCEPT_FEATURE_RELATIONSHIP.'
+ 'RELATED_PRODUCT_CONCEPT_FEATURE') | ((
'ELECTROTECHNICAL_DESIGN.' +
'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION')

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```
                IN TYPEOF(cfr)) )))
                = 0);
    wr3: (SELF.condition.conditional_operator.name =
'implication');
    END_ENTITY; -- inclusion_product_concept_feature

ENTITY index_expression
    SUBTYPE OF (string_expression, binary_generic_expression);
    DERIVE
        operand : generic_expression :=
SELF\binary_generic_expression.
                operands[1];
        index   : generic_expression :=
SELF\binary_generic_expression.
                operands[2];
    WHERE
        wr1: (('ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN TYPEOF(
                operand)) AND (
                'ELECTROTECHNICAL_DESIGN.NUMERIC_EXPRESSION' IN
TYPEOF(
                index)));
        wr2: is_int_expr(index);
    END_ENTITY; -- index_expression

ENTITY installation_location
    SUBTYPE OF (shape_aspect);
    WHERE
        wr1: (SIZEOF(TYPEOF(SELF) * [
                'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
'ELECTROTECHNICAL_DESIGN.SPECIFIED_HIGHER_USAGE_OCCURRENCE'])
                = 1);
        wr2:
(SELF.of_shape.definition\product_definition.frame_of_reference
                .name IN ['conceptual definition', 'functional
definition',
                'functional occurrence', 'part definition', 'part
occurrence',
                'physical occurrence', 'system definition']);
        wr3:
(((SELF.of_shape.definition\product_definition_relationship.
                relating_product_definition.frame_of_reference.name =
                'functional definition') AND
(SELF.of_shape.definition\
product_definition_relationship.related_product_definition.
                frame_of_reference.name = 'functional occurrence'))
XOR ((
SELF.of_shape.definition\product_definition_relationship.
                relating_product_definition.frame_of_reference.name =
                'part definition') AND (SELF.of_shape.definition\
product_definition_relationship.related_product_definition.
```

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frame_of_reference.name = 'part occurrence') AND
(SELF.
of_shape.definition\product_definition_relationship.
related_product_definition.name = 'single
instance')));
wr4: (SIZEOF(QUERY ( des <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
des) * ['ELECTROTECHNICAL_DESIGN.' +
'DOCUMENT_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'SIGNAL_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'TERMINAL_DESIGNATION_ASSIGNMENT']) > 0) )) = 0);
wr5: (SIZEOF(QUERY ( des <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
'ELECTROTECHNICAL_DESIGN.' +
'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT') IN
TYPEOF(des))
AND (des.role.description = 'primary')) )) = 1);
wr6: (SIZEOF(QUERY ( i <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
name = 'version') )) < 2);
END_ENTITY; -- installation_location

ENTITY installation_node
SUBTYPE OF (shape_aspect);
END_ENTITY; -- installation_node

ENTITY installation_route
SUBTYPE OF (shape_aspect);
WHERE
wr1: (SIZEOF(QUERY ( i <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
name = 'version') )) < 2);
END_ENTITY; -- installation_route

ENTITY installation_section
SUBTYPE OF (shape_aspect);
WHERE
wr1: (SIZEOF(QUERY ( i <* USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
name = 'version') )) < 2);
END_ENTITY; -- installation_section

ENTITY installation_section_end
SUBTYPE OF (shape_aspect);

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```
WHERE
  wr1: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
  sar.name = 'section end') AND (
    'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION' IN
    TYPEOF(sar.related_shape_aspect))) )) = 1);
  wr2: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
  sar.name = 'section end residence') AND (
    'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE' IN
TYPEOF(
  sar.related_shape_aspect))) )) < 2);
END_ENTITY; -- installation_section_end

ENTITY installation_section_interface
  SUBTYPE OF (shape_aspect);
WHERE
  wr1: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
  sar.name = 'section end joint') AND (
    'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END' IN
    TYPEOF(sar.related_shape_aspect))) )) > 0);
  wr3: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
  sar.name = 'section interface residence') AND (
    'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE' IN
TYPEOF(
  sar.related_shape_aspect))) )) <= 1);
  wr4: (SIZEOF(QUERY ( i <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
  name = 'version') )) < 2);
END_ENTITY; -- installation_section_interface

ENTITY installation_segment
  ABSTRACT SUPERTYPE
  SUBTYPE OF (shape_aspect);
END_ENTITY; -- installation_segment

ENTITY int_literal
  SUBTYPE OF (literal_number);
  SELF\literal_number.the_value : INTEGER;
END_ENTITY; -- int_literal

ENTITY int_numeric_variable
  SUBTYPE OF (numeric_variable);
```

```

END_ENTITY; -- int_numeric_variable

ENTITY int_value_function
  SUBTYPE OF (value_function);
END_ENTITY; -- int_value_function

ENTITY interface
  SUBTYPE OF (shape_aspect);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN TYPEOF(
SELF\shape_aspect.of_shape\property_definition.definition));
    wr2:
(SELF\shape_aspect.of_shape\property_definition.definition.
frame_of_reference\application_context_element.name
IN [
      'functional definition','part definition']);
    wr3: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
      sar.name = 'external access') AND (
      'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
      related_shape_aspect))) ) ) > 0);
END_ENTITY; -- interface

ENTITY interval_expression
  SUBTYPE OF (boolean_expression,
multiple_arity_generic_expression);
  DERIVE
    interval_low : generic_expression := SELF\
multiple_arity_generic_expression.operands[1];
    interval_item : generic_expression := SELF\
multiple_arity_generic_expression.operands[2];
    interval_high : generic_expression := SELF\
multiple_arity_generic_expression.operands[3];
  WHERE
    wr1: (('ELECTROTECHNICAL_DESIGN.EXPRESSION' IN TYPEOF(
interval_low)) AND (
'ELECTROTECHNICAL_DESIGN.EXPRESSION' IN TYPEOF(
interval_item)) AND (
'ELECTROTECHNICAL_DESIGN.EXPRESSION' IN TYPEOF(
interval_high)));
    wr2: ((( 'ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN TYPEOF(
SELF.interval_low)) AND (
'ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN
TYPEOF(
SELF.interval_high)) AND (
'ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN
TYPEOF(
SELF.interval_item))) OR ((

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```
        'ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN
TYPEOF(
        SELF.interval_low)) AND (
        'ELECTROTECHNICAL_DESIGN.NUMERIC_EXPRESSION' IN
TYPEOF(
        SELF.interval_item)) AND (
        'ELECTROTECHNICAL_DESIGN.NUMERIC_EXPRESSION' IN
TYPEOF(
        SELF.interval_high))));
END_ENTITY; -- interval_expression

ENTITY invisibility;
    invisible_items : SET [1:?] OF invisible_item;
END_ENTITY; -- invisibility

ENTITY item_defined_transformation;
    name          : label;
    description    : OPTIONAL text;
    transform_item_1 : representation_item;
    transform_item_2 : representation_item;
END_ENTITY; -- item_defined_transformation

ENTITY item_designation_assignment
    SUBTYPE OF (identification_assignment);
    items : SET [1:?] OF item_designation_item;
    WHERE
        wr1: (SIZEOF(SELF.items) = 1);
        wr2: (SELF\identification_assignment.role.description IN
['alias',
        'primary']);
        wr3: (NOT (SELF\identification_assignment.role.name IN
['alias', 'id',
        'version']));
        wr4: (SIZEOF(QUERY ( aca <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_CLASSIFICATION_ASSIGNMENT.' + 'ITEMS') | (
        'ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM' IN TYPEOF(aca.
        assigned_class)) )) < 2);
        wr5: (SIZEOF(QUERY ( aoa <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_ORGANIZATION_ASSIGNMENT.' + 'ITEMS') |
(aoa.role.
        name = 'item designation scope') )) < 2);
        wr6: (SIZEOF(QUERY ( i <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
        name = 'version') )) < 2);
END_ENTITY; -- item_designation_assignment

ENTITY known_source
    SUBTYPE OF (external_source, pre_defined_item);
END_ENTITY; -- known_source

ENTITY language
```



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SUBTYPE OF (group);
WHERE
  wr1: ((SIZEOF(QUERY ( ca <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'CLASSIFICATION_ASSIGNMENT.' + 'ASSIGNED_CLASS') | ((
    'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE_ASSIGNMENT')
IN
    TYPEOF(ca) ) ) > 0) OR (SIZEOF(QUERY ( aca <*
USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'ATTRIBUTE_CLASSIFICATION_ASSIGNMENT.' +
'ASSIGNED_CLASS')
    | (('ELECTROTECHNICAL_DESIGN.' +
    'ATTRIBUTE_LANGUAGE_ASSIGNMENT') IN TYPEOF(aca) ) ) >
0));
END_ENTITY; -- language

ENTITY language_assignment
SUBTYPE OF (classification_assignment);
  items : SET [1:?] OF language_item;
WHERE
  wr1: (('ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE') IN
TYPEOF(SELF.
  assigned_class));
  wr2: (SELF.role.name = 'language');
  wr3: (SIZEOF(SELF.items) = SIZEOF(QUERY ( i <* SELF.items |
(((
    'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION') IN
    TYPEOF(i)) AND (i\representation.name = 'document
content')) )));
END_ENTITY; -- language_assignment

ENTITY leader_curve
SUBTYPE OF (annotation_curve_occurrence);
WHERE
  wr1: (SIZEOF(QUERY ( ldc <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_CALLOUT.CONTENTENTS') | ((
    'ELECTROTECHNICAL_DESIGN.' +
'LEADER_DIRECTED_CALLOUT')
    IN TYPEOF(ldc) ) ) >= 1);
END_ENTITY; -- leader_curve

ENTITY leader_directed_callout
SUBTYPE OF (draughting_callout);
WHERE
  wr1: (SIZEOF(QUERY ( l_1 <* SELF\draughting_callout.contents |
(
    'ELECTROTECHNICAL_DESIGN.LEADER_CURVE' IN
TYPEOF(l_1) ) )
    >= 1);
  wr2: (SIZEOF(SELF\draughting_callout.contents) >= 2);
END_ENTITY; -- leader_directed_callout

ENTITY leader_directed_dimension

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```
    SUBTYPE OF (leader_directed_callout);
    WHERE
        wr1: (SIZEOF(QUERY ( con <* SELF.contents | (
            'ELECTROTECHNICAL_DESIGN.LEADER_CURVE' IN
TYPEOF(con)) ))
            = 1);
    END_ENTITY; -- leader_directed_dimension

ENTITY leader_terminator
    SUBTYPE OF (terminator_symbol);
    WHERE
        wr1: ('ELECTROTECHNICAL_DESIGN.LEADER_CURVE' IN TYPEOF(SELF\
            terminator_symbol.annotated_curve));
    END_ENTITY; -- leader_terminator

ENTITY length_function
    SUBTYPE OF (numeric_expression, unary_generic_expression);
    SELF\unary_generic_expression.operand : string_expression;
    END_ENTITY; -- length_function

ENTITY length_measure_with_unit
    SUBTYPE OF (measure_with_unit);
    WHERE
        wr1: ('ELECTROTECHNICAL_DESIGN.LENGTH_UNIT' IN TYPEOF(SELF\
            measure_with_unit.unit_component));
    END_ENTITY; -- length_measure_with_unit

ENTITY length_unit
    SUBTYPE OF (named_unit);
    WHERE
        wr1: ((SELF\named_unit.dimensions.length_exponent = 1) AND
(SELF\
            named_unit.dimensions.mass_exponent = 0) AND (SELF\
            named_unit.dimensions.time_exponent = 0) AND (SELF\
            named_unit.dimensions.electric_current_exponent = 0)
AND (
            SELF\named_unit.dimensions.
            thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
            .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
            named_unit.dimensions.luminous_intensity_exponent =
0));
    END_ENTITY; -- length_unit

ENTITY like_expression
    SUBTYPE OF (comparison_expression);
    WHERE
        wr1: (('ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN TYPEOF(
            SELF\comparison_expression.operands[1])) AND (
            'ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN
TYPEOF(
            SELF\comparison_expression.operands[2])));
    END_ENTITY; -- like_expression
```

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ENTITY line
  SUBTYPE OF (curve);
  pnt : cartesian_point;
  dir : vector;
  WHERE
    wr1: (dir.dim = pnt.dim);
END_ENTITY; -- line

ENTITY linear_dimension
  SUBTYPE OF (dimension_curve_directed_callout);
END_ENTITY; -- linear_dimension

ENTITY literal_number
  ABSTRACT SUPERTYPE OF (ONEOF (int_literal,real_literal))
  SUBTYPE OF (simple_numeric_expression, generic_literal);
  the_value : NUMBER;
END_ENTITY; -- literal_number

ENTITY local_time;
  hour_component : hour_in_day;
  minute_component : OPTIONAL minute_in_hour;
  second_component : OPTIONAL second_in_minute;
  zone : coordinated_universal_time_offset;
  WHERE
    wr1: valid_time(SELF);
END_ENTITY; -- local_time

ENTITY log10_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- log10_function

ENTITY log2_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- log2_function

ENTITY log_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- log_function

ENTITY lot_effectivity
  SUBTYPE OF (effectivity);
  effectivity_lot_id : identifier;
  effectivity_lot_size : measure_with_unit;
END_ENTITY; -- lot_effectivity

ENTITY luminous_intensity_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.LUMINOUS_INTENSITY_UNIT' IN
      TYPEOF(SELF\measure_with_unit.unit_component));
END_ENTITY; -- luminous_intensity_measure_with_unit

ENTITY luminous_intensity_unit
  SUBTYPE OF (named_unit);
  WHERE

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wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
(SELF\
    named_unit.dimensions.mass_exponent = 0) AND (SELF\
    named_unit.dimensions.time_exponent = 0) AND (SELF\
    named_unit.dimensions.electric_current_exponent = 0)
AND (
    SELF\named_unit.dimensions.
    thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
    .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
    named_unit.dimensions.luminous_intensity_exponent =
1));
END_ENTITY; -- luminous_intensity_unit

ENTITY make_from_usage_option
    SUBTYPE OF (product_definition_usage);
    ranking : INTEGER;
    ranking_rationale : text;
    quantity : measure_with_unit;
    WHERE
        wr1 : (NOT ('NUMBER' IN TYPEOF(quantity.value_component))) OR
(quantity.
    value_component > 0);
END_ENTITY;

ENTITY mapped_item
    SUBTYPE OF (representation_item);
    mapping_source : representation_map;
    mapping_target : representation_item;
    WHERE
        wr1:
acyclic_mapped_representation(using_representations(SELF), [SELF]);
END_ENTITY; -- mapped_item

ENTITY mass_measure_with_unit
    SUBTYPE OF (measure_with_unit);
    WHERE
        wr1: ('ELECTROTECHNICAL_DESIGN.MASS_UNIT' IN TYPEOF(SELF\
    measure_with_unit.unit_component));
END_ENTITY; -- mass_measure_with_unit

ENTITY mass_unit
    SUBTYPE OF (named_unit);
    WHERE
        wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
(SELF\
    named_unit.dimensions.mass_exponent = 1) AND (SELF\
    named_unit.dimensions.time_exponent = 0) AND (SELF\
    named_unit.dimensions.electric_current_exponent = 0)
AND (
    SELF\named_unit.dimensions.
    thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
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        .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
        named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- mass_unit

ENTITY maximum_function
  SUBTYPE OF (multiple_arity_function_call);
END_ENTITY; -- maximum_function

ENTITY measure_representation_item
  SUBTYPE OF (representation_item, measure_with_unit);
END_ENTITY; -- measure_representation_item

ENTITY measure_with_unit
  SUPERTYPE OF (ONEOF
(length_measure_with_unit,mass_measure_with_unit,
  time_measure_with_unit,electric_current_measure_with_unit,
  thermodynamic_temperature_measure_with_unit,
  celsius_temperature_measure_with_unit,
  amount_of_substance_measure_with_unit,
luminous_intensity_measure_with_unit,plane_angle_measure_with_unit,
  solid_angle_measure_with_unit,area_measure_with_unit,
  volume_measure_with_unit,ratio_measure_with_unit));
  value_component : measure_value;
  unit_component  : unit;
WHERE
  wr1: valid_units(SELF);
END_ENTITY; -- measure_with_unit

ENTITY minimum_function
  SUBTYPE OF (multiple_arity_function_call);
END_ENTITY; -- minimum_function

ENTITY minus_expression
  SUBTYPE OF (binary_numeric_expression);
END_ENTITY; -- minus_expression

ENTITY minus_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- minus_function

ENTITY mod_expression
  SUBTYPE OF (binary_numeric_expression);
END_ENTITY; -- mod_expression

ENTITY mult_expression
  SUBTYPE OF (multiple_arity_numeric_expression);
END_ENTITY; -- mult_expression

ENTITY multi_language_attribute_assignment
  SUBTYPE OF (attribute_value_assignment);
  items : SET [1:?] OF multi_language_attribute_item;
  DERIVE

```

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```
language : label := get_multi_language(SELF);
WHERE
  wr1: (SELF\attribute_value_assignment.role.name =
        'alternate language');
  wr2: ((SIZEOF(USEDIN(SELF,
'ELECTROTECHNICAL_DESIGN.ATTRIBUTE_LANGUAGE_ASSIGNMENT.ITEMS'))
        = 1) AND (SIZEOF(QUERY ( ala <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'ATTRIBUTE_LANGUAGE_ASSIGNMENT.' + 'ITEMS') | (ala.
        attribute_name = 'attribute_value') )) = 1));
END_ENTITY; -- multi_language_attribute_assignment

ENTITY multiple_arity_boolean_expression
  ABSTRACT SUPERTYPE OF (ONEOF (and_expression,or_expression))
  SUBTYPE OF (boolean_expression,
multiple_arity_generic_expression);
  SELF\multiple_arity_generic_expression.operands : LIST [2:?]
OF boolean_expression;
END_ENTITY; -- multiple_arity_boolean_expression

ENTITY multiple_arity_function_call
  ABSTRACT SUPERTYPE OF (ONEOF
(maximum_function,minimum_function))
  SUBTYPE OF (multiple_arity_numeric_expression);
END_ENTITY; -- multiple_arity_function_call

ENTITY multiple_arity_generic_expression
  ABSTRACT SUPERTYPE
  SUBTYPE OF (generic_expression);
  operands : LIST [2:?] OF generic_expression;
END_ENTITY; -- multiple_arity_generic_expression

ENTITY multiple_arity_numeric_expression
  ABSTRACT SUPERTYPE OF (ONEOF (plus_expression,mult_expression,
multiple_arity_function_call))
  SUBTYPE OF (numeric_expression,
multiple_arity_generic_expression);
  SELF\multiple_arity_generic_expression.operands : LIST [2:?]
OF numeric_expression;
END_ENTITY; -- multiple_arity_numeric_expression

ENTITY name_attribute;
  attribute_value : label;
  named_item      : name_attribute_select;
END_ENTITY; -- name_attribute

ENTITY named_unit
  SUPERTYPE OF (ONEOF (si_unit,conversion_based_unit,
context_dependent_unit) ANDOR ONEOF (length_unit,mass_unit,
time_unit,electric_current_unit,thermodynamic_temperature_unit,
amount_of_substance_unit,luminous_intensity_unit,plane_angle_unit,
solid_angle_unit,area_unit,volume_unit,ratio_unit));
```

```

        dimensions : dimensional_exponents;
END_ENTITY; -- named_unit

ENTITY named_unit_variable
  SUBTYPE OF (named_unit, variable_semantics);
  INVERSE
    associated_variable_environment : environment FOR semantics;
END_ENTITY; -- named_unit_variable

ENTITY next_assembly_usage_occurrence
  SUBTYPE OF (assembly_component_usage);
END_ENTITY; -- next_assembly_usage_occurrence

ENTITY not_expression
  SUBTYPE OF (unary_boolean_expression);
  SELF\unary_generic_expression.operand : boolean_expression;
END_ENTITY; -- not_expression

ENTITY note_representation
  SUBTYPE OF (representation);
  WHERE
    wr1: (SIZEOF(SELF.items) = 1);
    wr2:
('ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM'
  IN TYPEOF(SELF.items[1]));
    wr3: (SIZEOF(USEDIN(SELF.items[1], 'ELECTROTECHNICAL_DESIGN.' +
  'LANGUAGE_ASSIGNMENT.' + 'ITEMS')) = 1);
    wr4: (SIZEOF(QUERY ( i <* USEDIN(SELF,
  'ELECTROTECHNICAL_DESIGN.' +
  'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
      name = 'version') )) < 2);
END_ENTITY; -- note_representation

ENTITY notification
  SUBTYPE OF (characterized_object);
  WHERE
    wr1: (SIZEOF(QUERY ( i <* USEDIN(SELF,
  'ELECTROTECHNICAL_DESIGN.' +
  'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
      name = 'version') )) < 2);
END_ENTITY; -- notification

ENTITY numeric_expression
  ABSTRACT SUPERTYPE OF (ONEOF (simple_numeric_expression,
    unary_numeric_expression, binary_numeric_expression,
multiple_arity_numeric_expression, length_function, value_function))
  SUBTYPE OF (expression);
  DERIVE
    is_int      : BOOLEAN := is_int_expr(SELF);
    sql_mappable : BOOLEAN := is_sql_mappable(SELF);
END_ENTITY; -- numeric_expression

```

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```
ENTITY numeric_variable
  SUPERTYPE OF (ONEOF
(int_numeric_variable,real_numeric_variable))
  SUBTYPE OF (simple_numeric_expression, variable);
  WHERE
    wr1: (('ELECTROTECHNICAL_DESIGN.INT_NUMERIC_VARIABLE' IN
          TYPEOF(SELF)) OR (
          'ELECTROTECHNICAL_DESIGN.REAL_NUMERIC_VARIABLE' IN
          TYPEOF(SELF)));
END_ENTITY; -- numeric_variable

ENTITY object_reference_designation_assignment
  SUBTYPE OF (item_designation_assignment);
  WHERE
    wr1: (SIZEOF(QUERY ( i <* SELF.items | (SIZEOF(TYPEOF(i) * [
          'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_LOCATION',
          'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_DEFINITION'])) =
0) ))
          = 0);
    wr2: (SIZEOF(QUERY ( despd <* SELF.items | ((
          'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(
          despd)) AND (NOT (despd\product_definition.
          frame_of_reference.name IN ['conceptual definition',
          'functional occurrence','part occurrence',
          'system definition']))) )) = 0);
    wr3: (SIZEOF(TYPEOF(SELF) * ['ELECTROTECHNICAL_DESIGN.' +
          'DOCUMENT DESIGNATION ASSIGNMENT',
          'ELECTROTECHNICAL_DESIGN.' +
          'OBJECT_REFERENCE DESIGNATION ASSIGNMENT',
          'ELECTROTECHNICAL_DESIGN.' +
          'SIGNAL DESIGNATION ASSIGNMENT',
          'ELECTROTECHNICAL_DESIGN.' +
          'TERMINAL DESIGNATION ASSIGNMENT']) = 1);
END_ENTITY; -- object_reference_designation_assignment

ENTITY object_role;
  name      : label;
  description : OPTIONAL text;
END_ENTITY; -- object_role

ENTITY odd_function
  SUBTYPE OF (unary_boolean_expression);
  SELF\unary_generic_expression.operand : numeric_expression;
  WHERE
    wr1: is_int_expr(SELF\numeric_expression);
END_ENTITY; -- odd_function

ENTITY one_direction_repeat_factor
  SUBTYPE OF (geometric_representation_item);
  repeat_factor : vector;
END_ENTITY; -- one_direction_repeat_factor

ENTITY or_expression
  SUBTYPE OF (multiple_arity_boolean_expression);
```



```

END_ENTITY; -- or_expression

ENTITY ordinate_dimension
  SUBTYPE OF (projection_directed_callout);
END_ENTITY; -- ordinate_dimension

ENTITY organization;
  id          : OPTIONAL identifier;
  name        : label;
  description : OPTIONAL text;
END_ENTITY; -- organization

ENTITY organization_assignment
  ABSTRACT SUPERTYPE;
  assigned_organization : organization;
  role                  : organization_role;
END_ENTITY; -- organization_assignment

ENTITY organization_relationship;
  name          : label;
  description   : OPTIONAL text;
  relating_organization : organization;
  related_organization : organization;
END_ENTITY; -- organization_relationship

ENTITY organization_role;
  name : label;
  DERIVE
  description : text := get_description_value(SELF);
  WHERE
  wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
    'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- organization_role

ENTITY organizational_address
  SUBTYPE OF (address);
  organizations : SET [1:?] OF organization;
  description   : OPTIONAL text;
END_ENTITY; -- organizational_address

ENTITY organizational_project;
  name          : label;
  description   : OPTIONAL text;
  responsible_organizations : SET [1:?] OF organization;
  DERIVE
  id : identifier := get_id_value(SELF);
  WHERE
  wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
    'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- organizational_project

ENTITY organizational_project_assignment
  ABSTRACT SUPERTYPE;
  assigned_organizational_project : organizational_project;
  role                            : organizational_project_role;

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```
END_ENTITY; -- organizational_project_assignment

ENTITY organizational_project_relationship;
    name                : label;
    description          : OPTIONAL text;
    relating_organizational_project : organizational_project;
    related_organizational_project  : organizational_project;
END_ENTITY; -- organizational_project_relationship

ENTITY organizational_project_role;
    name        : label;
    description : OPTIONAL text;
END_ENTITY; -- organizational_project_role

ENTITY oriented_edge
    SUBTYPE OF (edge);
    edge_element : edge;
    orientation   : BOOLEAN;
    DERIVE
        SELF\edge.edge_start : vertex :=
boolean_choose(SELF.orientation,
                SELF.edge_element.edge_start, SELF.
                edge_element.edge_end);
        SELF\edge.edge_end   : vertex :=
boolean_choose(SELF.orientation,
                SELF.edge_element.edge_end, SELF.
                edge_element.edge_start);
    WHERE
        wr1: (NOT ('ELECTROTECHNICAL_DESIGN.ORIENTED_EDGE' IN TYPEOF(
                SELF.edge_element)));
END_ENTITY; -- oriented_edge

ENTITY over_riding_styled_item
    SUBTYPE OF (styled_item);
    over_ridden_style : styled_item;
END_ENTITY; -- over_riding_styled_item

ENTITY package_product_concept_feature
    SUBTYPE OF (product_concept_feature);
    WHERE
        wr1: (NOT (('ELECTROTECHNICAL_DESIGN.' +
                'CONDITIONAL_CONCEPT_FEATURE') IN TYPEOF(SELF)));
        wr2: (SIZEOF(QUERY ( cfr <*
USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.CONCEPT_FEATURE_RELATIONSHIP.'
        + 'RELATING_PRODUCT_CONCEPT_FEATURE') | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION') IN
TYPEOF(cfr))
        AND (SIZEOF(QUERY ( ipcf <* USEDIN(cfr,
'ELECTROTECHNICAL_DESIGN.CONDITIONAL_CONCEPT_FEATURE.'
        + 'CONDITION') | (('ELECTROTECHNICAL_DESIGN.' +
        'INCLUSION_PRODUCT_CONCEPT_FEATURE') IN TYPEOF(ipcf))
)) = 1)) ))
        > 0);
```

```

END_ENTITY; -- package_product_concept_feature

ENTITY page_connector_group
  SUBTYPE OF (group);
  WHERE
    wr1: (SIZEOF(QUERY ( gr <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' + 'GROUP_RELATIONSHIP.' +
      'RELATED_GROUP') | ((gr.name = 'connecting line
ownership')
      AND ('ELECTROTECHNICAL_DESIGN.CONNECTING_LINE_GROUP'
IN
      TYPEOF(gr.relating_group))) ) = 1);
    wr2: (SELF\group.description IN
['central','exclusive','neutral']);
  END_ENTITY; -- page_connector_group

ENTITY page_connector_presentation_group
  SUBTYPE OF (group);
  WHERE
    wr1: (SIZEOF(QUERY ( gr <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' + 'GROUP_RELATIONSHIP.' +
      'RELATED_GROUP') | ((gr.name = 'page connector
ownership')
      AND ('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_GROUP'
IN
      TYPEOF(gr.relating_group))) ) = 1);
    wr2: (SELF\group.description IN ['none','sink','source']);
  END_ENTITY; -- page_connector_presentation_group

ENTITY page_connector_reference_group
  SUBTYPE OF (group);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
      'GROUP_ASSIGNMENT.' + 'ASSIGNED_GROUP')) = 1);
    wr2: (SIZEOF(QUERY ( gr <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' + 'GROUP_RELATIONSHIP.' +
      'RELATED_GROUP') | ((gr.name =
      'page connector presentation ownership') AND
('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_PRESENTATION_GROUP'
      IN TYPEOF(gr.relating_group))) ) = 1);
  END_ENTITY; -- page_connector_reference_group

ENTITY page_connector_reference_group_assignment
  SUBTYPE OF (group_assignment);
  item : page_connector_reference_item;
END_ENTITY; -- page_connector_reference_group_assignment

ENTITY parabola
  SUBTYPE OF (conic);
  focal_dist : length_measure;
  WHERE
    wr1: (focal_dist <> 0);
  END_ENTITY; -- parabola

ENTITY path

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    SUBTYPE OF (topological_representation_item);
    edge_list : LIST [1:?] OF UNIQUE oriented_edge;
    WHERE
        wr1: path_head_to_tail(SELF);
END_ENTITY; -- path

ENTITY person;
    id          : identifier;
    last_name   : OPTIONAL label;
    first_name  : OPTIONAL label;
    middle_names : OPTIONAL LIST [1:?] OF label;
    prefix_titles : OPTIONAL LIST [1:?] OF label;
    suffix_titles : OPTIONAL LIST [1:?] OF label;
    WHERE
        wr1: (EXISTS(last_name) OR EXISTS(first_name));
END_ENTITY; -- person

ENTITY person_and_organization;
    the_person      : person;
    the_organization : organization;
    DERIVE
        name          : label := get_name_value(SELF);
        description   : text := get_description_value(SELF);
    WHERE
        wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
            'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1);
        wr2: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
            'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- person_and_organization

ENTITY person_and_organization_address
    SUBTYPE OF (organizational_address, personal_address);
    WHERE
        wr1: (SIZEOF(SELF\personal_address.people) = 1);
        wr2: (SIZEOF(SELF\organizational_address.organizations) = 1);
        wr3: (SIZEOF(QUERY ( pao <* USEDIN(SELF.people[1],
'ELECTROTECHNICAL DESIGN.PERSON_AND_ORGANIZATION.THE_PERSON')
            | (pao.the_organization ::=
SELF\organizational_address.
            organizations[1]) )) = 1);
END_ENTITY; -- person_and_organization_address

ENTITY person_and_organization_assignment
    ABSTRACT SUPERTYPE;
    assigned_person_and_organization : person_and_organization;
    role                             :
person_and_organization_role;
END_ENTITY; -- person_and_organization_assignment

ENTITY person_and_organization_role;
    name : label;
    DERIVE
        description : text := get_description_value(SELF);
    WHERE
```

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        wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
            'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- person_and_organization_role

ENTITY personal_address
  SUBTYPE OF (address);
  people      : SET [1:?] OF person;
  description : OPTIONAL text;
END_ENTITY; -- personal_address

ENTITY physically_modelled_product_definition
  SUBTYPE OF (product_definition_with_associated_documents);
  WHERE
    wr1: (SELF.frame_of_reference\application_context_element.name
=
        'physical model occurrence');
    wr2: ((SIZEOF(documentation_ids) = 1) AND (SIZEOF(QUERY ( d < *
        documentation_ids | (SIZEOF(QUERY ( drt < * d.
        representation_types | (drt.name = 'physical') )) =
1) )) =
        1));
END_ENTITY; -- physically_modelled_product_definition

ENTITY placement
  SUPERTYPE OF (ONEOF (axis2_placement_2d,axis2_placement_3d))
  SUBTYPE OF (geometric_representation_item);
  location : cartesian_point;
END_ENTITY; -- placement

ENTITY planar_box
  SUBTYPE OF (planar_extent);
  placement : axis2_placement;
END_ENTITY; -- planar_box

ENTITY planar_extent
  SUBTYPE OF (geometric_representation_item);
  size_in_x : length_measure;
  size_in_y : length_measure;
END_ENTITY; -- planar_extent

ENTITY plane_angle_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.PLANE_ANGLE_UNIT' IN
TYPEOF(SELF
        \measure_with_unit.unit_component));
END_ENTITY; -- plane_angle_measure_with_unit

ENTITY plane_angle_unit
  SUBTYPE OF (named_unit);
  WHERE
    wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
(SELF\
        named_unit.dimensions.mass_exponent = 0) AND (SELF\
        named_unit.dimensions.time_exponent = 0) AND (SELF\

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named_unit.dimensions.electric_current_exponent = 0)
AND (
    SELF\named_unit.dimensions.
    thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
    .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
    named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- plane_angle_unit

ENTITY plus_expression
    SUBTYPE OF (multiple_arity_numeric_expression);
END_ENTITY; -- plus_expression

ENTITY point
    SUPERTYPE OF (cartesian_point)
    SUBTYPE OF (geometric_representation_item);
END_ENTITY; -- point

ENTITY polyline
    SUBTYPE OF (bounded_curve);
    points : LIST [2:?] OF cartesian_point;
END_ENTITY; -- polyline

ENTITY power_expression
    SUBTYPE OF (binary_numeric_expression);
END_ENTITY; -- power_expression

ENTITY pre_defined_colour
    SUBTYPE OF (pre_defined_item, colour);
END_ENTITY; -- pre_defined_colour

ENTITY pre_defined_curve_font
    SUBTYPE OF (pre_defined_item);
END_ENTITY; -- pre_defined_curve_font

ENTITY pre_defined_dimension_symbol
    SUBTYPE OF (pre_defined_symbol);
    WHERE
        wr1: (SELF\pre_defined_item.name IN ['arc length', 'conical
taper',
            'counterbore', 'countersink', 'depth', 'diameter', 'plus
minus',
            'radius', 'slope', 'spherical diameter', 'spherical
radius',
            'square']);
END_ENTITY; -- pre_defined_dimension_symbol

ENTITY pre_defined_geometrical_tolerance_symbol
    SUBTYPE OF (pre_defined_symbol);
    WHERE
        wr1: (SELF\pre_defined_item.name IN ['angularity', 'circular
runout',
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'circularity','concentricity','cylindricity','diameter',
    'flatness','least material condition',
    'maximum material condition','parallelism',
    'perpendicularity','position','profile of a line',
    'profile of a surface','projected tolerance zone',
    'regardless of feature
size','straightness','symmetry',
    'target point','total runout']);
END_ENTITY; -- pre_defined_geometrical_tolerance_symbol

ENTITY pre_defined_item;
    name : label;
END_ENTITY; -- pre_defined_item

ENTITY pre_defined_point_marker_symbol
    SUBTYPE OF (pre_defined_symbol);
    WHERE
        wr1: (SELF\pre_defined_item.name IN
['asterisk','circle','dot',
    'plus','square','triangle','x']);
END_ENTITY; -- pre_defined_point_marker_symbol

ENTITY pre_defined_symbol
    SUBTYPE OF (pre_defined_item);
END_ENTITY; -- pre_defined_symbol

ENTITY pre_defined_terminator_symbol
    SUBTYPE OF (pre_defined_symbol);
    WHERE
        wr1: (SELF\pre_defined_item.name IN ['blanked arrow','blanked
box',
    'blanked dot','dimension origin','filled
arrow','filled box',
    'filled dot','integral symbol','open arrow','slash',
    'unfilled arrow']);
END_ENTITY; -- pre_defined_terminator_symbol

ENTITY pre_defined_text_font
    SUBTYPE OF (pre_defined_item);
END_ENTITY; -- pre_defined_text_font

ENTITY precision_qualifier;
    precision_value : INTEGER;
END_ENTITY; -- precision_qualifier

ENTITY predefined_connectivity_definition
    SUBTYPE OF (connectivity_definition);
    WHERE
        wr1: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | (
    sar.name = 'connectivity') )) = SIZEOF(QUERY ( sar <*
    USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +

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                'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
                sar.name = 'connectivity') AND (
                'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
                related_shape_aspect)) AND (sar.related_shape_aspect.
of_shape\property_definition.definition.frame_of_reference\
                application_context_element.name = 'part
occurrence')) ));
END_ENTITY; -- predefined_connectivity_definition

ENTITY presentation_area
  SUBTYPE OF (presentation_representation);
  WHERE
    wr1: ((SIZEOF(QUERY ( ais <* USEDIN(SELF,
                'ELECTROTECHNICAL_DESIGN.' + 'AREA_IN_SET.AREA') | (
                SIZEOF(USEDIN(ais,'ELECTROTECHNICAL_DESIGN.' +
                'PRESENTATION_SIZE.UNIT')) = 1) )) > 0) OR
(SIZEOF(USEDIN(
                SELF,'ELECTROTECHNICAL_DESIGN.' +
                'PRESENTATION_SIZE.UNIT')) = 1));
END_ENTITY; -- presentation_area

ENTITY presentation_layer_assignment;
  name          : label;
  description   : text;
  assigned_items : SET [1:?] OF layered_item;
END_ENTITY; -- presentation_layer_assignment

ENTITY presentation_representation
  SUBTYPE OF (representation);
  WHERE
    wr1: (SELF\representation.context_of_items\
geometric_representation_context.coordinate_space_dimension
                = 2);
    wr2:
('ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_CONTEXT'
                IN TYPEOF(SELF\representation.context_of_items));
END_ENTITY; -- presentation_representation

ENTITY presentation_set;
  INVERSE
    areas : SET [1:?] OF area_in_set FOR in_set;
END_ENTITY; -- presentation_set

ENTITY presentation_size;
  unit : presentation_size_assignment_select;
  size : planar_box;
  WHERE
    wr1: (((('ELECTROTECHNICAL_DESIGN.PRESENTATION_REPRESENTATION'
                IN TYPEOF(SELF.unit)) AND
item_in_context(SELF.size,SELF.
                unit\representation.context_of_items)) OR ((
                'ELECTROTECHNICAL_DESIGN.AREA_IN_SET' IN TYPEOF(SELF.
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        unit)) AND (SIZEOF(QUERY ( ais <*
SELF.unit\area_in_set.
        in_set.areas | (NOT
item_in_context(SELF.size,ais.area\
        representation.context_of_items)) )) = 0)));
END_ENTITY; -- presentation_size

ENTITY presentation_style_assignment;
    styles : SET [1:?] OF presentation_style_select;
WHERE
    wr1: (SIZEOF(QUERY ( style1 <* SELF.styles | (NOT (SIZEOF(
        QUERY ( style2 <* (SELF.styles - style1) | (NOT
((TYPEOF(
        style1) <> TYPEOF(style2)) OR (SIZEOF([
        'ELECTROTECHNICAL_DESIGN.' + 'SURFACE_STYLE_USAGE',
        'ELECTROTECHNICAL_DESIGN.' +
'EXTERNALLY_DEFINED_STYLE']
        * TYPEOF(style1)) = 1))) )) = 0)) )) = 0);
    wr2: (SIZEOF(QUERY ( style1 <* SELF.styles | (
        'ELECTROTECHNICAL_DESIGN.SURFACE_STYLE_USAGE' IN
        TYPEOF(style1)) )) <= 2);
END_ENTITY; -- presentation_style_assignment

ENTITY presentation_style_by_context
    SUBTYPE OF (presentation_style_assignment);
    style_context : style_context_select;
END_ENTITY; -- presentation_style_by_context

ENTITY presentation_view
    SUBTYPE OF (presentation_representation);
END_ENTITY; -- presentation_view

ENTITY presentation_with_association
    SUBTYPE OF (presentation_representation);
WHERE
    wr1: (SIZEOF(SELF\representation.items) = 1);
    wr2: (SIZEOF(QUERY ( pir <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTED_ITEM_REPRESENTATION.' + 'PRESENTATION') |
(NOT ((
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_WITH_ASSOCIATION') IN
TYPEOF(pir.item)) )) =
        0);
END_ENTITY; -- presentation_with_association

ENTITY presented_item
    ABSTRACT SUPERTYPE;
END_ENTITY; -- presented_item

ENTITY presented_item_representation;
    presentation : presentation_representation_select;
    item : presented_item;
END_ENTITY; -- presented_item_representation

```

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```
ENTITY presented_item_with_association
  SUBTYPE OF (presented_item);
  items : SET [1:?] OF associated_item;
  WHERE
    wr1: (SIZEOF(QUERY ( pir <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'PRESENTED_ITEM_REPRESENTATION.ITEM') | (NOT
('ELECTROTECHNICAL_DESIGN.PRESENTATION_WITH_ASSOCIATION'
  IN TYPEOF(pir.presentation))) ) = 0);
END_ENTITY; -- presented_item_with_association

ENTITY process_variable
  SUBTYPE OF (characterized_object);
END_ENTITY; -- process_variable

ENTITY product;
  id : identifier;
  name : label;
  description : OPTIONAL text;
  frame_of_reference : SET [1:?] OF product_context;
END_ENTITY; -- product

ENTITY product_category;
  name : label;
  description : OPTIONAL text;
  DERIVE
    id : identifier := get_id_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- product_category

ENTITY product_category_relationship;
  name : label;
  description : OPTIONAL text;
  category : product_category;
  sub_category : product_category;
  WHERE
    wr1:
acyclic_product_category_relationship(SELF, [SELF.sub_category]);
END_ENTITY; -- product_category_relationship

ENTITY product_class
  SUBTYPE OF (product_concept, characterized_object);
END_ENTITY; -- product_class

ENTITY product_concept;
  id : identifier;
  name : label;
  description : OPTIONAL text;
  market_context : product_concept_context;
  UNIQUE
    url : id;
END_ENTITY; -- product_concept
```

```

ENTITY product_concept_context
  SUBTYPE OF (application_context_element);
  market_segment_type : label;
END_ENTITY; -- product_concept_context

ENTITY product_concept_feature;
  id : identifier;
  name : label;
  description : OPTIONAL text;
END_ENTITY; -- product_concept_feature

ENTITY product_concept_feature_association;
  name : label;
  description : OPTIONAL text;
  concept : product_concept;
  feature : product_concept_feature;
END_ENTITY; -- product_concept_feature_association

ENTITY product_concept_feature_category
  SUBTYPE OF (group);
  WHERE
    wr1: (SIZEOF(QUERY ( aga <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.GROUP_ASSIGNMENT.' +
      'ASSIGNED_GROUP') | (('ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_GROUP_ASSIGNMENT') IN TYPEOF(aga)) AND
((aga.role.
      name <> 'specification category member') OR (SIZEOF(
      QUERY ( i <* aga.items |
(('ELECTROTECHNICAL_DESIGN.'
      + 'PRODUCT_CONCEPT_FEATURE') IN TYPEOF(i)) AND (NOT
((
      'ELECTROTECHNICAL_DESIGN.' +
      'CONDITIONAL_CONCEPT_FEATURE') IN TYPEOF(i)))) ) ) <>
SIZEOF(
      aga.items)))) ) = 0);
END_ENTITY; -- product_concept_feature_category

ENTITY product_concept_feature_category_usage
  SUBTYPE OF (group_assignment);
  items : SET [1:?] OF category_usage_item;
  WHERE
    wr1:
('ELECTROTECHNICAL_DESIGN.PRODUCT_CONCEPT_FEATURE_CATEGORY'
      IN TYPEOF(SELF.assigned_group));
    wr2: (SELF.role.name IN ['mandatory category usage',
      'optional category usage']);
END_ENTITY; -- product_concept_feature_category_usage

ENTITY product_concept_relationship;
  name : label;
  description : OPTIONAL text;
  relating_product_concept : product_concept;
  related_product_concept : product_concept;
END_ENTITY; -- product_concept_relationship

```

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```
ENTITY product_context
  SUBTYPE OF (application_context_element);
  discipline_type : label;
END_ENTITY; -- product_context

ENTITY product_definition;
  id                : identifier;
  description       : OPTIONAL text;
  formation         : product_definition_formation;
  frame_of_reference : product_definition_context;
  DERIVE
    name : label := get_name_value(SELF);
  WHERE
    url: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
      'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1);
END_ENTITY; -- product_definition

ENTITY product_definition_context
  SUBTYPE OF (application_context_element);
  life_cycle_stage : label;
END_ENTITY; -- product_definition_context

ENTITY product_definition_context_association;
  definition          : product_definition;
  frame_of_reference : product_definition_context;
  role               : product_definition_context_role;
END_ENTITY; -- product_definition_context_association

ENTITY product_definition_context_role;
  name      : label;
  description : OPTIONAL text;
END_ENTITY; -- product_definition_context_role

ENTITY product_definition_effectivity
  SUBTYPE OF (effectivity);
  usage : product_definition_relationship;
  WHERE
    url: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
      'EFFECTIVITY_ASSIGNMENT.ASSIGNED_EFFECTIVITY')) = 0);
END_ENTITY; -- product_definition_effectivity

ENTITY product_definition_formation;
  id          : identifier;
  description : OPTIONAL text;
  of_product  : product;
  UNIQUE
    url : id, of_product;
END_ENTITY; -- product_definition_formation

ENTITY product_definition_formation_relationship;
  id                : identifier;
  name              : label;
  description       : OPTIONAL text;
```

```

    relating_product_definition_formation :
product_definition_formation;
    related_product_definition_formation :
product_definition_formation;
END_ENTITY; -- product_definition_formation_relationship

ENTITY product_definition_formation_with_specified_source
SUBTYPE OF (product_definition_formation);
    make_or_buy : source;
END_ENTITY; -- product_definition_formation_with_specified_source

ENTITY product_definition_occurrence_relationship;
    name : label;
    description : OPTIONAL text;
    occurrence : product_definition;
    occurrence_usage : assembly_component_usage;
WHERE
    wr1: (occurrence_usage.relativing_product_definition :<>:
occurrence);
    wr2: (occurrence_usage.related_product_definition :<>:
occurrence);
    wr3: (occurrence.formation := occurrence_usage.
related_product_definition.formation);
END_ENTITY; -- product_definition_occurrence_relationship

ENTITY product_definition_relationship;
    id : identifier;
    name : label;
    description : OPTIONAL text;
    relating_product_definition : product_definition;
    related_product_definition : product_definition;
END_ENTITY; -- product_definition_relationship

ENTITY product_definition_shape
SUBTYPE OF (property_definition);
UNIQUE
    url : definition;
WHERE
    wr1:
(SIZEOF(['ELECTROTECHNICAL DESIGN.CHARACTERIZED_PRODUCT_DEFINITION',
'ELECTROTECHNICAL DESIGN.CHARACTERIZED_OBJECT'] *
TYPEOF(SELF\property_definition.definition)) > 0);
END_ENTITY; -- product_definition_shape

ENTITY product_definition_substitute;
    description : OPTIONAL text;
    context_relationship : product_definition_relationship;
    substitute_definition : product_definition;
DERIVE
    name : label := get_name_value(SELF);
WHERE
    wr1: (context_relationship.related_product_definition :<>:
substitute_definition);
    wr2: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL DESIGN.' +
'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1);

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```
END_ENTITY; -- product_definition_substitute

ENTITY product_definition_usage
  SUPERTYPE OF (make_from_usage_option, assembly_component_usage)
  SUBTYPE OF (product_definition_relationship);
  UNIQUE
    url : id, relating_product_definition,
related_product_definition;
  WHERE
    wr1: acyclic_product_definition_relationship(SELF, [SELF\
product_definition_relationship.related_product_definition],
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE');
END_ENTITY; -- product_definition_usage

ENTITY product_definition_with_associated_documents
  SUBTYPE OF (product_definition);
  documentation_ids : SET [1:?] OF document;
END_ENTITY; -- product_definition_with_associated_documents

ENTITY product_identification
  SUBTYPE OF (configuration_item, characterized_object);
  WHERE
    wr1: (SIZEOF(QUERY ( cd <*
USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
'CONFIGURATION_DESIGN.CONFIGURATION')
| (('ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_FORMATION') IN TYPEOF(cd.design))
AND (
  SIZEOF(QUERY ( prpc <* USEDIN(cd.design\
product_definition_formation.of_product,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS')
| (prpc.name IN ['part', 'raw material', 'tool']) )) >
0)) ))
    <= 1);
    wr2: (('ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_CLASS') IN
TYPEOF(
  SELF.item_concept));
    wr3: ((NOT (('ELECTROTECHNICAL_DESIGN.' + 'CONFIGURABLE_ITEM')
IN TYPEOF(SELF))) OR (('ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_SPECIFICATION') IN TYPEOF(SELF)));
END_ENTITY; -- product_identification

ENTITY product_related_product_category
  SUBTYPE OF (product_category);
  products : SET [1:?] OF product;
END_ENTITY; -- product_related_product_category

ENTITY product_specification
  SUBTYPE OF (product_identification, configurable_item);
END_ENTITY; -- product_specification

ENTITY projection_curve
```

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    SUBTYPE OF (annotation_curve_occurrence);
END_ENTITY; -- projection_curve

ENTITY projection_directed_callout
  SUBTYPE OF (draughting_callout);
  WHERE
    wr1: (SIZEOF(QUERY ( p_1 <* SELF\draughting_callout.contents |
(
      'ELECTROTECHNICAL_DESIGN.PROJECTION_CURVE' IN TYPEOF(
        p_1)) )) = 1);
    wr2: (SIZEOF(SELF\draughting_callout.contents) >= 2);
END_ENTITY; -- projection_directed_callout

ENTITY promissory_usage_occurrence
  SUBTYPE OF (assembly_component_usage);
END_ENTITY; -- promissory_usage_occurrence

ENTITY property_definition;
  name          : label;
  description   : OPTIONAL text;
  definition    : characterized_definition;
  DERIVE
    id : identifier := get_id_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- property_definition

ENTITY property_definition_relationship;
  name          : label;
  description   : text;
  relating_property_definition : property_definition;
  related_property_definition  : property_definition;
END_ENTITY; -- property_definition_relationship

ENTITY property_definition_representation;
  definition      : represented_definition;
  used_representation : representation;
  DERIVE
    description : text := get_description_value(SELF);
    name       : label := get_name_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
    wr2: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'NAME_ATTRIBUTE.NAMED_ITEM')) <= 1);
END_ENTITY; -- property_definition_representation

ENTITY qualified_representation_item
  SUBTYPE OF (representation_item);
  qualifiers : SET [1:?] OF value_qualifier;
  WHERE
    wr1: (SIZEOF(QUERY ( temp <* qualifiers | (
      'ELECTROTECHNICAL_DESIGN.PRECISION_QUALIFIER' IN
      TYPEOF(temp)) )) < 2);

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END_ENTITY; -- qualified_representation_item

ENTITY quantified_assembly_component_usage
  SUBTYPE OF (assembly_component_usage);
  quantity : measure_with_unit;
  WHERE
    wr1: ((NOT ('NUMBER' IN TYPEOF(quantity.value_component))) OR
(
    quantity.value_component > 0));
END_ENTITY; -- quantified_assembly_component_usage

ENTITY quasi_uniform_curve
  SUBTYPE OF (b_spline_curve);
END_ENTITY; -- quasi_uniform_curve

ENTITY radius_dimension
  SUBTYPE OF (dimension_curve_directed_callout);
  WHERE
    wr1: (SIZEOF(QUERY ( con <* SELF.contents | (
      'ELECTROTECHNICAL_DESIGN.PROJECTION_CURVE' IN TYPEOF(
        con)) )) <= 1);
END_ENTITY; -- radius_dimension

ENTITY ratio_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.RATIO_UNIT' IN TYPEOF(SELF\
      measure_with_unit.unit_component));
END_ENTITY; -- ratio_measure_with_unit

ENTITY ratio_unit
  SUBTYPE OF (named_unit);
  WHERE
    wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
(SELF\
      named_unit.dimensions.mass_exponent = 0) AND (SELF\
      named_unit.dimensions.time_exponent = 0) AND (SELF\
      named_unit.dimensions.electric_current_exponent = 0)
AND (
      SELF\named_unit.dimensions.
      thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
      .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
      named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- ratio_unit

ENTITY rational_b_spline_curve
  SUBTYPE OF (b_spline_curve);
  weights_data : LIST [2:?] OF REAL;
  DERIVE
    weights : ARRAY [0:upper_index_on_control_points] OF REAL :=
      list_to_array(weights_data,0,
        upper_index_on_control_points);
```



```

WHERE
    wr1: (SIZEOF(weights_data) = SIZEOF(SELF\b_spline_curve.
        control_points_list));
    wr2: curve_weights_positive(SELF);
END_ENTITY; -- rational_b_spline_curve

ENTITY real_literal
    SUBTYPE OF (literal_number);
    SELF\literal_number.the_value : REAL;
END_ENTITY; -- real_literal

ENTITY real_numeric_variable
    SUBTYPE OF (numeric_variable);
END_ENTITY; -- real_numeric_variable

ENTITY reference_grid_layout
    SUBTYPE OF (draughting_symbol_representation);
    WHERE
        wr1: (SIZEOF(QUERY ( rr <* USEDIN(SELF,
            'ELECTROTECHNICAL_DESIGN.' +
            'REPRESENTATION_RELATIONSHIP.' + 'REP_1') | ((rr.name
=
            'reference grid') AND
('ELECTROTECHNICAL_DESIGN.REFERENCE_GRID_REPRESENTATION'
    IN TYPEOF(rr.rep_2))) ) = 1);
END_ENTITY; -- reference_grid_layout

ENTITY reference_grid_representation
    SUBTYPE OF (representation);
    WHERE
        wr1 : (SIZEOF(SELF\representation.items) = 3);
        wr2 : (SIZEOF(QUERY ( column <* SELF\representation.items | ((
TYPEOF(column)
            'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN
            AND (column\mapped_item.mapping_source.
            mapped_representation.name =
            'reference grid column representation')) ) = 1);
        wr3 : (SIZEOF(QUERY ( row <* SELF\representation.items | ((
TYPEOF(row)
            'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN
            AND
            (row\mapped_item.mapping_source.mapped_representation.
            name = 'reference grid row representation')) ) =
1);
        wr4 : (SIZEOF(QUERY ( origin <* SELF\representation.items | ((
            'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT_2D' IN
            TYPEOF(origin)) AND (origin.name = 'grid origin'))
)) = 1);
        wr5 : (SIZEOF(QUERY ( mi <* SELF\representation.items | ((
            'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN TYPEOF(mi))
            AND (SIZEOF(QUERY ( item <*
mi\mapped_item.mapping_source.
            mapped_representation.items | (NOT
            (SIZEOF(TYPEOF(item) * [

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        'ELECTROTECHNICAL_DESIGN.' + 'AXIS2_PLACEMENT_2D',
        'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM',
        'ELECTROTECHNICAL_DESIGN.' +
        'MEASURE_REPRESENTATION_ITEM']] = 1)) )) = 0)) )) =
0);
wr6 : (SIZEOF(QUERY ( mi <* SELF\representation.items | ((
        'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN TYPEOF(mi))
        AND (NOT (SIZEOF(QUERY ( pos <* mi\mapped_item.
        mapping_source.mapped_representation.items | (
        'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT_2D' IN
        TYPEOF(pos)) )) = 1))) )) = 0);
wr7 : (SIZEOF(QUERY ( mi <* SELF\representation.items | ((
        'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN TYPEOF(mi))
        AND (NOT (SIZEOF(QUERY ( spacing <* mi\mapped_item.
        mapping_source.mapped_representation.items |
((SIZEOF(
        TYPEOF(spacing) * [
        'ELECTROTECHNICAL_DESIGN.LENGTH_MEASURE_WITH_UNIT',
        'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'])
        = 2) AND (spacing.name = 'grid spacing')) )) = 1)))
)) = 0);
wr8 : (SIZEOF(QUERY ( rm <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION_MAP.' +
        'MAPPED_REPRESENTATION') | (NOT (SIZEOF(USEDIN(rm,
        'ELECTROTECHNICAL_DESIGN.' + 'MAPPED_ITEM.' +
        'MAPPING_SOURCE')) = 1)) )) = 0);
wr9 : (SIZEOF(QUERY ( rm <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION_MAP.' +
        'MAPPED_REPRESENTATION') | (NOT (SIZEOF(QUERY ( mi
<*
        USEDIN(rm, 'ELECTROTECHNICAL_DESIGN.' +
        'MAPPED_ITEM.'
        + 'MAPPING_SOURCE') | (NOT (SIZEOF(QUERY ( rep <*
USEDIN(mi,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
        'ITEMS') | (SIZEOF(TYPEOF(rep) * [
        'ELECTROTECHNICAL_DESIGN.' +
        'DRAWING_SHEET_REVISION',
        'ELECTROTECHNICAL_DESIGN.' + 'PRESENTATION_VIEW'])) =
1) ))
        = 1)) )) = 0)) )) = 0);
wr10: (SIZEOF(QUERY ( mi <* SELF\representation.items | ((
        'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN TYPEOF(mi))
        AND (NOT (SIZEOF(QUERY ( pos <* mi\mapped_item.
        mapping_source.mapped_representation.items | ((
        'ELECTROTECHNICAL_DESIGN.' + 'AXIS2_PLACEMENT_2D')
IN
        TYPEOF(pos)) ) * QUERY ( origin <*
SELF\representation.
        items | (('ELECTROTECHNICAL_DESIGN.' +
        'AXIS2_PLACEMENT_2D') IN TYPEOF(origin)) )) = 1)))
)) = 0);
wr11: (SIZEOF(QUERY ( rr <* USEDIN(SELF,

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        'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION_RELATIONSHIP.' + 'REP_2') |
((rr.name =
        'reference grid') AND (
        'ELECTROTECHNICAL_DESIGN.REFERENCE_GRID_LAYOUT' IN
        TYPEOF(rr.rep_1))) ) >= 1);
END_ENTITY; -- reference_grid_representation

ENTITY relative_event_occurrence
  SUBTYPE OF (event_occurrence);
  base_event : event_occurrence;
  offset     : time_measure_with_unit;
END_ENTITY; -- relative_event_occurrence

ENTITY representation;
  name           : label;
  items          : SET [1:?] OF representation_item;
  context_of_items : representation_context;
  DERIVE
    id           : identifier := get_id_value(SELF);
    description  : text := get_description_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
        'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
    wr2: (SIZEOF(USEDIN(SELF,'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTION_ATTRIBUTE.DESCRIBED_ITEM')) <= 1);
END_ENTITY; -- representation

ENTITY representation_context;
  context_identifier : identifier;
  context_type      : text;
  INVERSE
    representations_in_context : SET [1:?] OF representation FOR
        context_of_items;
END_ENTITY; -- representation_context

ENTITY representation_item;
  name : label;
  WHERE
    wr1: (SIZEOF(using_representations(SELF)) > 0);
END_ENTITY; -- representation_item

ENTITY representation_item_relationship;
  name           : label;
  description    : OPTIONAL text;
  relating_representation_item : representation_item;
  related_representation_item  : representation_item;
END_ENTITY; -- representation_item_relationship

ENTITY representation_map;
  mapping_origin      : representation_item;
  mapped_representation : representation;
  INVERSE
    map_usage : SET [1:?] OF mapped_item FOR mapping_source;
  WHERE

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wr1:
item_in_context(SELF.mapping_origin,SELF.mapped_representation.
                context_of_items);
END_ENTITY; -- representation_map

ENTITY representation_relationship;
    name          : label;
    description   : OPTIONAL text;
    rep_1         : representation;
    rep_2         : representation;
END_ENTITY; -- representation_relationship

ENTITY representation_relationship_with_transformation
    SUBTYPE OF (representation_relationship);
    transformation_operator : transformation;
WHERE
    wr1: (SELF\representation_relationship.rep_1.context_of_items
: <>:
SELF\representation_relationship.rep_2.context_of_items);
END_ENTITY; -- representation_relationship_with_transformation

ENTITY retention
    SUBTYPE OF (action);
WHERE
    wr1: (SIZEOF(QUERY ( aa <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' + 'ACTION_ASSIGNMENT.' +
        'ASSIGNED_ACTION') | ((( 'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_ACTION_ASSIGNMENT') IN TYPEOF(aa)) AND
(aa.role.
    name = 'retention')) ) ) >= 1);
    wr2: ((SIZEOF(QUERY ( atia <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_TIME_INTERVAL_ASSIGNMENT.' + 'ITEMS') |
(atia.role.
    name = 'minimum retention period') ) ) = 1) AND
(SIZEOF(
    QUERY ( atia <*
USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
    + 'APPLIED_TIME_INTERVAL_ASSIGNMENT.' + 'ITEMS') |
(atia.
    role.name = 'maximum retention period') ) ) = 1) AND
(SIZEOF(
    QUERY ( atial <*
USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
    + 'APPLIED_TIME_INTERVAL_ASSIGNMENT.' + 'ITEMS') |
((atial.
    role.name = 'minimum retention period') AND ((
    'ELECTROTECHNICAL_DESIGN.' +
    'TIME_INTERVAL_WITH_BOUNDS') IN TYPEOF(atial.
    assigned_time_interval)) AND (EXISTS(atial.
    assigned_time_interval\time_interval_with_bounds.
    secondary_bound) OR
EXISTS(atial.assigned_time_interval\
    time_interval_with_bounds.duration)) AND (SIZEOF(
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        QUERY ( atia2 <*
USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.'
        + 'APPLIED_TIME_INTERVAL_ASSIGNMENT.' + 'ITEMS') |
((atia2.
        role.name = 'maximum retention period') AND ((
        'ELECTROTECHNICAL_DESIGN.' +
        'TIME_INTERVAL_WITH_BOUNDS') IN TYPEOF(atia2.
        assigned_time_interval)) AND (EXISTS(atia2.
        assigned_time_interval\time_interval_with_bounds.
        secondary_bound) OR
EXISTS(atia2.assigned_time_interval\
        time_interval_with_bounds.duration)) AND (atia1.
        assigned_time_interval\time_interval_with_bounds.
        primary_bound :=: atia2.assigned_time_interval\
        time_interval_with_bounds.primary_bound)) = 1)) )
= 1));
        wr3: ((SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
        'ACTION_RELATIONSHIP.' + 'RELATING_ACTION')) +
SIZEOF(
        USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
        'ACTION_RELATIONSHIP.' + 'RELATED_ACTION')) = 0);
END_ENTITY; -- retention

ENTITY role_association;
        role          : object_role;
        item_with_role : role_select;
END_ENTITY; -- role_association

ENTITY routed_segment
        SUBTYPE OF (installation_segment);
        WHERE
        wr1: (SIZEOF(QUERY ( sar <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
'RELATING_SHAPE_ASPECT') | ((
        sar.name = 'course sequence') AND (SIZEOF(TYPEOF(sar.
        related_shape_aspect) * [
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
        'ELECTROTECHNICAL_DESIGN.' +
        'INSTALLATION_SECTION_INTERFACE']) = 1)) ) >= 1);
END_ENTITY; -- routed_segment

ENTITY security_classification;
        name          : label;
        purpose       : text;
        security_level : security_classification_level;
END_ENTITY; -- security_classification

ENTITY security_classification_assignment
        ABSTRACT SUPERTYPE;
        assigned_security_classification : security_classification;
        DERIVE
        role : object_role := get_role(SELF);

```

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```
WHERE
  wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
    'ROLE_ASSOCIATION.ITEM_WITH_ROLE')) <= 1);
END_ENTITY; -- security_classification_assignment

ENTITY security_classification_level;
  name : label;
END_ENTITY; -- security_classification_level

ENTITY serial_numbered_effectivity
  SUBTYPE OF (effectivity);
  effectivity_start_id : identifier;
  effectivity_end_id   : OPTIONAL identifier;
END_ENTITY; -- serial_numbered_effectivity

ENTITY shape_aspect;
  name                : label;
  description          : OPTIONAL text;
  of_shape             : product_definition_shape;
  product_definitional : LOGICAL;
  DERIVE
    id : identifier := get_id_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- shape_aspect

ENTITY shape_aspect_relationship;
  name                : label;
  description          : OPTIONAL text;
  relating_shape_aspect : shape_aspect;
  related_shape_aspect  : shape_aspect;
  DERIVE
    id : identifier := get_id_value(SELF);
  WHERE
    wr1: (SIZEOF(USEDIN(SELF, 'ELECTROTECHNICAL_DESIGN.' +
      'ID_ATTRIBUTE.IDENTIFIED_ITEM')) <= 1);
END_ENTITY; -- shape_aspect_relationship

ENTITY shape_definition_representation
  SUBTYPE OF (property_definition_representation);
  WHERE
    wr1: (('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_SHAPE' IN
      TYPEOF(SELF.definition)) OR (
      'ELECTROTECHNICAL_DESIGN.SHAPE_DEFINITION' IN TYPEOF(
      SELF.definition.definition));
    wr2: ('ELECTROTECHNICAL_DESIGN.SHAPE_REPRESENTATION' IN
      TYPEOF(
      SELF.used_representation));
END_ENTITY; -- shape_definition_representation

ENTITY shape_representation
  SUBTYPE OF (representation);
END_ENTITY; -- shape_representation
```

```

ENTITY shape_representation_relationship
  SUBTYPE OF (representation_relationship);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.SHAPE_REPRESENTATION' IN (
      TYPEOF(SELF\representation_relationship.rep_1) +
      TYPEOF(SELF
        \representation_relationship.rep_2)));
  END_ENTITY; -- shape_representation_relationship

ENTITY si_unit
  SUBTYPE OF (named_unit);
  prefix : OPTIONAL si_prefix;
  name   : si_unit_name;
  DERIVE
    SELF\named_unit.dimensions : dimensional_exponents :=
      dimensions_for_si_unit(name);
  END_ENTITY; -- si_unit

ENTITY signal
  SUBTYPE OF (characterized_object);
  WHERE
    wr1: (SIZEOF(QUERY ( des <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
      (SIZEOF(TYPEOF(
        des) * ['ELECTROTECHNICAL_DESIGN.' +
        'DOCUMENT_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'TERMINAL_DESIGNATION_ASSIGNMENT']) > 0) )) = 0);
    wr2: (SIZEOF(QUERY ( des <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
        'ELECTROTECHNICAL_DESIGN.' +
        'SIGNAL_DESIGNATION_ASSIGNMENT') IN TYPEOF(des)) AND
      (des.
        role.description = 'primary')))) = 1);
    wr3: (SIZEOF(QUERY ( i <* USEDIN(SELF,
      'ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
      (i.role.
        name = 'version')) < 2);
  END_ENTITY; -- signal

ENTITY signal_designation_assignment
  SUBTYPE OF (item_designation_assignment);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.SIGNAL' IN
      TYPEOF(SELF.items[1]));
    wr2: (SIZEOF(TYPEOF(SELF) * ['ELECTROTECHNICAL_DESIGN.' +
      'DOCUMENT_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +

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```
        'SIGNAL DESIGNATION ASSIGNMENT',
        'ELECTROTECHNICAL DESIGN.' +
        'TERMINAL DESIGNATION ASSIGNMENT']) = 1);
END_ENTITY; -- signal_designation_assignment

ENTITY simple_boolean_expression
  ABSTRACT SUPERTYPE OF (ONEOF (boolean_literal,boolean_variable))
  SUBTYPE OF (boolean_expression, simple_generic_expression);
END_ENTITY; -- simple_boolean_expression

ENTITY simple_generic_expression
  ABSTRACT SUPERTYPE OF (ONEOF (generic_literal,generic_variable))
  SUBTYPE OF (generic_expression);
END_ENTITY; -- simple_generic_expression

ENTITY simple_numeric_expression
  ABSTRACT SUPERTYPE OF (ONEOF (literal_number,numeric_variable))
  SUBTYPE OF (numeric_expression, simple_generic_expression);
END_ENTITY; -- simple_numeric_expression

ENTITY simple_string_expression
  ABSTRACT SUPERTYPE OF (ONEOF (string_literal,string_variable))
  SUBTYPE OF (string_expression, simple_generic_expression);
END_ENTITY; -- simple_string_expression

ENTITY sin_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- sin_function

ENTITY slash_expression
  SUBTYPE OF (binary_numeric_expression);
END_ENTITY; -- slash_expression

ENTITY solid_angle_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  WHERE
    wr1: ('ELECTROTECHNICAL DESIGN.SOLID_ANGLE_UNIT' IN
TYPEOF(SELF
        \measure_with_unit.unit_component));
END_ENTITY; -- solid_angle_measure_with_unit

ENTITY solid_angle_unit
  SUBTYPE OF (named_unit);
  WHERE
    wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
(SELF\
        named_unit.dimensions.mass_exponent = 0) AND (SELF\
        named_unit.dimensions.time_exponent = 0) AND (SELF\
        named_unit.dimensions.electric_current_exponent = 0)
AND (
        SELF\named_unit.dimensions.
        thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
        .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
```



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        named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- solid_angle_unit

ENTITY specified_higher_usage_occurrence
  SUBTYPE OF (assembly_component_usage);
  upper_usage : assembly_component_usage;
  next_usage  : next_assembly_usage_occurrence;
  UNIQUE
  url : upper_usage, next_usage;
  WHERE
  wr1: (SELF :<>: upper_usage);
  wr2: (SELF\product_definition_relationship.
        relating_product_definition ::= upper_usage.
        relating_product_definition);
  wr3: (SELF\product_definition_relationship.
        related_product_definition ::= next_usage.
        related_product_definition);
  wr4: ((upper_usage.related_product_definition ::= next_usage.
        relating_product_definition) OR (SIZEOF(QUERY ( pdr
<*
        USEDIN(upper_usage.related_product_definition,
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_RELATIONSHIP.'
        + 'RELATED_PRODUCT_DEFINITION') | (pdr.
        relating_product_definition ::= next_usage.
        relating_product_definition) )) = 1));
  wr5:
(SIZEOF(['ELECTROTECHNICAL_DESIGN.NEXT_ASSEMBLY_USAGE_OCCURRENCE',
'ELECTROTECHNICAL_DESIGN.SPECIFIED_HIGHER_USAGE_OCCURRENCE']
        * TYPEOF(upper_usage)) = 1);
END_ENTITY; -- specified_higher_usage_occurrence

ENTITY square_root_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- square_root_function

ENTITY string_expression
  ABSTRACT SUPERTYPE OF (ONEOF (simple_string_expression,
        index_expression, substring_expression, concat_expression,
        format_function))
  SUBTYPE OF (expression);
END_ENTITY; -- string_expression

ENTITY string_literal
  SUBTYPE OF (simple_string_expression, generic_literal);
  the_value : STRING;
END_ENTITY; -- string_literal

ENTITY string_variable
  SUBTYPE OF (simple_string_expression, variable);
END_ENTITY; -- string_variable

ENTITY structured_dimension_callout

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```
SUBTYPE OF (draughting_callout);
WHERE
  wr1: (SIZEOF(TYPEOF(SELF) * [
    'ELECTROTECHNICAL_DESIGN.DATUM_FEATURE_CALLOUT',
    'ELECTROTECHNICAL_DESIGN.DATUM_TARGET_CALLOUT',
    'ELECTROTECHNICAL_DESIGN.GEOMETRICAL_TOLERANCE_CALLOUT',
    'ELECTROTECHNICAL_DESIGN.LEADER_DIRECTED_CALLOUT',
    'ELECTROTECHNICAL_DESIGN.PROJECTION_DIRECTED_CALLOUT',
    'ELECTROTECHNICAL_DESIGN.DIMENSION_CURVE_DIRECTED_CALLOUT'])
    = 0);
  wr2: (SIZEOF(QUERY ( ato <* QUERY ( con <* SELF.contents | (
    'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN
    TYPEOF(con)) ) | (NOT (ato.name IN ['dimension
value',
    'tolerance value','unit text','prefix text','suffix
text']))) ))
    = 0);
  wr3: (SIZEOF(QUERY ( ato <* QUERY ( con <* SELF.contents | (
    'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN
    TYPEOF(con)) ) | (ato.name = 'dimension value') ))
    >= 1);
  wr4: (SIZEOF(QUERY ( dcr <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_CALLOUT_RELATIONSHIP.' +
    'RELATING_DRAUGHTING_CALLOUT') | (((
    'ELECTROTECHNICAL_DESIGN.' +
    'DIMENSION_CALLOUT_COMPONENT_RELATIONSHIP') IN
TYPEOF(dcr))
    AND (dcr.name = 'prefix')) )) <= 1);
  wr5: (SIZEOF(QUERY ( dcr <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_CALLOUT_RELATIONSHIP.' +
    'RELATING_DRAUGHTING_CALLOUT') | (((
    'ELECTROTECHNICAL_DESIGN.' +
    'DIMENSION_CALLOUT_COMPONENT_RELATIONSHIP') IN
TYPEOF(dcr))
    AND (dcr.name = 'suffix')) )) <= 1);
  wr6: ((NOT (SIZEOF(QUERY ( ato <* QUERY ( con <* SELF.contents
| (
    'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN
    TYPEOF(con)) ) | (ato.name = 'prefix text') )) > 0))
OR (
    SIZEOF(QUERY ( dcr <* USEDIN(SELF,
    'ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_CALLOUT_RELATIONSHIP.' +
    'RELATING_DRAUGHTING_CALLOUT') | (((
    'ELECTROTECHNICAL_DESIGN.' +
    'DIMENSION_CALLOUT_COMPONENT_RELATIONSHIP') IN
TYPEOF(dcr))
```

```

        AND (dcr.name = 'prefix')) )) = 1));
wr7: ((NOT (SIZEOF(QUERY ( ato <* QUERY ( con <* SELF.contents
| (
        'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT_OCCURRENCE'
IN
        TYPEOF(con)) ) | (ato.name = 'suffix text') )) > 0))
OR (
        SIZEOF(QUERY ( dcr <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_CALLOUT_RELATIONSHIP.' +
        'RELATING_DRAUGHTING_CALLOUT') | (((
        'ELECTROTECHNICAL_DESIGN.' +
        'DIMENSION_CALLOUT_COMPONENT_RELATIONSHIP') IN
TYPEOF(dcr))
        AND (dcr.name = 'suffix')) )) = 1));
END_ENTITY; -- structured_dimension_callout

ENTITY styled_item
    SUBTYPE OF (representation_item);
    styles : SET [1:?] OF presentation_style_assignment;
    item : representation_item;
    WHERE
        wr1: ((SIZEOF(SELF.styles) = 1) XOR (SIZEOF(QUERY ( pres_style
<*
        SELF.styles | (NOT (('ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_STYLE_BY_CONTEXT') IN
TYPEOF(pres_style))) )
        = 0));
END_ENTITY; -- styled_item

ENTITY substring_expression
    SUBTYPE OF (string_expression,
multiple_arity_generic_expression);
    DERIVE
        operand : generic_expression := SELF\
            multiple_arity_generic_expression.operands[1];
        index1 : generic_expression := SELF\
            multiple_arity_generic_expression.operands[2];
        index2 : generic_expression := SELF\
            multiple_arity_generic_expression.operands[3];
    WHERE
        wr1: (('ELECTROTECHNICAL_DESIGN.STRING_EXPRESSION' IN TYPEOF(
            operand)) AND (
            'ELECTROTECHNICAL_DESIGN.NUMERIC_EXPRESSION' IN
TYPEOF(
            index1)) AND (
            'ELECTROTECHNICAL_DESIGN.NUMERIC_EXPRESSION' IN
TYPEOF(
            index2)));
        wr2: (SIZEOF(SELF\multiple_arity_generic_expression.operands)
= 3);
        wr3: is_int_expr(index1);
        wr4: is_int_expr(index2);
END_ENTITY; -- substring_expression

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```
ENTITY symbol_colour;
  colour_of_symbol : colour;
END_ENTITY; -- symbol_colour

ENTITY symbol_representation
  SUBTYPE OF (representation);
END_ENTITY; -- symbol_representation

ENTITY symbol_representation_map
  SUBTYPE OF (representation_map);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.SYMBOL_REPRESENTATION' IN
TYPEOF(SELF\representation_map.mapped_representation));
    wr2: ('ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT' IN
TYPEOF(SELF\
      representation_map.mapping_origin));
END_ENTITY; -- symbol_representation_map

ENTITY symbol_style;
  name : label;
  style_of_symbol : symbol_style_select;
END_ENTITY; -- symbol_style

ENTITY symbol_target
  SUBTYPE OF (geometric_representation_item);
  placement : axis2_placement;
  x_scale : positive_ratio_measure;
  y_scale : positive_ratio_measure;
END_ENTITY; -- symbol_target

ENTITY tan_function
  SUBTYPE OF (unary_function_call);
END_ENTITY; -- tan_function

ENTITY terminal
  SUBTYPE OF (shape_aspect);
  WHERE
    wr1 : (SELF\shape_aspect.product_definitional = UNKNOWN);
    wr2 : ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN TYPEOF(
SELF\shape_aspect.of_shape\property_definition.definition));
    wr3 :
(SELF\shape_aspect.of_shape\property_definition.definition.
  frame_of_reference\application_context_element.name
IN [
  'functional definition','functional occurrence',
  'part definition','part occurrence']);
    wr4 :
(SELF\shape_aspect.of_shape\property_definition.definition.
  name = 'single instance');
    wr5 : (SIZEOF(QUERY ( des <* USEDIN(SELF,
  'ELECTROTECHNICAL_DESIGN.' +
  'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (NOT
(SIZEOF(
```

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        TYPEOF(des) * ['ELECTROTECHNICAL_DESIGN.' +
        'DOCUMENT_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'SIGNAL_DESIGNATION_ASSIGNMENT']) > 0)) )) = 0);
wr6 : (SIZEOF(QUERY ( des <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
        'ELECTROTECHNICAL_DESIGN.' +
        'TERMINAL_DESIGNATION_ASSIGNMENT') IN TYPEOF(des))
AND (des
        .role.description = 'primary')) )) = 1);
wr7 : (SIZEOF(QUERY ( sar <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
        'RELATED_SHAPE_ASPECT') | ((
sar.related_shape_aspect.of_shape\property_definition.
definition.frame_of_reference\application_context_element.
        name = 'functional occurrence') AND (sar.name =
        'definition usage') AND (
        'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
        relating_shape_aspect)) AND
(sar.relating_shape_aspect.
of_shape\property_definition.definition.frame_of_reference\
        application_context_element.name = 'functional
definition')) ))
        = 1);
wr8 : (SIZEOF(QUERY ( sar <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
        'RELATED_SHAPE_ASPECT') | ((
sar.related_shape_aspect.of_shape\property_definition.
definition.frame_of_reference\application_context_element.
        name = 'part occurrence') AND (sar.name =
        'definition usage') AND (
        'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
        relating_shape_aspect)) AND
(sar.relating_shape_aspect.
of_shape\property_definition.definition.frame_of_reference\
        application_context_element.name = 'part
definition')) )) =
        1);
wr9 : (SIZEOF(QUERY ( sar <* USEDIN(SELF,
        'ELECTROTECHNICAL_DESIGN.' +
        'SHAPE_ASPECT_RELATIONSHIP.' +
        'RELATING_SHAPE_ASPECT') | (
(sar.relating_shape_aspect.of_shape\property_definition.

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definition.frame_of_reference\application_context_element.  
    name = 'functional definition') AND (sar.name =  
    'correspondence') AND (NOT (  
    'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.  
    related_shape_aspect))) AND (NOT  
(sar.related_shape_aspect.  
  
of_shape\property_definition.definition.frame_of_reference\  
    application_context_element.name = 'functional  
occurrence')) ) )  
    = 0);  
    wr10: (SIZEOF(QUERY ( sar <* USEDIN(SELF,  
        'ELECTROTECHNICAL_DESIGN.' +  
        'SHAPE_ASPECT_RELATIONSHIP.' +  
'RELATING_SHAPE_ASPECT') | (  
  
(sar.relating_shape_aspect.of_shape\property_definition.  
  
definition.frame_of_reference\application_context_element.  
    name = 'part definition') AND (sar.name =  
'correspondence')  
    AND ('ELECTROTECHNICAL_DESIGN.TERMINAL' IN  
TYPEOF(sar.  
        related_shape_aspect)) AND  
(sar.related_shape_aspect.  
  
of_shape\property_definition.definition.frame_of_reference\  
    application_context_element.name = 'part  
occurrence')) ) )  
    <= 1);  
    wr11: (SIZEOF(QUERY ( corr_mem <* QUERY ( sar <* USEDIN(SELF,  
        'ELECTROTECHNICAL_DESIGN.' +  
        'SHAPE_ASPECT_RELATIONSHIP.' +  
'RELATING_SHAPE_ASPECT') | (  
  
(sar.relating_shape_aspect.of_shape\property_definition.  
  
definition.frame_of_reference\application_context_element.  
    name = 'functional definition') AND (sar.name =  
'correspondence')) ) | (NOT (SIZEOF(  
    QUERY ( next_corr_mem <* QUERY ( sar <*  
(USEDIN(SELF,  
        'ELECTROTECHNICAL_DESIGN.' +  
        'SHAPE_ASPECT_RELATIONSHIP.' +  
'RELATING_SHAPE_ASPECT') -  
    corr_mem) | ((sar.relating_shape_aspect.of_shape\  
    property_definition.definition.frame_of_reference\  
    application_context_element.name = 'functional  
definition')  
    AND (sar.name = 'correspondence')) ) | (corr_mem.  
    related_shape_aspect =  
next_corr_mem.related_shape_aspect) ))  
    = 0)) )) = 0);  
    END_ENTITY; -- terminal
```

```

ENTITY terminal_designation_assignment
  SUBTYPE OF (item_designation_assignment);
  WHERE
    wr1: (SIZEOF(TYPEOF(SELF.items[1]) * [
      'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 1);
    wr2: (SIZEOF(TYPEOF(SELF) * ['ELECTROTECHNICAL_DESIGN.' +
      'DOCUMENT_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'SIGNAL_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'TERMINAL_DESIGNATION_ASSIGNMENT']) = 1);
END_ENTITY; -- terminal_designation_assignment

ENTITY terminator_symbol
  SUBTYPE OF (annotation_symbol_occurrence);
  annotated_curve : annotation_curve_occurrence;
END_ENTITY; -- terminator_symbol

ENTITY text_literal
  SUBTYPE OF (geometric_representation_item);
  literal      : presentable_text;
  placement    : axis2_placement;
  alignment    : text_alignment;
  path         : text_path;
  font         : font_select;
END_ENTITY; -- text_literal

ENTITY text_literal_with_associated_curves
  SUBTYPE OF (text_literal);
  associated_curves : SET [1:?] OF curve;
END_ENTITY; -- text_literal_with_associated_curves

ENTITY text_literal_with_blanking_box
  SUBTYPE OF (text_literal);
  blanking : planar_box;
END_ENTITY; -- text_literal_with_blanking_box

ENTITY text_literal_with_delineation
  SUBTYPE OF (text_literal);
  delineation : text_delineation;
END_ENTITY; -- text_literal_with_delineation

ENTITY text_literal_with_extent
  SUBTYPE OF (text_literal);
  extent : planar_extent;
END_ENTITY; -- text_literal_with_extent

ENTITY text_style;
  name          : label;
  character_appearance : character_style_select;
END_ENTITY; -- text_style

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ENTITY text_style_for_defined_font;
    text_colour : colour;
END_ENTITY; -- text_style_for_defined_font

ENTITY text_style_with_box_characteristics
    SUBTYPE OF (text_style);
    characteristics : SET [1:4] OF box_characteristic_select;
    WHERE
        wr1: (SIZEOF(QUERY ( c1 <* SELF.characteristics | (SIZEOF(
            QUERY ( c2 <* (SELF.characteristics - c1) |
(TYPEOF(c1) =
                TYPEOF(c2)) )) > 0 )) = 0);
END_ENTITY; -- text_style_with_box_characteristics

ENTITY text_style_with_mirror
    SUBTYPE OF (text_style);
    mirror_placement : axis2_placement;
END_ENTITY; -- text_style_with_mirror

ENTITY text_style_with_spacing
    SUBTYPE OF (text_style);
    character_spacing : character_spacing_select;
END_ENTITY; -- text_style_with_spacing

ENTITY thermodynamic_temperature_measure_with_unit
    SUBTYPE OF (measure_with_unit);
    WHERE
        wr1: ('ELECTROTECHNICAL DESIGN.THERMODYNAMIC_TEMPERATURE_UNIT'
            IN TYPEOF(SELF\measure_with_unit.unit_component));
END_ENTITY; -- thermodynamic_temperature_measure_with_unit

ENTITY thermodynamic_temperature_unit
    SUBTYPE OF (named_unit);
    WHERE
        wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
(SELF\
            named_unit.dimensions.mass_exponent = 0) AND (SELF\
            named_unit.dimensions.time_exponent = 0) AND (SELF\
            named_unit.dimensions.electric_current_exponent = 0)
AND (
            SELF\named_unit.dimensions.
            thermodynamic_temperature_exponent = 1) AND
(SELF\named_unit
            .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
            named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- thermodynamic_temperature_unit

ENTITY time_interval;
    id : identifier;
    name : label;
    description : OPTIONAL text;
END_ENTITY; -- time_interval
```



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ENTITY time_interval_assignment
  ABSTRACT SUPERTYPE;
  assigned_time_interval : time_interval;
  role                    : time_interval_role;
END_ENTITY; -- time_interval_assignment

ENTITY time_interval_based_effectivity
  SUBTYPE OF (effectivity);
  effectivity_period : time_interval;
END_ENTITY; -- time_interval_based_effectivity

ENTITY time_interval_role;
  name      : label;
  description : OPTIONAL text;
END_ENTITY; -- time_interval_role

ENTITY time_interval_with_bounds
  SUBTYPE OF (time_interval);
  primary_bound   : OPTIONAL date_time_or_event_occurrence;
  secondary_bound : OPTIONAL date_time_or_event_occurrence;
  duration        : OPTIONAL time_measure_with_unit;
  WHERE
    wr1: (NOT (EXISTS(secondary_bound) AND EXISTS(duration)));
    wr2: (EXISTS(primary_bound) OR EXISTS(secondary_bound));
END_ENTITY; -- time_interval_with_bounds

ENTITY time_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  WHERE
    wr1: ('ELECTROTECHNICAL_DESIGN.TIME_UNIT' IN TYPEOF(SELF\
      measure_with_unit.unit_component));
END_ENTITY; -- time_measure_with_unit

ENTITY time_unit
  SUBTYPE OF (named_unit);
  WHERE
    wr1: ((SELF\named_unit.dimensions.length_exponent = 0) AND
  (SELF\
      named_unit.dimensions.mass_exponent = 0) AND (SELF\
      named_unit.dimensions.time_exponent = 1) AND (SELF\
      named_unit.dimensions.electric_current_exponent = 0)
  AND (
      SELF\named_unit.dimensions.
      thermodynamic_temperature_exponent = 0) AND
  (SELF\named_unit
      .dimensions.amount_of_substance_exponent = 0) AND
  (SELF\
      named_unit.dimensions.luminous_intensity_exponent =
  0));
END_ENTITY; -- time_unit

ENTITY topological_representation_item
  SUPERTYPE OF (ONEOF (vertex,edge,path))
  SUBTYPE OF (representation_item);
END_ENTITY; -- topological_representation_item

```

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```
ENTITY trimmed_curve
  SUBTYPE OF (bounded_curve);
  basis_curve      : curve;
  trim_1           : SET [1:2] OF trimming_select;
  trim_2           : SET [1:2] OF trimming_select;
  sense_agreement  : BOOLEAN;
  master_representation : trimming_preference;
  WHERE
    wr1: ((HIINDEX(trim_1) = 1) OR (TYPEOF(trim_1[1]) <>
    TYPEOF(trim_1[2])));
    wr2: ((HIINDEX(trim_2) = 1) OR (TYPEOF(trim_2[1]) <>
    TYPEOF(trim_2[2])));
  END_ENTITY; -- trimmed_curve

ENTITY two_direction_repeat_factor
  SUBTYPE OF (one_direction_repeat_factor);
  second_repeat_factor : vector;
  END_ENTITY; -- two_direction_repeat_factor

ENTITY type_qualifier;
  name : label;
  END_ENTITY; -- type_qualifier

ENTITY unary_boolean_expression
  ABSTRACT SUPERTYPE OF (ONEOF (not_expression, odd_function))
  SUBTYPE OF (boolean_expression, unary_generic_expression);
  END_ENTITY; -- unary_boolean_expression

ENTITY unary_function_call
  ABSTRACT SUPERTYPE OF (ONEOF
(abs_function, minus_function, sin_function,
cos_function, tan_function, asin_function, acos_function, exp_function,
log_function, log2_function, log10_function, square_root_function))
  SUBTYPE OF (unary_numeric_expression);
  END_ENTITY; -- unary_function_call

ENTITY unary_generic_expression
  ABSTRACT SUPERTYPE
  SUBTYPE OF (generic_expression);
  operand : generic_expression;
  END_ENTITY; -- unary_generic_expression

ENTITY unary_numeric_expression
  ABSTRACT SUPERTYPE OF (unary_function_call)
  SUBTYPE OF (numeric_expression, unary_generic_expression);
  SELF\unary_generic_expression.operand : numeric_expression;
  END_ENTITY; -- unary_numeric_expression

ENTITY uncertainty_measure_with_unit
  SUBTYPE OF (measure_with_unit);
  name : label;
  description : OPTIONAL text;
```

```

WHERE
  wr1:
valid_measure_value(SELF\measure_with_unit.value_component);
END_ENTITY; -- uncertainty_measure_with_unit

ENTITY uniform_curve
  SUBTYPE OF (b_spline_curve);
END_ENTITY; -- uniform_curve

ENTITY value_function
  SUPERTYPE OF (int_value_function)
  SUBTYPE OF (numeric_expression, unary_generic_expression);
  SELF\unary_generic_expression.operand : string_expression;
END_ENTITY; -- value_function

ENTITY value_range
  SUBTYPE OF (compound_representation_item);
WHERE
  wr1: (((('ELECTROTECHNICAL_DESIGN.' +
'SET_REPRESENTATION_ITEM')
      IN TYPEOF(item_element)) AND
value_range_wr1(item_element));
  wr2: value_range_wr2(item_element);
  wr3: value_range_wr3(item_element);
END_ENTITY; -- value_range

ENTITY value_representation_item
  SUBTYPE OF (representation_item);
  value_component : measure_value;
WHERE
  wr1: (SIZEOF(QUERY ( rep <* using_representations(SELF) | (NOT
(
'ELECTROTECHNICAL_DESIGN.GLOBAL_UNIT_ASSIGNED_CONTEXT'
      IN TYPEOF(rep.context_of_items))) ) = 0);
END_ENTITY; -- value_representation_item

ENTITY variable
  ABSTRACT SUPERTYPE OF (ONEOF (numeric_variable,boolean_variable,
  string_variable))
  SUBTYPE OF (generic_variable);
END_ENTITY; -- variable

ENTITY variable_semantics
  ABSTRACT SUPERTYPE;
END_ENTITY; -- variable_semantics

ENTITY vector
  SUBTYPE OF (geometric_representation_item);
  orientation : direction;
  magnitude : length_measure;
WHERE
  wr1: (magnitude >= 0);
END_ENTITY; -- vector

```

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```
ENTITY versioned_action_request;
    id          : identifier;
    version     : label;
    purpose     : text;
    description : OPTIONAL text;
END_ENTITY; -- versioned_action_request

ENTITY vertex
    SUBTYPE OF (topological_representation_item);
END_ENTITY; -- vertex

ENTITY vertex_point
    SUBTYPE OF (vertex, geometric_representation_item);
    vertex_geometry : point;
END_ENTITY; -- vertex_point

ENTITY volume_measure_with_unit
    SUBTYPE OF (measure_with_unit);
    WHERE
        wr1: ('ELECTROTECHNICAL_DESIGN.VOLUME_UNIT' IN TYPEOF(SELF\
            measure_with_unit.unit_component));
END_ENTITY; -- volume_measure_with_unit

ENTITY volume_unit
    SUBTYPE OF (named_unit);
    WHERE
        wr1: ((SELF\named_unit.dimensions.length_exponent = 3) AND
(SELF\
            named_unit.dimensions.mass_exponent = 0) AND (SELF\
            named_unit.dimensions.time_exponent = 0) AND (SELF\
            named_unit.dimensions.electric_current_exponent = 0)
AND (
            SELF\named_unit.dimensions.
            thermodynamic_temperature_exponent = 0) AND
(SELF\named_unit
            .dimensions.amount_of_substance_exponent = 0) AND
(SELF\
            named_unit.dimensions.luminous_intensity_exponent =
0));
END_ENTITY; -- volume_unit

ENTITY xor_expression
    SUBTYPE OF (binary_boolean_expression);
    SELF\binary_generic_expression.operands : LIST [2:2] OF
boolean_expression;
END_ENTITY; -- xor_expression

RULE action_subtype_exclusiveness FOR (action);

WHERE
    wr1: (SIZEOF(QUERY ( a <* action | (SIZEOF(TYPEOF(a) * [
        'ELECTROTECHNICAL_DESIGN.EXECUTED_ACTION',
        'ELECTROTECHNICAL_DESIGN.RETENTION']) > 1) )) = 0);
```

```

END_RULE; -- action_subtype_exclusiveness

RULE application_protocol_definition_required FOR
(application_context);

WHERE
    wr1: (SIZEOF(QUERY ( ac <* application_context | (SIZEOF(
        QUERY ( apd <*
USEDIN(ac, 'ELECTROTECHNICAL_DESIGN.APPLICATION_PROTOCOL_DEFINITION.A
PPLICATION')
        | (apd.application_interpreted_model_schema_name =
        'electrotechnical_design') )) > 0) )) > 0);

END_RULE; -- application_protocol_definition_required

RULE approval_person_organization_requires_date_time FOR (
approval_person_organization);

WHERE
    wr1: (SIZEOF(QUERY ( apo <* approval_person_organization |
((SIZEOF(
        QUERY ( u <* USEDIN(apo, 'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_DATE_ASSIGNMENT.' + 'ITEMS') | (u.role.name =
        'sign off') )) + SIZEOF(QUERY ( u <* USEDIN(apo,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_DATE_AND_TIME_ASSIGNMENT.' + 'ITEMS') |
(u.role.name
        = 'sign off') ))) <> 1) )) = 0);

END_RULE; -- approval_person_organization_requires_date_time

RULE approval_requires_approval_assignment FOR (approval);

WHERE
    wr1: (SIZEOF(QUERY ( a <* approval |
(SIZEOF(USEDIN(a, 'ELECTROTECHNICAL_DESIGN.APPROVAL_ASSIGNMENT.ASSIGN
ED_APPROVAL'))
        = 0) )) = 0);

END_RULE; -- approval_requires_approval_assignment

RULE assembly_component_usage_reference_designation_constraint FOR
(
assembly_component_usage);

WHERE
    wr1: (SIZEOF(QUERY ( assy_rel <* QUERY ( acu <*
assembly_component_usage | (acu\
product_definition_relationship.related_product_definition.
frame_of_reference\application_context_element.name IN
[
    'functional occurrence', 'part occurrence']) ) |
(SIZEOF(
    QUERY ( primary <* QUERY ( orda <* USEDIN(assy_rel.

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        related_product_definition, 'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (orda\
        identification_assignment.role.description = 'primary')
    ) | (
        NOT (assy_rel.reference_designator = primary\
        identification_assignment.assigned_id)) )) > 0) )) =
0);
    wr2: (SIZEOF(QUERY ( acu <* assembly_component_usage | (SIZEOF(
        QUERY ( orda <* USEDIN(acu, 'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (orda\
        identification_assignment.role.description = 'primary')
    )) > 1) ))
        = 0);
    wr3: (SIZEOF(QUERY ( acu <* assembly_component_usage | (SIZEOF(
        QUERY ( primary <* QUERY ( orda <* USEDIN(acu,
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (orda\
        identification_assignment.role.description = 'primary')
    ) | (
        NOT (acu.reference_designator = primary\
        identification_assignment.assigned_id)) )) > 0) )) =
0);

    END_RULE; --
assembly_component_usage_reference_designation_constraint

    RULE characterized_object_subtype_exclusiveness FOR (
        characterized_object);

    WHERE
        wr1: (SIZEOF(QUERY ( c <* characterized_object |
        (SIZEOF(TYPEOF(c) * [
            'ELECTROTECHNICAL_DESIGN.' + 'CHARACTERIZED_CLASS',
            'ELECTROTECHNICAL_DESIGN.' + 'DOCUMENT_FILE',
            'ELECTROTECHNICAL_DESIGN.' + 'NOTIFICATION',
            'ELECTROTECHNICAL_DESIGN.' + 'PROCESS_VARIABLE',
            'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_CLASS',
            'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_IDENTIFICATION',
            'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_SPECIFICATION',
            'ELECTROTECHNICAL_DESIGN.' + 'SIGNAL']) > 1) )) = 0);

    END_RULE; -- characterized_object_subtype_exclusiveness

    RULE class_reference_requires_version FOR
    (externally_defined_class);

    WHERE
        wr1: (SIZEOF(QUERY ( edc <* externally_defined_class | (((
            'ELECTROTECHNICAL_DESIGN.' + 'KNOWN_SOURCE') IN TYPEOF(
            edc.source)) AND (SIZEOF(QUERY ( aei <* USEDIN(edc,
            'ELECTROTECHNICAL_DESIGN.' +
            'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.ITEMS') |
            (aei.
                role.name = 'version') )) <> 1) )) = 0);
        wr2: (SIZEOF(QUERY ( edc <* externally_defined_class | (((
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        'ELECTROTECHNICAL_DESIGN.' + 'KNOWN_SOURCE') IN TYPEOF(
        edc.source)) AND (SIZEOF(QUERY ( aeī <* USEDIN(edc,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT.ITEMS') |
(aei.role.name =
        'version') )) > 0)) = 0);

END_RULE; -- class_reference_requires_version

RULE classification_assignment_subtype_exclusiveness FOR (
        classification_assignment);

WHERE
        wr1: (SIZEOF(QUERY ( c <* classification_assignment |
(SIZEOF(TYPEOF(c)
        * ['ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_CLASSIFICATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE_ASSIGNMENT']) >
1) ))
        = 0);

END_RULE; -- classification_assignment_subtype_exclusiveness

RULE compatible_dimension FOR (cartesian_point, direction,
        representation_context,
geometric_representation_context);

WHERE
        wr1: (SIZEOF(QUERY ( x <* cartesian_point | (SIZEOF(QUERY ( y <*
        geometric_representation_context |
(item_in_context(x,y) AND (
        HIINDEX(x.coordinates) <>
y.coordinate_space_dimension)) )) >
        0) )) = 0);
        wr2: (SIZEOF(QUERY ( x <* direction | (SIZEOF(QUERY ( y <*
        geometric_representation_context |
(item_in_context(x,y) AND (
        HIINDEX(x.direction_ratios) <>
y.coordinate_space_dimension)) ))
        > 0) )) = 0);

END_RULE; -- compatible_dimension

RULE complex_product_requires_product_definition FOR
(product_definition,
        product_definition_formation,
product_related_product_category);

WHERE
        wr1: (SIZEOF(QUERY ( pdf <* product_definition_formation |
(((SIZEOF(
        QUERY ( prpc <* USEDIN(pdf.of_product,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(prpc.name

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        = 'functionality' ) ) = 1) AND (SIZEOF(QUERY ( pd < *
USEDIN (
    pdf, 'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_DEFINITION.'
+
    'FORMATION' ) | (pd.frame_of_reference.name =
    'functional definition' ) ) <> 1)) OR ((SIZEOF(
QUERY ( prpc < * USEDIN(pdf.of_product,
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS' ) |
(prpc.name
    = 'conceptual design' ) ) = 1) AND (SIZEOF(QUERY ( pd
< *
    USEDIN(pdf, 'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_DEFINITION.' + 'FORMATION' ) |
(pd.frame_of_reference.
    name = 'conceptual definition' ) ) <> 1)) OR ((SIZEOF(
QUERY ( prpc < * USEDIN(pdf.of_product,
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS' ) |
(prpc.name
    = 'alternative solution' ) ) = 1) AND (SIZEOF(QUERY (
pd < *
    USEDIN(pdf, 'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_DEFINITION.' + 'FORMATION' ) |
(pd.frame_of_reference.
    name = 'alternative definition' ) ) <> 1))) ) = 0);

END_RULE; -- complex_product_requires_product_definition

RULE configuration_design_constraint FOR (configuration_design);

WHERE
    wr1: (SIZEOF(QUERY ( cd < * configuration_design | (NOT
        configuration_design_correlation(cd) ) ) = 0);

END_RULE; -- configuration_design_constraint

RULE curve_font_usage FOR (curve_style_font,
    externally_defined_curve_font, pre_defined_curve_font);

WHERE
    wr1: (SIZEOF(QUERY ( csf < * curve_style_font |
(SIZEOF(USEDIN(csf,
    'ELECTROTECHNICAL_DESIGN.CURVE_STYLE.CURVE_FONT' ) ) = 0)
))
    = 0);
    wr2: (SIZEOF(QUERY ( pdcf < * pre_defined_curve_font |
(SIZEOF(USEDIN(
    pdcf, 'ELECTROTECHNICAL_DESIGN.CURVE_STYLE.CURVE_FONT' ) )
=
    0) ) ) = 0);
    wr3: (SIZEOF(QUERY ( edcf < * externally_defined_curve_font |
(NOT (
    SIZEOF(USEDIN(edcf, 'ELECTROTECHNICAL_DESIGN.' +
    'CURVE_STYLE.' + 'CURVE_FONT' ) ) >= 1) ) ) = 0);
```



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END_RULE; -- curve_font_usage

RULE dependent_instantiable_action_directive FOR
(action_directive);

WHERE
  wr1: (SIZEOF(QUERY ( a <* action_directive | (NOT
(SIZEOF(USEDIN(a, ''))
  > 0)) )) = 0);

END_RULE; -- dependent_instantiable_action_directive

RULE dependent_instantiable_address FOR (address);

WHERE
  wr1: (SIZEOF(QUERY ( a <* address | (NOT (SIZEOF(USEDIN(a, '')) >
0)) ))
  = 0);

END_RULE; -- dependent_instantiable_address

RULE dependent_instantiable_approval_role FOR (approval_role);

WHERE
  wr1: (SIZEOF(QUERY ( a <* approval_role | (NOT
(SIZEOF(USEDIN(a, '')) >
  0)) )) = 0);

END_RULE; -- dependent_instantiable_approval_role

RULE dependent_instantiable_approval_status FOR (approval_status);

WHERE
  wr1: (SIZEOF(QUERY ( a <* approval_status | (NOT
(SIZEOF(USEDIN(a, ''))
  > 0)) )) = 0);

END_RULE; -- dependent_instantiable_approval_status

RULE dependent_instantiable_attribute_value_role FOR (
  attribute_value_role);

WHERE
  wr1: (SIZEOF(QUERY ( a <* attribute_value_role | (NOT
(SIZEOF(USEDIN(a,
  '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_attribute_value_role

RULE dependent_instantiable_classification_role FOR
(classification_role);

WHERE

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```
wr1: (SIZEOF(QUERY ( c <* classification_role | (NOT
(SIZEOF(USEDIN(c,
    '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_classification_role

RULE dependent_instantiable_colour_rgb FOR (colour_rgb);

WHERE
    wr1: (SIZEOF(QUERY ( c <* colour_rgb | (NOT
(SIZEOF(USEDIN(c, '')) > 0)) ))
        = 0);

END_RULE; -- dependent_instantiable_colour_rgb

RULE dependent_instantiable_curve_style FOR (curve_style);

WHERE
    wr1: (SIZEOF(QUERY ( c <* curve_style | (NOT
(SIZEOF(USEDIN(c, '')) > 0)) ))
        = 0);

END_RULE; -- dependent_instantiable_curve_style

RULE dependent_instantiable_date FOR (date);

WHERE
    wr1: (SIZEOF(QUERY ( d <* date | (NOT (SIZEOF(USEDIN(d, '')) >
0)) )) =
        0);

END_RULE; -- dependent_instantiable_date

RULE dependent_instantiable_date_and_time FOR (date_and_time);

WHERE
    wr1: (SIZEOF(QUERY ( d <* date_and_time | (NOT
(SIZEOF(USEDIN(d, '')) >
    0)) )) = 0);

END_RULE; -- dependent_instantiable_date_and_time

RULE dependent_instantiable_date_role FOR (date_role);

WHERE
    wr1: (SIZEOF(QUERY ( d <* date_role | (NOT (SIZEOF(USEDIN(d, ''))
> 0)) ))
        = 0);

END_RULE; -- dependent_instantiable_date_role

RULE dependent_instantiable_date_time_role FOR (date_time_role);

WHERE
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    wr1: (SIZEOF(QUERY ( d <* date_time_role | (NOT
(SIZEOF(USEDIN(d, ''))
    > 0)) )) = 0);

END_RULE; -- dependent_instantiable_date_time_role

RULE dependent_instantiable_derived_unit FOR (derived_unit);

WHERE
    wr1: (SIZEOF(QUERY ( d <* derived_unit | (NOT
(SIZEOF(USEDIN(d, '')) >
    0)) )) = 0);

END_RULE; -- dependent_instantiable_derived_unit

RULE dependent_instantiable_document_usage_role FOR
(document_usage_role);

WHERE
    wr1: (SIZEOF(QUERY ( d <* document_usage_role | (NOT
(SIZEOF(USEDIN(d,
    '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_document_usage_role

RULE dependent_instantiable_externally_defined_symbol FOR (
externally_defined_symbol);

WHERE
    wr1: (SIZEOF(QUERY ( e <* externally_defined_symbol | (NOT
(SIZEOF(
    USEDIN(e, '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_externally_defined_symbol

RULE dependent_instantiable_fill_area_style FOR (fill_area_style);

WHERE
    wr1: (SIZEOF(QUERY ( f <* fill_area_style | (NOT
(SIZEOF(USEDIN(f, ''))
    > 0)) )) = 0);

END_RULE; -- dependent_instantiable_fill_area_style

RULE dependent_instantiable_fill_area_style_colour FOR (
fill_area_style_colour);

WHERE
    wr1: (SIZEOF(QUERY ( f <* fill_area_style_colour | (NOT (SIZEOF(
    USEDIN(f, '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_fill_area_style_colour

RULE dependent_instantiable_identification_role FOR
(identification_role);

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WHERE
  wr1: (SIZEOF(QUERY ( i <* identification_role | (NOT
(SIZEOF(USEDIN(i,
  '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_identification_role

RULE dependent_instantiable_measure_with_unit FOR
(measure_with_unit);

WHERE
  wr1: (SIZEOF(QUERY ( m <* measure_with_unit | (NOT
(SIZEOF(USEDIN(m, ''))
  > 0)) )) = 0);

END_RULE; -- dependent_instantiable_measure_with_unit

RULE dependent_instantiable_named_unit FOR (named_unit);

WHERE
  wr1: (SIZEOF(QUERY ( n <* named_unit | (NOT
(SIZEOF(USEDIN(n, '')) > 0)) ))
  = 0);

END_RULE; -- dependent_instantiable_named_unit

RULE dependent_instantiable_object_role FOR (object_role);

WHERE
  wr1: (SIZEOF(QUERY ( o <* object_role | (NOT
(SIZEOF(USEDIN(o, '')) > 0)) ))
  = 0);

END_RULE; -- dependent_instantiable_object_role

RULE dependent_instantiable_organization_role FOR
(organization_role);

WHERE
  wr1: (SIZEOF(QUERY ( o <* organization_role | (NOT
(SIZEOF(USEDIN(o, ''))
  > 0)) )) = 0);

END_RULE; -- dependent_instantiable_organization_role

RULE dependent_instantiable_organizational_project_role FOR (
  organizational_project_role);

WHERE
  wr1: (SIZEOF(QUERY ( o <* organizational_project_role | (NOT
(SIZEOF(
  USEDIN(o, '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_organizational_project_role
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RULE dependent_instantiable_person FOR (person);

WHERE
  wr1: (SIZEOF(QUERY ( p <* person | (NOT (SIZEOF(USEDIN(p, '')) >
0)) ))
        = 0);

END_RULE; -- dependent_instantiable_person

RULE dependent_instantiable_person_and_organization_role FOR (
  person_and_organization_role);

WHERE
  wr1: (SIZEOF(QUERY ( p <* person_and_organization_role | (NOT
(SIZEOF(
  USEDIN(p, '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_person_and_organization_role

RULE dependent_instantiable_pre_defined_colour FOR
(pre_defined_colour);

WHERE
  wr1: (SIZEOF(QUERY ( p <* pre_defined_colour | (NOT
(SIZEOF(USEDIN(p,
  '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_pre_defined_colour

RULE dependent_instantiable_pre_defined_symbol FOR
(pre_defined_symbol);

WHERE
  wr1: (SIZEOF(QUERY ( p <* pre_defined_symbol | (NOT
(SIZEOF(USEDIN(p,
  '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_pre_defined_symbol

RULE dependent_instantiable_precision_qualifier FOR
(precision_qualifier);

WHERE
  wr1: (SIZEOF(QUERY ( p <* precision_qualifier | (NOT
(SIZEOF(USEDIN(p,
  '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_precision_qualifier

RULE dependent_instantiable_presentation_style_by_context FOR (
  presentation_style_by_context);

WHERE
  wr1: (SIZEOF(QUERY ( p <* presentation_style_by_context | (NOT (

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```
        sizeof(USEDIN(p, '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_presentation_style_by_context

RULE dependent_instantiable_product_definition_context_role FOR (
    product_definition_context_role);

WHERE
    wr1: (sizeof(QUERY ( p <* product_definition_context_role | (NOT
(
        sizeof(USEDIN(p, '')) > 0)) )) = 0);

END_RULE; --
dependent_instantiable_product_definition_context_role

RULE dependent_instantiable_retention FOR (retention);

WHERE
    wr1: (sizeof(QUERY ( r <* retention | (NOT (sizeof(USEDIN(r, ''))
> 0)) ))
        = 0);

END_RULE; -- dependent_instantiable_retention

RULE dependent_instantiable_security_classification_level FOR (
    security_classification_level);

WHERE
    wr1: (sizeof(QUERY ( s <* security_classification_level | (NOT (
        sizeof(USEDIN(s, '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_security_classification_level

RULE dependent_instantiable_symbol_colour FOR (symbol_colour);

WHERE
    wr1: (sizeof(QUERY ( s <* symbol_colour | (NOT
(sizeof(USEDIN(s, '')) >
        0)) )) = 0);

END_RULE; -- dependent_instantiable_symbol_colour

RULE dependent_instantiable_text_style FOR (text_style);

WHERE
    wr1: (sizeof(QUERY ( t <* text_style | (NOT
(sizeof(USEDIN(t, '')) > 0)) ))
        = 0);

END_RULE; -- dependent_instantiable_text_style

RULE dependent_instantiable_text_style_for_defined_font FOR (
    text_style_for_defined_font);

WHERE
```

```

    wr1: (SIZEOF(QUERY ( t <* text_style_for_defined_font | (NOT
(SIZEOF(
        USEDIN(t, '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_text_style_for_defined_font

RULE dependent_instantiable_time_interval_role FOR
(time_interval_role);

WHERE
    wr1: (SIZEOF(QUERY ( t <* time_interval_role | (NOT
(SIZEOF(USEDIN(t,
        '')) > 0)) )) = 0);

END_RULE; -- dependent_instantiable_time_interval_role

RULE dependent_instantiable_type_qualifier FOR (type_qualifier);

WHERE
    wr1: (SIZEOF(QUERY ( t <* type_qualifier | (NOT
(SIZEOF(USEDIN(t, ''))
        > 0)) )) = 0);

END_RULE; -- dependent_instantiable_type_qualifier

RULE dimensionality_is_two_or_three FOR (
    geometric_representation_context);

WHERE
    wr1: (SIZEOF(QUERY ( g <* geometric_representation_context |
(NOT ((g.
        coordinate_space_dimension = 2) OR (g.
        coordinate_space_dimension = 3))) )) = 0);

END_RULE; -- dimensionality_is_two_or_three

RULE draughting_model_annotation_layers FOR
(presentation_representation);

WHERE
    wr1: (SIZEOF(QUERY ( pr <* presentation_representation | (NOT
(SIZEOF(
        QUERY ( ao <* QUERY ( it <* pr\representation.items | (
        'ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE' IN
        TYPEOF(it)) ) | (NOT (SIZEOF(USEDIN(ao,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_LAYER_ASSIGNMENT.' + 'ASSIGNED_ITEMS'))
>= 1)) ))
        = 0)) )) = 0);

END_RULE; -- draughting_model_annotation_layers

RULE draughting_subfigure_representation_layers FOR (
    draughting_subfigure_representation);

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```
WHERE
  wr1: (SIZEOF(QUERY ( dsr <* draughting_subfigure_representation
| (
      NOT (SIZEOF(QUERY ( item <* dsr\representation.items |
((
      'ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE' IN
      TYPEOF(item)) AND (SIZEOF(USEDIN(item,
      'ELECTROTECHNICAL_DESIGN.' +
      'PRESENTATION_LAYER_ASSIGNMENT.' + 'ASSIGNED_ITEMS')) =
0)) ))
      = 0)) )) = 0);

END_RULE; -- draughting_subfigure_representation_layers

RULE drawing_revision_document_designation_constraint FOR (
  drawing_revision);

WHERE
  wr1: (SIZEOF(QUERY ( d <* drawing_revision | (SIZEOF(QUERY ( des
<*
      USEDIN(d, 'ELECTROTECHNICAL_DESIGN.' +
      'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(des)
      * ['ELECTROTECHNICAL_DESIGN.' +
      'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'SIGNAL_DESIGNATION_ASSIGNMENT',
      'ELECTROTECHNICAL_DESIGN.' +
      'TERMINAL_DESIGNATION_ASSIGNMENT'])) > 0) )) > 0) )) =
0);
  wr2: (SIZEOF(QUERY ( d <* drawing_revision | (SIZEOF(QUERY ( des
<*
      USEDIN(d, 'ELECTROTECHNICAL_DESIGN.' +
      'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
      'ELECTROTECHNICAL_DESIGN.' +
      'DOCUMENT_DESIGNATION_ASSIGNMENT') IN TYPEOF(des)) AND
(des.
      role.description = 'primary')) > 1) )) = 0);

END_RULE; -- drawing_revision_document_designation_constraint

RULE drawing_sheet_annotation_layers FOR (drawing_sheet_revision);

WHERE
  wr1: (SIZEOF(QUERY ( dsr <* drawing_sheet_revision | (NOT
(SIZEOF(
      QUERY ( ao <* QUERY ( it <* dsr\representation.items |
(
      'ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE' IN
      TYPEOF(it)) ) | (NOT (SIZEOF(USEDIN(ao,
      'ELECTROTECHNICAL_DESIGN.' +
      'PRESENTATION_LAYER_ASSIGNMENT.' + 'ASSIGNED_ITEMS'))
>= 1) )) ))
      = 0)) )) = 0);
```



```

END_RULE; -- drawing_sheet_annotation_layers

RULE drawing_sheet_layout_usage FOR (mapped_item);

WHERE
    wr1: (SIZEOF(QUERY ( dsl <* QUERY ( mi <* mapped_item | (
        'ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_LAYOUT' IN
    TYPEOF(
        mi.mapping_source.mapped_representation)) ) | (NOT
    (SIZEOF(
        USEDIN(dsl, '')) = SIZEOF(QUERY ( dsr <* USEDIN(dsl,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.ITEMS') |
    (
        'ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION' IN
    TYPEOF(dsr)) )))) )) = 0);

END_RULE; -- drawing_sheet_layout_usage

RULE drawing_sheet_revision_document_designation_constraint FOR (
    drawing_sheet_revision);

WHERE
    wr1: (SIZEOF(QUERY ( d <* drawing_sheet_revision | (SIZEOF(
        QUERY ( des <* USEDIN(d, 'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
    (SIZEOF(TYPEOF(des)
        * ['ELECTROTECHNICAL_DESIGN.' +
        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'SIGNAL_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'TERMINAL_DESIGNATION_ASSIGNMENT']) > 0) )) > 0) )) =
    0);
    wr2: (SIZEOF(QUERY ( d <* drawing_sheet_revision | (SIZEOF(
        QUERY ( des <* USEDIN(d, 'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'DOCUMENT_DESIGNATION_ASSIGNMENT') IN TYPEOF(des)) AND
    (des.
        role.description = 'primary')) )) > 1) )) = 0);

END_RULE; --
drawing_sheet_revision_document_designation_constraint

RULE drawing_view_annotation_layers FOR (presentation_view);

WHERE
    wr1: (SIZEOF(QUERY ( pv <* presentation_view | (NOT (SIZEOF(
        QUERY ( ao <* QUERY ( it <* pv\representation.items | (
        'ELECTROTECHNICAL_DESIGN.ANNOTATION_OCCURRENCE' IN
    TYPEOF(it)) ) | (NOT (SIZEOF(USEDIN(ao,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_LAYER_ASSIGNMENT.' + 'ASSIGNED_ITEMS'))
    >= 1)) ))
    = 0)) )) = 0);

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```
END_RULE; -- drawing_view_annotation_layers

RULE effectivity_assignment_subtype_exclusiveness FOR (
    effectivity_assignment);

WHERE
    wr1: (SIZEOF(QUERY ( e <* effectivity_assignment |
(SIZEOF(TYPEOF(e) *
    ['ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_EFFECTIVITY_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_INEFFECTIVITY_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
    'CONFIGURED_EFFECTIVITY_ASSIGNMENT']) > 1) )) = 0);

END_RULE; -- effectivity_assignment_subtype_exclusiveness

RULE effectivity_context_assignment_subtype_exclusiveness FOR (
    effectivity_context_assignment);

WHERE
    wr1: (SIZEOF(QUERY ( e <* effectivity_context_assignment |
(SIZEOF(
    TYPEOF(e) * ['ELECTROTECHNICAL_DESIGN.' +
    'CLASS_USAGE_EFFECTIVITY_CONTEXT_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
    'CONFIGURED_EFFECTIVITY_CONTEXT_ASSIGNMENT']) > 1) )) =
0);

END_RULE; -- effectivity_context_assignment_subtype_exclusiveness

RULE event_occurrence_requires_event_occurrence_assignment FOR (
    event_occurrence, event_occurrence_assignment,
    relative_event_occurrence);

WHERE
    wr1: (SIZEOF(QUERY ( eo <* event_occurrence |
((SIZEOF(USEDIN(eo,
    'ELECTROTECHNICAL_DESIGN.' +
'RELATIVE_EVENT_OCCURRENCE.'
    + 'BASE_EVENT')) = 0) AND (SIZEOF(USEDIN(eo,
    'ELECTROTECHNICAL_DESIGN.' +
    'EVENT_OCCURRENCE_ASSIGNMENT.' +
'ASSIGNED_EVENT_OCCURRENCE'))
    = 0) )) = 0);

END_RULE; -- event_occurrence_requires_event_occurrence_assignment

RULE executed_action_requires_status FOR (executed_action);

WHERE
    wr1: (SIZEOF(QUERY ( ea <* executed_action | (SIZEOF(USEDIN(ea,
    'ELECTROTECHNICAL_DESIGN.' + 'ACTION_STATUS.' +
    'ASSIGNED_ACTION')) <> 1) )) = 0);
```

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END_RULE; -- executed_action_requires_status

RULE externally_defined_class_with_known_source_requirement FOR (
    externally_defined_class);

WHERE
    wr1: (SIZEOF(QUERY ( edc <* externally_defined_class | (((
        'ELECTROTECHNICAL_DESIGN.' + 'KNOWN_SOURCE') IN TYPEOF(
        edc.source)) AND (SIZEOF(QUERY ( aoa <*
USEDIN(edc, 'ELECTROTECHNICAL_DESIGN.APPLIED_ORGANIZATION_ASSIGNMENT.
ITEMS')
        | (aoa.role.name = 'class_supplier') )) = 0)) )) = 0);

END_RULE; --
externally_defined_class_with_known_source_requirement

RULE externally_defined_item_relationship_constraint FOR (
    externally_defined_item_relationship);

WHERE
    wr1: (SIZEOF(QUERY ( e <* externally_defined_item_relationship |
(NOT
        externally_defined_item_relationship_correlation(e)) ))
= 0);

END_RULE; -- externally_defined_item_relationship_constraint

RULE externally_defined_item_subtype_exclusiveness FOR (
    externally_defined_item);

WHERE
    wr1: (SIZEOF(QUERY ( e <* externally_defined_item |
(SIZEOF(TYPEOF(e)
        * ['ELECTROTECHNICAL_DESIGN.' +
        'EXTERNALLY_DEFINED_CLASS', 'ELECTROTECHNICAL_DESIGN.' +
        'EXTERNALLY_DEFINED_CURVE_FONT',
        'ELECTROTECHNICAL_DESIGN.' +
        'EXTERNALLY_DEFINED_GENERAL_PROPERTY',
        'ELECTROTECHNICAL_DESIGN.' +
        'EXTERNALLY_DEFINED_HATCH_STYLE',
        'ELECTROTECHNICAL_DESIGN.' +
        'EXTERNALLY_DEFINED_SYMBOL',
        'ELECTROTECHNICAL_DESIGN.' +
        'EXTERNALLY_DEFINED_TEXT_FONT', 'ELECTROTECHNICAL_DESIGN.'
        + 'EXTERNALLY_DEFINED_TILE_STYLE'])) > 1) )) = 0);

END_RULE; -- externally_defined_item_subtype_exclusiveness

RULE fill_area_style_tile_symbol_constraint FOR (
    fill_area_style_tile_symbol_with_style);

WHERE

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wr1: (SIZEOF(QUERY ( fast < *
fill_area_style_tile_symbol_with_style |
    (('ELECTROTECHNICAL_DESIGN.' + 'DEFINED_SYMBOL') IN
    TYPEOF(fast.symbol\styled_item.item)) AND (NOT ((
    'ELECTROTECHNICAL_DESIGN.' +
'EXTERNALLY_DEFINED_SYMBOL')
    IN TYPEOF(fast.symbol\styled_item.item\defined_symbol.
    definition)))) ) = 0);

END_RULE; -- fill_area_style_tile_symbol_constraint

RULE general_property_constraint FOR (general_property);

WHERE
    wr1: (SIZEOF(QUERY ( g < * general_property | (NOT
        general_property_correlation(g)) )) = 0);

END_RULE; -- general_property_constraint

RULE global_length_and_angle_units_2d_or_3d FOR (
    global_unit_assigned_context);

WHERE
    wr1: (SIZEOF(QUERY ( guac < * global_unit_assigned_context |
(SIZEOF(
    guac.units) < 2) )) = 0);
    wr2: (SIZEOF(QUERY ( guac < * global_unit_assigned_context |
((SIZEOF(
    QUERY ( x < * guac.units | (('ELECTROTECHNICAL_DESIGN.'
+
    'LENGTH_UNIT') IN TYPEOF(x)) )) <> 1) OR (SIZEOF(QUERY
( x < *
    guac.units | (('ELECTROTECHNICAL_DESIGN.' +
    'PLANE_ANGLE_UNIT') IN TYPEOF(x)) )) <> 1)) )) = 0);

END_RULE; -- global_length_and_angle_units_2d_or_3d

RULE group_assignment_subtype_exclusiveness FOR
(group_assignment);

WHERE
    wr1: (SIZEOF(QUERY ( ga < * group_assignment | (SIZEOF(TYPEOF(ga)
* [
    'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_GROUP_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
'CONNECTING_LINE_GROUP_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_GROUP_ELEMENTS_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
'PAGE_CONNECTOR_REFERENCE_GROUP_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE']) > 1) )) =
0);
```

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END_RULE; -- group_assignment_subtype_exclusiveness

RULE group_relationship_constraint FOR (group_relationship);

WHERE
  wr1: (SIZEOF(QUERY ( g <* group_relationship | (NOT
    group_relationship_correlation(g)) )) = 0);

END_RULE; -- group_relationship_constraint

RULE group_subtype_exclusiveness FOR (group);

WHERE
  wr1: (SIZEOF(QUERY ( g <* group | (SIZEOF(TYPEOF(g) * [
    'ELECTROTECHNICAL_DESIGN.' + 'CLASS',
    'ELECTROTECHNICAL_DESIGN.' + 'CLASS_SYSTEM',
    'ELECTROTECHNICAL_DESIGN.' + 'CONNECTING_LINE_GROUP',
    'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE',
    'ELECTROTECHNICAL_DESIGN.' + 'PAGE_CONNECTOR_GROUP',
    'ELECTROTECHNICAL_DESIGN.' +
    'PAGE_CONNECTOR_PRESENTATION_GROUP',
    'ELECTROTECHNICAL_DESIGN.' +
    'PAGE_CONNECTOR_REFERENCE_GROUP',
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_CONCEPT_FEATURE_CATEGORY']) > 1) )) = 0);

END_RULE; -- group_subtype_exclusiveness

RULE identification_assignment_relationship_constraint FOR (
  identification_assignment_relationship);

WHERE
  wr1: (SIZEOF(QUERY ( i <* identification_assignment_relationship
| (
  NOT
  identification_assignment_relationship_correlation(i)) ))
  = 0);

END_RULE; -- identification_assignment_relationship_constraint

RULE identification_assignment_subtype_exclusiveness FOR (
  identification_assignment);

WHERE
  wr1: (SIZEOF(QUERY ( i <* identification_assignment |
(SIZEOF(TYPEOF(i)
  * ['ELECTROTECHNICAL_DESIGN.' +
  'APPLIED_IDENTIFICATION_ASSIGNMENT',
  'ELECTROTECHNICAL_DESIGN.' +
  'EXTERNAL_IDENTIFICATION_ASSIGNMENT',
  'ELECTROTECHNICAL_DESIGN.' +
  'ITEM_DESIGNATION_ASSIGNMENT']) > 1) )) = 0);

END_RULE; -- identification_assignment_subtype_exclusiveness

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RULE known_source_constraint FOR (known_source);

WHERE
  wr1: (SIZEOF(QUERY ( k <* known_source | (NOT
(k\pre_defined_item.name
      IN ['IEC 61360 library','ISO 13584 library']))) ) = 0);

END_RULE; -- known_source_constraint

RULE person_requires_person_and_organization FOR (person);

WHERE
  wr1: (SIZEOF(QUERY ( p <* person | (SIZEOF(USEDIN(p,
'ELECTROTECHNICAL_DESIGN.PERSON_AND_ORGANIZATION.THE_PERSON')
      = 0) )) = 0);

END_RULE; -- person_requires_person_and_organization

RULE physical_instance_requires_product_definition FOR (
  product_definition, product_definition_formation,
  product_related_product_category);

WHERE
  wr1: (SIZEOF(QUERY ( pdf <* product_definition_formation |
((SIZEOF(
      QUERY ( prpc <* USEDIN(pdf.of_product,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(prpc.name
      = 'physically realized product') )) > 0) AND (SIZEOF(
QUERY ( pd <* USEDIN(pdf,'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION.' + 'FORMATION') |
(pd.frame_of_reference.
      name = 'physical occurrence') )) <> 1)) )) = 0);

END_RULE; -- physical_instance_requires_product_definition

RULE pre_defined_item_subtype_exclusiveness FOR
(pre_defined_item);

WHERE
  wr1: (SIZEOF(QUERY ( p <* pre_defined_item | (SIZEOF(TYPEOF(p) *
[
      'ELECTROTECHNICAL_DESIGN.KNOWN_SOURCE',
'ELECTROTECHNICAL_DESIGN.PRE_DEFINED_SYMBOL'] ) > 1) ))
=
      0);

END_RULE; -- pre_defined_item_subtype_exclusiveness

RULE presentation_layer_assignment_constraint_2d_or_3d FOR (
  presentation_layer_assignment);

WHERE
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wr1: (SIZEOF(QUERY ( pla <* presentation_layer_assignment | (NOT
(
    SIZEOF(QUERY ( pnt <* QUERY ( item <*
pla.assigned_items | ((
    'ELECTROTECHNICAL_DESIGN.' + 'POINT') IN TYPEOF(item))
)
    | (NOT (SIZEOF(QUERY ( rep <* USEDIN(pnt,
    'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') | ((
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION') IN
    TYPEOF(rep)) )) = 0)) )) = 0)) )) = 0);
wr2: (SIZEOF(QUERY ( pla <* presentation_layer_assignment | (NOT
(
    SIZEOF(QUERY ( crv <* QUERY ( item <*
pla.assigned_items | ((
    'ELECTROTECHNICAL_DESIGN.' + 'CURVE') IN TYPEOF(item))
)
    | (NOT (SIZEOF(QUERY ( rep <* USEDIN(crv,
    'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') | ((
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION') IN
    TYPEOF(rep)) )) = 0)) )) = 0)) )) = 0);
wr3: (SIZEOF(QUERY ( pla <* presentation_layer_assignment | (NOT
(
    SIZEOF(QUERY ( ao <* QUERY ( item <* pla.assigned_items
| ((
    'ELECTROTECHNICAL_DESIGN.' + 'ANNOTATION_OCCURRENCE')
IN
    TYPEOF(item)) ) | (NOT (SIZEOF(QUERY ( ur <*
using_representations(ao) | (NOT (SIZEOF(TYPEOF(ur) * [
    'ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_SUBFIGURE_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' + 'DRAUGHTING_MODEL',
    'ELECTROTECHNICAL_DESIGN.' + 'PRESENTATION_AREA',
    'ELECTROTECHNICAL_DESIGN.' + 'PRESENTATION_VIEW']) =
1)) ))
    = 0)) )) = 0)) )) = 0);

END_RULE; -- presentation_layer_assignment_constraint_2d_or_3d

RULE presentation_size_constraint FOR (presentation_size);

WHERE
wr1: (SIZEOF(QUERY ( ps <* presentation_size | (NOT (
    'ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION' IN
    TYPEOF(ps.unit))) )) = 0);

END_RULE; -- presentation_size_constraint

RULE presentation_style_by_context_constraint FOR (
    presentation_style_by_context);

WHERE
wr1: (SIZEOF(QUERY ( psbc <* presentation_style_by_context |
(NOT (
    'ELECTROTECHNICAL_DESIGN.PRESENTATION_VIEW' IN TYPEOF(
    psbc.style_context))) )) = 0);

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    wr2: (SIZEOF(QUERY ( psbc <* presentation_style_by_context |
(NOT (
        SIZEOF(psbcs\presentation_style_assignment.styles) = 1))
)) = 0);

END_RULE; -- presentation_style_by_context_constraint

RULE presentation_view_presented_once FOR (drawing_sheet_revision,
presentation_view);

WHERE
    wr1: (SIZEOF(QUERY ( pv <* presentation_view | (NOT (SIZEOF(
        QUERY ( rm <* USEDIN(pv, 'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION_MAP.' + 'MAPPED_REPRESENTATION') | (NOT
(
        SIZEOF(QUERY ( mi <* rm.map_usage | (NOT (SIZEOF(
        QUERY ( dsr <* drawing_sheet_revision | (mi IN dsr\
        representation.items) )) = 1)) )) = 0)) )) = 0)) )) =
0);

END_RULE; -- presentation_view_presented_once

RULE presented_item_subtype_exclusiveness FOR (presented_item);

WHERE
    wr1: (SIZEOF(QUERY ( p <* presented_item | (SIZEOF(TYPEOF(p) * [
        'ELECTROTECHNICAL_DESIGN.' + 'APPLIED_PRESENTED_ITEM',
        'ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_PRESENTED_ITEM'])
        > 1) )) = 0);

END_RULE; -- presented_item_subtype_exclusiveness

RULE product_concept_feature_requires_category FOR (
product_concept_feature,
product_concept_feature_category);

WHERE
    wr1: (SIZEOF(QUERY ( pcf <* product_concept_feature | (SIZEOF(
        QUERY ( aga <* USEDIN(pcf, 'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_GROUP_ASSIGNMENT.' + 'ITEMS') |
((aga.role.name =
        'specification category member') AND ((
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_CONCEPT_FEATURE_CATEGORY') IN TYPEOF(aga.
        assigned_group))) )) <> 1) )) = 0);

END_RULE; -- product_concept_feature_requires_category

RULE product_definition_constraint FOR (product_definition);

WHERE
    wr1: (SIZEOF(QUERY ( p <* product_definition | (NOT
        product_definition_correlation(p)) )) = 0);
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END_RULE; -- product_definition_constraint

RULE product_definition_context_association_constraint FOR (
    product_definition_context_association);

WHERE
    wr1: (SIZEOF(QUERY ( p <* product_definition_context_association
| (
    NOT
product_definition_context_association_correlation(p)) ))
    = 0);

END_RULE; -- product_definition_context_association_constraint

RULE product_definition_context_constraint FOR (
    product_definition_context);

WHERE
    wr1: (SIZEOF(QUERY ( p <* product_definition_context | (NOT
    product_definition_context_correlation(p)) )) = 0);

END_RULE; -- product_definition_context_constraint

RULE product_definition_relationship_constraint FOR (
    product_definition_relationship);

WHERE
    wr1: (SIZEOF(QUERY ( p <* product_definition_relationship | (NOT
    product_definition_relationship_correlation(p)) )) =
0);

END_RULE; -- product_definition_relationship_constraint

RULE product_requires_category FOR (product,
    product_related_product_category);

WHERE
    wr1: (SIZEOF(QUERY ( p <* product | (SIZEOF(USEDIN(p,
'ELECTROTECHNICAL_DESIGN.PRODUCT_RELATED_PRODUCT_CATEGORY.PRODUCTS')
)
    = 0) )) = 0);

END_RULE; -- product_requires_category

RULE product_requires_person_organization FOR (product);

WHERE
    wr1: (SIZEOF(QUERY ( prod <* product | ((SIZEOF(QUERY ( prpc <*
USEDIN(prod, 'ELECTROTECHNICAL_DESIGN.PRODUCT_RELATED_PRODUCT_CATEGOR
Y.PRODUCTS')
    | (prpc.name IN ['accessory', 'part', 'software'])) )) >
0) AND
    (SIZEOF(QUERY ( apoa <* USEDIN(prod,

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'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_PERSON_AND_ORGANIZATION_ASSIGNMENT.ITEMS') |
(apoa\
owner') ))
    person_and_organization_assignment.role.name <> 'id
    = 1)) )) = 0);

END_RULE; -- product_requires_person_organization

RULE product_requires_version FOR (product);

WHERE
    wr1: (SIZEOF(QUERY ( prod <* product | (SIZEOF(USEDIN(prod,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_DEFINITION_FORMATION.' + 'OF_PRODUCT')) = 0)
)) = 0);

END_RULE; -- product_requires_version

RULE property_definition_constraint FOR (property_definition);

WHERE
    wr1: (SIZEOF(QUERY ( p <* property_definition | (NOT
        property_definition_correlation(p)) )) = 0);

END_RULE; -- property_definition_constraint

RULE property_definition_relationship_constraint FOR (
    property_definition_relationship);

WHERE
    wr1: (SIZEOF(QUERY ( p <* property_definition_relationship |
(NOT
        property_definition_relationship_correlation(p)) )) =
0);

END_RULE; -- property_definition_relationship_constraint

RULE property_definition_representation_constraint FOR (
    property_definition_representation);

WHERE
    wr1: (SIZEOF(QUERY ( p <* property_definition_representation |
(NOT
        property_definition_representation_correlation(p)) )) =
0);

END_RULE; -- property_definition_representation_constraint

RULE property_reference_requires_name_scope FOR (
    externally_defined_general_property);

WHERE
    wr1: (SIZEOF(QUERY ( edgp <* externally_defined_general_property
| (((
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        'ELECTROTECHNICAL_DESIGN.' + 'KNOWN_SOURCE') IN TYPEOF(
edgp.source)) AND (SIZEOF(QUERY ( edir <* USEDIN(edgp,
'ELECTROTECHNICAL_DESIGN.' +
'EXTERNALLY_DEFINED_ITEM_RELATIONSHIP.' +
'RELATING_ITEM') | (
    (edir.name = 'name scope') AND ((
'ELECTROTECHNICAL_DESIGN.' +
'EXTERNALLY_DEFINED_CLASS')
    IN TYPEOF(edir.related_item)) AND ((
'ELECTROTECHNICAL_DESIGN.' + 'KNOWN_SOURCE') IN TYPEOF(
edir.related_item.source))) ) <> 1)) ) = 0);

END_RULE; -- property_reference_requires_name_scope

RULE property_reference_requires_version FOR (
    externally_defined_general_property);

WHERE
    wr1: (SIZEOF(QUERY ( edgp <* externally_defined_general_property
| (((
        'ELECTROTECHNICAL_DESIGN.' + 'KNOWN_SOURCE') IN TYPEOF(
edgp.source)) AND (SIZEOF(QUERY ( edir <* USEDIN(edgp,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT.' +
'ITEMS') | (
    edir.role.name = 'version') )) <> 1)) )) = 0);

END_RULE; -- property_reference_requires_version

RULE reference_grid_layout_usage FOR (mapped_item);

WHERE
    wr1: (SIZEOF(QUERY ( rgl <* QUERY ( mi <* mapped_item | ((
        'ELECTROTECHNICAL_DESIGN.' + 'REFERENCE_GRID_LAYOUT')
IN
TYPEOF(mi\mapped_item.mapping_source.mapped_representation)) )
<*
    USEDIN(rgl, 'ELECTROTECHNICAL_DESIGN.' +
'REPRESENTATION.'
+ 'ITEMS') | (SIZEOF(TYPEOF(items) * [
'ELECTROTECHNICAL_DESIGN.' + 'DRAWING_SHEET_REVISION',
'ELECTROTECHNICAL_DESIGN.' + 'PRESENTATION_VIEW']) = 1)
)))) )
    = 0);

END_RULE; -- reference_grid_layout_usage

RULE representation_constraint FOR (representation);

WHERE
    wr1: (SIZEOF(QUERY ( r <* representation | (NOT
    representation_correlation(r)) )) = 0);

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END_RULE; -- representation_constraint

RULE representation_item_constraint FOR (representation_item);

WHERE
  wr1: (SIZEOF(QUERY ( r <* representation_item | (NOT
    representation_item_correlation(r)) )) = 0);

END_RULE; -- representation_item_constraint

RULE representation_item_subtype_exclusiveness FOR
(representation_item);

WHERE
  wr1: (SIZEOF(QUERY ( r <* representation_item |
(SIZEOF(TYPEOF(r) * [
'ELECTROTECHNICAL_DESIGN.COMPOUND_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.GEOMETRIC_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM']) >
1) ))
    = 0);
  wr2: (SIZEOF(QUERY ( r <* representation_item |
(SIZEOF(TYPEOF(r) * [
'ELECTROTECHNICAL_DESIGN.COMPOUND_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.TOPOLOGICAL_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM']) >
1) ))
    = 0);
  wr3: (SIZEOF(QUERY ( r <* representation_item |
(SIZEOF(TYPEOF(r) * [
'ELECTROTECHNICAL_DESIGN.COMPOUND_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM',
'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.TOPOLOGICAL_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM']) >
1) ))
    = 0);

END_RULE; -- representation_item_subtype_exclusiveness

RULE representation_relationship_constraint FOR (
  representation_relationship);

WHERE
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wr1: (SIZEOF(QUERY ( r <* representation_relationship | (NOT
    representation_relationship_correlation(r)) )) = 0);

END_RULE; -- representation_relationship_constraint

RULE representation_subtype_exclusiveness FOR (representation);

WHERE
    wr1: (SIZEOF(QUERY ( r <* representation | (SIZEOF(TYPEOF(r) * [
        'ELECTROTECHNICAL_DESIGN.' + 'DRAUGHTING_MODEL',
        'ELECTROTECHNICAL_DESIGN.' + 'NOTE_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
        + 'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION']) ) >
1) ))
    = 0);

END_RULE; -- representation_subtype_exclusiveness

RULE restrict_alternative_definition FOR (product_definition,
    product_definition_context);

WHERE
    wr1: (SIZEOF(QUERY ( pd <* product_definition | ((pd.
        frame_of_reference.name = 'alternative definition') AND
(
        SIZEOF(QUERY ( pdr <* USEDIN(pd,
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_DEFINITION_RELATIONSHIP.' +
            'RELATED_PRODUCT_DEFINITION') | (pdr.name =
            'solution alternative definition') )) <> 1)) )) = 0);
    wr2: (SIZEOF(QUERY ( pd <* product_definition | ((pd.
        frame_of_reference.name = 'alternative definition') AND
(NOT (
        pd.name IN ['technical', 'supplier', 'final',
            'technical supplier', 'technical final', 'supplier
final',
            'technical supplier final', ''])))) )) = 0);
    wr3: (SIZEOF(QUERY ( pd <* product_definition | ((pd.
        frame_of_reference.name = 'alternative definition') AND
(pd.
        name IN ['supplier', 'technical supplier', 'supplier
final',
            'technical supplier final']) AND (SIZEOF(QUERY ( aoa <*
            USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.' +
            'APPLIED_ORGANIZATION_ASSIGNMENT.' + 'ITEMS') |
(aoa.role.name
            = 'supplier') )) <> 1)) )) = 0);
    wr4: (SIZEOF(QUERY ( pd <* product_definition | ((pd.
        frame_of_reference.name = 'alternative definition') AND
(pd.
        name IN ['final', 'technical final', 'supplier final',
            'technical supplier final']) AND (SIZEOF(QUERY ( pdr <*

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USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP.' +
'RELATING_PRODUCT_DEFINITION') | (pdr.name =
'final specification' ) ) = 0) AND (SIZEOF(QUERY ( pd
<*
USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION.' + 'DEFINITION') | (SIZEOF(
QUERY ( pdr <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION') |
((pdr.
used_representation.name = 'final item
characteristics') AND (
SIZEOF(QUERY ( i <* pdr.used_representation.items | ((
'ELECTROTECHNICAL_DESIGN.' +
'DESRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i)) )) =
SIZEOF(
pdr.used_representation.items)) AND (SIZEOF(pdr.
used_representation.items) >= 2) AND (SIZEOF(QUERY ( i
<* pdr.
used_representation.items | (i.name = 'final item
status') ))
= 1)) )) > 0) )) = 0)) )) = 0);

END_RULE; -- restrict_alternative_definition

RULE restrict_applied_action_assignment FOR
(applied_action_assignment,
object_role);

WHERE
wr1: (SIZEOF(QUERY ( aaa <* applied_action_assignment |
((aaa.role.
description = 'activity element') AND (NOT ((
'ELECTROTECHNICAL_DESIGN.' + 'EXECUTED_ACTION') IN
TYPEOF(aaa.assigned_action)))))) = 0);
wr2: (SIZEOF(QUERY ( aaa <* applied_action_assignment |
((aaa.role.
description = 'activity element') AND (NOT
item_correlation(
aaa.items, ['ACTION', 'ACTION_METHOD', 'ACTION_PROPERTY',
'ASSEMBLY_COMPONENT_USAGE_SUBSTITUTE', 'CONFIGURATION_ITEM',
'CONFIGURATION_EFFECTIVITY',
'CONFIGURED_EFFECTIVITY_ASSIGNMENT', 'DOCUMENT_FILE',
'DRAUGHTING_MODEL', 'DRAWING_REVISION', 'GENERAL_PROPERTY',
'PRESENTATION_AREA', 'PRODUCT', 'PRODUCT_CONCEPT',
'PRODUCT_CONCEPT_FEATURE',
'PRODUCT_CONCEPT_FEATURE_ASSOCIATION',
'PRODUCT_CONCEPT_FEATURE_CATEGORY',
'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE', 'PRODUCT_DEFINITION',
'PRODUCT_DEFINITION_FORMATION',
'PRODUCT_DEFINITION_RELATIONSHIP',
'PRODUCT_DEFINITION_SUBSTITUTE', 'PROPERTY_DEFINITION',
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        'SHAPE_ASPECT', 'SHAPE_REPRESENTATION']))) )) = 0);
wr3: (SIZEOF(QUERY ( aaa <* applied_action_assignment | ((NOT
EXISTS(
        aaa.role)) OR (aaa.role.description = 'activity
element')) AND
        (SIZEOF(QUERY ( i <* aaa.items | ((
        'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_ACTION_ASSIGNMENT')
        IN TYPEOF(i)) )) > 0)) )) = 0);
wr4: (SIZEOF(QUERY ( aaa <* applied_action_assignment |
((aaa.role.
        name = 'retention') AND (NOT
(('ELECTROTECHNICAL_DESIGN.'
        + 'RETENTION') IN TYPEOF(aaa.assigned_action)))) )) =
0);
wr5: (SIZEOF(QUERY ( aaa <* applied_action_assignment |
((aaa.role.
        name = 'retention') AND (NOT
item_correlation(aaa.items, [
        'ACTION', 'ACTION_DIRECTIVE', 'ACTION_PROPERTY',
        'ACTION_RELATIONSHIP', 'APPLIED_ACTION_ASSIGNMENT',
        'APPLIED_CLASSIFICATION_ASSIGNMENT',
        'ASSEMBLY_COMPONENT_USAGE_SUBSTITUTE', 'CERTIFICATION',
        'CLASS_SYSTEM', 'CONFIGURATION_EFFECTIVITY',
'CONFIGURATION_ITEM', 'CONFIGURED_EFFECTIVITY_ASSIGNMENT',
        'DOCUMENT_FILE', 'DRAUGHTING_MODEL', 'DRAWING_REVISION',
        'GENERAL_PROPERTY', 'ORGANIZATIONAL_PROJECT',
        'PRESENTATION_AREA', 'PRODUCT', 'PRODUCT_CONCEPT',
        'PRODUCT_CONCEPT_FEATURE',
        'PRODUCT_CONCEPT_FEATURE_ASSOCIATION',
        'PRODUCT_CONCEPT_FEATURE_CATEGORY',
'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE', 'PRODUCT_DEFINITION',
        'PRODUCT_DEFINITION_FORMATION',
        'PRODUCT_DEFINITION_RELATIONSHIP',
        'PRODUCT_DEFINITION_SUBSTITUTE', 'PROPERTY_DEFINITION',
        'SHAPE_REPRESENTATION', 'VERSIONED_ACTION_REQUEST'])))
)) = 0);
wr6: (SIZEOF(QUERY ( aaa <* applied_action_assignment |
((aaa.role.
        name = 'test activity') AND (NOT
item_correlation(aaa.items, [
        'PROPERTY_DEFINITION']))) )) = 0);

END_RULE; -- restrict_applied_action_assignment

RULE restrict_applied_action_request_assignment FOR (
        applied_action_request_assignment, object_role);

WHERE
wr1: (SIZEOF(QUERY ( aara <* applied_action_request_assignment |
(aara
        .role.name <> 'scope') )) = 0);

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END_RULE; -- restrict_applied_action_request_assignment

RULE restrict_applied_classification_assignment_role FOR (
    applied_classification_assignment);

WHERE
    wr1: (SIZEOF(QUERY ( aca <* applied_classification_assignment |
    (((
        'ELECTROTECHNICAL_DESIGN.' + 'CLASS') IN TYPEOF(aca.
        assigned_class)) AND (NOT (aca.role.name IN
    ['definitional',
        'nondefinitional',''])))) = 0);
    wr2: (SIZEOF(QUERY ( aca <* applied_classification_assignment |
    ((aca.
        role.name IN ['definitional','nondefinitional','']) AND
    (NOT (
        ('ELECTROTECHNICAL_DESIGN.' + 'CLASS') IN TYPEOF(aca.
        assigned_class)))))) = 0);
    wr3: (SIZEOF(QUERY ( aca <* applied_classification_assignment |
    (((
        'ELECTROTECHNICAL_DESIGN.' + 'CLASS_SYSTEM') IN TYPEOF(
        aca.assigned_class)) AND (aca.role.name <>
        'class system membership')))) = 0);
    wr4: (SIZEOF(QUERY ( aca <* applied_classification_assignment |
    ((aca.
        role.name = 'class system membership') AND (NOT ((
        'ELECTROTECHNICAL_DESIGN.' + 'CLASS_SYSTEM') IN TYPEOF(
        aca.assigned_class)))))) = 0);

END_RULE; -- restrict_applied_classification_assignment_role

RULE restrict_applied_event_occurrence_assignment FOR (
    applied_event_occurrence_assignment);

WHERE
    wr1: (SIZEOF(QUERY ( eo <* applied_event_occurrence_assignment |
    ((eo\
        event_occurrence_assignment.role.name = 'event
context') AND (
        SIZEOF(eo.items) > 1)) )) = 0);

END_RULE; -- restrict_applied_event_occurrence_assignment

RULE restrict_applied_organizational_project_assignment FOR (
    applied_organizational_project_assignment,
object_role);

WHERE
    wr1: (SIZEOF(QUERY ( aopa <*
applied_organizational_project_assignment
    | ((aopa.role.name = 'affecting project') AND (NOT
        item_correlation(aopa.items,['PRODUCT_CONCEPT'])))) =
0);
    wr2: (SIZEOF(QUERY ( aopa <*
applied_organizational_project_assignment
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    | ((aopa.role.name = 'work program') AND (NOT
item_correlation(aopa.items, ['EXECUTED_ACTION']))) )) =
0);

END_RULE; -- restrict_applied_organizational_project_assignment

RULE restrict_camera_image_in_view FOR (camera_image,
presentation_view);

WHERE
wr1: (SIZEOF(QUERY ( ci <* camera_image | (SIZEOF(QUERY ( r <*
USEDIN(
    ci, 'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') | ((
'ELECTROTECHNICAL_DESIGN.' + 'PRESENTATION_VIEW') IN
    TYPEOF(r)) )) <> 1) )) = 0);
wr2: (SIZEOF(QUERY ( pv <* presentation_view | (SIZEOF(QUERY (
ri <*
    pv\representation.items | (('ELECTROTECHNICAL_DESIGN.'
+
    'CAMERA_IMAGE') IN TYPEOF(ri)) )) > 1) )) = 0);

END_RULE; -- restrict_camera_image_in_view

RULE restrict_class_system_assignment_for_approval_status FOR (
applied_classification_assignment, approval_status);

WHERE
wr1: (SIZEOF(QUERY ( ent <* approval_status | (SIZEOF(QUERY ( ia
<*
    USEDIN(ent, 'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_CLASSIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
    name = 'class system membership') )) > 1) )) = 0);

END_RULE; -- restrict_class_system_assignment_for_approval_status

RULE restrict_class_system_assignment_for_class FOR (
applied_classification_assignment, class);

WHERE
wr1: (SIZEOF(QUERY ( c <* class | (SIZEOF(QUERY ( aca <*
USEDIN(c,
    'ELECTROTECHNICAL_DESIGN.' +
'CLASSIFICATION_ASSIGNMENT.'
    + 'ASSIGNED_CLASS') | ((aca.role.name =
    'class system membership') AND ((
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_CLASSIFICATION_ASSIGNMENT') IN TYPEOF(aca)))
)) > 1) ))
    = 0);

END_RULE; -- restrict_class_system_assignment_for_class

RULE restrict_class_system_assignment_for_document_type FOR (
applied_classification_assignment, document_type);

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WHERE
  wr1: (SIZEOF(QUERY ( ent <* document_type | (SIZEOF(QUERY ( ia
<*
      USEDIN(ent,'ELECTROTECHNICAL_DESIGN.' +
      'APPLIED_CLASSIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
      name = 'class system membership') )) > 1) )) = 0);

END_RULE; -- restrict_class_system_assignment_for_document_type

RULE restrict_class_system_assignment_for_planar_extent FOR (
  applied_classification_assignment, planar_extent);

WHERE
  wr1: (SIZEOF(QUERY ( pe <* planar_extent |
((pe\representation_item.
      name = 'size format') AND (SIZEOF(QUERY ( aca <*
USEDIN(pe,'ELECTROTECHNICAL_DESIGN.APPLIED_CLASSIFICATION_ASSIGNMENT
.ITEMS')
      | (aca\classification_assignment.role.name =
      'class system membership') )) >1)) )) = 0);

END_RULE; -- restrict_class_system_assignment_for_planar_extent

RULE
restrict_class_system_assignment_for_security_classification_level
FOR (
  applied_classification_assignment,
  security_classification_level);

WHERE
  wr1: (SIZEOF(QUERY ( ent <* security_classification_level |
(SIZEOF(
  QUERY ( ia <* USEDIN(ent,'ELECTROTECHNICAL_DESIGN.' +
  'APPLIED_CLASSIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
  name = 'class system membership') )) > 1) )) = 0);

END_RULE; --
restrict_class_system_assignment_for_security_classification_level

RULE restrict_concept_feature_operator FOR
(concept_feature_operator);

WHERE
  wr1: (SIZEOF(QUERY ( cfo <* concept_feature_operator | (NOT
(cfo.name
  IN ['and','or ','oneof','not','implication']))) )) = 0);
  wr2: (SIZEOF(QUERY ( cfo <* concept_feature_operator |
((cfo.name =
  'implication') AND (SIZEOF(QUERY ( cfrwc <* USEDIN(cfo,
  'ELECTROTECHNICAL_DESIGN.' +
  'CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION.' +
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        'CONDITIONAL_OPERATOR') | (SIZEOF(QUERY ( ccf <*
USEDIN(cfrwc,
        'ELECTROTECHNICAL_DESIGN.' +
        'CONDITIONAL_CONCEPT_FEATURE.' + 'CONDITION') | (NOT ((
        'ELECTROTECHNICAL_DESIGN.' +
        'INCLUSION_PRODUCT_CONCEPT_FEATURE') IN TYPEOF(ccf)))
)) > 0) ))
        > 0) )) = 0);

END_RULE; -- restrict_concept_feature_operator

RULE restrict_configuration_design_for_product_class FOR (
        configuration_design, product_class);

WHERE
        wr1: (SIZEOF(QUERY ( cd <* configuration_design | ((cd.name =
        'functionality') AND ((NOT (('ELECTROTECHNICAL_DESIGN.'
+
        'PRODUCT_DEFINITION') IN TYPEOF(cd.design))) OR
(cd.design\
        product_definition.frame_of_reference.name <>
        'functional definition')))) = 0);
        wr2: (SIZEOF(QUERY ( cd <* configuration_design | ((cd.name =
        'realization') AND ((NOT (('ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_DEFINITION') IN TYPEOF(cd.design))) OR
(cd.design\
        product_definition.frame_of_reference.name <>
        'conceptual definition')))) = 0);
        wr3: (SIZEOF(QUERY ( cd <* configuration_design | ((cd.name IN [
        'functionality','realization']) AND (NOT ((
        'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_CLASS') IN
TYPEOF(
        cd.configuration.item_concept)))))) = 0);
        wr4: (SIZEOF(QUERY ( cd <* configuration_design | (((
        'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_DEFINITION') IN
TYPEOF(cd.design)) AND (cd.design\product_definition.
        frame_of_reference.name <> 'design constraint
definition') AND
        ((cd.configuration.name <> 'design constraint usage')
OR (
        NOT (('ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_CLASS') IN
TYPEOF(cd.configuration.item_concept)))))) = 0);
        wr5: (SIZEOF(QUERY ( cd <* configuration_design | ((cd.name =
        'physical instance basis') AND ((NOT ((
        'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_DEFINITION') IN
TYPEOF(cd.design))) OR (cd.design\product_definition.
        frame_of_reference.name <> 'physical occurrence')))) =
= 0);
        wr6: (SIZEOF(QUERY ( cd <* configuration_design | ((cd.name =
        'physical instance basis') AND (NOT ((
        'ELECTROTECHNICAL_DESIGN.' + 'PRODUCT_IDENTIFICATION')
IN
        TYPEOF(cd.configuration)))))) = 0);

END_RULE; -- restrict_configuration_design_for_product_class

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RULE restrict draughting_title_for_drawing_sheet_revision FOR (
    drawing_sheet_revision);

WHERE
    wr1: (SIZEOF(QUERY ( d <* drawing_sheet_revision |
(SIZEOF(USEDIN(d,
    'ELECTROTECHNICAL_DESIGN.' + 'DRAUGHTING_TITLE.' +
    'ITEMS')) > 1) )) = 0);

END_RULE; -- restrict draughting_title_for_drawing_sheet_revision

RULE restrict_effectivity_assignment_for_class_category_usage FOR
(
    applied_effectivity_assignment,
    product_concept_feature_category_usage);

WHERE
    wr1: (SIZEOF(QUERY ( aea <* applied_effectivity_assignment | (((
    SIZEOF(QUERY ( i <* aea.items | ((
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE') IN TYPEOF(i))
)) > 0)
    OR (SIZEOF(QUERY ( i <* aea.items | ((
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE') IN TYPEOF(i))
)) <>
    SIZEOF(aea.items))) AND ((SIZEOF(TYPEOF(aea.
    assigned_effectivity)) > 1) OR
(aea.assigned_effectivity.id <>
    'class usage') OR (SIZEOF(QUERY ( cueca <* USEDIN(aea,
    'ELECTROTECHNICAL_DESIGN.' +
    'EFFECTIVITY_CONTEXT_ASSIGNMENT.' +
    'ASSIGNED_EFFECTIVITY_ASSIGNMENT') | ((
    'ELECTROTECHNICAL_DESIGN.' +
    'CLASS_USAGE_EFFECTIVITY_CONTEXT_ASSIGNMENT') IN
    TYPEOF(cueca)) ))
    = 0))) )) = 0);

END_RULE; --
restrict_effectivity_assignment_for_class_category_usage

RULE restrict_effectivity_for_effectivity_relationship FOR (
    effectivity_relationship);

WHERE
    wr1: (SIZEOF(QUERY ( er <* effectivity_relationship | ((SIZEOF([
    'ELECTROTECHNICAL_DESIGN.' + 'LOT_EFFECTIVITY',
    'ELECTROTECHNICAL_DESIGN.' +
    'SERIAL_NUMBERED_EFFECTIVITY', 'ELECTROTECHNICAL_DESIGN.'
    + 'PRODUCT_DEFINITION_EFFECTIVITY'] * TYPEOF(er.
    relating_effectivity)) > 0) OR (SIZEOF([
    'ELECTROTECHNICAL_DESIGN.' + 'LOT_EFFECTIVITY',
    'ELECTROTECHNICAL_DESIGN.' +
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'SERIAL_NUMBERED_EFFECTIVITY', 'ELECTROTECHNICAL DESIGN.'
  + 'PRODUCT_DEFINITION_EFFECTIVITY'] * TYPEOF(er.
  related_effectivity)) > 0)) )) = 0);

END_RULE; -- restrict_effectivity_for_effectivity_relationship

RULE restrict_effectivity_usage FOR
(configured_effectivity_assignment,
  effectivity);

WHERE
  wr1: (SIZEOF(QUERY ( e <* effectivity | ((SIZEOF([
    'ELECTROTECHNICAL DESIGN.' + 'DATED_EFFECTIVITY',
    'ELECTROTECHNICAL DESIGN.' +
    'TIME_INTERVAL_BASED_EFFECTIVITY'] * TYPEOF(e)) = 0)
AND (
  SIZEOF(QUERY ( er <* USEDIN(e,
    'ELECTROTECHNICAL DESIGN.EFFECTIVITY_RELATIONSHIP.' +
    'RELATED_EFFECTIVITY') | (er.name = 'inheritance') )) =
0) AND
  (e.id = 'configuration validity') AND (SIZEOF(QUERY (
cea <*
USEDIN(e, 'ELECTROTECHNICAL DESIGN.EFFECTIVITY_ASSIGNMENT.ASSIGNED_EF
FECTIVITY')
  | (('ELECTROTECHNICAL DESIGN.' +
    'CONFIGURED_EFFECTIVITY_ASSIGNMENT') IN TYPEOF(cea)) ))
= 0)
AND (e.id = 'class usage') AND (SIZEOF(QUERY ( aea <*
USEDIN(e,
  'ELECTROTECHNICAL DESIGN.' + 'EFFECTIVITY_ASSIGNMENT.'
+
  'ASSIGNED_EFFECTIVITY') | (('ELECTROTECHNICAL DESIGN.'
+
  'APPLIED_EFFECTIVITY_ASSIGNMENT') IN TYPEOF(aea)) AND
(
  SIZEOF(QUERY ( i <* aea.items | ((
    'ELECTROTECHNICAL DESIGN.' +
    'PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE') IN TYPEOF(i))
)) > 0)) ))
= 0)) )) = 0);

END_RULE; -- restrict_effectivity_usage

RULE
restrict_group_relationship_for_general_classification_hierarchy FOR
(
  class, group_relationship);

WHERE
  wr1: (SIZEOF(QUERY ( gr <* group_relationship | ((gr.name =
    'class hierarchy') AND ((NOT
    (('ELECTROTECHNICAL DESIGN.'
    + 'CLASS') IN TYPEOF(gr.related_group))) OR (NOT ((

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'ELECTROTECHNICAL_DESIGN.' + 'CLASS') IN TYPEOF(gr.
relating_group)))))) = 0);

END_RULE; --
restrict_group_relationship_for_general_classification_hierarchy

RULE restrict_group_relationship_for_specification_category FOR (
group_relationship, product_concept_feature_category);

WHERE
wrl: (SIZEOF(QUERY ( gr <* group_relationship | ((gr.name =
'specification_category_hierarchy') AND ((NOT ((
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE_CATEGORY') IN
TYPEOF(gr.related_group)))
OR (NOT (('ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE_CATEGORY') IN TYPEOF(gr.
relating_group)))))) = 0);

END_RULE; --
restrict_group_relationship_for_specification_category

RULE restrict_identification_assignment_for_product FOR (product);

WHERE
wrl: (SIZEOF(QUERY ( p <* product | (SIZEOF(QUERY ( i <*
USEDIN(p,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.name
= 'id') )) > 1) )) = 0);

END_RULE; -- restrict_identification_assignment_for_product

RULE restrict_language_assignment_for_annotation_text_occurrence
FOR (
annotation_text_occurrence);

WHERE
wrl: (SIZEOF(QUERY ( a <* annotation_text_occurrence |
(SIZEOF(USEDIN(
a, 'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE_ASSIGNMENT.' +
'ITEMS')) > 1) )) = 0);

END_RULE; --
restrict_language_assignment_for_annotation_text_occurrence

RULE
restrict_language_assignment_for_descriptive_representation_item FOR
(
descriptive_representation_item);

WHERE
wrl: (SIZEOF(QUERY ( d <* descriptive_representation_item |
(SIZEOF(
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        USEDIN(d, 'ELECTROTECHNICAL_DESIGN.' +
        'LANGUAGE_ASSIGNMENT.' + 'ITEMS')) > 1) )) = 0);

    END_RULE; --
restrict_language_assignment_for_descriptive_representation_item

    RULE restrict_language_assignment_for_representation FOR
(representation);

    WHERE
        wr1: (SIZEOF(QUERY ( r <* representation | (SIZEOF(USEDIN(r,
        'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE_ASSIGNMENT.' +
        'ITEMS')) > 1) )) = 0);

    END_RULE; -- restrict_language_assignment_for_representation

    RULE restrict_product_category_for_product FOR (product);

    WHERE
        wr1: (SIZEOF(QUERY ( p <* product | (SIZEOF(QUERY ( prpc <*
USEDIN(p,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(prpc.name
        IN ['conceptual
product', 'document', 'functionality', 'part',
        'physically realized product', 'alternative solution',
        'requirement', 'technical
system', 'accessory', 'software'])) )) =
        0) )) = 0);
        wr2: (SIZEOF(QUERY ( p <* product | (SIZEOF(QUERY ( prpc <*
USEDIN(p,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(prpc.name
        IN ['conceptual
product', 'document', 'functionality', 'part',
        'physically realized product', 'alternative solution',
        'requirement', 'technical system'])) )) > 1) )) = 0);

    END_RULE; -- restrict_product_category_for_product

    RULE restrict_product_definition_substitute FOR (
        product_definition_substitute);

    WHERE
        wr1: (SIZEOF(QUERY ( pds <* product_definition_substitute |
(SIZEOF(
        USEDIN(pds, 'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_EFFECTIVITY_ASSIGNMENT.' + 'ITEMS')) = 0) )) =
0);
        wr2: (SIZEOF(QUERY ( pds <* product_definition_substitute |
(pds.
        substitute_definition.frame_of_reference.name <>
        'part occurrence') )) = 0);

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wr3: (SIZEOF(QUERY ( pds <* product_definition_substitute | (((
    'ELECTROTECHNICAL_DESIGN.' +
'ASSEMBLY_COMPONENT_USAGE')
    IN TYPEOF(pds.context_relationship)) AND
(SIZEOF(USEDIN(pds.
    context_relationship,'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_DEFINITION_OCCURRENCE_RELATIONSHIP.' +
    'OCCURRENCE_USAGE')) = 0) AND ((
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_DEFINITION_RELATIONSHIP') IN TYPEOF(pds.
    context_relationship)) AND (pds.context_relationship.
    related_product_definition.frame_of_reference.name <>
    'part occurrence')) )) = 0);

END_RULE; -- restrict_product_definition_substitute

RULE restrict_properties_of_document_file FOR (document_file);

WHERE
wr1: (SIZEOF(QUERY ( df <* document_file | (SIZEOF(QUERY ( pd <*
    USEDIN(df,'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION.' + 'DEFINITION') | (pd.name =
    'document_property') )) > 1) )) = 0);
wr2: (SIZEOF(QUERY ( df <* document_file | (SIZEOF(QUERY ( rt <*
df.
    representation_types | (('ELECTROTECHNICAL_DESIGN.' +
    'DOCUMENT_REPRESENTATION_TYPE') IN TYPEOF(rt)) AND
(rt.name IN
    ['digital','physical'])) )) = 0) )) = 0);

END_RULE; -- restrict_properties_of_document_file

RULE restrict_property_value_format_for_general_property FOR (
    general_property);

WHERE
wr1: (SIZEOF(QUERY ( gp <* general_property | (SIZEOF(QUERY (
pdr <*
    USEDIN(gp,'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION') |
(pdr.
    used_representation.name = 'property value format') ))
> 2) ))
    = 0);

END_RULE; -- restrict_property_value_format_for_general_property

RULE restrict_representation_for_document_content_property FOR (
    representation, representation_item);

WHERE
wr1: (SIZEOF(QUERY ( r <* representation | ((r.name =
    'document content') AND ((SIZEOF(r.items) < 1) OR
(SIZEOF(r.
    items) > 3))) )) = 0);
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wr2: (SIZEOF(QUERY ( ri <* representation_item | ((SIZEOF(
    QUERY ( r <* USEDIN(ri,
    'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') |
(r.name
    = 'document content') )) > 0) AND (NOT (ri.name IN [
    'detail level','geometry type','real world scale'])))
)) = 0);
wr3: (SIZEOF(QUERY ( r <* representation | ((r.name =
    'document content') AND (SIZEOF(QUERY ( i <* r.items |
((i.
    name = 'detail level') AND (('ELECTROTECHNICAL_DESIGN.'
+
    'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
1)) ))
= 0);
wr4: (SIZEOF(QUERY ( r <* representation | ((r.name =
    'document content') AND (SIZEOF(QUERY ( i <* r.items |
((i.
    name = 'geometry type') AND
(('ELECTROTECHNICAL_DESIGN.'
+ 'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) ))
> 1)) ))
= 0);
wr5: (SIZEOF(QUERY ( r <* representation | ((r.name =
    'document content') AND (SIZEOF(QUERY ( i <* r.items |
((i.
    name = 'real world scale') AND (SIZEOF([
    'ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM','ELECTROTECHNICAL_DESIGN.'
+ 'VALUE_REPRESENTATION_ITEM'] * TYPEOF(i)) = 1)) )) >
1)) ))
= 0);

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END_RULE; -- restrict_representation_for_document_content_property
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RULE restrict_representation_for_document_creation_property FOR (
    representation, representation_item);
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WHERE
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wr1: (SIZEOF(QUERY ( r <* representation | ((r.name =
    'document creation') AND ((SIZEOF(r.items) < 2) OR
(SIZEOF(r.
    items) > 3))) )) = 0);
wr2: (SIZEOF(QUERY ( ri <* representation_item | ((SIZEOF(
    QUERY ( r <* USEDIN(ri,
    'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') |
(r.name
    = 'document creation') )) > 0) AND (NOT (ri.name IN [
    'creating interface','creating system','operating
system']))) ))
= 0);
wr3: (SIZEOF(QUERY ( r <* representation | ((r.name =
    'document creation') AND (SIZEOF(QUERY ( i <* r.items |
((i.

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        name = 'creating interface') AND ((
        'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
1)) ))
        = 0);
wr4: (SIZEOF(QUERY ( r <* representation | ((r.name =
        'document creation') AND (SIZEOF(QUERY ( i <* r.items |
((i.
        name = 'creating system') AND ((
        'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) <>
1)) ))
        = 0);
wr5: (SIZEOF(QUERY ( r <* representation | ((r.name =
        'document creation') AND (SIZEOF(QUERY ( i <* r.items |
((i.
        name = 'operating system') AND ((
        'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
1)) ))
        = 0);

END_RULE; --
restrict_representation_for_document_creation_property

RULE restrict_representation_for_document_format_property FOR (
    representation, representation_item);

WHERE
wr1: (SIZEOF(QUERY ( r <* representation | ((r.name =
        'document format') AND ((SIZEOF(r.items) < 1) OR
(SIZEOF(r.
        items) > 2))) )) = 0);
wr2: (SIZEOF(QUERY ( ri <* representation_item | ((SIZEOF(
        QUERY ( r <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') |
(r.name
        = 'document format') )) > 0) AND (NOT (ri.name IN [
        'character code','data format']))) )) = 0);
wr3: (SIZEOF(QUERY ( r <* representation | ((r.name =
        'document format') AND (SIZEOF(QUERY ( i <* r.items |
((i.name
        = 'character code') AND (('ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
1)) ))
        = 0);
wr4: (SIZEOF(QUERY ( r <* representation | ((r.name =
        'document format') AND (SIZEOF(QUERY ( i <* r.items |
((i.name
        = 'data format') AND (('ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
1)) ))
        = 0);

END_RULE; -- restrict_representation_for_document_format_property
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RULE restrict_representation_for_document_properties FOR (
    property_definition, representation,
    representation_context);

WHERE
    wr1: (SIZEOF(QUERY ( pd <* property_definition | ((pd.name =
        'document property') AND (SIZEOF(QUERY ( pdr <*
USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION') |
(NOT (
        pdr.used_representation.name IN ['document content',
        'document creation','document format','document
size'])))) )) >
        0)) )) = 0);
    wr2: (SIZEOF(QUERY ( r <* representation | ((r.name IN [
        'document content','document creation','document
format',
        'document size']) AND (SIZEOF(QUERY ( pdr <* USEDIN(r,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION')
        IN TYPEOF(pdr.definition)) AND (pdr.definition.name =
        'document property')) )) = 0)) )) = 0);
    wr3: (SIZEOF(QUERY ( r <* representation | ((r.name IN [
        'document content','document creation','document
format',
        'document size']) AND (r.context_of_items.context_type
<>
        'document parameters')) )) = 0);
    wr4: (SIZEOF(QUERY ( rc <* representation_context |
((rc.context_type
        = 'document parameters') AND (SIZEOF(QUERY ( r <*
USEDIN(rc, 'ELECTROTECHNICAL_DESIGN.REPRESENTATION.CONTEXT_OF_ITEMS')
        | (NOT (r.name IN ['document content','document
creation',
        'document format','document size']))) )) > 0)) )) = 0);

END_RULE; -- restrict_representation_for_document_properties

RULE restrict_representation_for_document_size_property FOR (
    representation, representation_item);

WHERE
    wr1: (SIZEOF(QUERY ( r <* representation | ((r.name = 'document
size')
        AND ((SIZEOF(r.items) < 1) OR (SIZEOF(r.items) > 2)))
)) = 0);
    wr2: (SIZEOF(QUERY ( ri <* representation_item | ((SIZEOF(
        QUERY ( r <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') |
(r.name

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size',
    = 'document size') )) > 0) AND (NOT (ri.name IN ['file
size',
    'page count']))) )) = 0);
wr3: (SIZEOF(QUERY ( r <* representation | ((r.name = 'document
size')
    AND (SIZEOF(QUERY ( i <* r.items | ((i.name = 'file
size') AND
    (SIZEOF(['ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.'
    + 'VALUE_RANGE', 'ELECTROTECHNICAL_DESIGN.' +
    'VALUE_REPRESENTATION_ITEM'] * TYPEOF(i)) = 1)) )) >
1)) )) =
    0);
wr4: (SIZEOF(QUERY ( r <* representation | ((r.name = 'document
size')
    AND (SIZEOF(QUERY ( i <* r.items | ((i.name = 'page
count')
    AND (SIZEOF(['ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.'
    + 'VALUE_RANGE', 'ELECTROTECHNICAL_DESIGN.' +
    'VALUE_REPRESENTATION_ITEM'] * TYPEOF(i)) = 1)) )) >
1)) )) =
    0);

END_RULE; -- restrict_representation_for_document_size_property

RULE restrict_uncertainty_in_global_uncertainty_assigned_context
FOR (
    global_uncertainty_assigned_context);

WHERE
    wr1: (SIZEOF(QUERY ( guac <* global_uncertainty_assigned_context
| (
    NOT (SIZEOF(guac.uncertainty) = 2)) )) = 0);

END_RULE; --
restrict_uncertainty_in_global_uncertainty_assigned_context

RULE restrict_version_assignment_for_action_directive FOR (
    action_directive);

WHERE
    wr1: (SIZEOF(QUERY ( a <* action_directive | (SIZEOF(QUERY ( i
<*
    USEDIN(a, 'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.name
    = 'version') )) > 1)) = 0);

END_RULE; -- restrict_version_assignment_for_action_directive
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RULE
restrict_version_assignment_for_applied_identification_assignment
FOR (
    applied_identification_assignment);

WHERE
    wr1: (SIZEOF(QUERY ( ent <* applied_identification_assignment |
(
    SIZEOF(QUERY ( ia <* USEDIN(ent,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
    name = 'version') )) > 1) )) = 0);

END_RULE; --
restrict_version_assignment_for_applied_identification_assignment

RULE restrict_version_assignment_for_class FOR (class);

WHERE
    wr1: (SIZEOF(QUERY ( ent <* class | (SIZEOF(QUERY ( ia <*
USEDIN(ent,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
    name = 'version') )) > 1) )) = 0);

END_RULE; -- restrict_version_assignment_for_class

RULE restrict_version_assignment_for_configuration_item FOR (
    configuration_item);

WHERE
    wr1: (SIZEOF(QUERY ( c <* configuration_item | (SIZEOF(QUERY ( i
<*
    USEDIN(c, 'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.name
    = 'version') )) > 1) )) = 0);

END_RULE; -- restrict_version_assignment_for_configuration_item

RULE restrict_version_assignment_for_document_file FOR
(document_file);

WHERE
    wr1: (SIZEOF(QUERY ( ent <* document_file | (SIZEOF(QUERY ( ia
<*
    USEDIN(ent, 'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
    name = 'version') )) > 1) )) = 0);

END_RULE; -- restrict_version_assignment_for_document_file

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RULE restrict_version_assignment_for_effectivity FOR
(effectivity);

WHERE
  wr1: (SIZEOF(QUERY ( ent <* effectivity | (SIZEOF(QUERY ( ia <*
    USEDIN(ent,'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
    name = 'version') )) > 1) )) = 0);

END_RULE; -- restrict_version_assignment_for_effectivity

RULE restrict_version_assignment_for_general_property FOR (
  general_property);

WHERE
  wr1: (SIZEOF(QUERY ( g <* general_property | (SIZEOF(QUERY ( i
<*
    USEDIN(g,'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.name
    = 'version') )) > 1) )) = 0);

END_RULE; -- restrict_version_assignment_for_general_property

RULE restrict_version_assignment_for_path FOR (path);

WHERE
  wr1: (SIZEOF(QUERY ( p <* path | (SIZEOF(QUERY ( i <* USEDIN(p,
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.name
    = 'version') )) > 1) )) = 0);

END_RULE; -- restrict_version_assignment_for_path

RULE restrict_version_assignment_for_product_concept FOR (
  product_concept);

WHERE
  wr1: (SIZEOF(QUERY ( ent <* product_concept | (SIZEOF(QUERY ( ia
<*
    USEDIN(ent,'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(ia.role.
    name = 'version') )) > 1) )) = 0);

END_RULE; -- restrict_version_assignment_for_product_concept

RULE restrict_version_assignment_for_product_concept_feature FOR (
  product_concept_feature);

WHERE
  wr1: (SIZEOF(QUERY ( p <* product_concept_feature | (SIZEOF(
    QUERY ( i <* USEDIN(p,'ELECTROTECHNICAL_DESIGN.' +
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        'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.name
    = 'version') )) > 1) )) = 0);

    END_RULE; --
restrict_version_assignment_for_product_concept_feature

    RULE retention_requires_retention_assignment FOR (retention);

    WHERE
        wr1: (SIZEOF(QUERY ( r <* retention | (SIZEOF(QUERY ( aa <*
USEDIN(r,
            'ELECTROTECHNICAL_DESIGN.' + 'ACTION_ASSIGNMENT.' +
            'ASSIGNED_ACTION') | ((( 'ELECTROTECHNICAL_DESIGN.' +
            'APPLIED_ACTION_ASSIGNMENT') IN TYPEOF(aa)) AND
(aa.role.name
    = 'retention')) )) = 0) )) = 0);

    END_RULE; -- retention_requires_retention_assignment

    RULE
security_classification_requires_security_classification_assignment
FOR (
    security_classification);

    WHERE
        wr1: (SIZEOF(QUERY ( sc <* security_classification |
(SIZEOF(USEDIN(sc,
            'ELECTROTECHNICAL_DESIGN.' +
            'SECURITY_CLASSIFICATION_ASSIGNMENT.' +
            'ASSIGNED_SECURITY_CLASSIFICATION')) = 0) )) = 0);

    END_RULE; --
security_classification_requires_security_classification_assignment

    RULE selected_instance_usage_requires_representation FOR (
    assembly_component_usage, representation);

    WHERE
        wr1: (SIZEOF(QUERY ( acr <* assembly_component_usage |
((acr.name =
            'selected instance usage') AND (SIZEOF(QUERY ( pd <*
USEDIN(
            acr, 'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.'
+
            'DEFINITION') | ((pd.name = 'occurrence selection')
AND (
            SIZEOF(QUERY ( pdr <* USEDIN(pd,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION') |
((pdr.
            used_representation.name = 'selection criteria') AND
(SIZEOF(
            pdr.used_representation.items) = 2) AND (SIZEOF(QUERY (
i <*

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        pdr.used_representation.items | ((sizeof([
            'ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.'
            + 'VALUE_RANGE'] * TYPEOF(i)) = 1) AND (i.name =
            'selection quantity')) = 1) AND (sizeof(QUERY ( i <*
pdr.
            used_representation.items |
            (('ELECTROTECHNICAL_DESIGN.'
            + 'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i)) AND
            (i.name
            = 'selection control')) = 1)) > 0)) = 0)) =
0);

END_RULE; -- selected_instance_usage_requires_representation

RULE shape_aspect_relationship_constraint FOR
(shape_aspect_relationship);

WHERE
    wr1: (sizeof(QUERY ( s <* shape_aspect_relationship | (NOT
        shape_aspect_relationship_correlation(s)) )) = 0);

END_RULE; -- shape_aspect_relationship_constraint

RULE shape_aspect_subtype_exclusiveness FOR (shape_aspect);

WHERE
    wr1: (sizeof(QUERY ( s <* shape_aspect | (sizeof(TYPEOF(s) * [
        'ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION',
        'ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END',
'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_INTERFACE',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_SEGMENT',
        'ELECTROTECHNICAL_DESIGN.INTERFACE',
        'ELECTROTECHNICAL_DESIGN.TERMINAL']) > 1) )) = 0);

END_RULE; -- shape_aspect_subtype_exclusiveness

RULE sheets_belong_to_one_drawing FOR (drawing_sheet_revision);

WHERE
    wr1: (sizeof(QUERY ( dsr <* drawing_sheet_revision | (sizeof(
        QUERY ( dsru <* USEDIN(dsr,
        'ELECTROTECHNICAL_DESIGN.AREA_IN_SET.AREA') | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'DRAWING_SHEET_REVISION_USAGE') IN TYPEOF(dsru)) ) <>
1) )) =
    0);
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END_RULE; -- sheets_belong_to_one_drawing

RULE subtype_mandatory_address FOR (address);

WHERE
  wr1: (SIZEOF(QUERY ( a <* address | (NOT type_check_function(a, [
    'ELECTROTECHNICAL_DESIGN.' + 'ORGANIZATIONAL_ADDRESS',
    'ELECTROTECHNICAL_DESIGN.' + 'PERSONAL_ADDRESS'], 0)) ))
=
    0);

END_RULE; -- subtype_mandatory_address

RULE subtype_mandatory_annotation_occurrence FOR
(annotation_occurrence);

WHERE
  wr1: (SIZEOF(QUERY ( ao <* annotation_occurrence | (NOT
('ELECTROTECHNICAL_DESIGN.DRAUGHTING_ANNOTATION_OCCURRENCE'
  IN TYPEOF(ao))) )) = 0);

END_RULE; -- subtype_mandatory_annotation_occurrence

RULE subtype_mandatory_bounded_curve FOR (bounded_curve);

WHERE
  wr1: (SIZEOF(QUERY ( c <* bounded_curve | (NOT (SIZEOF(TYPEOF(c)
* [
    'ELECTROTECHNICAL_DESIGN.B_SPLINE_CURVE',
    'ELECTROTECHNICAL_DESIGN.COMPOSITE_CURVE',
    'ELECTROTECHNICAL_DESIGN.POLYLINE',
    'ELECTROTECHNICAL_DESIGN.TRIMMED_CURVE']) = 1)) )) =
0);

END_RULE; -- subtype_mandatory_bounded_curve

RULE subtype_mandatory_camera_image FOR (camera_image);

WHERE
  wr1: (SIZEOF(QUERY ( ci <* camera_image | (NOT (
    'ELECTROTECHNICAL_DESIGN.CAMERA_IMAGE_2D_WITH_SCALE' IN
    TYPEOF(ci))) )) = 0);

END_RULE; -- subtype_mandatory_camera_image

RULE subtype_mandatory_camera_model FOR (camera_model);

WHERE
  wr1: (SIZEOF(QUERY ( cm <* camera_model | (NOT (
    'ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2' IN
    TYPEOF(cm))) ))
= 0);

END_RULE; -- subtype_mandatory_camera_model

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RULE subtype_mandatory_curve FOR (curve);

WHERE
  wr1: (SIZEOF(QUERY ( c <* curve | (NOT (SIZEOF(TYPEOF(c) * [
    'ELECTROTECHNICAL_DESIGN.BOUNDED_CURVE',
    'ELECTROTECHNICAL_DESIGN.CONIC',
    'ELECTROTECHNICAL_DESIGN.LINE']) = 1)) ) = 0);

END_RULE; -- subtype_mandatory_curve

RULE subtype_mandatory_date FOR (date);

WHERE
  wr1: (SIZEOF(QUERY ( d <* date | (NOT (
    'ELECTROTECHNICAL_DESIGN.CALENDAR_DATE' IN TYPEOF(d)))
))
  = 0);

END_RULE; -- subtype_mandatory_date

RULE subtype_mandatory_draughting_callout FOR
(draughting_callout);

WHERE
  wr1: (SIZEOF(QUERY ( dc <* draughting_callout | (NOT (
    'ELECTROTECHNICAL_DESIGN.DRAUGHTING_ELEMENTS' IN
TYPEOF(
  dc))) ) = 0);

END_RULE; -- subtype_mandatory_draughting_callout

RULE subtype_mandatory_pre_defined_curve_font FOR (
pre_defined_curve_font);

WHERE
  wr1: (SIZEOF(QUERY ( pdcf <* pre_defined_curve_font | (NOT
('ELECTROTECHNICAL_DESIGN.DRAUGHTING_PRE_DEFINED_CURVE_FONT'
  IN TYPEOF(pdcf))) ) = 0);

END_RULE; -- subtype_mandatory_pre_defined_curve_font

RULE subtype_mandatory_pre_defined_symbol FOR
(pre_defined_symbol);

WHERE
  wr1: (SIZEOF(QUERY ( pds <* pre_defined_symbol | (NOT
(SIZEOF(TYPEOF(
  pds) * ['ELECTROTECHNICAL_DESIGN.' +
    'PRE_DEFINED_GEOMETRICAL_TOLERANCE_SYMBOL',
    'ELECTROTECHNICAL_DESIGN.' +
    'PRE_DEFINED_DIMENSION_SYMBOL', 'ELECTROTECHNICAL_DESIGN.'
    + 'PRE_DEFINED_POINT_MARKER_SYMBOL',
    'ELECTROTECHNICAL_DESIGN.' +
```

```

        'PRE_DEFINED_TERMINATOR_SYMBOL']] = 1)) )) = 0);

END_RULE; -- subtype_mandatory_pre_defined_symbol

RULE text_font_usage FOR (externally_defined_text_font,
    pre_defined_text_font);

WHERE
    wr1: (SIZEOF(QUERY ( pdtf <* pre_defined_text_font |
(SIZEOF(USEDIN(
    pdtf, 'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL.FONT')) = 0)
))
    = 0);
    wr2: (SIZEOF(QUERY ( edtf <* externally_defined_text_font |
(SIZEOF(
USEDIN(edtf, 'ELECTROTECHNICAL_DESIGN.TEXT_LITERAL.FONT'))
    = 0) )) = 0);

END_RULE; -- text_font_usage

RULE
versioned_action_request_requires_date_and_person_or_organization
FOR (
    versioned_action_request);

WHERE
    wr1: (SIZEOF(QUERY ( va <* versioned_action_request | ((SIZEOF(
    QUERY ( adapaoa <* USEDIN(va, 'ELECTROTECHNICAL_DESIGN.'
+
    'APPLIED_PERSON_AND_ORGANIZATION_ASSIGNMENT.' +
'ITEMS') | (
    adapaoa.role.name = 'requestor ') )) + SIZEOF(
    QUERY ( adaoa <* USEDIN(va, 'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_ORGANIZATION_ASSIGNMENT.' + 'ITEMS') |
(adaoa.role.
    name = 'requestor ') ))) = 0) )) = 0);
    wr2: (SIZEOF(QUERY ( va <* versioned_action_request | ((SIZEOF(
    QUERY ( adapaoa <* USEDIN(va, 'ELECTROTECHNICAL_DESIGN.'
+
    'APPLIED_PERSON_AND_ORGANIZATION_ASSIGNMENT.' +
'ITEMS') | (
    adapaoa.role.name = 'notified person or organization')
)) +
    SIZEOF(QUERY ( adaoa <* USEDIN(va,
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_ORGANIZATION_ASSIGNMENT.' + 'ITEMS') |
(adaoa.role.
    name = 'notified person or organization') ))) = 0) )) =
0);

END_RULE; --
versioned_action_request_requires_date_and_person_or_organization

```

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```
RULE versioned_action_request_requires_status FOR
(action_request_status,
    versioned_action_request);

WHERE
    wr1: (SIZEOF(QUERY ( ar <* versioned_action_request | (NOT
(SIZEOF(
    QUERY ( ars <* action_request_status | (ar :=: ars.
    assigned_request) )) = 1)) )) = 0);

END_RULE; -- versioned_action_request_requires_status

FUNCTION acyclic(
    arg1: generic_expression;
    arg2: SET OF generic_expression
): BOOLEAN;

LOCAL
    result : BOOLEAN;
END_LOCAL;
IF 'ELECTROTECHNICAL_DESIGN.SIMPLE_GENERIC_EXPRESSION' IN
TYPEOF(
    arg1) THEN
    RETURN(TRUE);
END_IF;
IF arg1 IN arg2 THEN
    RETURN(FALSE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.UNARY_GENERIC_EXPRESSION' IN TYPEOF(
    arg1) THEN
    RETURN(acyclic(arg1\unary_generic_expression.operand,arg2 +
[arg1]));
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.BINARY_GENERIC_EXPRESSION' IN
TYPEOF(
    arg1) THEN
    RETURN(acyclic(arg1\binary_generic_expression.operands[1],arg2
+ [
    arg1]) AND
acyclic(arg1\binary_generic_expression.operands[2],
    arg2 + [arg1]));
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.MULTIPLE_ARITY_GENERIC_EXPRESSION'
IN
    TYPEOF(arg1) THEN
    result := TRUE;
    REPEAT i := 1 TO
SIZEOF(arg1\multiple_arity_generic_expression.
    operands) BY 1;
        result := result AND acyclic(arg1\
            multiple_arity_generic_expression.operands[i],arg2 +
[arg1]);
    END_REPEAT;
    RETURN(result);
END_IF;
```

```

END_FUNCTION; -- acyclic

FUNCTION acyclic_composite_text(
    start_composite: composite_text;
    child_text: SET [1:?] OF text_or_character
): LOGICAL;

LOCAL
    i          : INTEGER;
    local_annotation_text : SET [0:?] OF annotation_text;
    local_composite_text  : SET [0:?] OF composite_text;
    local_children        : SET [0:?] OF text_or_character;
END_LOCAL;
local_composite_text := QUERY ( child <* child_text | (
    'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT' IN TYPEOF(child)
);
IF SIZEOF(local_composite_text) > 0 THEN
    REPEAT i := 1 TO HIINDEX(local_composite_text) BY 1;
        IF start_composite :=: local_composite_text[i] THEN
            RETURN(FALSE);
        END_IF;
    END_REPEAT;
END_IF;
local_children := child_text;
IF SIZEOF(local_composite_text) > 0 THEN
    REPEAT i := 1 TO HIINDEX(local_composite_text) BY 1;
        local_children := local_children + local_composite_text[i].
            collected_text;
    END_REPEAT;
END_IF;
local_annotation_text := QUERY ( child <* child_text | (
    'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT' IN TYPEOF(child)
);
IF SIZEOF(local_annotation_text) > 0 THEN
    REPEAT i := 1 TO HIINDEX(local_annotation_text) BY 1;
        local_children := local_children + QUERY ( item <*
            local_annotation_text[i]\mapped_item.mapping_source.
            mapped_representation.items | (SIZEOF([
                'ELECTROTECHNICAL_DESIGN.ANNOTATION_TEXT',
                'ELECTROTECHNICAL_DESIGN.COMPOSITE_TEXT'] *
            TYPEOF(item))
            > 0) );
    END_REPEAT;
END_IF;
IF local_children :<>: child_text THEN

RETURN(acyclic_composite_text(start_composite,local_children));
ELSE
    RETURN(TRUE);
END_IF;

END_FUNCTION; -- acyclic_composite_text

FUNCTION acyclic_mapped_item_usage(

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```

        rep: representation
    ): BOOLEAN;

LOCAL
    items : SET OF representation_item;
END_LOCAL;
items := QUERY ( item <* rep.items | (
    'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN TYPEOF(item) ) );
IF SIZEOF(items) = 0 THEN
    RETURN(FALSE);
ELSE
    REPEAT i := 1 TO HIINDEX(items) BY 1;
        IF items[i]\mapped_item.mapping_source.mapped_representation
:=:
            rep THEN
                RETURN(TRUE);
            ELSE
                RETURN(acyclic_mapped_item_usage(items[i]\mapped_item.
                    mapping_source.mapped_representation));
            END_IF;
        END_REPEAT;
    RETURN(FALSE);
END_IF;

END_FUNCTION; -- acyclic_mapped_item_usage

FUNCTION acyclic_mapped_representation(
    parent_set: SET OF representation;
    children_set: SET OF representation_item
): BOOLEAN;

LOCAL
    x : SET OF representation_item;
    y : SET OF representation_item;
END_LOCAL;
x := QUERY ( z <* children_set | (
    'ELECTROTECHNICAL_DESIGN.MAPPED_ITEM' IN TYPEOF(z) ) );
IF SIZEOF(x) > 0 THEN
    REPEAT i := 1 TO HIINDEX(x) BY 1;
        IF x[i]\mapped_item.mapping_source.mapped_representation IN
            parent_set THEN
                RETURN(FALSE);
            END_IF;
        IF NOT acyclic_mapped_representation(parent_set +
x[i]\mapped_item
            .mapping_source.mapped_representation,x[i]\mapped_item.
            mapping_source.mapped_representation.items) THEN
                RETURN(FALSE);
            END_IF;
        END_REPEAT;
    END_IF;
x := children_set - x;
IF SIZEOF(x) > 0 THEN
    REPEAT i := 1 TO HIINDEX(x) BY 1;
        y := QUERY ( z <* bag_to_set(USEDIN(x[i], '')) | (

```

```

        'ELECTROTECHNICAL_DESIGN.REPRESENTATION_ITEM' IN
    TYPEOF(z) ) );
    IF NOT acyclic_mapped_representation(parent_set,y) THEN
        RETURN(FALSE);
    END_IF;
    END_REPEAT;
    END_IF;
    RETURN(TRUE);

```

```
END_FUNCTION; -- acyclic_mapped_representation
```

```

FUNCTION acyclic_product_category_relationship(
    relation: product_category_relationship;
    children: SET OF product_category
): BOOLEAN;

```

```

LOCAL
    x          : SET OF product_category_relationship;
    local_children : SET OF product_category;
END_LOCAL;
REPEAT i := 1 TO HIINDEX(children) BY 1;
    IF relation.category == children[i] THEN
        RETURN(FALSE);
    END_IF;
END_REPEAT;
x := bag_to_set(USEDIN(relation.category,
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_CATEGORY_RELATIONSHIP.SUB_CATEGORY'));
local_children := children + relation.category;
IF SIZEOF(x) > 0 THEN
    REPEAT i := 1 TO HIINDEX(x) BY 1;
        IF NOT
            acyclic_product_category_relationship(x[i],local_children)
        THEN
            RETURN(FALSE);
        END_IF;
    END_REPEAT;
END_IF;
RETURN(TRUE);

```

```
END_FUNCTION; -- acyclic_product_category_relationship
```

```

FUNCTION acyclic_product_definition_relationship(
    relation: product_definition_relationship;
    relatives: SET [1:?] OF product_definition;
    specific_relation: STRING
): BOOLEAN;

```

```

LOCAL
    x : SET OF product_definition_relationship;
END_LOCAL;
IF relation.relativing_product_definition IN relatives THEN
    RETURN(FALSE);
END_IF;
x := QUERY ( pd <* bag_to_set(USEDIN(relation.

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```
        relating_product_definition, 'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_DEFINITION_RELATIONSHIP.' +
'RELATED_PRODUCT_DEFINITION'))
        | (specific_relation IN TYPEOF(pd)) );
    REPEAT i := 1 TO HIINDEX(x) BY 1;
        IF NOT acyclic_product_definition_relationship(x[i], relatives
+
        relation.relativing_product_definition, specific_relation)
THEN
    RETURN(FALSE);
    END_IF;
    END_REPEAT;
    RETURN(TRUE);

END_FUNCTION; -- acyclic_product_definition_relationship

FUNCTION acyclic_shape_aspect_relationship(
    relation: shape_aspect_relationship;
    relatives: SET [1:?] OF shape_aspect;
    specific_relation: STRING
): LOGICAL;

    LOCAL
        x : SET OF shape_aspect_relationship;
    END_LOCAL;
    IF relation.relativing_shape_aspect IN relatives THEN
        RETURN(FALSE);
    END_IF;
    x := QUERY ( sa <*
bag_to_set(USEDIN(relation.relativing_shape_aspect,
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_ASPECT_RELATIONSHIP.' +
    'RELATED_SHAPE_ASPECT')) | (specific_relation IN TYPEOF(sa))
);
    REPEAT i := 1 TO HIINDEX(x) BY 1;
        IF NOT acyclic_shape_aspect_relationship(x[i], relatives +
relation.
        relating_shape_aspect, specific_relation) THEN
            RETURN(FALSE);
        END_IF;
    END_REPEAT;
    RETURN(TRUE);

END_FUNCTION; -- acyclic_shape_aspect_relationship

FUNCTION applied_classification_assignment_correlation(
    aca: applied_classification_assignment
): BOOLEAN;

    LOCAL
        role_name : STRING;
    END_LOCAL;
    role_name := aca.role.name;
    CASE role_name OF
        'class_system_membership' : BEGIN
            IF NOT ('ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM' IN TYPEOF(
```



```

aca.assigned_class)) THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* aca.items | (SIZEOF(TYPEOF(i) * [
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' + 'APPROVAL_STATUS',
'ELECTROTECHNICAL_DESIGN.CLASS',
'ELECTROTECHNICAL_DESIGN.' +

'COLOUR_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.'
+ 'EQUIPMENT_MARKING', 'ELECTROTECHNICAL_DESIGN.' +

'ITEM_DESIGNATION_ASSIGNMENT', 'ELECTROTECHNICAL_DESIGN.'
+ 'SECURITY_CLASSIFICATION_LEVEL']) = 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
END;
'definitional' : BEGIN
IF NOT ('ELECTROTECHNICAL_DESIGN.CLASS' IN TYPEOF(aca.
assigned_class)) THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* aca.items | (SIZEOF(TYPEOF(i) * [
'ELECTROTECHNICAL_DESIGN.' +
'ASSEMBLY_COMPONENT_USAGE',
'ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2',
'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
'ELECTROTECHNICAL_DESIGN.' +
'CONNECTIVITY_DEFINITION',
'ELECTROTECHNICAL_DESIGN.DOCUMENT',
'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',
'ELECTROTECHNICAL_DESIGN.DRAWING_REVISION',
'ELECTROTECHNICAL_DESIGN.' + 'DRAWING_SHEET_REVISION',
'ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING',
'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_LOCATION',
'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_SECTION',
'ELECTROTECHNICAL_DESIGN.' +
'INSTALLATION_SECTION_INTERFACE',
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.PRODUCT',
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_FORMATION',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP',
'ELECTROTECHNICAL_DESIGN.' +
'SECURITY_CLASSIFICATION',
'ELECTROTECHNICAL_DESIGN.SIGNAL',
'ELECTROTECHNICAL_DESIGN.' +
'SYMBOL_REPRESENTATION_MAP',
'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0) )) > 0 THEN
RETURN(FALSE);
END_IF;

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```
END;
'non definitional' : BEGIN
  IF NOT ('ELECTROTECHNICAL_DESIGN.CLASS' IN TYPEOF(aca.
    assigned_class)) THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( i <* aca.items | (SIZEOF(TYPEOF(i) * [
    'ELECTROTECHNICAL_DESIGN.' +
'ASSEMBLY_COMPONENT_USAGE',
    'ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2',
    'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
    'ELECTROTECHNICAL_DESIGN.' +
'CONNECTIVITY_DEFINITION',
    'ELECTROTECHNICAL_DESIGN.DOCUMENT',
    'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',
    'ELECTROTECHNICAL_DESIGN.DRAWING_REVISION',
    'ELECTROTECHNICAL_DESIGN.' + 'DRAWING_SHEET_REVISION',
    'ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING',
    'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_LOCATION',
    'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_SECTION',
    'ELECTROTECHNICAL_DESIGN.' +
    'INSTALLATION_SECTION_INTERFACE',
    'ELECTROTECHNICAL_DESIGN.' +
    'ITEM_DESIGNATION_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.PRODUCT',
    'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_DEFINITION_FORMATION',
    'ELECTROTECHNICAL_DESIGN.' +
    'PRODUCT_DEFINITION_RELATIONSHIP',
    'ELECTROTECHNICAL_DESIGN.' +
'SECURITY_CLASSIFICATION',
    'ELECTROTECHNICAL_DESIGN.SIGNAL',
    'ELECTROTECHNICAL_DESIGN.' +
'SYMBOL_REPRESENTATION_MAP',
    'ELECTROTECHNICAL_DESIGN.TERMINAL'])) = 0) )) > 0 THEN
    RETURN(FALSE);
  END_IF;
END;
'' : BEGIN
  IF NOT ('ELECTROTECHNICAL_DESIGN.CLASS' IN TYPEOF(aca.
    assigned_class)) THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( i <* aca.items | (SIZEOF(TYPEOF(i) * [
    'ELECTROTECHNICAL_DESIGN.' +
'ASSEMBLY_COMPONENT_USAGE',
    'ELECTROTECHNICAL_DESIGN.CAMERA_MODEL_D2',
    'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
    'ELECTROTECHNICAL_DESIGN.' +
'CONNECTIVITY_DEFINITION',
    'ELECTROTECHNICAL_DESIGN.DOCUMENT',
    'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',
    'ELECTROTECHNICAL_DESIGN.DRAWING_REVISION',
    'ELECTROTECHNICAL_DESIGN.' + 'DRAWING_SHEET_REVISION',
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'ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING',
'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_LOCATION',
'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_SECTION',
'ELECTROTECHNICAL_DESIGN.' +
'INSTALLATION_SECTION_INTERFACE',
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.PRODUCT',
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_FORMATION',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP',
'ELECTROTECHNICAL_DESIGN.' +
'SECURITY_CLASSIFICATION',
'ELECTROTECHNICAL_DESIGN.SIGNAL',
'ELECTROTECHNICAL_DESIGN.' +
'SYMBOL_REPRESENTATION_MAP',
'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0) )) > 0 THEN
RETURN (FALSE);
END_IF;
END;
'instance requirement' : BEGIN
IF NOT (aca.assigned_class.name =
'product component with required instances') THEN
RETURN (FALSE);
END_IF;
IF SIZEOF(TYPEOF(aca.assigned_class) * [
'ELECTROTECHNICAL_DESIGN.' + 'CLASS',
'ELECTROTECHNICAL_DESIGN.' + 'CLASS_SYSTEM',
'ELECTROTECHNICAL_DESIGN.' + 'CONNECTING_LINE_GROUP',
'ELECTROTECHNICAL_DESIGN.' + 'PAGE_CONNECTOR_GROUP',
'ELECTROTECHNICAL_DESIGN.' +
'PAGE_CONNECTOR_PRESENTATION_GROUP',
'ELECTROTECHNICAL_DESIGN.' +
'PAGE_CONNECTOR_REFERENCE_GROUP',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE_CATEGORY']) > 0 THEN
RETURN (FALSE);
END_IF;
END;
'system composition' : BEGIN
IF NOT ('ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM' IN TYPEOF(
aca.assigned_class)) THEN
RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* aca.items | (NOT (
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(i))) ))
> 0 THEN
RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* aca.items | (NOT
(i.frame_of_reference.
name = 'system definition'))) > 0 THEN

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        RETURN (FALSE);
    END_IF;
END;
OTHERWISE                :                RETURN (TRUE);
END_CASE;
RETURN (TRUE);

END_FUNCTION; -- applied_classification_assignment_correlation

FUNCTION applied_document_reference_correlation(
    adr: applied_document_reference
): BOOLEAN;

LOCAL
    role_name : STRING;
END_LOCAL;
role_name := adr.role.name;
CASE role_name OF
    'documentation'      :                BEGIN
        IF SIZEOF(QUERY ( i <* adr.items | (NOT (
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))) ))
            > 0 THEN
            RETURN (FALSE);
        END_IF;
        IF SIZEOF(QUERY ( i <* adr.items | ((
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))
            AND (NOT (i.frame_of_reference.name =
            'requirement definition')))) )) > 0 THEN
            RETURN (FALSE);
        END_IF;
    END;
    'verification'      :                BEGIN
        IF SIZEOF(QUERY ( i <* adr.items | (NOT (
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))) ))
            > 0 THEN
            RETURN (FALSE);
        END_IF;
        IF SIZEOF(QUERY ( i <* adr.items | ((
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))
            AND (NOT (i.frame_of_reference.name =
            'requirement definition')))) )) > 0 THEN
            RETURN (FALSE);
        END_IF;
    END;
    'referenced standard' :                IF SIZEOF(QUERY ( i <*
    adr.items |
        (NOT ('ELECTROTECHNICAL_DESIGN.PLANAR_BOX' IN
        TYPEOF(i))) ))
        > 0 THEN
        RETURN (FALSE);
    END_IF;
END;
```

```

        OTHERWISE          :          RETURN(TRUE);
    END_CASE;
RETURN(TRUE);

END_FUNCTION; -- applied_document_reference_correlation

FUNCTION applied_document_usage_constraint_assignment_correlation(
    aduca: applied_document_usage_constraint_assignment
): BOOLEAN;

LOCAL
    role_name : STRING;
END_LOCAL;
role_name := aduca.role.name;
CASE role_name OF
    'documentation'      :          BEGIN
        IF SIZEOF(QUERY ( i <* aduca.items | (NOT (
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))) ) )
            > 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( i <* aduca.items | ((
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))
            AND (NOT (i.frame_of_reference.name =
            'requirement_definition')))) ) > 0 THEN
            RETURN(FALSE);
        END_IF;
    END;
    'verification'      :          BEGIN
        IF SIZEOF(QUERY ( i <* aduca.items | (NOT (
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))) ) )
            > 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( i <* aduca.items | ((
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(i))
            AND (NOT (i.frame_of_reference.name =
            'requirement_definition')))) ) > 0 THEN
            RETURN(FALSE);
        END_IF;
    END;
    OTHERWISE          :          RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; --
applied_document_usage_constraint_assignment_correlation

FUNCTION applied_group_assignment_correlation(
    aga: applied_group_assignment
): BOOLEAN;

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```
LOCAL
  role_name : STRING;
END_LOCAL;
role_name := aga.role.name;
CASE role_name OF
  'specification category member' : BEGIN
    IF SIZEOF(QUERY ( i <* aga.items | (NOT (
      'ELECTROTECHNICAL_DESIGN.PRODUCT_CONCEPT_FEATURE' IN
      TYPEOF(i))) )) > 0 THEN
      RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aga.items | (
      'ELECTROTECHNICAL_DESIGN.CONDITIONAL_CONCEPT_FEATURE'
IN
      TYPEOF(i))) )) > 0 THEN
      RETURN(FALSE);
    END_IF;
    IF NOT
      ('ELECTROTECHNICAL_DESIGN.PRODUCT_CONCEPT_FEATURE_CATEGORY'
      IN TYPEOF(aga.assigned_group)) THEN
      RETURN(FALSE);
    END_IF;
  END;
  OTHERWISE : RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- applied_group_assignment_correlation

FUNCTION applied_identification_assignment_correlation(
  aia: applied_identification_assignment
): BOOLEAN;

LOCAL
  role_name : STRING;
END_LOCAL;
role_name := aia.role.name;
CASE role_name OF
  'alias' : BEGIN
    IF SIZEOF(QUERY ( i <* aia.items | (SIZEOF(TYPEOF(i) * [
      'ELECTROTECHNICAL_DESIGN.APPROVAL_STATUS',
      'ELECTROTECHNICAL_DESIGN.CLASS_SYSTEM',
      'ELECTROTECHNICAL_DESIGN.' +
      'COLOUR_REPRESENTATION_ITEM',
      'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
      'ELECTROTECHNICAL_DESIGN.' +
'CONNECTIVITY_DEFINITION',
      'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',
      'ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY',
      'ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE',
      'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',
      'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
      'ELECTROTECHNICAL_DESIGN.' +
      'INSTALLATION_SECTION_INTERFACE',
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'ELECTROTECHNICAL_DESIGN.NOTIFICATION',
'ELECTROTECHNICAL_DESIGN.ORGANIZATION',
'ELECTROTECHNICAL_DESIGN.PATH',
'ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE',
'ELECTROTECHNICAL_DESIGN.PRODUCT',
'ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE',
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE_CATEGORY',
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
'ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION',
'ELECTROTECHNICAL_DESIGN.' +
'SECURITY_CLASSIFICATION_LEVEL',
'ELECTROTECHNICAL_DESIGN.TERMINAL',
'ELECTROTECHNICAL_DESIGN.VERTEX']) = 0) )) > 0 THEN
RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* USEDIN(aia,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
name = 'version') )) > 1 THEN
RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* USEDIN(aia,
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_ORGANIZATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.name
= 'alias scope') )) > 1 THEN
RETURN (FALSE);
END_IF;
END;
'id' : BEGIN
IF SIZEOF(QUERY ( i <* aia.items | (NOT (
'ELECTROTECHNICAL_DESIGN.PRODUCT' IN TYPEOF(i))) )) >
0
THEN
RETURN (FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* aia.items | ((
'ELECTROTECHNICAL_DESIGN.PRODUCT' IN TYPEOF(i)) AND (
NOT (SIZEOF(QUERY ( cat <* USEDIN(i,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(cat.name
IN ['accessory','other','part','software']) )) = 1)))
)) > 0
THEN
RETURN (FALSE);
END_IF;
END;
'inventory number' : BEGIN
IF SIZEOF(QUERY ( i <* aia.items | (NOT (

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        'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(i)) ) )
    > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aia.items | ((
        'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(i))
        AND (NOT (i\product_definition.frame_of_reference.name
=
        'physical instance')))) ) ) > 0 THEN
        RETURN(FALSE);
    END_IF;
END;
'version'          :          BEGIN
    IF SIZEOF(QUERY ( i <* aia.items | (SIZEOF(TYPEOF(i) * [
        'ELECTROTECHNICAL_DESIGN.ACTION',
        'ELECTROTECHNICAL_DESIGN.ACTION_DIRECTIVE',
        'ELECTROTECHNICAL_DESIGN.CLASS',
        'ELECTROTECHNICAL_DESIGN.CONFIGURATION_ITEM',
        'ELECTROTECHNICAL_DESIGN.' +
'CONNECTIVITY_DEFINITION',
        'ELECTROTECHNICAL_DESIGN.DOCUMENT_FILE',
        'ELECTROTECHNICAL_DESIGN.EFFECTIVITY',
        'ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY',
        'ELECTROTECHNICAL_DESIGN.' +
'IDENTIFICATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_LOCATION',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE',
        'ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION',
        'ELECTROTECHNICAL_DESIGN.' +
        'INSTALLATION_SECTION_INTERFACE',
        'ELECTROTECHNICAL_DESIGN.NOTIFICATION',
        'ELECTROTECHNICAL_DESIGN.PATH',
        'ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS',
        'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_CONCEPT_FEATURE',
        'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION',
        'ELECTROTECHNICAL_DESIGN.REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.SIGNAL']) = 0)) ) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aia.items | (SIZEOF(TYPEOF(i) * [
        'ELECTROTECHNICAL_DESIGN.' + 'LOT_EFFECTIVITY',
        'ELECTROTECHNICAL_DESIGN.' +
        'SERIAL_NUMBERED_EFFECTIVITY']) > 0)) ) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aia.items | ((
        'ELECTROTECHNICAL_DESIGN.IDENTIFICATION_ASSIGNMENT' IN
TYPEOF(i)) AND (SIZEOF(TYPEOF(i) * [
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT']) = 0)) ) ) > 0 THEN
```



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        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aia.items | (((
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT') IN TYPEOF(i)) AND
(NOT (
        i.role.name = 'alias')))) ) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aia.items | (((
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT') IN TYPEOF(i)) AND (NOT
(i.role
        .description = 'alias')))) ) > 0 THEN
        RETURN(FALSE);
    END_IF;
    END;
    OTHERWISE          :          RETURN(TRUE);
    END_CASE;
    RETURN(TRUE);

END_FUNCTION; -- applied_identification_assignment_correlation

FUNCTION applied_organization_assignment_correlation(
    aoa: applied_organization_assignment
): BOOLEAN;

LOCAL
    role_name : STRING;
END_LOCAL;
role_name := aoa.role.name;
CASE role_name OF
    'alias scope'          :          IF SIZEOF(QUERY ( i
<*
        aoa.items | (NOT (('ELECTROTECHNICAL_DESIGN.' +
0
        'APPLIED_IDENTIFICATION_ASSIGNMENT') IN TYPEOF(i))) ) >
        THEN
            RETURN(FALSE);
        END_IF;
    'class supplier'      :          IF SIZEOF(QUERY ( i
<*
        aoa.items | (NOT (
        'ELECTROTECHNICAL_DESIGN.EXTERNALLY_DEFINED_CLASS' IN
        TYPEOF(i))) ) > 0 THEN
            RETURN(FALSE);
        END_IF;
    'concerned organization' :          BEGIN
        IF SIZEOF(QUERY ( i <* aoa.items | (NOT (
        'ELECTROTECHNICAL_DESIGN.ACTION' IN TYPEOF(i))) ) > 0
        THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( i <* aoa.items | (

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        'ELECTROTECHNICAL_DESIGN.RETENTION' IN TYPEOF(i)) )) >
0
        THEN
        RETURN(FALSE);
    END_IF;
END;
'supplying organization'          :          BEGIN
    IF SIZEOF(QUERY ( i <* aoa.items | (NOT (
        'ELECTROTECHNICAL_DESIGN.ACTION' IN TYPEOF(i))) )) > 0
        THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aoa.items | (
        'ELECTROTECHNICAL_DESIGN.RETENTION' IN TYPEOF(i)) )) >
0
        THEN
        RETURN(FALSE);
    END_IF;
END;
'item designation scope'          :          IF SIZEOF(QUERY ( i
<*
        aoa.items | (NOT (('ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT') IN TYPEOF(i))) )) > 0
THEN
    RETURN(FALSE);
    END_IF;
'notified person or organization' :          IF SIZEOF(QUERY (
i <*
        aoa.items | (NOT (('ELECTROTECHNICAL_DESIGN.' +
        'VERSIONED_ACTION_REQUEST') IN TYPEOF(i))) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
'organization in contract'        :          IF SIZEOF(QUERY ( i
<*
        aoa.items | (NOT ('ELECTROTECHNICAL_DESIGN.CONTRACT' IN
        TYPEOF(i))) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
'requestor'                       :          BEGIN
    IF SIZEOF(QUERY ( i <* aoa.items | (SIZEOF(TYPEOF(i) * [
        'ELECTROTECHNICAL_DESIGN.' + 'ACTION',
        'ELECTROTECHNICAL_DESIGN.' +
'VERSIONED_ACTION_REQUEST'])
        = 0) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* aoa.items | (
        'ELECTROTECHNICAL_DESIGN.RETENTION' IN TYPEOF(i)) )) >
0
        THEN
        RETURN(FALSE);
    END_IF;
    IF (SIZEOF(QUERY ( da <* USEDIN(aoa,
        'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_DATE_ASSIGNMENT.'

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+ 'ITEMS') | (da.role.name = 'actual') )) + SIZEOF(
QUERY ( dta <* USEDIN(aoa, 'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_DATE_AND_TIME_ASSIGNMENT.' + 'ITEMS') |
(dta.role.
name = 'actual') ))) = 0 THEN
RETURN(FALSE);
END_IF;
END;
'signing for contract' : BEGIN
IF SIZEOF(QUERY ( i <* aoa.items | (NOT ((
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_ORGANIZATION_ASSIGNMENT') IN TYPEOF(i))) )) >
0
THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* aoa.items | (((
'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_ORGANIZATION_ASSIGNMENT') IN TYPEOF(i)) AND
(NOT (i.
role.name = 'organization in contract')))) )) > 0 THEN
RETURN(FALSE);
END_IF;
END;
'validity context' : IF SIZEOF(QUERY ( i
<*
aoa.items | (SIZEOF(TYPEOF(i) * [
'ELECTROTECHNICAL_DESIGN.' + 'ACTION_PROPERTY',
'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION',
'ELECTROTECHNICAL_DESIGN.' +
'REPRESENTATION_RELATIONSHIP'])
= 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
OTHERWISE : RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- applied_organization_assignment_correlation

FUNCTION applied_person_and_organization_assignment_correlation(
apoa: applied_person_and_organization_assignment
): BOOLEAN;

LOCAL
role_name : STRING;
END_LOCAL;
role_name := apoa.role.name;
CASE role_name OF
'notified person or organization' : IF SIZEOF(QUERY (
i <*
apoa.items | (NOT (('ELECTROTECHNICAL_DESIGN.' +
'VERSIONED_ACTION_REQUEST') IN TYPEOF(i))) )) > 0 THEN
RETURN(FALSE);
END_IF;

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'requestor'
: BEGIN
  IF SIZEOF(QUERY ( i <* apoa.items | (SIZEOF(TYPEOF(i) * [
    'ELECTROTECHNICAL_DESIGN.' + 'ACTION',
    'ELECTROTECHNICAL_DESIGN.' +
'VERSIONED_ACTION_REQUEST'])
    = 0) )) > 0 THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( i <* apoa.items | (
    'ELECTROTECHNICAL_DESIGN.RETENTION' IN TYPEOF(i) )) >
0
    THEN
    RETURN(FALSE);
  END_IF;
  IF (SIZEOF(QUERY ( da <* USEDIN(apoa,
    'ELECTROTECHNICAL_DESIGN.' +
'APPLIED_DATE_ASSIGNMENT.'
    + 'ITEMS') | (da.role.name = 'actual') )) + SIZEOF(
    QUERY ( dta <* USEDIN(apoa, 'ELECTROTECHNICAL_DESIGN.'
+
    'APPLIED_DATE_AND_TIME_ASSIGNMENT.' + 'ITEMS') |
(dta.role.
    name = 'actual') ))) = 0 THEN
    RETURN(FALSE);
  END_IF;
END;
'signing for contract'
: BEGIN
  IF SIZEOF(QUERY ( i <* apoa.items | (NOT ((
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_ORGANIZATION_ASSIGNMENT') IN TYPEOF(i))) )) >
0
    THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( i <* apoa.items | (((
    'ELECTROTECHNICAL_DESIGN.' +
    'APPLIED_ORGANIZATION_ASSIGNMENT') IN TYPEOF(i)) AND
(NOT (i.
    role.name = 'organization in contract')))) )) > 0 THEN
    RETURN(FALSE);
  END_IF;
END;
OTHERWISE
: RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; --
applied_person_and_organization_assignment_correlation

FUNCTION aspect_ratio(
  p: planar_box
): positive_ratio_measure;
RETURN(p.size_in_x / p.size_in_y);

END_FUNCTION; -- aspect_ratio

```

```

FUNCTION bag_to_set(
    the_bag: BAG OF GENERIC:intype
): SET OF GENERIC:intype;

LOCAL
    the_set : SET OF GENERIC:intype := [];
END_LOCAL;
IF SIZEOF(the_bag) > 0 THEN
    REPEAT i := 1 TO HIINDEX(the_bag) BY 1;
        the_set := the_set + the_bag[i];
    END_REPEAT;
END_IF;
RETURN(the_set);

END_FUNCTION; -- bag_to_set

FUNCTION base_axis(
    dim: INTEGER;
    axis1, axis2, axis3: direction
): LIST [2:3] OF direction;

LOCAL
    u      : LIST [2:3] OF direction;
    d1     : direction;
    d2     : direction;
    factor : REAL;
END_LOCAL;
IF dim = 3 THEN
    d1 := NVL(normalise(axis3), dummy_gri || direction([0,0,1]));
    d2 := first_proj_axis(d1, axis1);
    u := [d2, second_proj_axis(d1, d2, axis2), d1];
ELSE
    IF EXISTS(axis1) THEN
        d1 := normalise(axis1);
        u := [d1, orthogonal_complement(d1)];
        IF EXISTS(axis2) THEN
            factor := dot_product(axis2, u[2]);
            IF factor < 0 THEN
                u[2].direction_ratios[1] := -u[2].direction_ratios[1];
                u[2].direction_ratios[2] := -u[2].direction_ratios[2];
            END_IF;
        END_IF;
    ELSE
        IF EXISTS(axis2) THEN
            d1 := normalise(axis2);
            u := [orthogonal_complement(d1), d1];
            u[1].direction_ratios[1] := -u[1].direction_ratios[1];
            u[1].direction_ratios[2] := -u[1].direction_ratios[2];
        ELSE
            u := [dummy_gri || direction([1,0]), dummy_gri ||
direction([0,1])];
        END_IF;
    END_IF;
END_IF;
END_IF;

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RETURN(u);

END_FUNCTION; -- base_axis

FUNCTION boolean_choose(
    b: BOOLEAN;
    choice1, choice2: GENERIC:item
): GENERIC:item;
IF b THEN
    RETURN(choice1);
ELSE
    RETURN(choice2);
END_IF;

END_FUNCTION; -- boolean_choose

FUNCTION build_2axes(
    ref_direction: direction
): LIST [2:2] OF direction;

LOCAL
    d : direction := NVL(normalise(ref_direction), dummy_gri ||
        direction([1,0]));
END_LOCAL;
RETURN([d,orthogonal_complement(d)]);

END_FUNCTION; -- build_2axes

FUNCTION build_axes(
    axis, ref_direction: direction
): LIST [3:3] OF direction;

LOCAL
    d1 : direction;
    d2 : direction;
END_LOCAL;
d1 := NVL(normalise(axis), dummy_gri || direction([0,0,1]));
d2 := first_proj_axis(d1,ref_direction);
RETURN([d2,normalise(cross_product(d1,d2)).orientation,d1]);

END_FUNCTION; -- build_axes

FUNCTION check_text_alignment(
    ct: composite_text
): BOOLEAN;

LOCAL
    a : SET OF text_alignment := [];
END_LOCAL;
REPEAT i := 1 TO HIINDEX(ct.collected_text) BY 1;
    a := a + [ct.collected_text[i]\text_literal.alignment];
END_REPEAT;
RETURN(SIZEOF(a) = 1);

END_FUNCTION; -- check_text_alignment
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FUNCTION check_text_font(
    ct: composite_text
): BOOLEAN;

LOCAL
    f : SET OF font_select := [];
END_LOCAL;
REPEAT i := 1 TO HIINDEX(ct.collected_text) BY 1;
    f := f + [ct.collected_text[i]\text_literal.font];
END_REPEAT;
RETURN(SIZEOF(f) <= 1);

END_FUNCTION; -- check_text_font

FUNCTION configuration_design_correlation(
    cd: configuration_design
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := cd.name;
CASE name OF
    'functionality' : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS' IN TYPEOF(
            cd.configuration.item_concept)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(cd.design)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT
            (cd.design.frame_of_reference\application_context_element
            .name IN ['functional definition','functional
            occurrence'])
            THEN
                RETURN(FALSE);
            END_IF;
        END;
    'occurrence usage definition' : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(cd.design)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (cd.design.name IN ['quantified instance',
            'selected instance','single instance']) THEN
            RETURN(FALSE);
        END_IF;
        END;
    'physical instance basis' : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(cd.design)) THEN
            RETURN(FALSE);

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        END_IF;
        IF NOT (cd.design.name = 'physical instance') THEN
            RETURN(FALSE);
        END_IF;
    END;
    'realization'
        : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS' IN TYPEOF(
            cd.configuration.item_concept)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(cd.design)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT
(cd.design.frame_of_reference\application_context_element
            .name = 'conceptual definition') THEN
            RETURN(FALSE);
        END_IF;
    END;
    OTHERWISE
        : RETURN(TRUE);
    END_CASE;
    RETURN(TRUE);

END_FUNCTION; -- configuration_design_correlation

FUNCTION constraints_param_b_spline(
    degree, up_knots, up_cp: INTEGER;
    knot_mult: LIST OF INTEGER;
    knots: LIST OF parameter_value
): BOOLEAN;

LOCAL
    k      : INTEGER;
    sum    : INTEGER;
    result : BOOLEAN := TRUE;
END_LOCAL;
sum := knot_mult[1];
REPEAT i := 2 TO up_knots BY 1;
    sum := sum + knot_mult[i];
END_REPEAT;
IF (degree < 1) OR (up_knots < 2) OR (up_cp < degree) OR (sum <>
(
    degree + up_cp + 2)) THEN
    result := FALSE;
    RETURN(result);
END_IF;
k := knot_mult[1];
IF (k < 1) OR (k > (degree + 1)) THEN
    result := FALSE;
    RETURN(result);
END_IF;
REPEAT i := 2 TO up_knots BY 1;
    IF (knot_mult[i] < 1) OR (knots[i] <= knots[i - 1]) THEN
        result := FALSE;
    
```



```

        RETURN(result);
    END_IF;
    k := knot_mult[i];
    IF (i < up_knots) AND (k > degree) THEN
        result := FALSE;
        RETURN(result);
    END_IF;
    IF (i = up_knots) AND (k > (degree + 1)) THEN
        result := FALSE;
        RETURN(result);
    END_IF;
END_REPEAT;
RETURN(result);

END_FUNCTION; -- constraints_param_b_spline

FUNCTION cross_product(
    arg1, arg2: direction
): vector;

LOCAL
    v2      : LIST [3:3] OF REAL;
    v1      : LIST [3:3] OF REAL;
    mag     : REAL;
    res     : direction;
    result  : vector;
END_LOCAL;
IF (NOT EXISTS(arg1)) OR (arg1.dim = 2) OR (NOT EXISTS(arg2)) OR
(arg2
    .dim = 2) THEN
    RETURN(?);
ELSE
    BEGIN
        v1 := normalise(arg1).direction_ratios;
        v2 := normalise(arg2).direction_ratios;
        res := dummy_gri || direction([(v1[2] * v2[3]) - (v1[3] *
v2[2]), (
            v1[3] * v2[1]) - (v1[1] * v2[3]), (v1[1] * v2[2]) -
(v1[2] * v2[
                1])]);
        mag := 0;
        REPEAT i := 1 TO 3 BY 1;
            mag := mag + (res.direction_ratios[i] *
res.direction_ratios[i]);
        END_REPEAT;
        IF mag > 0 THEN
            result := dummy_gri || vector(res, SQRT(mag));
        ELSE
            result := dummy_gri || vector(arg1, 0);
        END_IF;
        RETURN(result);
    END;
END_IF;

END_FUNCTION; -- cross_product

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```
FUNCTION curve_weights_positive(
    b: rational_b_spline_curve
): BOOLEAN;

LOCAL
    result : BOOLEAN := TRUE;
END_LOCAL;
REPEAT i := 0 TO b.upper_index_on_control_points BY 1;
    IF b.weights[i] <= 0 THEN
        result := FALSE;
        RETURN(result);
    END_IF;
END_REPEAT;
RETURN(result);

END_FUNCTION; -- curve_weights_positive

FUNCTION derive_dimensional_exponents(
    x: unit
): dimensional_exponents;

LOCAL
    result : dimensional_exponents :=
dimensional_exponents(0,0,0,0,0,0,
    0);
END_LOCAL;
IF 'ELECTROTECHNICAL DESIGN.DERIVED UNIT' IN TYPEOF(x) THEN
    REPEAT i := LOINDEX(x.elements) TO HIINDEX(x.elements) BY 1;
        result.length_exponent := result.length_exponent +
(x.elements[i].
    exponent *
x.elements[i].unit.dimensions.length_exponent);
        result.mass_exponent := result.mass_exponent +
(x.elements[i].
    exponent * x.elements[i].unit.dimensions.mass_exponent);
        result.time_exponent := result.time_exponent +
(x.elements[i].
    exponent * x.elements[i].unit.dimensions.time_exponent);
        result.electric_current_exponent := result.
    electric_current_exponent + (x.elements[i].exponent * x.
    elements[i].unit.dimensions.electric_current_exponent);
        result.thermodynamic_temperature_exponent := result.
    thermodynamic_temperature_exponent +
(x.elements[i].exponent *
    x.elements[i].unit.dimensions.
    thermodynamic_temperature_exponent);
        result.amount_of_substance_exponent := result.
    amount_of_substance_exponent + (x.elements[i].exponent *
x.
elements[i].unit.dimensions.amount_of_substance_exponent);
        result.luminous_intensity_exponent := result.
    luminous_intensity_exponent + (x.elements[i].exponent *
x.
```

```

elements[i].unit.dimensions.luminous_intensity_exponent);
    END_REPEAT;
ELSE
    result := x.dimensions;
END_IF;
RETURN(result);

END_FUNCTION; -- derive_dimensional_exponents

FUNCTION dimension_of(
    item: geometric_representation_item
): dimension_count;

LOCAL
    x : SET OF representation;
    y : representation_context;
    dim : dimension_count;
END_LOCAL;
IF 'ELECTROTECHNICAL_DESIGN.CARTESIAN_POINT' IN TYPEOF(item)
    THEN
        dim := SIZEOF(item\cartesian_point.coordinates);
        RETURN(dim);
    END_IF;
IF 'ELECTROTECHNICAL_DESIGN.DIRECTION' IN TYPEOF(item) THEN
    dim := SIZEOF(item\direction.direction_ratios);
    RETURN(dim);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.VECTOR' IN TYPEOF(item) THEN
    dim :=
SIZEOF(item\vector.orientation\direction.direction_ratios);
    RETURN(dim);
END_IF;
x := using_representations(item);
y := x[1].context_of_items;
dim :=
y\geometric_representation_context.coordinate_space_dimension;
RETURN(dim);

END_FUNCTION; -- dimension_of

FUNCTION dimensions_for_si_unit(
    n: si_unit_name
): dimensional_exponents;
CASE n OF
    metre :
RETURN(dimensional_exponents(1,0,0,0,0,0,0));
    gram :
RETURN(dimensional_exponents(0,1,0,0,0,0,0));
    second :
RETURN(dimensional_exponents(0,0,1,0,0,0,0));
    ampere :
RETURN(dimensional_exponents(0,0,0,1,0,0,0));
    kelvin :
RETURN(dimensional_exponents(0,0,0,0,1,0,0));
END_CASE;

```

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```
mole      :
RETURN(dimensional_exponents(0,0,0,0,0,1,0));
candela   :
RETURN(dimensional_exponents(0,0,0,0,0,0,1));
radian    :
RETURN(dimensional_exponents(0,0,0,0,0,0,0));
steradian :
RETURN(dimensional_exponents(0,0,0,0,0,0,0));
hertz     : RETURN(dimensional_exponents(0,0,-
1,0,0,0,0));
newton    : RETURN(dimensional_exponents(1,1,-
2,0,0,0,0));
pascal    : RETURN(dimensional_exponents(-1,1,-
2,0,0,0,0));
joule     : RETURN(dimensional_exponents(2,1,-
2,0,0,0,0));
watt      : RETURN(dimensional_exponents(2,1,-
3,0,0,0,0));
coulomb   :
RETURN(dimensional_exponents(0,0,1,1,0,0,0));
volt      : RETURN(dimensional_exponents(2,1,-3,-
1,0,0,0));
farad     : RETURN(dimensional_exponents(-2,-
1,4,1,0,0,0));
ohm       : RETURN(dimensional_exponents(2,1,-3,-
2,0,0,0));
siemens   : RETURN(dimensional_exponents(-2,-
1,3,2,0,0,0));
weber     : RETURN(dimensional_exponents(2,1,-2,-
1,0,0,0));
tesla     : RETURN(dimensional_exponents(0,1,-2,-
1,0,0,0));
henry     : RETURN(dimensional_exponents(2,1,-2,-
2,0,0,0));
degree_celsius :
RETURN(dimensional_exponents(0,0,0,0,1,0,0));
lumen     :
RETURN(dimensional_exponents(0,0,0,0,0,0,1));
lux       : RETURN(dimensional_exponents(-
2,0,0,0,0,0,1));
becquerel : RETURN(dimensional_exponents(0,0,-
1,0,0,0,0));
gray      : RETURN(dimensional_exponents(2,0,-
2,0,0,0,0));
sievert   : RETURN(dimensional_exponents(2,0,-
2,0,0,0,0));
OTHERWISE : RETURN(?);
END_CASE;

END_FUNCTION; -- dimensions_for_si_unit

FUNCTION dot_product(
    arg1, arg2: direction
): REAL;
```

```

LOCAL
  ndim    : INTEGER;
  scalar  : REAL;
  vec1    : direction;
  vec2    : direction;
END_LOCAL;
IF (NOT EXISTS(arg1)) OR (NOT EXISTS(arg2)) THEN
  scalar := ?;
ELSE
  IF arg1.dim <> arg2.dim THEN
    scalar := ?;
  ELSE
    BEGIN
      vec1 := normalise(arg1);
      vec2 := normalise(arg2);
      ndim := arg1.dim;
      scalar := 0;
      REPEAT i := 1 TO ndim BY 1;
        scalar := scalar + (vec1.direction_ratios[i] * vec2.
          direction_ratios[i]);
      END_REPEAT;
    END;
  END_IF;
END_IF;
RETURN(scalar);

END_FUNCTION; -- dot_product

FUNCTION externally_defined_item_relationship_correlation(
  edir: externally_defined_item_relationship
): BOOLEAN;

LOCAL
  name : STRING;
END_LOCAL;
name := edir.name;
CASE name OF
  'name scope' : BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.EXTERNALLY_DEFINED_CLASS'
      IN TYPEOF(edir.related_item)) THEN
      RETURN(FALSE);
    END_IF;
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
      'EXTERNALLY_DEFINED_GENERAL_PROPERTY') IN TYPEOF(edir.
      relating_item)) THEN
      RETURN(FALSE);
    END_IF;
  END;
  OTHERWISE : RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- externally_defined_item_relationship_correlation

FUNCTION first_proj_axis(

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```
                z_axis, arg: direction
            ): direction;

LOCAL
    x_vec  : vector;
    v      : direction;
    z      : direction;
    x_axis : direction;
END_LOCAL;
IF NOT EXISTS(z_axis) THEN
    RETURN(?);
ELSE
    z := normalise(z_axis);
    IF NOT EXISTS(arg) THEN
        IF z.direction_ratios <> [1,0,0] THEN
            v := dummy_gri || direction([1,0,0]);
        ELSE
            v := dummy_gri || direction([0,1,0]);
        END_IF;
    ELSE
        IF arg.dim <> 3 THEN
            RETURN(?);
        END_IF;
        IF cross_product(arg,z).magnitude = 0 THEN
            RETURN(?);
        ELSE
            v := normalise(arg);
        END_IF;
    END_IF;
    x_vec := scalar_times_vector(dot_product(v,z),z);
    x_axis := vector_difference(v,x_vec).orientation;
    x_axis := normalise(x_axis);
END_IF;
RETURN(x_axis);

END_FUNCTION; -- first_proj_axis

FUNCTION general_property_correlation(
    gp: general_property
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := gp.name;
CASE name OF
    'body breadth' : BEGIN
        IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
    used_representation.name = 'property value format') ))
> 0
        THEN
            RETURN(FALSE);
        END_IF;
    END_CASE;
```

```

END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
used_representation.name = 'property specification')
)) > 0
THEN
RETURN(FALSE);
END_IF;
END;
'body height' : BEGIN
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
used_representation.name = 'property value format'))
> 0
THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
used_representation.name = 'property specification'))
> 0
THEN
RETURN(FALSE);
END_IF;
END;
'body length' : BEGIN
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
used_representation.name = 'property value format'))
> 0
THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
used_representation.name = 'property specification'))
> 0
THEN
RETURN(FALSE);
END_IF;
END;
'component colour' : BEGIN
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +

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```
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property value format') ))
> 0
    THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property specification')
)) > 0
    THEN
    RETURN(FALSE);
END_IF;
END;
'cross section area' :          BEGIN
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property value format') ))
> 0
    THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property specification')
)) > 0
    THEN
    RETURN(FALSE);
END_IF;
END;
'mass' :          BEGIN
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property value format') ))
> 0
    THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property specification')
)) > 0
    THEN
    RETURN(FALSE);
```



```

        END_IF;
    END;
    'material specification'      :      BEGIN
        IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
> 0
            used_representation.name = 'property value format') ))
            THEN
                RETURN(FALSE);
            END_IF;
        IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
)) > 0
            used_representation.name = 'property specification')
            THEN
                RETURN(FALSE);
            END_IF;
    END;
    'mounting features specification'      :      BEGIN
        IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
> 0
            used_representation.name = 'property value format') ))
            THEN
                RETURN(FALSE);
            END_IF;
        IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
)) > 0
            used_representation.name = 'property specification')
            THEN
                RETURN(FALSE);
            END_IF;
    END;
    'operating temperature'      :      BEGIN
        IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
| (pdr.
> 0
            used_representation.name = 'property value format') ))
            THEN
                RETURN(FALSE);
            END_IF;
        IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
            'ELECTROTECHNICAL_DESIGN.' +

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```
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property specification')
)) > 0
        THEN
        RETURN(FALSE);
    END_IF;
END;
'outside diameter' : BEGIN
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property value format') ))
> 0
        THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property specification')
)) > 0
        THEN
        RETURN(FALSE);
    END_IF;
END;
'rated current' : BEGIN
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property value format') ))
> 0
        THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property specification')
)) > 0
        THEN
        RETURN(FALSE);
    END_IF;
END;
'rated power' : BEGIN
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
used_representation.name = 'property value format') ))
> 0
```

```

        THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
    | (pdr.
        used_representation.name = 'property specification')
    )) > 0
        THEN
        RETURN (FALSE);
    END_IF;
    END;
    'rated voltage' : BEGIN
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
    | (pdr.
        used_representation.name = 'property value format') ))
    > 0
        THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
    | (pdr.
        used_representation.name = 'property specification')
    )) > 0
        THEN
        RETURN (FALSE);
    END_IF;
    END;
    'storage temperature' : BEGIN
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
    | (pdr.
        used_representation.name = 'property value format') ))
    > 0
        THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(gp,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION'))
    | (pdr.
        used_representation.name = 'property specification')
    )) > 0
        THEN
        RETURN (FALSE);
    END_IF;
    END;
    OTHERWISE : RETURN (TRUE);
    END_CASE;

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```
RETURN(TRUE);

END_FUNCTION; -- general_property_correlation

FUNCTION get_description_value(
    obj: description_attribute_select
): text;

LOCAL
    description_bag : BAG OF description_attribute := USEDIN(obj,
        'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTION_ATTRIBUTE.' +
'DESCRIBED_ITEM');
END_LOCAL;
IF SIZEOF(description_bag) = 1 THEN
    RETURN(description_bag[1].attribute_value);
ELSE
    RETURN(?);
END_IF;

END_FUNCTION; -- get_description_value

FUNCTION get_id_value(
    obj: id_attribute_select
): identifier;

LOCAL
    id_bag : BAG OF id_attribute := USEDIN(obj,
        'ELECTROTECHNICAL_DESIGN.' + 'ID_ATTRIBUTE.' +
        'IDENTIFIED_ITEM');
END_LOCAL;
IF SIZEOF(id_bag) = 1 THEN
    RETURN(id_bag[1].attribute_value);
ELSE
    RETURN(?);
END_IF;

END_FUNCTION; -- get_id_value

FUNCTION get_multi_language(
    x: attribute_value_assignment
): label;

LOCAL
    alas : BAG OF attribute_language_assignment := USEDIN(x,
        'ELECTROTECHNICAL_DESIGN.' +
        'ATTRIBUTE_LANGUAGE_ASSIGNMENT.ITEMS');
END_LOCAL;
IF SIZEOF(alas) > 0 THEN
    RETURN(alas[1].language);
END_IF;
RETURN(?);

END_FUNCTION; -- get_multi_language
```

```

FUNCTION get_name_value(
    obj: name_attribute_select
): label;

LOCAL
    name_bag : BAG OF name_attribute := USEDIN(obj,
        'ELECTROTECHNICAL_DESIGN.' + 'NAME_ATTRIBUTE.' +
        'NAMED_ITEM');
END_LOCAL;
IF SIZEOF(name_bag) = 1 THEN
    RETURN(name_bag[1].attribute_value);
ELSE
    RETURN(?);
END_IF;

END_FUNCTION; -- get_name_value

FUNCTION get_role(
    obj: role_select
): object_role;

LOCAL
    role_bag : BAG OF role_association := USEDIN(obj,
        'ELECTROTECHNICAL_DESIGN.' + 'ROLE_ASSOCIATION.' +
        'ITEM_WITH_ROLE');
END_LOCAL;
IF SIZEOF(role_bag) = 1 THEN
    RETURN(role_bag[1].role);
ELSE
    RETURN(?);
END_IF;

END_FUNCTION; -- get_role

FUNCTION group_relationship_correlation(
    gr: group_relationship
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := gr.name;
CASE name OF
    'class_hierarchy' : IF NOT ((
        'ELECTROTECHNICAL_DESIGN.CLASS' IN
        TYPEOF(gr.related_group))
        AND ('ELECTROTECHNICAL_DESIGN.CLASS' IN TYPEOF(gr.
        relating_group))) THEN
        RETURN(FALSE);
    END_IF;
    'connecting_line_ownership' : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_GROUP' IN
            TYPEOF(gr.related_group)) THEN
            RETURN(FALSE);
        END_IF;

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        IF NOT ('ELECTROTECHNICAL_DESIGN.CONNECTING_LINE_GROUP' IN
            TYPEOF(gr.relatng_group)) THEN
            RETURN(FALSE);
        END_IF;
    END;
'page connector ownership' : BEGIN
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
        'PAGE_CONNECTOR_PRESENTATION_GROUP') IN TYPEOF(gr.
            related_group)) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT ('ELECTROTECHNICAL_DESIGN.PAGE_CONNECTOR_GROUP' IN
        TYPEOF(gr.relatng_group)) THEN
        RETURN(FALSE);
    END_IF;
    END;
'page connector presentation ownership' : BEGIN
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
        'PAGE_CONNECTOR_REFERENCE_GROUP') IN
        TYPEOF(gr.related_group))
        THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (('ELECTROTECHNICAL_DESIGN.' +
            'PAGE_CONNECTOR_PRESENTATION_GROUP') IN TYPEOF(gr.
                relatng_group)) THEN
                RETURN(FALSE);
            END_IF;
        END;
    OTHERWISE : RETURN(TRUE);
    END_CASE;
RETURN(TRUE);

END_FUNCTION; -- group_relationship_correlation

FUNCTION identification_assignment_relationship_correlation(
    iar: identification_assignment_relationship
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := iar.name;
CASE name OF
    'item designation composition' : IF NOT ((
        'ELECTROTECHNICAL_DESIGN.ITEM_DESIGNATION_ASSIGNMENT' IN
        TYPEOF(iar.related_identification_assignment)) AND (
        'ELECTROTECHNICAL_DESIGN.ITEM_DESIGNATION_ASSIGNMENT' IN
        TYPEOF(iar.relatng_identification_assignment))) THEN
        RETURN(FALSE);
    END_IF;
    OTHERWISE : RETURN(TRUE);
    END_CASE;
RETURN(TRUE);

```

```

END_FUNCTION; --
identification_assignment_relationship_correlation

FUNCTION is_acyclic(
    arg: generic_expression
): BOOLEAN;
RETURN(acyclic(arg, []));

END_FUNCTION; -- is_acyclic

FUNCTION is_int_expr(
    arg: numeric_expression
): BOOLEAN;

LOCAL
    i : INTEGER;
END_LOCAL;
IF 'ELECTROTECHNICAL_DESIGN.INT_LITERAL' IN TYPEOF(arg) THEN
    RETURN(TRUE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.REAL_LITERAL' IN TYPEOF(arg) THEN
    RETURN(FALSE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.INT_NUMERIC_VARIABLE' IN TYPEOF(arg)
    THEN
    RETURN(TRUE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.REAL_NUMERIC_VARIABLE' IN
TYPEOF(arg)
    THEN
    RETURN(FALSE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.ABS_FUNCTION' IN TYPEOF(arg) THEN
    RETURN(is_int_expr(arg\unary_numeric_expression.operand));
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.MINUS_FUNCTION' IN TYPEOF(arg) THEN
    RETURN(is_int_expr(arg\unary_numeric_expression.operand));
END_IF;
IF ('ELECTROTECHNICAL_DESIGN.SIN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.COS_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.TAN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.ASIN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.ACOS_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.ATAN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.EXP_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.LOG_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.LOG2_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.LOG10_FUNCTION' IN TYPEOF(arg)) OR
(
    'ELECTROTECHNICAL_DESIGN.SQUARE_ROOT_FUNCTION' IN
TYPEOF(arg)
    THEN
    RETURN(FALSE);
END_IF;
IF ('ELECTROTECHNICAL_DESIGN.PLUS_EXPRESSION' IN TYPEOF(arg)) OR

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        ('ELECTROTECHNICAL_DESIGN.MULT_EXPRESSION' IN TYPEOF(arg))
OR
        ('ELECTROTECHNICAL_DESIGN.MAXIMUM_FUNCTION' IN TYPEOF(arg))
OR
        ('ELECTROTECHNICAL_DESIGN.MINIMUM_FUNCTION' IN TYPEOF(arg))
        THEN
        REPEAT i := 1 TO SIZEOF(arg\multiple_arity_numeric_expression.
            operands) BY 1;
        IF NOT
is_int_expr(arg\multiple_arity_numeric_expression.operands[
            i]) THEN
            RETURN(FALSE);
        END_IF;
        END_REPEAT;
        RETURN(TRUE);
    END_IF;
    IF ('ELECTROTECHNICAL_DESIGN.MINUS_EXPRESSION' IN TYPEOF(arg))
OR
        ('ELECTROTECHNICAL_DESIGN.POWER_EXPRESSION' IN TYPEOF(arg))
        THEN
        RETURN(is_int_expr(arg\binary_numeric_expression.operands[1])
AND
            is_int_expr(arg\binary_numeric_expression.operands[2]));
    END_IF;
    IF ('ELECTROTECHNICAL_DESIGN.DIV_EXPRESSION' IN TYPEOF(arg)) OR
    (
        'ELECTROTECHNICAL_DESIGN.MOD_EXPRESSION' IN TYPEOF(arg))
    THEN
        RETURN(TRUE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.SLASH_EXPRESSION' IN TYPEOF(arg)
        THEN
        RETURN(FALSE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.LENGTH_FUNCTION' IN TYPEOF(arg) THEN
        RETURN(TRUE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.VALUE_FUNCTION' IN TYPEOF(arg) THEN
        IF 'ELECTROTECHNICAL_DESIGN.INT_VALUE_FUNCTION' IN TYPEOF(arg)
            THEN
            RETURN(TRUE);
        ELSE
            RETURN(FALSE);
        END_IF;
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.INTEGER_DEFINED_FUNCTION' IN TYPEOF(
arg) THEN
        RETURN(TRUE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.REAL_DEFINED_FUNCTION' IN
    TYPEOF(arg)
        THEN
        RETURN(FALSE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.BOOLEAN_DEFINED_FUNCTION' IN TYPEOF(
```



```

        arg) THEN
        RETURN (FALSE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.STRING_DEFINED_FUNCTION' IN TYPEOF(
        arg) THEN
        RETURN (FALSE);
    END_IF;
    RETURN (FALSE);

END_FUNCTION; -- is_int_expr

FUNCTION is_sql_mappable(
    arg: expression
): BOOLEAN;

LOCAL
    i : INTEGER;
END_LOCAL;
IF 'ELECTROTECHNICAL_DESIGN.SIMPLE_NUMERIC_EXPRESSION' IN
TYPEOF(
    arg) THEN
    RETURN (TRUE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.SQL_MAPPABLE_DEFINED_FUNCTION' IN
    TYPEOF(arg) THEN
    RETURN (TRUE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.MINUS_FUNCTION' IN TYPEOF(arg) THEN
    RETURN (is_sql_mappable(arg\unary_numeric_expression.operand));
END_IF;
IF ('ELECTROTECHNICAL_DESIGN.ABS_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.SIN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.COS_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.TAN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.ASIN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.ACOS_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.ATAN_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.EXP_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.LOG_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.LOG2_FUNCTION' IN TYPEOF(arg)) OR (
    'ELECTROTECHNICAL_DESIGN.LOG10_FUNCTION' IN TYPEOF(arg)) OR
(
    'ELECTROTECHNICAL_DESIGN.SQUARE_ROOT_FUNCTION' IN
TYPEOF(arg))
    OR ('ELECTROTECHNICAL_DESIGN.VALUE_FUNCTION' IN TYPEOF(arg))
    OR ('ELECTROTECHNICAL_DESIGN.LENGTH_FUNCTION' IN
TYPEOF(arg))
    THEN
    RETURN (FALSE);
END_IF;
IF ('ELECTROTECHNICAL_DESIGN.PLUS_EXPRESSION' IN TYPEOF(arg)) OR
    ('ELECTROTECHNICAL_DESIGN.MULT_EXPRESSION' IN TYPEOF(arg))
OR
    ('ELECTROTECHNICAL_DESIGN.MAXIMUM_FUNCTION' IN TYPEOF(arg))
OR

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```
        ('ELECTROTECHNICAL_DESIGN.MINIMUM_FUNCTION' IN TYPEOF(arg))
    THEN
        REPEAT i := 1 TO SIZEOF(arg\multiple_arity_numeric_expression.
            operands) BY 1;
            IF NOT
is_sql_mappable(arg\multiple_arity_numeric_expression.
                operands[i]) THEN
                    RETURN(FALSE);
                END_IF;
            END_REPEAT;
        RETURN(TRUE);
    END_IF;
    IF ('ELECTROTECHNICAL_DESIGN.MINUS_EXPRESSION' IN TYPEOF(arg))
OR
        ('ELECTROTECHNICAL_DESIGN.SLASH_EXPRESSION' IN TYPEOF(arg))
    THEN

RETURN(is_sql_mappable(arg\binary_numeric_expression.operands[1])
        AND
is_sql_mappable(arg\binary_numeric_expression.operands[2]));
    END_IF;
    IF ('ELECTROTECHNICAL_DESIGN.DIV_EXPRESSION' IN TYPEOF(arg)) OR
(
        'ELECTROTECHNICAL_DESIGN.MOD_EXPRESSION' IN TYPEOF(arg)) OR
(
        'ELECTROTECHNICAL_DESIGN.POWER_EXPRESSION' IN TYPEOF(arg))
    THEN
        RETURN(FALSE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.SIMPLE_BOOLEAN_EXPRESSION' IN
TYPEOF(
        arg) THEN
        RETURN(TRUE);
    END_IF;
    IF 'ELECTROTECHNICAL_DESIGN.NOT_EXPRESSION' IN TYPEOF(arg) THEN
        RETURN(is_sql_mappable(arg\unary_generic_expression.operand));
    END_IF;
    IF ('ELECTROTECHNICAL_DESIGN.ODD_FUNCTION' IN TYPEOF(arg)) OR (
        'ELECTROTECHNICAL_DESIGN.XOR_EXPRESSION' IN TYPEOF(arg))
THEN
        RETURN(FALSE);
    END_IF;
    IF ('ELECTROTECHNICAL_DESIGN.AND_EXPRESSION' IN TYPEOF(arg)) OR
(
        'ELECTROTECHNICAL_DESIGN.OR_EXPRESSION' IN TYPEOF(arg)) THEN
        REPEAT i := 1 TO SIZEOF(arg\multiple_arity_boolean_expression.
            operands) BY 1;
            IF NOT
is_sql_mappable(arg\multiple_arity_boolean_expression.
                operands[i]) THEN
                    RETURN(FALSE);
                END_IF;
            END_REPEAT;
        RETURN(TRUE);
    END_IF;
```

```

IF 'ELECTROTECHNICAL_DESIGN.EQUALS_EXPRESSION' IN TYPEOF(arg)
  THEN
RETURN(is_sql_mappable(arg\binary_generic_expression.operands[1])
  AND
is_sql_mappable(arg\binary_generic_expression.operands[2]));
  END_IF;
  IF ('ELECTROTECHNICAL_DESIGN.COMPARISON_EQUAL' IN TYPEOF(arg))
OR
  ('ELECTROTECHNICAL_DESIGN.COMPARISON_GREATER' IN
TYPEOF(arg))
  OR ('ELECTROTECHNICAL_DESIGN.COMPARISON_GREATER_EQUAL' IN
TYPEOF(arg)) OR ('ELECTROTECHNICAL_DESIGN.COMPARISON_LESS'
IN
TYPEOF(arg)) OR (
  'ELECTROTECHNICAL_DESIGN.COMPARISON_LESS_EQUAL' IN
TYPEOF(arg))
  OR ('ELECTROTECHNICAL_DESIGN.COMPARISON_NOT_EQUAL' IN
TYPEOF(
arg)) OR ('ELECTROTECHNICAL_DESIGN.LIKE_EXPRESSION' IN
TYPEOF(
arg)) THEN
  RETURN(is_sql_mappable(arg\comparison_expression.operands[1])
AND
  is_sql_mappable(arg\comparison_expression.operands[2]));
  END_IF;
  IF 'ELECTROTECHNICAL_DESIGN.INTERVAL_EXPRESSION' IN TYPEOF(arg)
  THEN
  RETURN(is_sql_mappable(arg\interval_expression.interval_low)
AND
  is_sql_mappable(arg\interval_expression.interval_high) AND
  is_sql_mappable(arg\interval_expression.interval_item));
  END_IF;
  IF ('ELECTROTECHNICAL_DESIGN.NUMERIC_DEFINED_FUNCTION' IN
TYPEOF(
arg)) OR ('ELECTROTECHNICAL_DESIGN.BOOLEAN_DEFINED_FUNCTION'
IN TYPEOF(arg)) OR (
  'ELECTROTECHNICAL_DESIGN.STRING_DEFINED_FUNCTION' IN TYPEOF(
arg)) THEN
  RETURN(FALSE);
  END_IF;
  IF 'ELECTROTECHNICAL_DESIGN.SIMPLE_STRING_EXPRESSION' IN TYPEOF(
arg) THEN
  RETURN(TRUE);
  END_IF;
  IF ('ELECTROTECHNICAL_DESIGN.INDEX_EXPRESSION' IN TYPEOF(arg))
OR
  ('ELECTROTECHNICAL_DESIGN.SUBSTRING_EXPRESSION' IN
TYPEOF(arg))
  OR ('ELECTROTECHNICAL_DESIGN.CONCAT_EXPRESSION' IN
TYPEOF(arg))
  OR ('ELECTROTECHNICAL_DESIGN.FORMAT_FUNCTION' IN
TYPEOF(arg))
  THEN
  RETURN(FALSE);

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```
END_IF;
RETURN(FALSE);

END_FUNCTION; -- is_sql_mappable

FUNCTION item_correlation(
    items: SET OF GENERIC;
    c_items: SET OF STRING
): LOGICAL;

LOCAL
    c_hit    : INTEGER := 0;
    c_types  : SET OF STRING := [];
END_LOCAL;
REPEAT i := 1 TO HIINDEX(c_items) BY 1;
    c_types := c_types + ['ELECTROTECHNICAL_DESIGN.' +
c_items[i]];
END_REPEAT;
REPEAT i := 1 TO HIINDEX(items) BY 1;
    IF SIZEOF(c_types * TYPEOF(items[i])) = 1 THEN
        c_hit := c_hit + 1;
    END_IF;
END_REPEAT;
IF SIZEOF(items) = c_hit THEN
    RETURN(TRUE);
ELSE
    RETURN(FALSE);
END_IF;

END_FUNCTION; -- item_correlation

FUNCTION item_in_context(
    item: representation_item;
    cntxt: representation_context
): BOOLEAN;

LOCAL
    y : BAG OF representation_item;
END_LOCAL;
IF SIZEOF(USEDIN(item,
'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS') * cntxt.
representations_in_context) > 0 THEN
    RETURN(TRUE);
ELSE
    y := QUERY ( z <* USEDIN(item, '') | (
'ELECTROTECHNICAL_DESIGN.REPRESENTATION_ITEM' IN
TYPEOF(z) ) );
    IF SIZEOF(y) > 0 THEN
        REPEAT i := 1 TO HIINDEX(y) BY 1;
            IF item_in_context(y[i], cntxt) THEN
                RETURN(TRUE);
            END_IF;
        END_REPEAT;
    END_IF;
END_IF;

END_FUNCTION;
```

```

RETURN (FALSE);

END_FUNCTION; -- item_in_context

FUNCTION leap_year(
    year: year_number
): BOOLEAN;
IF ((year MOD 4) = 0) AND ((year MOD 100) <> 0) OR ((year MOD
400) =
    0) THEN
RETURN (TRUE);
ELSE
RETURN (FALSE);
END_IF;

END_FUNCTION; -- leap_year

FUNCTION list_to_array(
    lis: LIST [0:?] OF GENERIC:t;
    low, u: INTEGER
): ARRAY OF GENERIC:t;

LOCAL
    n : INTEGER;
    res : ARRAY [low:u] OF GENERIC:t;
END_LOCAL;
n := SIZEOF(lis);
IF n <> ((u - low) + 1) THEN
RETURN (?);
ELSE
res := [lis[1],n];
REPEAT i := 2 TO n BY 1;
res[(low + i) - 1] := lis[i];
END_REPEAT;
RETURN(res);
END_IF;

END_FUNCTION; -- list_to_array

FUNCTION normalise(
    arg: vector_or_direction
): vector_or_direction;

LOCAL
    ndim : INTEGER;
    v : direction;
    vec : vector;
    mag : REAL;
    result : vector_or_direction;
END_LOCAL;
IF NOT EXISTS(arg) THEN
result := ?;
ELSE
ndim := arg.dim;
IF 'ELECTROTECHNICAL_DESIGN.VECTOR' IN TYPEOF(arg) THEN

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BEGIN
  v := dummy_gri ||
direction(arg.orientation.direction_ratios);
  IF arg.magnitude = 0 THEN
    RETURN(?);
  ELSE
    vec := dummy_gri || vector(v,1);
  END_IF;
END;
ELSE
  v := dummy_gri || direction(arg.direction_ratios);
END_IF;
mag := 0;
REPEAT i := 1 TO ndim BY 1;
  mag := mag + (v.direction_ratios[i] *
v.direction_ratios[i]);
END_REPEAT;
IF mag > 0 THEN
  mag := SQRT(mag);
  REPEAT i := 1 TO ndim BY 1;
    v.direction_ratios[i] := v.direction_ratios[i] / mag;
  END_REPEAT;
  IF 'ELECTROTECHNICAL_DESIGN.VECTOR' IN TYPEOF(arg) THEN
    vec.orientation := v;
    result := vec;
  ELSE
    result := v;
  END_IF;
ELSE
  RETURN(?);
END_IF;
RETURN(result);

END_FUNCTION; -- normalise

FUNCTION orthogonal_complement(
  vec: direction
): direction;

LOCAL
  result : direction;
END_LOCAL;
IF (vec.dim <> 2) OR (NOT EXISTS(vec)) THEN
  RETURN(?);
ELSE
  result := dummy_gri || direction([-
vec.direction_ratios[2],vec.
  direction_ratios[1]]);
  RETURN(result);
END_IF;

END_FUNCTION; -- orthogonal_complement

FUNCTION path_head_to_tail(
```

```

        a_path: path
    ): BOOLEAN;

LOCAL
    n : INTEGER;
    p : BOOLEAN := TRUE;
END_LOCAL;
n := SIZEOF(a_path.edge_list);
REPEAT i := 2 TO n BY 1;
    p := p AND (a_path.edge_list[i - 1].edge_end :=:
a_path.edge_list[i]
    .edge_start);
END_REPEAT;
RETURN(p);

END_FUNCTION; -- path_head_to_tail

FUNCTION product_definition_context_association_correlation(
    pdca: product_definition_context_association
): BOOLEAN;

LOCAL
    role_name : STRING;
END_LOCAL;
role_name := pdca.role.name;
CASE role_name OF
    'application context' :           IF NOT (pdca.definition.
        frame_of_reference.name IN ['conceptual definition',
        'functional definition', 'part definition']) THEN
        RETURN(FALSE);
    END_IF;
    'external' :           IF NOT
(pdca.frame_of_reference.name
    = 'external') THEN
        RETURN(FALSE);
    END_IF;
    'part definition type' :         BEGIN
        IF NOT (pdca.definition.frame_of_reference.name =
        'part definition') THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (pdca.frame_of_reference.name = 'assembly
definition')
            THEN
                RETURN(FALSE);
            END_IF;
        END;
    OTHERWISE :           RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; --
product_definition_context_association_correlation

FUNCTION product_definition_context_correlation(

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        pdc: product_definition_context
    ): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := pdc\application_context_element.name;
CASE name OF
    'assembly definition' :           BEGIN
        IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
            'FRAME_OF_REFERENCE')) = 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( a <* USEDIN(pdc,
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
            'FRAME_OF_REFERENCE') | ((NOT (a.role.name =
            'part definition type')) OR (NOT (a.definition.
            frame_of_reference.name = 'part definition')))) ) ) > 0
THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_DEFINITION.' + 'FRAME_OF_REFERENCE')) > 0
THEN
            RETURN(FALSE);
        END_IF;
    END;
    'external' :           BEGIN
        IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
            'FRAME_OF_REFERENCE')) = 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( a <* USEDIN(pdc,
            'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_DEFINITION_CONTEXT_ASSOCIATION.' +
            'FRAME_OF_REFERENCE') | (NOT (a.role.name =
            'external')) ) ) >
            0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(USEDIN(pdc, 'ELECTROTECHNICAL_DESIGN.' +
            'PRODUCT_DEFINITION.' + 'FRAME_OF_REFERENCE')) > 0
THEN
            RETURN(FALSE);
        END_IF;
    END;
    OTHERWISE :           RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- product_definition_context_correlation

```



```

FUNCTION product_definition_correlation(
    pd: product_definition
): BOOLEAN;

LOCAL
    name          : STRING;
    context_name  : STRING;
END_LOCAL;
context_name := pd.frame_of_reference.name;
CASE context_name OF
    'alternative definition' : BEGIN
        IF SIZEOF(QUERY ( i <*
USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
        + 'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
        name = 'version') )) > 1 THEN
            RETURN(FALSE);
        END_IF;
    END;
    'conceptual definition' : BEGIN
        IF SIZEOF(QUERY ( des <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
        des) * ['ELECTROTECHNICAL_DESIGN.' +
        'DOCUMENT_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'SIGNAL_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'TERMINAL_DESIGNATION_ASSIGNMENT'])) > 0) )) > 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( des <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
        'ELECTROTECHNICAL_DESIGN.' +
        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT') IN
TYPEOF(des))
        AND (des.role.description = 'primary')) )) <> 1 THEN
            RETURN(FALSE);
        END_IF;
    END;
    'digital document definition' : BEGIN
        IF SIZEOF(QUERY ( cat <* USEDIN(pd.formation.of_product,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
        .name = 'document')) )) > 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( des <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
        des) * ['ELECTROTECHNICAL_DESIGN.' +

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        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'SIGNAL_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'TERMINAL_DESIGNATION_ASSIGNMENT']] > 0) )) > 0 THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
    'ELECTROTECHNICAL_DESIGN.' +
    'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
    'ELECTROTECHNICAL_DESIGN.' +
    'DOCUMENT_DESIGNATION_ASSIGNMENT') IN TYPEOF(des)) AND
(des.
    role.description = 'primary')))) <> 1 THEN
    RETURN(FALSE);
END_IF;
END;
'physical document definition' : BEGIN
    IF SIZEOF(QUERY ( cat <* USEDIN(pd.formation.of_product,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
        .name = 'document')))) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( des <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
        des) * ['ELECTROTECHNICAL_DESIGN.' +
        'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'SIGNAL_DESIGNATION_ASSIGNMENT',
        'ELECTROTECHNICAL_DESIGN.' +
        'TERMINAL_DESIGNATION_ASSIGNMENT']] > 0) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( des <* USEDIN(pd,
        'ELECTROTECHNICAL_DESIGN.' +
        'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
        'ELECTROTECHNICAL_DESIGN.' +
        'DOCUMENT_DESIGNATION_ASSIGNMENT') IN TYPEOF(des)) AND
(des.
        role.description = 'primary')))) <> 1 THEN
        RETURN(FALSE);
    END_IF;
END;
'physical model occurrence' : BEGIN
    IF SIZEOF(QUERY ( cat <* USEDIN(pd.formation.of_product,
        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
        .name = 'document')))) > 0 THEN
        RETURN(FALSE);
    END_IF;

```

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IF SIZEOF(QUERY ( des <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
des) * ['ELECTROTECHNICAL_DESIGN.' +
'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'SIGNAL_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'TERMINAL_DESIGNATION_ASSIGNMENT'])) > 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
'ELECTROTECHNICAL_DESIGN.' +
'DOCUMENT_DESIGNATION_ASSIGNMENT') IN TYPEOF(des)) AND
(des.
role.description = 'primary')))) <> 1 THEN
RETURN(FALSE);
END_IF;
END;
'functional occurrence' : BEGIN
IF SIZEOF(QUERY ( cat <* USEDIN(pd.formation.of_product,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
.name = 'functionality')))) > 0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
des) * ['ELECTROTECHNICAL_DESIGN.' +
'DOCUMENT_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'SIGNAL_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'TERMINAL_DESIGNATION_ASSIGNMENT'])) > 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
'ELECTROTECHNICAL_DESIGN.' +
'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT') IN
TYPEOF(des))
AND (des.role.description = 'primary')))) <> 1 THEN
RETURN(FALSE);
END_IF;
IF (SIZEOF(QUERY ( pdu <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP.' +
'RELATED_PRODUCT_DEFINITION') | ((

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```
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE' IN
TYPEOF(pdu)) AND (pdu.name = 'definition usage') AND
(pdu.
relating_product_definition.frame_of_reference\
application_context_element.name = 'functional
definition')) ))
+ SIZEOF(QUERY ( cd <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' + 'CONFIGURATION_DESIGN.' +
'DESIGN') | (cd.name = 'occurrence usage definition')
))) <>
1 THEN
RETURN(FALSE);
END_IF;
END;
'part definition' : IF SIZEOF(QUERY ( cat <*
USEDIN(pd.formation.of_product,'ELECTROTECHNICAL_DESIGN.'
+ 'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
.name IN ['accessory','other','part','software']))) )) >
0 THEN
RETURN(FALSE);
END_IF;
'part occurrence' : BEGIN
IF SIZEOF(QUERY ( cat <* USEDIN(pd.formation.of_product,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
.name IN ['accessory','other','part','software']))) ))
> 0
THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
des) * ['ELECTROTECHNICAL_DESIGN.' +
'DOCUMENT_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'SIGNAL_DESIGNATION_ASSIGNMENT',
'ELECTROTECHNICAL_DESIGN.' +
'TERMINAL_DESIGNATION_ASSIGNMENT']) > 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
'ELECTROTECHNICAL_DESIGN.' +
'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT') IN
TYPEOF(des))
AND (des.role.description = 'primary')) )) <> 1 THEN
RETURN(FALSE);
END_IF;
IF (SIZEOF(QUERY ( pdu <* USEDIN(pd,
```

```

'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP.' +
'RELATED_PRODUCT_DEFINITION') | ((
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE' IN
TYPEOF(pdu)) AND (pdu.name = 'definition usage') AND
(pdu.
relating_product_definition.frame_of_reference\
application_context_element.name = 'part definition'))
)) +
SIZEOF(QUERY ( cd <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' + 'CONFIGURATION_DESIGN.' +
'DESIGN') | (cd.name = 'occurrence usage definition')
))) <>
1 THEN
RETURN(FALSE);
END_IF;
END;
'physical occurrence' : BEGIN
IF SIZEOF(QUERY ( cat <* USEDIN(pd.formation.of_product,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
.name IN ['accessory','other','part','software']))) ))
> 0
THEN
RETURN(FALSE);
END_IF;
IF (SIZEOF(QUERY ( pdu <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION_RELATIONSHIP.' +
'RELATED_PRODUCT_DEFINITION') | ((
'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE' IN
TYPEOF(pdu)) AND (pdu.name = 'physical realization')
AND (pdu
.relating_product_definition.frame_of_reference\
application_context_element.name = 'part definition'))
)) +
SIZEOF(QUERY ( cd <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' + 'CONFIGURATION_DESIGN.' +
'DESIGN') | (cd.name = 'physical instance basis') )))
<> 1
THEN
RETURN(FALSE);
END_IF;
END;
'requirement definition' : IF SIZEOF(QUERY ( cat <*
USEDIN(pd.formation.of_product,'ELECTROTECHNICAL_DESIGN.'
+ 'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
.name = 'requirement')) )) > 0 THEN
RETURN(FALSE);
END_IF;
'system definition' : BEGIN
IF SIZEOF(QUERY ( cat <* USEDIN(pd.formation.of_product,

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        'ELECTROTECHNICAL_DESIGN.' +
        'PRODUCT_RELATED_PRODUCT_CATEGORY.' + 'PRODUCTS') |
(NOT (cat
        .name = 'technical system')) )) > 0 THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
    'ELECTROTECHNICAL_DESIGN.' +
    'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') |
(SIZEOF(TYPEOF(
    des) * ['ELECTROTECHNICAL_DESIGN.' +
    'DOCUMENT_DESIGNATION_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
    'SIGNAL_DESIGNATION_ASSIGNMENT',
    'ELECTROTECHNICAL_DESIGN.' +
    'TERMINAL_DESIGNATION_ASSIGNMENT']) > 0) )) > 0 THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( des <* USEDIN(pd,
    'ELECTROTECHNICAL_DESIGN.' +
    'ITEM_DESIGNATION_ASSIGNMENT.' + 'ITEMS') | (((
    'ELECTROTECHNICAL_DESIGN.' +
    'OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT') IN
TYPEOF(des))
    AND (des.role.description = 'primary')) )) <> 1 THEN
    RETURN(FALSE);
END_IF;
END;
OTHERWISE
:
RETURN(TRUE);
END_CASE;
name := pd.name;
CASE name OF
    'physical instance'
:
BEGIN
    IF NOT (pd.frame_of_reference.name = 'physical
occurrence')
        THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( i <*
USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.'
    + 'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
        name = 'inventory number') )) > 1 THEN
            RETURN(FALSE);
        END_IF;
        END;
    'quantified instance'
:
BEGIN
    IF NOT (pd.frame_of_reference.name = 'part occurrence')
THEN
        RETURN(FALSE);
        END_IF;
        IF NOT (SIZEOF(QUERY ( prop <* USEDIN(pd,
            'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.' +
            'DEFINITION') | (prop.name = 'occurrence quantity') ))
= 1)

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```

        THEN
            RETURN (FALSE);
        END_IF;
    END;
    'selected instance'          :          BEGIN
        IF NOT (pd.frame_of_reference.name = 'part occurrence')
THEN
            RETURN (FALSE);
        END_IF;
        IF NOT (SIZEOF(QUERY ( prop <* USEDIN(pd,
            'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.' +
            'DEFINITION') | (prop.name = 'occurrence selection
control') ))
            = 1) THEN
            RETURN (FALSE);
        END_IF;
    END;
    'single instance'          :          IF NOT
(pd.frame_of_reference.
        name IN ['part occurrence', 'functional occurrence'])
THEN
        RETURN (FALSE);
    END_IF;
    'specified instance'      :          BEGIN
        IF NOT (pd.frame_of_reference.name IN ['part occurrence',
            'functional occurrence']) THEN
            RETURN (FALSE);
        END_IF;
        IF NOT ((pd.frame_of_reference.name = 'functional
occurrence')
            AND (('ELECTROTECHNICAL_DESIGN.' +
                'SPECIFIED_HIGHER_USAGE_OCCURRENCE') IN TYPEOF(pd)))
OR ((pd.
            frame_of_reference.name = 'part occurrence') AND ((
                'ELECTROTECHNICAL_DESIGN.' +
                'SPECIFIED_HIGHER_USAGE_OCCURRENCE') IN TYPEOF(pd))))
THEN
            RETURN (FALSE);
        END_IF;
    END;
    'final'                  :          IF NOT
(pd.frame_of_reference.
        name = 'alternative definition') THEN
        RETURN (FALSE);
    END_IF;
    'supplier'              :          IF NOT
(pd.frame_of_reference.
        name = 'alternative definition') THEN
        RETURN (FALSE);
    END_IF;
    'technical'             :          IF NOT
(pd.frame_of_reference.
        name = 'alternative definition') THEN
        RETURN (FALSE);
    END_IF;

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'technical supplier'      :          IF NOT
(pd.frame_of_reference.
  name = 'alternative definition') THEN
  RETURN(FALSE);
END_IF;
'technical final'        :          IF NOT
(pd.frame_of_reference.
  name = 'alternative definition') THEN
  RETURN(FALSE);
END_IF;
'supplier final'         :          IF NOT
(pd.frame_of_reference.
  name = 'alternative definition') THEN
  RETURN(FALSE);
END_IF;
'technical supplier final' :          IF NOT
(pd.frame_of_reference.
  name = 'alternative definition') THEN
  RETURN(FALSE);
END_IF;
OTHERWISE                :          RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- product_definition_correlation

FUNCTION product_definition_relationship_correlation(
  pdr: product_definition_relationship
): BOOLEAN;

LOCAL
  name : STRING;
END_LOCAL;
name := pdr.name;
CASE name OF
  'conceptual definition allocation' :          BEGIN
    IF NOT
      (pdr.related_product_definition.frame_of_reference.name
        IN ['functional occurrence', 'part occurrence',
          'physical occurrence']) THEN
      RETURN(FALSE);
    END_IF;
  END_IF;
  IF NOT
    (pdr.relatng_product_definition.frame_of_reference.name
      = 'conceptual definition') THEN
    RETURN(FALSE);
  END_IF;
END;
'dedicated function'      :          BEGIN
  IF NOT
    (pdr.related_product_definition.frame_of_reference.name =
      'functional definition') THEN
    RETURN(FALSE);
  END_IF;
```



```

        IF NOT
(pdr.relatiing_product_definition.frame_of_reference.name
    IN ['conceptual definition','part definition',
        'part occurrence','physical occurrence']) THEN
        RETURN(FALSE);
    END_IF;
END;
'offered function'          :          BEGIN
    IF NOT
(pdr.related_product_definition.frame_of_reference.name =
    'functional definition') THEN
        RETURN(FALSE);
    END_IF;
    IF NOT
(pdr.relatiing_product_definition.frame_of_reference.name
    IN ['conceptual definition','part definition',
        'part occurrence','physical occurrence']) THEN
        RETURN(FALSE);
    END_IF;
END;
'definition usage'         :          BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE'
    IN TYPEOF(pdr)) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT
(((pdr.relatiing_product_definition.frame_of_reference.
    name = 'functional definition') AND (pdr.
    related_product_definition.frame_of_reference.name =
    'functional occurrence')) XOR ((pdr.
    relatiing_product_definition.frame_of_reference.name =
    'part definition') AND
(pdr.related_product_definition.
    frame_of_reference.name = 'part occurrence')))) THEN
        RETURN(FALSE);
    END_IF;
END;
'final specification'      :          BEGIN
    IF NOT
(pdr.related_product_definition.frame_of_reference.name
    IN ['functional definition','part definition',
        'physical occurrence']) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT
(pdr.relatiing_product_definition.frame_of_reference.name
    = 'alternative definition') THEN
        RETURN(FALSE);
    END_IF;
END;
'functional unit allocation' :          BEGIN
    IF NOT
(pdr.related_product_definition.frame_of_reference.name
    IN ['conceptual definition','part occurrence',
        'physical occurrence']) THEN

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        RETURN (FALSE);
    END_IF;
    IF NOT
(pdr.relatiing_product_definition.frame_of_reference.name
    = 'functional occurrence') THEN
        RETURN (FALSE);
    END_IF;
END;
'physical occurrence usage'          :          BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.ASSEMBLY_COMPONENT_USAGE'
        IN TYPEOF(pdr)) THEN
        RETURN (FALSE);
    END_IF;
    IF NOT
(pdr.related_product_definition.frame_of_reference.name =
    'physical occurrence') THEN
        RETURN (FALSE);
    END_IF;
    IF NOT
(pdr.relatiing_product_definition.frame_of_reference.name
    = 'physical occurrence') THEN
        RETURN (FALSE);
    END_IF;
END;
'physical realization'              :          BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_USAGE'
        IN TYPEOF(pdr)) THEN
        RETURN (FALSE);
    END_IF;
    IF NOT
(pdr.related_product_definition.frame_of_reference.name =
    'physical occurrence') THEN
        RETURN (FALSE);
    END_IF;
    IF NOT
(pdr.relatiing_product_definition.frame_of_reference.name
    = 'part definition') THEN
        RETURN (FALSE);
    END_IF;
END;
'preferred item allocation'          :          BEGIN
    IF NOT
(pdr.related_product_definition.frame_of_reference.name
    IN ['functional definition', 'part definition']) THEN
        RETURN (FALSE);
    END_IF;
    IF NOT
(pdr.relatiing_product_definition.frame_of_reference.name
    = 'functional occurrence') THEN
        RETURN (FALSE);
    END_IF;
END;
'quantified instance usage'         :          BEGIN
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
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        'QUANTIFIED_ASSEMBLY_COMPONENT_USAGE') IN TYPEOF(pdr))
THEN
    RETURN(FALSE);
END_IF;
IF NOT
((pdr.related_product_definition.frame_of_reference.name
 = 'part definition') AND
(pdr.relatering_product_definition.
 frame_of_reference.name = 'part definition')) THEN
    RETURN(FALSE);
END_IF;
END;
'selected instance usage' : BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.ASSEMBLY_COMPONENT_USAGE'
        IN TYPEOF(pdr)) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT
((pdr.related_product_definition.frame_of_reference.name
 = 'part definition') AND
(pdr.relatering_product_definition.
 frame_of_reference.name = 'part definition')) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT (SIZEOF(QUERY ( prop <* USEDIN(pdr,
        'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.' +
        'DEFINITION') | (prop.name = 'occurrence selection
control') ))
        = 1) THEN
        RETURN(FALSE);
    END_IF;
END;
'single instance usage' : BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.ASSEMBLY_COMPONENT_USAGE'
        IN TYPEOF(pdr)) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT
(((pdr.relatering_product_definition.frame_of_reference.
 name = 'functional definition') AND (pdr.
 related_product_definition.frame_of_reference.name =
 'functional definition')) XOR ((pdr.
 relatering_product_definition.frame_of_reference.name =
 'part definition') AND
(pdr.related_product_definition.
 frame_of_reference.name = 'part definition')) THEN
        RETURN(FALSE);
    END_IF;
END;
'solution alternative definition' : BEGIN
    IF NOT
(pdr.related_product_definition.frame_of_reference.name =
 'alternative definition') THEN
        RETURN(FALSE);
    END_IF;

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        IF NOT
(pdr.relating_product_definition.frame_of_reference.name
        IN ['alternative definition','conceptual product',
        'functional occurrence']) THEN
        RETURN(FALSE);
    END_IF;
    IF
(pdr.relating_product_definition.frame_of_reference.name =
        'functional occurrence') AND (NOT (pdr.
        relating_product_definition.name = 'single instance'))
THEN
        RETURN(FALSE);
    END_IF;
END;
'specified instance usage' : BEGIN
    IF NOT (('ELECTROTECHNICAL DESIGN.' +
        'SPECIFIED_HIGHER_USAGE_OCCURRENCE') IN TYPEOF(pdr))
THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(pdr) * ['ELECTROTECHNICAL DESIGN.' +
        'SPECIFIED_HIGHER_USAGE_OCCURRENCE']) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF NOT
(((pdr.relating_product_definition.frame_of_reference.
        name = 'functional definition') AND (pdr.
        related_product_definition.frame_of_reference.name =
        'functional definition')) XOR ((pdr.
        relating_product_definition.frame_of_reference.name =
        'part definition') AND
(pdr.related_product_definition.
        frame_of_reference.name = 'part definition')))) THEN
        RETURN(FALSE);
    END_IF;
END;
OTHERWISE : RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- product_definition_relationship_correlation

FUNCTION property_definition_correlation(
    pd: property_definition
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := pd.name;
CASE name OF
    'information content' : BEGIN
        IF SIZEOF(QUERY ( pdr <* USEDIN(pd,
            'ELECTROTECHNICAL DESIGN.' +

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        'PROPERTY_DEFINITION_REPRESENTATION.' + 'DEFINITION')
| (pdr.
    name = 'information content') ) = 0 THEN
    RETURN(FALSE);
END_IF;
IF NOT ('ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING' IN
    TYPEOF(pd.definition)) THEN
    RETURN(FALSE);
END_IF;
END;
OTHERWISE : RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- property_definition_correlation

FUNCTION property_definition_relationship_correlation(
    pdr: property_definition_relationship
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := pdr.name;
CASE name OF
    'connectivity allocation' : BEGIN
        IF NOT (('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
            IN
                TYPEOF(pdr.relating_property_definition.definition)) AND (
                    pdr.relating_property_definition.definition\shape_aspect.
                        of_shape.definition\product_definition.frame_of_reference.
                            name = 'functional definition')) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (pdr.relating_property_definition.definition\
            product_definition.frame_of_reference.name IN [
                'functional occurrence', 'part occurrence',
                'physical occurrence']) THEN
            RETURN(FALSE);
        END_IF;
    END;
    'encountered object sequence' : BEGIN
        IF NOT (pdr.related_property_definition.name =
            'route characteristics') THEN
            RETURN(FALSE);
        END_IF;
        IF
            SIZEOF(TYPEOF(pdr.related_property_definition.definition) * [
                'ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION',
                'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION']) = 0
        THEN
            RETURN(FALSE);
        END_IF;

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IF NOT (pdr.related_property_definition.definition\  
    product_definition.frame_of_reference.name IN [  
        'conceptual definition', 'functional occurrence',  
        'part occurrence', 'physical occurrence']) THEN  
    RETURN(FALSE);  
END_IF;  
IF NOT (pdr.relatering_property_definition.name =  
    'route requirements') THEN  
    RETURN(FALSE);  
END_IF;  
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE' IN  
    TYPEOF(pdr.relatering_property_definition.definition))  
THEN  
    RETURN(FALSE);  
END_IF;  
END;  
'functional unit allocation' : BEGIN  
    IF NOT (pdr.related_property_definition.definition\  
        product_definition.frame_of_reference.name IN [  
            'conceptual definition', 'part occurrence',  
            'physical occurrence']) THEN  
        RETURN(FALSE);  
    END_IF;  
    IF NOT (pdr.relatering_property_definition.definition\  
        product_definition_relationship.name IN [  
            'single instance usage', 'specified instance usage'])  
THEN  
    RETURN(FALSE);  
END_IF;  
IF NOT (pdr.relatering_property_definition.definition\  
product_definition_relationship.related_product_definition.  
    frame_of_reference.name = 'functional definition')  
THEN  
    RETURN(FALSE);  
END_IF;  
END;  
'item allocation' : BEGIN  
    IF NOT  
( 'ELECTROTECHNICAL_DESIGN.SHAPE_ASPECT_RELATIONSHIP'  
    IN TYPEOF(pdr.related_property_definition.definition))  
THEN  
    RETURN(FALSE);  
END_IF;  
IF NOT (pdr.related_property_definition.definition\  
    shape_aspect_relationship.name IN [  
        'preferred item terminal allocation', 'terminal  
allocation'])  
    THEN  
        RETURN(FALSE);  
    END_IF;  
    IF NOT  
( 'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION_RELATIONSHIP'  
    IN  
    TYPEOF(pdr.relatering_property_definition.definition)) THEN
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        RETURN (FALSE);
    END_IF;
    IF NOT (pdr.relatng_property_definition.definition\
        product_definition_relationship.name IN [
            'functional unit allocation','preferred item
allocation'])
        THEN
            RETURN (FALSE);
        END_IF;
    IF NOT ((pdr.related_property_definition.definition\
        shape_aspect_relationship.name = 'terminal
allocation') AND (
        pdr.relatng_property_definition.definition\
        product_definition_relationship.name =
            'functional unit allocation')) THEN
        RETURN (FALSE);
    END_IF;
    IF NOT ((pdr.related_property_definition.definition\
        shape_aspect_relationship.name =
            'preferred item terminal allocation') AND (pdr.
        relating_property_definition.definition\
        product_definition_relationship.name =
            'preferred item allocation')) THEN
        RETURN (FALSE);
    END_IF;
END;
'parameter association'          :          BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE' IN
        TYPEOF(pdr.related_property_definition.definition))
THEN
        RETURN (FALSE);
    END_IF;
    IF NOT ('ELECTROTECHNICAL_DESIGN.SIGNAL' IN TYPEOF(pdr.
        relating_property_definition.definition)) THEN
        RETURN (FALSE);
    END_IF;
END;
'preferred equipment'          :          BEGIN
    IF NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
        TYPEOF(pdr.related_property_definition.definition))
THEN
        RETURN (FALSE);
    END_IF;
    IF NOT ('ELECTROTECHNICAL_DESIGN.SIGNAL' IN TYPEOF(pdr.
        relating_property_definition.definition)) THEN
        RETURN (FALSE);
    END_IF;
    IF NOT (pdr.related_property_definition.definition\
        product_definition.frame_of_reference.name IN [
            'functional definition','part definition']) THEN
        RETURN (FALSE);
    END_IF;
END;
'trigger'                      :          BEGIN

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    IF
SIZEOF(TYPEOF(pdr.related_property_definition.definition) * [
    'ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE',
    'ELECTROTECHNICAL_DESIGN.SIGNAL']) = 0 THEN
    RETURN(FALSE);
END_IF;
IF NOT ('ELECTROTECHNICAL_DESIGN.NOTIFICATION' IN TYPEOF(
    pdr.relatng_property_definition.definition)) THEN
    RETURN(FALSE);
END_IF;
END;
'validity context'          :          BEGIN
    IF
SIZEOF(TYPEOF(pdr.relatng_property_definition.definition) *
    ['ELECTROTECHNICAL_DESIGN.PRODUCT_CLASS',
    'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION']) = 0
THEN
    RETURN(FALSE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN TYPEOF(
    pdr.relatng_property_definition.definition) THEN
    IF NOT (pdr.relatng_property_definition.definition\
        product_definition.frame_of_reference.name =
        'system definition') THEN
        RETURN(FALSE);
    END_IF;
END_IF;
END;
OTHERWISE          :          RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- property_definition_relationship_correlation

FUNCTION property_definition_representation_correlation(
    pdr: property_definition_representation
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := pdr.name;
CASE name OF
    'information content' :          BEGIN
        IF NOT (('ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION' IN
            TYPEOF(pdr.definition)) AND (pdr.definition\
                property_definition.name = 'information content'))
THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (('ELECTROTECHNICAL_DESIGN.NOTE_REPRESENTATION' IN
            TYPEOF(pdr.used_representation)) XOR
            (pdr.used_representation
                .name = 'property value')) THEN
            RETURN(FALSE);

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        END_IF;
    END;
    'parameter association' : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.PROCESS_VARIABLE' IN
            TYPEOF(pdr.definition.definition)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (pdr.used_representation.name = 'signal value')
THEN
            RETURN(FALSE);
        END_IF;
    END;
    'trigger' : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.NOTIFICATION' IN TYPEOF(
            pdr.definition.definition)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (pdr.used_representation.name = 'signal value')
THEN
            RETURN(FALSE);
        END_IF;
    END;
    OTHERWISE : RETURN(TRUE);
    END_CASE;
    RETURN(TRUE);

END_FUNCTION; -- property_definition_representation_correlation

FUNCTION representation_correlation(
    rep: representation
): BOOLEAN;

    LOCAL
        name : STRING;
    END_LOCAL;
    name := rep.name;
    CASE name OF
        'admitted qualifier' : BEGIN
            IF SIZEOF(rep.items) <> 1 THEN
                RETURN(FALSE);
            END_IF;
            IF NOT (
                'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
                IN TYPEOF(rep.items[1])) THEN
                RETURN(FALSE);
            END_IF;
            IF SIZEOF(QUERY ( tq <* rep.items[1]\
                qualified_representation_item.qualifiers | (NOT ((
                'ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
                TYPEOF(tq))
                AND (tq.name IN ['nominal','specified','typical'])))
            )) > 0
            THEN
                RETURN(FALSE);

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END_IF;
IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
  'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
  'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
  'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
  + 'REFERENCE_GRID_REPRESENTATION',
  'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
  0 THEN
    RETURN(FALSE);
  END_IF;
END;
'allowed units' : BEGIN
  IF NOT (
    'ELECTROTECHNICAL_DESIGN.GLOBAL_UNIT_ASSIGNED_CONTEXT'
    IN TYPEOF(rep.context_of_items)) THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | (NOT ('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
    TYPEOF(pdr.definition))) ) ) > 0 THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
    'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
    + 'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
  0 THEN
    RETURN(FALSE);
  END_IF;
END;
'cable pull information' : BEGIN
  IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    |
('ELECTROTECHNICAL_DESIGN.SHAPE_ASPECT_RELATIONSHIP'
  IN TYPEOF(pdr.definition.definition)) ) ) < 1 THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | ((NOT (
    'ELECTROTECHNICAL_DESIGN.SHAPE_ASPECT_RELATIONSHIP' IN
```

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        TYPEOF(pdr.definition.definition))) OR (NOT
(pdr.definition.
        definition\shape_aspect_relationship.name =
        'arrangement sequence')))) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
        + 'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
        0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'APPLIED_IDENTIFICATION_ASSIGNMENT.' + 'ITEMS') |
(i.role.
        name = 'version') )) > 1 THEN
        RETURN(FALSE);
    END_IF;
    END;
    'direction range' : BEGIN
    IF NOT (SIZEOF(rep.items) = 2) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rep.items | (NOT ((
        'ELECTROTECHNICAL_DESIGN.' +
        'PLANE_ANGLE_MEASURE_WITH_UNIT') IN TYPEOF(i))) )) > 0
THEN
        RETURN(FALSE);
    END_IF;
    IF NOT (SIZEOF(QUERY ( max <* rep.items | (max.name =
        'maximum angle') )) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT (SIZEOF(QUERY ( min <* rep.items | (min.name =
        'minimum angle') )) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( rr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION_RELATIONSHIP.' + 'REP_1') | (rr.name =
        'connect area') )) <> 1 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
        + 'REFERENCE_GRID_REPRESENTATION',

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        'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
        0 THEN
            RETURN(FALSE);
        END_IF;
    END;
'final item characteristics' :          BEGIN
    IF NOT (SIZEOF(rep.items) = 2) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rep.items | (NOT ((
        'ELECTROTECHNICAL_DESIGN.' +
        'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
0
        THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (SIZEOF(QUERY ( stat <* rep.items | (stat.name =
            'final item status') )) = 1) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (SIZEOF(QUERY ( spec <* rep.items | (spec.name =
            'final specification') )) = 1) THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
            | ((NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
            IN TYPEOF(pdr.definition.definition))) OR (NOT (pdr.
            definition.definition\product_definition.name IN
['final',
            'supplier final','technical final',
            'technical supplier final']))) ))
            > 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
            'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
            'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
            + 'REFERENCE_GRID_REPRESENTATION',
            'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
            0 THEN
                RETURN(FALSE);
            END_IF;
        END;
'gis position' :          BEGIN
    IF NOT (SIZEOF(rep.items) = 7) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rep.items | (SIZEOF(TYPEOF(i) * [

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'ELECTROTECHNICAL_DESIGN.' +
'DESRIPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM']] = 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( d <* rep.items | ((d.name =
'height') AND
(('ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(d))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( d <* rep.items | ((d.name =
'scale') AND
(('ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(d))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( d <* rep.items | ((d.name =
'x-axis delta x') AND (('ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(d)))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( d <* rep.items | ((d.name =
'x-axis delta y') AND (('ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(d)))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( d <* rep.items | ((d.name =
'x coordinate') AND (('ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(d)))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( d <* rep.items | ((d.name =
'y coordinate') AND (('ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(d)))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( z <* rep.items | ((z.name = 'zone')
AND (
('ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(z))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'GEOMETRIC_REPRESENTATION_CONTEXT') IN TYPEOF(rep.
context_of_items)) THEN
RETURN(FALSE);

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END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| (NOT
('ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION'
IN TYPEOF(pdr.definition.definition))) )) > 0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
+ 'REFERENCE_GRID_REPRESENTATION',
'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
0 THEN
RETURN(FALSE);
END_IF;
END;
'grid layout' : BEGIN
IF NOT (SIZEOF(rep.items) = 3) THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* rep.items | (SIZEOF(TYPEOF(i) * [
'ELECTROTECHNICAL_DESIGN.' + 'AXIS2_PLACEMENT_2D',
'ELECTROTECHNICAL_DESIGN.' +
'LENGTH_MEASURE_WITH_UNIT'])
= 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( x <* rep.items | ((x.name = 'delta
x')
AND (('ELECTROTECHNICAL_DESIGN.' +
'LENGTH_MEASURE_WITH_UNIT') IN TYPEOF(x))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( y <* rep.items | ((y.name = 'delta
y')
AND (('ELECTROTECHNICAL_DESIGN.' +
'LENGTH_MEASURE_WITH_UNIT') IN TYPEOF(y))) )) = 1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( o <* rep.items | ((o.name = 'grid
origin')
AND (('ELECTROTECHNICAL_DESIGN.' +
'AXIS2_PLACEMENT_2D')
IN TYPEOF(o))) )) = 1) THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( o <* rep.items | (((
```

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        'ELECTROTECHNICAL_DESIGN.' + 'AXIS2_PLACEMENT_2D') IN
        TYPEOF(o)) AND
EXISTS(o\axis2_placement_2d.ref_direction)) )
        > 0 THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (('ELECTROTECHNICAL_DESIGN.' +
            'GEOMETRIC_REPRESENTATION_CONTEXT') IN TYPEOF(rep.
            context_of_items)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT
        (rep.context_of_items\geometric_representation_context.
            coordinate_space_dimension = 2) THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
            'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
            'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
            'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
            + 'REFERENCE_GRID_REPRESENTATION',
            'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
        >
            0 THEN
                RETURN(FALSE);
            END_IF;
        END;
        'linear pattern location'          :          BEGIN
            IF NOT (SIZEOF(rep.items) = 2) THEN
                RETURN(FALSE);
            END_IF;
            IF SIZEOF(QUERY ( i <* rep.items | (SIZEOF(TYPEOF(i) * [
                'ELECTROTECHNICAL_DESIGN.' + 'AXIS2_PLACEMENT_3D',
                'ELECTROTECHNICAL_DESIGN.' +
'LENGTH_MEASURE_WITH_UNIT']
                = 0) )) > 0 THEN
                    RETURN(FALSE);
                END_IF;
                IF NOT (SIZEOF(QUERY ( d <* rep.items | ((d.name =
                    'pattern location distance') AND ((
                    'ELECTROTECHNICAL_DESIGN.' +
'LENGTH_MEASURE_WITH_UNIT')
                    IN TYPEOF(d))) )) = 1) THEN
                        RETURN(FALSE);
                    END_IF;
                    IF NOT (SIZEOF(QUERY ( s <* rep.items | ((s.name =
                        'pattern start location') AND ((
                        'ELECTROTECHNICAL_DESIGN.' + 'AXIS2_PLACEMENT_3D') IN
                        TYPEOF(s))) )) = 1) THEN
                            RETURN(FALSE);
                        END_IF;
                        IF NOT (('ELECTROTECHNICAL_DESIGN.' +
                            'GEOMETRIC_REPRESENTATION_CONTEXT') IN TYPEOF(rep.
                            context_of_items)) THEN

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        RETURN (FALSE);
    END_IF;
    IF NOT
(rep.context_of_items\geometric_representation_context.
    coordinate_space_dimension = 3) THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (NOT ('ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING'
IN
        TYPEOF(pdr.definition.definition))) ) ) > 0 THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
        + 'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
        0 THEN
        RETURN (FALSE);
    END_IF;
END;
'marking location'          :          BEGIN
    IF SIZEOF(rep.items) > 1 THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rep.items | (NOT (
TYPEOF(i))) ) )
        > 0 THEN
        RETURN (FALSE);
    END_IF;
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
        'GEOMETRIC_REPRESENTATION_CONTEXT') IN TYPEOF(rep.
        context_of_items)) THEN
        RETURN (FALSE);
    END_IF;
    IF NOT
(rep.context_of_items\geometric_representation_context.
        coordinate_space_dimension = 3) THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (NOT ('ELECTROTECHNICAL_DESIGN.EQUIPMENT_MARKING'
IN
        TYPEOF(pdr.definition.definition))) ) ) > 0 THEN
```



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    RETURN (FALSE);
  END_IF;
  IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
    'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
    + 'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
    0 THEN
      RETURN (FALSE);
    END_IF;
  END;
  'notification message' : BEGIN
    IF SIZEOF(rep.items) > 1 THEN
      RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rep.items | (NOT (
      'ELECTROTECHNICAL_DESIGN.AXIS2_PLACEMENT_2D' IN
      TYPEOF(i))) )
    > 0 THEN
      RETURN (FALSE);
    END_IF;
    IF NOT (SIZEOF(QUERY ( t <* rep.items | (t.name = 'message
text' ) )
    = 1) THEN
      RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
      'ELECTROTECHNICAL_DESIGN.' +
      'PROPERTY_DEFINITION_REPRESENTATION.' +
      'USED_REPRESENTATION')
      | (NOT ('ELECTROTECHNICAL_DESIGN.NOTIFICATION' IN
      TYPEOF(pdr.definition.definition))) ) ) > 0 THEN
      RETURN (FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
      'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
      'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
      'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
      + 'REFERENCE_GRID_REPRESENTATION',
      'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
    0 THEN
      RETURN (FALSE);
    END_IF;
  END;
  'property specification' : BEGIN
    IF SIZEOF(rep.items) > 3 THEN
      RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rep.items | (NOT ((
      'ELECTROTECHNICAL_DESIGN.' +

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        'DESCRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
0
        THEN
        RETURN(FALSE);
    END_IF;
    IF NOT (SIZEOF(QUERY ( d <* rep.items | (d.name =
'definition') ))
        = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( n <* rep.items | (n.name = 'note') )) >
1
        THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( r <* rep.items | (r.name = 'remark') ))
> 1
        THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | ('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) )) <> 1 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( la <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE_ASSIGNMENT.' +
'ITEMS') | (('ELECTROTECHNICAL_DESIGN.GROUP' IN
TYPEOF(
        la.assigned_class)) AND (la.assigned_class.description
=
        'ISO 639-2 language code') AND (la.role.name =
'language')) ))
        > 1 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
+ 'REFERENCE_GRID_REPRESENTATION',
'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
        0 THEN
        RETURN(FALSE);
    END_IF;
END;
'property value' : BEGIN
    IF SIZEOF(rep.items) <> 1 THEN
        RETURN(FALSE);
    END_IF;

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IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| ('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
TYPEOF(pdr.definition)) )) <> 1 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
+ 'REFERENCE_GRID_REPRESENTATION',
'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
0 THEN
RETURN(FALSE);
END_IF;
END;
'property value format' : BEGIN
IF SIZEOF(rep.items) > 2 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* rep.items | (NOT ((
'ELECTROTECHNICAL_DESIGN.' +
'DESRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(i))) )) >
0
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( vf <* rep.items | (vf.name =
'value format') )) = 1) THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( sd <* rep.items | (sd.name = 'source
document') ))
> 1 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| ('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
TYPEOF(pdr.definition)) )) <> 1 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( la <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' + 'LANGUAGE_ASSIGNMENT.' +
'ITEMS') | (('ELECTROTECHNICAL_DESIGN.GROUP' IN
TYPEOF(
la.assigned_class)) AND (la.assigned_class.description
=

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        'ISO 639-2 language code') AND (la.role.name =
'language')
        AND (la.role.description = 'default')) )) > 1 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
        + 'REFERENCE_GRID_REPRESENTATION',
        'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
        1 THEN
        RETURN(FALSE);
    END_IF;
END;
'quantity' : BEGIN
    IF SIZEOF(rep.items) > 1 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rep.items | (NOT ((
        'ELECTROTECHNICAL_DESIGN.' +
        'MEASURE_REPRESENTATION_ITEM') IN TYPEOF(i)))) ) > 0
THEN
        RETURN(FALSE);
    END_IF;
    IF NOT (SIZEOF(QUERY ( stat <* rep.items | (stat.name =
        'quantity measure') )) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
        'USED_REPRESENTATION')
        | ((NOT
        ('ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION'
        IN TYPEOF(pdr.definition))) OR (NOT (pdr.definition\
        property_definition.name = 'occurrence quantity')) OR
        (NOT (
        'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
        TYPEOF(
        pdr.definition.definition))) OR (NOT (pdr.definition.
        definition\product_definition.name = 'quantified
        instance')))) )
        > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
        'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
        'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
        'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
        + 'REFERENCE_GRID_REPRESENTATION',
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    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION']]
>
    0 THEN
    RETURN(FALSE);
    END_IF;
    END;
'schematic node connect area' : BEGIN
    IF SIZEOF(QUERY ( i <* rep.items | (SIZEOF(TYPEOF(i) * [
        'ELECTROTECHNICAL_DESIGN.' + 'CARTESIAN_POINT',
        'ELECTROTECHNICAL_DESIGN.' + 'COMPOSITE_CURVE',
        'ELECTROTECHNICAL_DESIGN.' + 'POLYLINE',
        'ELECTROTECHNICAL_DESIGN.' + 'TRIMMED_CURVE']) = 0) ))
>
        0 THEN
        RETURN(FALSE);
        END_IF;
        IF NOT (('ELECTROTECHNICAL_DESIGN.' +
            'GEOMETRIC_REPRESENTATION_CONTEXT') IN TYPEOF(rep.
            context_of_items)) THEN
            RETURN(FALSE);
        END_IF;
        IF NOT
            (rep.context_of_items\geometric_representation_context.
            coordinate_space_dimension = 2) THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
            'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
            'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
            'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
            + 'REFERENCE_GRID_REPRESENTATION',
            'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
            0 THEN
            RETURN(FALSE);
            END_IF;
        END;
'section interface parameters' : BEGIN
    IF SIZEOF(QUERY ( i <* rep.items | (SIZEOF(TYPEOF(i) * [
        'ELECTROTECHNICAL_DESIGN.' + 'AREA_MEASURE_WITH_UNIT',
        'ELECTROTECHNICAL_DESIGN.' +
'RATIO_MEASURE_WITH_UNIT'])
        = 0) )) > 0 THEN
        RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( c <* rep.items | ((c.name =
            'cross section area') AND (NOT ((
            'ELECTROTECHNICAL_DESIGN.' + 'AREA_MEASURE_WITH_UNIT')
            IN TYPEOF(c)))))) > 0 THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( s <* rep.items | ((s.name = 'space
factor')
            AND (('ELECTROTECHNICAL_DESIGN.' +

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        'RATIO_MEASURE_WITH_UNIT') IN TYPEOF(s))) )) > 0 THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | (NOT (('ELECTROTECHNICAL_DESIGN.' +
    'INSTALLATION_SECTION_INTERFACE') IN
TYPEOF(pdr.definition.
    definition)))) )) > 0 THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
    + 'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
    0 THEN
    RETURN(FALSE);
END_IF;
END;
'section parameters'          :          BEGIN
    IF SIZEOF(QUERY ( i <* rep.items | (SIZEOF(TYPEOF(i) * [
        'ELECTROTECHNICAL_DESIGN.' + 'AREA_MEASURE_WITH_UNIT',
        'ELECTROTECHNICAL_DESIGN.' +
'LENGTH_MEASURE_WITH_UNIT',
        'ELECTROTECHNICAL_DESIGN.' +
'RATIO_MEASURE_WITH_UNIT'])
        = 0) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( c <* rep.items | ((c.name =
        'cross section area') AND (NOT (
        'ELECTROTECHNICAL_DESIGN.' + 'AREA_MEASURE_WITH_UNIT')
        IN TYPEOF(c)))) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( c <* rep.items | ((c.name IN ['bending
radius',
        'section length']) AND (NOT
        (('ELECTROTECHNICAL_DESIGN.'
        + 'LENGTH_MEASURE_WITH_UNIT') IN TYPEOF(c)))) )) > 0
THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( s <* rep.items | ((s.name = 'space
factor')
        AND (('ELECTROTECHNICAL_DESIGN.' +
        'RATIO_MEASURE_WITH_UNIT') IN TYPEOF(s))) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
```

```

IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| (NOT (('ELECTROTECHNICAL_DESIGN.' +
'INSTALLATION_SECTION') IN
TYPEOF(pdr.definition.definition))) ) )
> 0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_MODEL','ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION','ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION','ELECTROTECHNICAL_DESIGN.'
+ 'REFERENCE_GRID_REPRESENTATION',
'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
0 THEN
RETURN(FALSE);
END_IF;
END;
'selection criteria' : BEGIN
IF NOT (SIZEOF(rep.items) = 2) THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( i <* rep.items | (SIZEOF(TYPEOF(i) * [
'ELECTROTECHNICAL_DESIGN.' +
'COMPOUND_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.' +
'DESRIPTIVE_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM']) = 0) )) > 0 THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( c <* rep.items | ((c.name =
'selection control') AND (('ELECTROTECHNICAL_DESIGN.'
+
'DESRIPTIVE_REPRESENTATION_ITEM') IN TYPEOF(c))) )) =
1)
THEN
RETURN(FALSE);
END_IF;
IF NOT (SIZEOF(QUERY ( q <* rep.items | ((q.name =
'selection quantity') AND (SIZEOF(TYPEOF(q) * [
'ELECTROTECHNICAL_DESIGN.' +
'COMPOUND_REPRESENTATION_ITEM',
'ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM']) = 1) )) = 1) THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')

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        | (NOT
('ELECTROTECHNICAL_DESIGN.PROPERTY_DEFINITION'
  IN TYPEOF(pdr.definition)) AND (NOT (pdr.definition\
property_definition.name = 'occurrence selection
control'))
  AND (((('ELECTROTECHNICAL_DESIGN.' +
'PRODUCT_DEFINITION') IN
TYPEOF(pdr.definition.definition))
  AND (NOT
(pdr.definition.definition\product_definition.name =
'selected instance')) XOR (((
'ELECTROTECHNICAL_DESIGN.' +
'ASSEMBLY_COMPONENT_USAGE')
  IN TYPEOF(pdr.definition.definition)) AND (NOT (pdr.
definition.definition\product_definition_relationship.name =
'selected instance usage'))))) ) > 0 THEN
  RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
+ 'REFERENCE_GRID_REPRESENTATION',
'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
  0 THEN
    RETURN(FALSE);
  END_IF;
END;
'signal characteristics' : BEGIN
  IF SIZEOF(rep.items) > 1 THEN
    RETURN(FALSE);
  END_IF;
  IF NOT (rep.items[1].name = 'signal level indicator') THEN
    RETURN(FALSE);
  END_IF;
  IF NOT
('ELECTROTECHNICAL_DESIGN.DESRIPTIVE_REPRESENTATION_ITEM'
  IN TYPEOF(rep.items[1])) THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
+ 'REFERENCE_GRID_REPRESENTATION',
'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
  0 THEN
    RETURN(FALSE);
  END_IF;
END;
```



```

'signal value' : BEGIN
  IF NOT (SIZEOF(USEDIN(rep, 'ELECTROTECHNICAL_DESIGN.' +
    'ID_ATTRIBUTE.' + 'IDENTIFIED_ITEM')) = 1) THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | ('ELECTROTECHNICAL_DESIGN.SIGNAL' IN TYPEOF(pdr.
    definition.definition)) )) <> 1 THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | (pdr.name = 'parameter association') )) > 1 THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
    + 'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
    1 THEN
    RETURN(FALSE);
  END_IF;
END;
'supplier probability' : BEGIN
  IF SIZEOF(rep.items) > 1 THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( i <* rep.items | (NOT ((
'RATIO_MEASURE_WITH_UNIT')
    IN TYPEOF(i))) )) > 0 THEN
    RETURN(FALSE);
  END_IF;
  IF NOT (SIZEOF(QUERY ( stat <* rep.items | (stat.name =
    'probability rate') )) = 1) THEN
    RETURN(FALSE);
  END_IF;
  IF SIZEOF(QUERY ( pdr <* USEDIN(rep,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | ((NOT ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION'
    IN TYPEOF(pdr.definition.definition)) OR (NOT (pdr.
    definition.definition\product_definition.name IN
['supplier',
    'supplier final', 'technical supplier',

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```
        'technical supplier final']))) )) > 0 THEN
    RETURN (FALSE);
END_IF;
IF SIZEOF(TYPEOF(rep) * ['ELECTROTECHNICAL_DESIGN.' +
    'DRAUGHTING_MODEL', 'ELECTROTECHNICAL_DESIGN.' +
    'NOTE_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.' +
    'PRESENTATION_REPRESENTATION', 'ELECTROTECHNICAL_DESIGN.'
    + 'REFERENCE_GRID_REPRESENTATION',
    'ELECTROTECHNICAL_DESIGN.' + 'SHAPE_REPRESENTATION'])
>
    0 THEN
        RETURN (FALSE);
    END_IF;
END;
OTHERWISE
    : RETURN (TRUE);
END_CASE;
RETURN (TRUE);

END_FUNCTION; -- representation_correlation

FUNCTION representation_item_correlation(
    ri: representation_item
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := ri.name;
CASE name OF
    'component colour'
        : IF NOT (
            'ELECTROTECHNICAL_DESIGN.COLOUR_REPRESENTATION_ITEM' IN
            TYPEOF(ri)) THEN
            RETURN (FALSE);
        END_IF;
    'material specification'
        : BEGIN
            IF NOT
            ('ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM'
            IN TYPEOF(ri)) THEN
                RETURN (FALSE);
            END_IF;
            IF 'ELECTROTECHNICAL_DESIGN.COLOUR_REPRESENTATION_ITEM' IN
            TYPEOF(ri) THEN
                RETURN (FALSE);
            END_IF;
        END;
    'mounting features specification'
        : BEGIN
            IF NOT
            ('ELECTROTECHNICAL_DESIGN.DESCRPTIVE_REPRESENTATION_ITEM'
            IN TYPEOF(ri)) THEN
                RETURN (FALSE);
            END_IF;
            IF 'ELECTROTECHNICAL_DESIGN.COLOUR_REPRESENTATION_ITEM' IN
            TYPEOF(ri) THEN
                RETURN (FALSE);
            END_IF;
        END;
END;
```

```

        END_IF;
    END;
    'rated current'
        : BEGIN
        IF SIZEOF(TYPEOF(ri) * ['ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.'
+ 'QUALIFIED_REPRESENTATION_ITEM']) < 2 THEN
        RETURN(FALSE);
        END_IF;
        IF NOT
((SIZEOF(ri\qualified_representation_item.qualifiers) > 0)
AND
(SIZEOF(ri\qualified_representation_item.qualifiers) < 3))
        THEN
        RETURN(FALSE);
        END_IF;
    END;
    'rated power'
        : BEGIN
        IF SIZEOF(TYPEOF(ri) * ['ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.'
+ 'QUALIFIED_REPRESENTATION_ITEM']) < 2 THEN
        RETURN(FALSE);
        END_IF;
        IF NOT
((SIZEOF(ri\qualified_representation_item.qualifiers) > 0)
AND
(SIZEOF(ri\qualified_representation_item.qualifiers) < 3))
        THEN
        RETURN(FALSE);
        END_IF;
    END;
    'rated voltage'
        : BEGIN
        IF SIZEOF(TYPEOF(ri) * ['ELECTROTECHNICAL_DESIGN.' +
'MEASURE_REPRESENTATION_ITEM', 'ELECTROTECHNICAL_DESIGN.'
+ 'QUALIFIED_REPRESENTATION_ITEM']) < 2 THEN
        RETURN(FALSE);
        END_IF;
        IF NOT
((SIZEOF(ri\qualified_representation_item.qualifiers) > 0)
AND
(SIZEOF(ri\qualified_representation_item.qualifiers) < 3))
        THEN
        RETURN(FALSE);
        END_IF;
    END;
    'body breadth'
        : BEGIN
        IF NOT (
        'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
        TYPEOF(ri)) THEN
        RETURN(FALSE);
        END_IF;
        IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'

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        IN TYPEOF(ri) THEN
        BEGIN
            IF NOT
(SIZEOF(ri\qualified_representation_item.qualifiers)
                = 1) THEN
                RETURN(FALSE);
            END_IF;
            IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
TYPEOF(ri\qualified_representation_item.qualifiers[1]))
                THEN
                RETURN(FALSE);
            END_IF;
        END;
    END_IF;
END;
'body height'
    :
    BEGIN
        IF NOT (
            'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
                TYPEOF(ri)) THEN
                RETURN(FALSE);
            END_IF;
            IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
                IN TYPEOF(ri) THEN
                BEGIN
                    IF NOT
(SIZEOF(ri\qualified_representation_item.qualifiers)
                        = 1) THEN
                        RETURN(FALSE);
                    END_IF;
                    IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
TYPEOF(ri\qualified_representation_item.qualifiers[1]))
                        THEN
                        RETURN(FALSE);
                    END_IF;
                END;
            END_IF;
        END;
'body length'
    :
    BEGIN
        IF NOT (
            'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
                TYPEOF(ri)) THEN
                RETURN(FALSE);
            END_IF;
            IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
                IN TYPEOF(ri) THEN
                BEGIN
                    IF NOT
(SIZEOF(ri\qualified_representation_item.qualifiers)
                        = 1) THEN
                        RETURN(FALSE);
                    END_IF;
                END;
            END_IF;
        END;

```

```

        IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
TYPEOF(ri\qualified_representation_item.qualifiers[1]))
            THEN
                RETURN(FALSE);
            END_IF;
        END;
    END_IF;
END;
'cross section area'          :          BEGIN
    IF NOT (
        'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
            TYPEOF(ri)) THEN
                RETURN(FALSE);
            END_IF;
        IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
            IN TYPEOF(ri) THEN
                BEGIN
                    IF NOT
(SIZEOF(ri\qualified_representation_item.qualifiers)
                        = 1) THEN
                        RETURN(FALSE);
                    END_IF;
                    IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
TYPEOF(ri\qualified_representation_item.qualifiers[1]))
                        THEN
                            RETURN(FALSE);
                        END_IF;
                    END;
                END_IF;
            END;
'mass'                          :          BEGIN
    IF NOT (
        'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
            TYPEOF(ri)) THEN
                RETURN(FALSE);
            END_IF;
        IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
            IN TYPEOF(ri) THEN
                BEGIN
                    IF NOT
(SIZEOF(ri\qualified_representation_item.qualifiers)
                        = 1) THEN
                        RETURN(FALSE);
                    END_IF;
                    IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
TYPEOF(ri\qualified_representation_item.qualifiers[1]))
                        THEN
                            RETURN(FALSE);
                        END_IF;
                    END;
                END;
            END;

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        END_IF;
    END;
    'operating temperature'          :          BEGIN
        IF NOT (
            'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
            TYPEOF(ri)) THEN
            RETURN(FALSE);
        END_IF;
        IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
            IN TYPEOF(ri) THEN
            BEGIN
                IF NOT
(SIZEOF(ri\qualified_representation_item.qualifiers)
                    = 1) THEN
                    RETURN(FALSE);
                END_IF;
                IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
TYPEOF(ri\qualified_representation_item.qualifiers[1]))
                    THEN
                        RETURN(FALSE);
                    END_IF;
                END;
            END_IF;
        END;
    'storage temperature'          :          BEGIN
        IF NOT (
            'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
            TYPEOF(ri)) THEN
            RETURN(FALSE);
        END_IF;
        IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
            IN TYPEOF(ri) THEN
            BEGIN
                IF NOT
(SIZEOF(ri\qualified_representation_item.qualifiers)
                    = 1) THEN
                    RETURN(FALSE);
                END_IF;
                IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
TYPEOF(ri\qualified_representation_item.qualifiers[1]))
                    THEN
                        RETURN(FALSE);
                    END_IF;
                END;
            END_IF;
        END;
    'outside diameter'          :          BEGIN
        IF NOT (
            'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM'
IN
            TYPEOF(ri)) THEN
```

```

RETURN (FALSE);
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.QUALIFIED_REPRESENTATION_ITEM'
  IN TYPEOF(ri) THEN
  BEGIN
    IF NOT
      (SIZEOF(ri\qualified_representation_item.qualifiers)
        = 1) THEN
      RETURN (FALSE);
    END_IF;
    IF NOT ('ELECTROTECHNICAL_DESIGN.TYPE_QUALIFIER' IN
      TYPEOF(ri\qualified_representation_item.qualifiers[1]))
      THEN
      RETURN (FALSE);
    END_IF;
  END;
END_IF;
END;
'body breadth' : BEGIN
  IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
    'REPRESENTATION.' + 'ITEMS')) = 1) THEN
    RETURN (FALSE);
  END_IF;
  IF SIZEOF(QUERY ( de <* USEDIN(ri,
    'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
    | (SIZEOF(QUERY ( pdr <* USEDIN(de,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
      TYPEOF(pdr.definition)) AND
      (pdr.definition\general_property.
        name = ri.name)) ) = 1) )) = 0 THEN
    RETURN (FALSE);
  END_IF;
END;
'body height' : BEGIN
  IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
    'REPRESENTATION.' + 'ITEMS')) = 1) THEN
    RETURN (FALSE);
  END_IF;
  IF SIZEOF(QUERY ( de <* USEDIN(ri,
    'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
    | (SIZEOF(QUERY ( pdr <* USEDIN(de,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
    | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
      TYPEOF(pdr.definition)) AND
      (pdr.definition\general_property.
        name = ri.name)) ) = 1) )) = 0 THEN
    RETURN (FALSE);
  END_IF;
END;

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```
        END_IF;
    END;
    'body length' : BEGIN
        IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
            'REPRESENTATION.' + 'ITEMS')) = 1) THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( de <* USEDIN(ri,
            'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
            | (SIZEOF(QUERY ( pdr <* USEDIN(de,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
            | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
            TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
            name = ri.name)) )) = 1) )) = 0 THEN
            RETURN(FALSE);
        END_IF;
    END;
    'component colour' : BEGIN
        IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
            'REPRESENTATION.' + 'ITEMS')) = 1) THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( de <* USEDIN(ri,
            'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
            | (SIZEOF(QUERY ( pdr <* USEDIN(de,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
            | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
            TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
            name = ri.name)) )) = 1) )) = 0 THEN
            RETURN(FALSE);
        END_IF;
    END;
    'cross section area' : BEGIN
        IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
            'REPRESENTATION.' + 'ITEMS')) = 1) THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(QUERY ( de <* USEDIN(ri,
            'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
            | (SIZEOF(QUERY ( pdr <* USEDIN(de,
            'ELECTROTECHNICAL_DESIGN.' +
            'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
            | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
            TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
```



```

        name = ri.name)) )) = 1) )) = 0 THEN
    RETURN (FALSE);
END_IF;
END;
'mass' : BEGIN
    IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
        name = ri.name)) )) = 1) )) = 0 THEN
        RETURN (FALSE);
    END_IF;
END;
'material specification' : BEGIN
    IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
        name = ri.name)) )) = 1) )) = 0 THEN
        RETURN (FALSE);
    END_IF;
END;
'operating temperature' : BEGIN
    IF NOT (SIZEOF(USEDIN(ri, 'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN (FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN

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        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
    name = ri.name)) )) = 1) )) = 0 THEN
    RETURN(FALSE);
END_IF;
END;
'storage temperature'          :          BEGIN
    IF NOT (SIZEOF(USEDIN(ri,'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
    name = ri.name)) )) = 1) )) = 0 THEN
        RETURN(FALSE);
    END_IF;
END;
'mounting features specification' :          BEGIN
    IF NOT (SIZEOF(USEDIN(ri,'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
    name = ri.name)) )) = 1) )) = 0 THEN
        RETURN(FALSE);
    END_IF;
END;
'outside diameter'              :          BEGIN
    IF NOT (SIZEOF(USEDIN(ri,'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
```

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        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
        name = ri.name)) )) = 1) )) = 0 THEN
        RETURN(FALSE);
    END_IF;
END;
'rated current'
        : BEGIN
    IF NOT (SIZEOF(USEDIN(ri,'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
        name = ri.name)) )) = 1) )) = 0 THEN
        RETURN(FALSE);
    END_IF;
END;
'rated power'
        : BEGIN
    IF NOT (SIZEOF(USEDIN(ri,'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
        name = ri.name)) )) = 1) )) = 0 THEN
        RETURN(FALSE);
    END_IF;
END;
'rated voltage'
        : BEGIN
    IF NOT (SIZEOF(USEDIN(ri,'ELECTROTECHNICAL_DESIGN.' +
        'REPRESENTATION.' + 'ITEMS')) = 1) THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( de <* USEDIN(ri,
        'ELECTROTECHNICAL_DESIGN.' + 'REPRESENTATION.' +
'ITEMS')

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```
        | (SIZEOF(QUERY ( pdr <* USEDIN(de,
        'ELECTROTECHNICAL_DESIGN.' +
        'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
        | (('ELECTROTECHNICAL_DESIGN.GENERAL_PROPERTY' IN
        TYPEOF(pdr.definition)) AND
(pdr.definition\general_property.
        name = ri.name)) )) = 1) )) = 0 THEN
        RETURN(FALSE);
    END_IF;
END;
OTHERWISE : RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- representation_item_correlation

FUNCTION representation_relationship_correlation(
    rr: representation_relationship
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := rr.name;
CASE name OF
    'connect area' : BEGIN
        IF NOT (rr.rep_1.name = 'direction range') THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (rr.rep_2.name = 'schematic node connect area')
THEN
            RETURN(FALSE);
        END_IF;
    END;
    'definitional' : BEGIN
        IF NOT (rr.rep_1.name = 'property value') THEN
            RETURN(FALSE);
        END_IF;
        IF NOT ((SIZEOF(TYPEOF(rr.rep_2) * [
            'ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION',
            'ELECTROTECHNICAL_DESIGN.NOTE_REPRESENTATION']) = 1)
XOR
            (rr.rep_2.name IN ['cable pull information','signal
value']))
        XOR (SIZEOF(QUERY ( i <* rr.rep_2.items |
        (SIZEOF(TYPEOF(i) *
            ['ELECTROTECHNICAL_DESIGN.PATH',
            'ELECTROTECHNICAL_DESIGN.VERTEX']) = 1) )) > 0)) THEN
            RETURN(FALSE);
        END_IF;
    END;
    'non definitional' : BEGIN
        IF NOT (rr.rep_1.name = 'property value') THEN
            RETURN(FALSE);
```

```

END_IF;
IF NOT ((SIZEOF(TYPEOF(rr.rep_2) * [
'ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION',
'ELECTROTECHNICAL_DESIGN.NOTE_REPRESENTATION']) = 1)
XOR
(rr.rep_2.name IN ['cable pull information','signal
value']))
XOR (SIZEOF(QUERY ( i <* rr.rep_2.items |
(SIZEOF(TYPEOF(i) *
['ELECTROTECHNICAL_DESIGN.PATH',
'ELECTROTECHNICAL_DESIGN.VERTEX']) = 1) )) > 0)) THEN
RETURN(FALSE);
END_IF;
END;
''
: BEGIN
IF NOT (rr.rep_1.name = 'property value') THEN
RETURN(FALSE);
END_IF;
IF NOT ((SIZEOF(TYPEOF(rr.rep_2) * [
'ELECTROTECHNICAL_DESIGN.DRAWING_SHEET_REVISION',
'ELECTROTECHNICAL_DESIGN.NOTE_REPRESENTATION']) = 1)
XOR
(rr.rep_2.name IN ['cable pull information','signal
value']))
XOR (SIZEOF(QUERY ( i <* rr.rep_2.items |
(SIZEOF(TYPEOF(i) *
['ELECTROTECHNICAL_DESIGN.PATH',
'ELECTROTECHNICAL_DESIGN.VERTEX']) = 1) )) > 0)) THEN
RETURN(FALSE);
END_IF;
END;
'instance placement'
: BEGIN
IF NOT (SIZEOF(TYPEOF(rr) * ['ELECTROTECHNICAL_DESIGN.' +
'SHAPE_REPRESENTATION_RELATIONSHIP',
'ELECTROTECHNICAL_DESIGN.' +
'REPRESENTATION_RELATIONSHIP_WITH_TRANSFORMATION']) =
2)
THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rr.rep_1,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(pdr.definition.definition)) )) = 0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rr.rep_2,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| ('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(pdr.definition.definition)) )) = 0 THEN
RETURN(FALSE);

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END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rr.rep_1,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| (('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(pdr.definition.definition)) AND
(pdr.definition.
definition\product_definition.name = 'single
instance'))) ) =
0 THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pdr <* USEDIN(rr.rep_2,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_REPRESENTATION.' +
'USED_REPRESENTATION')
| (('ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
TYPEOF(pdr.definition.definition)) AND
(pdr.definition.
definition\product_definition.frame_of_reference.name
=
'conceptual definition'))) ) = 0 THEN
RETURN(FALSE);
END_IF;
END;
'node area' : BEGIN
IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'DRAUGHTING_SYMBOL_REPRESENTATION') IN
TYPEOF(rr.rep_1))
THEN
RETURN(FALSE);
END_IF;
IF NOT (rr.rep_2.name = 'schematic node connect area')
THEN
RETURN(FALSE);
END_IF;
END;
'note presentation reference' : BEGIN
IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_WITH_ASSOCIATION') IN TYPEOF(rr.rep_1))
THEN
RETURN(FALSE);
END_IF;
IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'PRESENTATION_WITH_ASSOCIATION') IN TYPEOF(rr.rep_2))
THEN
RETURN(FALSE);
END_IF;
IF SIZEOF(QUERY ( pir <* USEDIN(rr.rep_2,
'ELECTROTECHNICAL_DESIGN.' +
'PRESENTED_ITEM_REPRESENTATION.' + 'PRESENTATION') |
(SIZEOF(
QUERY ( i <*
pir.item\presented_item_with_association.items
```

```

        | (('ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION')
        IN TYPEOF(i)) )) = 0) )) > 0 THEN
        RETURN(FALSE);
    END_IF;
END;
'note representation set' : BEGIN
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION')
        IN TYPEOF(rr.rep_1)) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'NOTE_REPRESENTATION')
        IN TYPEOF(rr.rep_2)) THEN
        RETURN(FALSE);
    END_IF;
END;
'reference grid' : BEGIN
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'REFERENCE_GRID_LAYOUT') IN TYPEOF(rr.rep_1)) THEN
        RETURN(FALSE);
    END_IF;
    IF NOT (('ELECTROTECHNICAL_DESIGN.' +
'REFERENCE_GRID_REPRESENTATION') IN TYPEOF(rr.rep_2))
THEN
        RETURN(FALSE);
    END_IF;
END;
'schematic node ownership' : BEGIN
    IF SIZEOF(QUERY ( sn <* rr.rep_1.items | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_SYMBOL_OCCURRENCE') IN TYPEOF(sn)) )) = 0
THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( uds <* rr.rep_2.items | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_SYMBOL_OCCURRENCE') IN TYPEOF(uds)) )) = 0
THEN
        RETURN(FALSE);
    END_IF;
END;
'schematic text ownership' : BEGIN
    IF SIZEOF(QUERY ( sn <* rr.rep_1.items | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_TEXT_OCCURRENCE') IN TYPEOF(sn)) )) = 0
THEN
        RETURN(FALSE);
    END_IF;
    IF SIZEOF(QUERY ( i <* rr.rep_2.items | ((
        'ELECTROTECHNICAL_DESIGN.' +
        'ANNOTATION_SYMBOL_OCCURRENCE') IN TYPEOF(i)) )) = 0
THEN
        RETURN(FALSE);

```

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```
        END_IF;
    END;
    OTHERWISE
        : RETURN(TRUE);
    END_CASE;
RETURN(TRUE);

END_FUNCTION; -- representation_relationship_correlation

FUNCTION scalar_times_vector(
    scalar: REAL;
    vec: vector_or_direction
): vector;

LOCAL
    v      : direction;
    mag    : REAL;
    result : vector;
END_LOCAL;
IF (NOT EXISTS(scalar)) OR (NOT EXISTS(vec)) THEN
    RETURN(?);
ELSE
    IF 'ELECTROTECHNICAL_DESIGN.VECTOR' IN TYPEOF(vec) THEN
        v := dummy_gri ||
direction(vec.orientation.direction_ratios);
        mag := scalar * vec.magnitude;
    ELSE
        v := dummy_gri || direction(vec.direction_ratios);
        mag := scalar;
    END_IF;
    IF mag < 0 THEN
        REPEAT i := 1 TO SIZEOF(v.direction_ratios) BY 1;
            v.direction_ratios[i] := -v.direction_ratios[i];
        END_REPEAT;
        mag := -mag;
    END_IF;
    result := dummy_gri || vector(normalise(v),mag);
END_IF;
RETURN(result);

END_FUNCTION; -- scalar_times_vector

FUNCTION second_proj_axis(
    z_axis, x_axis, arg: direction
): direction;

LOCAL
    temp      : vector;
    v         : direction;
    y_axis    : vector;
END_LOCAL;
IF NOT EXISTS(arg) THEN
    v := dummy_gri || direction([0,1,0]);
ELSE
    v := arg;
END_IF;
```



```

temp := scalar_times_vector(dot_product(v,z_axis),z_axis);
y_axis := vector_difference(v,temp);
temp := scalar_times_vector(dot_product(v,x_axis),x_axis);
y_axis := vector_difference(y_axis,temp);
y_axis := normalise(y_axis);
RETURN(y_axis.orientation);

END_FUNCTION; -- second_proj_axis

FUNCTION shape_aspect_relationship_correlation(
    sar: shape_aspect_relationship
): BOOLEAN;

LOCAL
    name : STRING;
END_LOCAL;
name := sar.name;
CASE name OF
    'arrangement sequence' : BEGIN
        IF SIZEOF(TYPEOF(sar.related_shape_aspect) * [
            'ELECTROTECHNICAL_DESIGN.' + 'FREE_SEGMENT',
            'ELECTROTECHNICAL_DESIGN.' + 'ROUTED_SEGMENT']) = 0
        THEN
            RETURN(FALSE);
        END_IF;
        IF NOT (('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
            IN TYPEOF(sar.relying_shape_aspect)) OR ((NOT (
            'ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION' IN
            TYPEOF(sar.relying_shape_aspect))) AND (
            'ELECTROTECHNICAL_DESIGN.PRODUCT_DEFINITION' IN
            TYPEOF(
                sar.relying_shape_aspect.of_shape.definition)) AND
            (sar.
                relating_shape_aspect.of_shape.definition\product_definition.
                frame_of_reference.name IN ['conceptual definition',
                'functional occurrence', 'part occurrence',
                'physical occurrence']))) THEN
            RETURN(FALSE);
        END_IF;
    END;
    'connectivity' : BEGIN
        IF NOT ('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
            IN TYPEOF(sar.relying_shape_aspect)) THEN
            RETURN(FALSE);
        END_IF;
        IF SIZEOF(TYPEOF(sar.related_shape_aspect) * [
            'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0 THEN
            RETURN(FALSE);
        END_IF;
    END;
    'connectivity allocation' : BEGIN
        IF NOT (('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'
            IN TYPEOF(sar.relying_shape_aspect)) AND (sar.

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relating_shape_aspect.of_shape.definition\product_definition.  
    frame_of_reference.name = 'functional definition'))  
THEN  
    RETURN(FALSE);  
END_IF;  
IF NOT (('ELECTROTECHNICAL_DESIGN.CONNECTIVITY_DEFINITION'  
    IN TYPEOF(sar.related_shape_aspect)) AND (sar.  
related_shape_aspect.of_shape.definition\product_definition.  
    frame_of_reference.name = 'part definition')) THEN  
    RETURN(FALSE);  
END_IF;  
END;  
'course sequence' : BEGIN  
    IF SIZEOF(TYPEOF(sar.related_shape_aspect) * [  
        'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_NODE',  
        'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_ROUTE',  
        'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_SECTION',  
        'ELECTROTECHNICAL_DESIGN.' +  
        'INSTALLATION_SECTION_INTERFACE']) = 0 THEN  
        RETURN(FALSE);  
    END_IF;  
    IF NOT ('ELECTROTECHNICAL_DESIGN.ROUTED_SEGMENT' IN  
TYPEOF(  
        sar.relating_shape_aspect)) THEN  
        RETURN(FALSE);  
    END_IF;  
END;  
'correspondence' : BEGIN  
    IF NOT (('ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.  
        related_shape_aspect)) AND (  
        'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.  
        relating_shape_aspect))) THEN  
        RETURN(FALSE);  
    END_IF;  
    IF NOT (sar.related_shape_aspect.of_shape.definition\  
        product_definition.name = 'single instance') THEN  
        RETURN(FALSE);  
    END_IF;  
    IF NOT (((sar.relating_shape_aspect.of_shape.definition\  
        product_definition.frame_of_reference.name =  
        'functional definition') AND  
(sar.related_shape_aspect.  
of_shape.definition\product_definition.frame_of_reference.  
    name = 'functional occurrence')) XOR ((sar.  
relating_shape_aspect.of_shape.definition\product_definition.  
    frame_of_reference.name = 'part definition') AND (sar.  
related_shape_aspect.of_shape.definition\product_definition.  
    frame_of_reference.name = 'part occurrence')) THEN  
        RETURN(FALSE);  
    END_IF;
```

```

END;
'definition usage' : BEGIN
  IF NOT (('ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
    related_shape_aspect)) AND (
    'ELECTROTECHNICAL_DESIGN.TERMINAL' IN TYPEOF(sar.
    relating_shape_aspect))) THEN
    RETURN(FALSE);
  END_IF;
  IF NOT (sar.related_shape_aspect.of_shape.definition\
    product_definition.name = 'single instance') THEN
    RETURN(FALSE);
  END_IF;
  IF NOT (((sar.relatng_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name =
    'functional definition') AND
(sar.related_shape_aspect.
of_shape.definition\product_definition.frame_of_reference.
  name = 'functional occurrence')) XOR ((sar.
relating_shape_aspect.of_shape.definition\product_definition.
  frame_of_reference.name = 'part definition') AND (sar.
related_shape_aspect.of_shape.definition\product_definition.
  frame_of_reference.name = 'part occurrence')))) THEN
    RETURN(FALSE);
  END_IF;
END;
'decomposition hierarchy' : IF NOT ((
  'ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION' IN
  TYPEOF(
    sar.related_shape_aspect)) AND (
  'ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION' IN
  TYPEOF(
    sar.relatng_shape_aspect))) THEN
  RETURN(FALSE);
  END_IF;
'neighbourhood' : IF NOT ((
  'ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION' IN
  TYPEOF(
    sar.related_shape_aspect)) AND (
  'ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION' IN
  TYPEOF(
    sar.relatng_shape_aspect))) THEN
  RETURN(FALSE);
  END_IF;
'external access' : BEGIN
  IF SIZEOF(TYPEOF(sar.related_shape_aspect) * [
    'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0 THEN
    RETURN(FALSE);
  END_IF;
  IF NOT ('ELECTROTECHNICAL_DESIGN.INTERFACE' IN TYPEOF(sar.
    relating_shape_aspect)) THEN
    RETURN(FALSE);
  END_IF;

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IF NOT (sar.related_shape_aspect.of_shape.definition\  
product_definition.frame_of_reference.name IN [  
'functional definition','part definition']) THEN  
RETURN(FALSE);  
END_IF;  
IF NOT (sar.relatng_shape_aspect.of_shape.definition\  
product_definition.frame_of_reference.name IN [  
'functional definition','part definition']) THEN  
RETURN(FALSE);  
END_IF;  
IF NOT ((sar.related_shape_aspect.of_shape.definition\  
product_definition.frame_of_reference.name =  
'functional definition') AND  
(sar.relatng_shape_aspect.  
of_shape.definition\product_definition.frame_of_reference.  
name = 'functional definition')) THEN  
RETURN(FALSE);  
END_IF;  
IF NOT ((sar.related_shape_aspect.of_shape.definition\  
product_definition.frame_of_reference.name =  
'part definition') AND  
(sar.relatng_shape_aspect.of_shape.  
definition\product_definition.frame_of_reference.name  
=  
'part definition')) THEN  
RETURN(FALSE);  
END_IF;  
END;  
'node residence' : BEGIN  
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_LOCATION' IN  
TYPEOF(sar.related_shape_aspect)) THEN  
RETURN(FALSE);  
END_IF;  
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE' IN  
TYPEOF(sar.relatng_shape_aspect)) THEN  
RETURN(FALSE);  
END_IF;  
END;  
'preferred item terminal allocation' : BEGIN  
IF SIZEOF(TYPEOF(sar.related_shape_aspect) * [  
'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0 THEN  
RETURN(FALSE);  
END_IF;  
IF SIZEOF(TYPEOF(sar.relatng_shape_aspect) * [  
'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0 THEN  
RETURN(FALSE);  
END_IF;  
IF NOT (sar.relatng_shape_aspect.of_shape.definition\  
product_definition.name = 'single instance') THEN  
RETURN(FALSE);  
END_IF;  
IF NOT (sar.related_shape_aspect.of_shape.definition\  
product_definition.frame_of_reference.name IN [  
'functional definition','part definition']) THEN
```

```

RETURN(FALSE);
END_IF;
IF NOT (sar.relatng_shape_aspect.of_shape.definition\
product_definition.frame_of_reference.name =
'functional occurrence') THEN
RETURN(FALSE);
END_IF;
IF (SIZEOF(QUERY ( pd <* USEDIN(sar,
'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.' +
'DEFINITION') | (SIZEOF(QUERY ( pdr <* USEDIN(pd,
'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_RELATIONSHIP.' +
'RELATED_PROPERTY_DEFINITION') | (pdr.name =
'item allocation') )) > 1) )) > 0) OR (SIZEOF(QUERY (
pd <*
USEDIN(sar,'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION.' + 'DEFINITION') | (SIZEOF(
QUERY ( pdr <* USEDIN(pd,'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_RELATIONSHIP.' +
'RELATED_PROPERTY_DEFINITION') | (pdr.name =
'item allocation') )) = 1) )) = 0) OR (SIZEOF(QUERY (
pd <*
USEDIN(sar,'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION.' + 'DEFINITION') | (SIZEOF(
QUERY ( pdr <* USEDIN(pd,'ELECTROTECHNICAL_DESIGN.' +
'PROPERTY_DEFINITION_RELATIONSHIP.' +
'RELATED_PROPERTY_DEFINITION') | (pdr.name =
'item allocation') )) = 1) )) > 1) THEN
RETURN(FALSE);
END_IF;
END;
'route course sequence' : BEGIN
IF SIZEOF(TYPEOF(sar.related_shape_aspect) * [
'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_NODE',
'ELECTROTECHNICAL_DESIGN.' + 'INSTALLATION_SECTION',
'ELECTROTECHNICAL_DESIGN.' +
'INSTALLATION_SECTION_INTERFACE']) = 0 THEN
RETURN(FALSE);
END_IF;
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_ROUTE' IN
TYPEOF(sar.relatng_shape_aspect)) THEN
RETURN(FALSE);
END_IF;
END;
'section end residence' : BEGIN
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE' IN
TYPEOF(sar.related_shape_aspect)) THEN
RETURN(FALSE);
END_IF;
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END'
IN TYPEOF(sar.relatng_shape_aspect)) THEN
RETURN(FALSE);
END_IF;
END;
'section interface residence' : BEGIN

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IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE' IN
        TYPEOF(sar.related_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
IF NOT
('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_INTERFACE'
    IN TYPEOF(sar.relatng_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
END;
'section join' : BEGIN
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END'
        IN TYPEOF(sar.related_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
IF NOT
('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_INTERFACE'
    IN TYPEOF(sar.relatng_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
END;
'section termination' : BEGIN
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION' IN
        TYPEOF(sar.related_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_SECTION_END'
        IN TYPEOF(sar.relatng_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
END;
'segment termination' : BEGIN
IF NOT ('ELECTROTECHNICAL_DESIGN.INSTALLATION_NODE' IN
        TYPEOF(sar.related_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
IF NOT ('ELECTROTECHNICAL_DESIGN.FREE_SEGMENT' IN TYPEOF(
        sar.relatng_shape_aspect)) THEN
    RETURN(FALSE);
END_IF;
END;
'terminal allocation' : BEGIN
IF SIZEOF(TYPEOF(sar.related_shape_aspect) * [
        'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0 THEN
    RETURN(FALSE);
END_IF;
IF SIZEOF(TYPEOF(sar.relatng_shape_aspect) * [
        'ELECTROTECHNICAL_DESIGN.TERMINAL']) = 0 THEN
    RETURN(FALSE);
END_IF;
IF NOT (sar.related_shape_aspect.of_shape.definition\
        product_definition.name = 'single instance') THEN
    RETURN(FALSE);
END_IF;
IF NOT (sar.relatng_shape_aspect.of_shape.definition\
```

```

        product_definition.name = 'single instance') THEN
    RETURN(FALSE);
END_IF;
IF NOT (sar.related_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name =
    'part occurrence') THEN
    RETURN(FALSE);
END_IF;
IF NOT (sar.relatng_shape_aspect.of_shape.definition\
    product_definition.frame_of_reference.name =
    'functional occurrence') THEN
    RETURN(FALSE);
END_IF;
IF (SIZEOF(QUERY ( pd <* USEDIN(sar,
    'ELECTROTECHNICAL_DESIGN.' + 'PROPERTY_DEFINITION.' +
    'DEFINITION') | (SIZEOF(QUERY ( pdr <* USEDIN(pd,
    'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_RELATIONSHIP.' +
    'RELATED_PROPERTY_DEFINITION') | (pdr.name =
    'item allocation') )) > 1) )) > 0) OR (SIZEOF(QUERY (
pd <*
    USEDIN(sar, 'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION.' + 'DEFINITION') | (SIZEOF(
    QUERY ( pdr <* USEDIN(pd, 'ELECTROTECHNICAL_DESIGN.' +
    'PROPERTY_DEFINITION_RELATIONSHIP.' +
    'RELATED_PROPERTY_DEFINITION') | (pdr.name =
    'item allocation') )) = 1) )) > 1) THEN
    RETURN(FALSE);
END_IF;
END;
OTHERWISE : RETURN(TRUE);
END_CASE;
RETURN(TRUE);

END_FUNCTION; -- shape_aspect_relationship_correlation

FUNCTION type_check_function(
    the_type: GENERIC;
    sub_names: SET OF STRING;
    criterion: INTEGER
): LOGICAL;
IF (NOT EXISTS(the_type)) OR (NOT ((0 <= criterion) AND
(criterion <=
    3))) OR (SIZEOF(sub_names) = 0) THEN
    RETURN(UNKNOWN);
ELSE
    CASE criterion OF
        0 : RETURN(SIZEOF(sub_names * TYPEOF(the_type)) >
0);
        1 : RETURN(SIZEOF(sub_names * TYPEOF(the_type)) =
0);
        2 : RETURN(SIZEOF(sub_names * TYPEOF(the_type)) =
1);
        3 : RETURN(SIZEOF(sub_names * TYPEOF(the_type))
<= 1);
    END CASE;
END;

```

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```
        END_CASE;
    END_IF;

END_FUNCTION; -- type_check_function

FUNCTION using_items(
    item: founded_item_select;
    checked_items: SET OF founded_item_select
): SET OF founded_item_select;

    LOCAL
        next_items      : SET OF founded_item_select;
        new_check_items : SET OF founded_item_select;
        result_items    : SET OF founded_item_select;
    END_LOCAL;
    result_items := [];
    new_check_items := checked_items + item;
    next_items := QUERY ( z <* bag_to_set(USEDIN(item, '')) | ((
        'ELECTROTECHNICAL_DESIGN.REPRESENTATION_ITEM' IN TYPEOF(z))
OR
        ('ELECTROTECHNICAL_DESIGN.FOUNDED_ITEM' IN TYPEOF(z))) );
    IF SIZEOF(next_items) > 0 THEN
        REPEAT i := 1 TO HIINDEX(next_items) BY 1;
            IF NOT (next_items[i] IN new_check_items) THEN
                result_items := result_items + next_items[i] +
using_items(
                    next_items[i], new_check_items);
            END_IF;
        END_REPEAT;
    END_IF;
    RETURN(result_items);

END_FUNCTION; -- using_items

FUNCTION using_representations(
    item: founded_item_select
): SET OF representation;

    LOCAL
        results          : SET OF representation;
        intermediate_items : SET OF founded_item_select;
        result_bag       : BAG OF representation;
    END_LOCAL;
    results := [];
    result_bag := USEDIN(item,
        'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS');
    IF SIZEOF(result_bag) > 0 THEN
        REPEAT i := 1 TO HIINDEX(result_bag) BY 1;
            results := results + result_bag[i];
        END_REPEAT;
    END_IF;
    intermediate_items := using_items(item, []);
    IF SIZEOF(intermediate_items) > 0 THEN
        REPEAT i := 1 TO HIINDEX(intermediate_items) BY 1;
            result_bag := USEDIN(intermediate_items[i],
```



```

        'ELECTROTECHNICAL_DESIGN.REPRESENTATION.ITEMS');
    IF SIZEOF(result_bag) > 0 THEN
        REPEAT j := 1 TO HIINDEX(result_bag) BY 1;
            results := results + result_bag[j];
        END_REPEAT;
    END_IF;
END_REPEAT;
END_IF;
RETURN(results);

END_FUNCTION; -- using_representations

FUNCTION valid_calendar_date(
    date: calendar_date
): LOGICAL;
CASE date.month_component OF
    1 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 31));
    2 : BEGIN
        IF leap_year(date.year_component) THEN
            RETURN((1 <= date.day_component) AND (date.day_component
<= 29));
        ELSE
            RETURN((1 <= date.day_component) AND (date.day_component
<= 28));
        END_IF;
    END;
    3 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 31));
    4 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 30));
    5 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 31));
    6 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 30));
    7 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 31));
    8 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 31));
    9 : RETURN((1 <= date.day_component) AND
(date.day_component
    <= 30));
    10 : RETURN((1 <= date.day_component) AND (date.
day_component <= 31));
    11 : RETURN((1 <= date.day_component) AND (date.
day_component <= 30));
    12 : RETURN((1 <= date.day_component) AND (date.
day_component <= 31));

```

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```
        END_CASE;
    RETURN (FALSE);

END_FUNCTION; -- valid_calendar_date

FUNCTION valid_measure_value(
    m: measure_value
): BOOLEAN;
IF 'REAL' IN TYPEOF(m) THEN
    RETURN (m > 0);
ELSE
    IF 'INTEGER' IN TYPEOF(m) THEN
        RETURN (m > 0);
    ELSE
        RETURN (TRUE);
    END_IF;
END_IF;

END_FUNCTION; -- valid_measure_value

FUNCTION valid_time(
    time: local_time
): BOOLEAN;
IF EXISTS(time.second_component) THEN
    RETURN (EXISTS(time.minute_component));
ELSE
    RETURN (TRUE);
END_IF;

END_FUNCTION; -- valid_time

FUNCTION valid_units(
    m: measure_with_unit
): BOOLEAN;
IF 'ELECTROTECHNICAL_DESIGN.LENGTH_MEASURE' IN TYPEOF(m.
value_component) THEN
    IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(1,0,0,0,0,0,0) THEN
        RETURN (FALSE);
    END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.MASS_MEASURE' IN TYPEOF(m.
value_component) THEN
    IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,1,0,0,0,0,0) THEN
        RETURN (FALSE);
    END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.TIME_MEASURE' IN TYPEOF(m.
value_component) THEN
    IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,1,0,0,0,0) THEN
        RETURN (FALSE);
    END_IF;
END_IF;
```

```

IF 'ELECTROTECHNICAL_DESIGN.ELECTRIC_CURRENT_MEASURE' IN
TYPEOF(m
.value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,0,1,0,0,0) THEN
RETURN(FALSE);
END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.THERMODYNAMIC_TEMPERATURE_MEASURE'
IN
TYPEOF(m.value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,0,0,1,0,0) THEN
RETURN(FALSE);
END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.CELSIUS_TEMPERATURE_MEASURE' IN
TYPEOF(m.value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,0,0,1,0,0) THEN
RETURN(FALSE);
END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.AMOUNT_OF_SUBSTANCE_MEASURE' IN
TYPEOF(m.value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,0,0,0,1,0) THEN
RETURN(FALSE);
END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.LUMINOUS_INTENSITY_MEASURE' IN
TYPEOF(m.value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,0,0,0,0,1) THEN
RETURN(FALSE);
END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.PLANE_ANGLE_MEASURE' IN TYPEOF(m.
value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,0,0,0,0,0) THEN
RETURN(FALSE);
END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.SOLID_ANGLE_MEASURE' IN TYPEOF(m.
value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(0,0,0,0,0,0,0) THEN
RETURN(FALSE);
END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.AREA_MEASURE' IN TYPEOF(m.
value_component) THEN
IF derive_dimensional_exponents(m.unit_component) <>
dimensional_exponents(2,0,0,0,0,0,0) THEN

```

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```
        RETURN (FALSE);
    END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.VOLUME_MEASURE' IN TYPEOF(m.
    value_component) THEN
    IF derive_dimensional_exponents(m.unit_component) <>
        dimensional_exponents(3,0,0,0,0,0,0) THEN
        RETURN (FALSE);
    END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.RATIO_MEASURE' IN TYPEOF(m.
    value_component) THEN
    IF derive_dimensional_exponents(m.unit_component) <>
        dimensional_exponents(0,0,0,0,0,0,0) THEN
        RETURN (FALSE);
    END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.POSITIVE_LENGTH_MEASURE' IN
TYPEOF(m.
    value_component) THEN
    IF derive_dimensional_exponents(m.unit_component) <>
        dimensional_exponents(1,0,0,0,0,0,0) THEN
        RETURN (FALSE);
    END_IF;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.POSITIVE_PLANE_ANGLE_MEASURE' IN
    TYPEOF(m.value_component) THEN
    IF derive_dimensional_exponents(m.unit_component) <>
        dimensional_exponents(0,0,0,0,0,0,0) THEN
        RETURN (FALSE);
    END_IF;
END_IF;
RETURN (TRUE);

END_FUNCTION; -- valid_units

FUNCTION value_range_wrl(
    agg: AGGREGATE OF representation_item
): BOOLEAN;
BEGIN
    IF (SIZEOF(agg) = 2) AND ((SIZEOF(QUERY ( i1 <* agg | (
        'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM' IN
        TYPEOF(i1)) )) = 2) OR (SIZEOF(QUERY ( i2 <* agg | (
        'ELECTROTECHNICAL_DESIGN.VALUE_REPRESENTATION_ITEM' IN
        TYPEOF(i2)) )) = 2)) THEN
        RETURN (TRUE);
    ELSE
        RETURN (FALSE);
    END_IF;
END;

END_FUNCTION; -- value_range_wrl

FUNCTION value_range_wr2(
    agg: AGGREGATE OF representation_item
```

```

    ): BOOLEAN;
BEGIN
    IF (SIZEOF(QUERY ( i <* agg | (i.name = 'upper limit') )) = 1)
AND (
        SIZEOF(QUERY ( i <* agg | (i.name = 'lower limit') )) = 1)
THEN
    RETURN(TRUE);
    ELSE
    RETURN(FALSE);
    END_IF;
END;

```

END_FUNCTION; -- value_range_wr2

```

FUNCTION value_range_wr3(
    agg: AGGREGATE OF representation_item
): BOOLEAN;

```

```

BEGIN
    IF (SIZEOF(QUERY ( i <* agg | (
        'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM' IN
        TYPEOF(i)) )) <> 2) OR (SIZEOF(QUERY ( i1 <* agg | ((
        'ELECTROTECHNICAL_DESIGN.MEASURE_REPRESENTATION_ITEM' IN
        TYPEOF(i1)) AND (SIZEOF(QUERY ( i2 <* agg | ((i1\
measure_with_unit.unit_component ::= i2\measure_with_unit.
unit_component) OR (i1\measure_with_unit.unit_component
::: i2\
measure_with_unit.unit_component)) )) = 2)) )) = 2) THEN
    RETURN(TRUE);
    ELSE
    RETURN(FALSE);
    END_IF;
END;

```

END_FUNCTION; -- value_range_wr3

```

FUNCTION vector_difference(
    arg1, arg2: vector_or_direction
): vector;

```

```

LOCAL
    ndim      : INTEGER;
    mag2      : REAL;
    mag1      : REAL;
    mag       : REAL;
    res       : direction;
    vec1      : direction;
    vec2      : direction;
    result    : vector;
END_LOCAL;
IF (NOT EXISTS(arg1)) OR (NOT EXISTS(arg2)) OR (arg1.dim <>
arg2.dim)
THEN
    RETURN(?);
ELSE
    BEGIN

```

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```
IF 'ELECTROTECHNICAL_DESIGN.VECTOR' IN TYPEOF(arg1) THEN
    mag1 := arg1.magnitude;
    vec1 := arg1.orientation;
ELSE
    mag1 := 1;
    vec1 := arg1;
END_IF;
IF 'ELECTROTECHNICAL_DESIGN.VECTOR' IN TYPEOF(arg2) THEN
    mag2 := arg2.magnitude;
    vec2 := arg2.orientation;
ELSE
    mag2 := 1;
    vec2 := arg2;
END_IF;
vec1 := normalise(vec1);
vec2 := normalise(vec2);
ndim := SIZEOF(vec1.direction_ratios);
mag := 0;
res := dummy_gri || direction(vec1.direction_ratios);
REPEAT i := 1 TO ndim BY 1;
    res.direction_ratios[i] := (mag1 *
vec1.direction_ratios[i]) + (
        mag2 * vec2.direction_ratios[i]);
    mag := mag + (res.direction_ratios[i] *
res.direction_ratios[i]);
END_REPEAT;
IF mag > 0 THEN
    result := dummy_gri || vector(res, SQRT(mag));
ELSE
    result := dummy_gri || vector(vec1, 0);
END_IF;
END;
END_IF;
RETURN(result);

END_FUNCTION; -- vector_difference

END_SCHEMA; -- electrotechnical_design
```

Annex B

(normative)

AIM short names of entities

Table B.1 provides the short names of entities specified in the AIM of this part of ISO 10303. Requirements on the use of the short names are found in the implementation methods included in ISO 10303.

Table B.1 - AIM short names of entities

Entity names	Short names
ABS_FUNCTION	ABSFNC
ACOS_FUNCTION	ACSFNC
ACTION	ACTION
ACTION_ASSIGNMENT	ACTASS
ACTION_DIRECTIVE	ACTDRC
ACTION_METHOD	ACTMTH
ACTION_PROPERTY	ACTPRP
ACTION_PROPERTY_REPRESENTATION	ACPRRP
ACTION_RELATIONSHIP	ACTRLT
ACTION_REQUEST_ASSIGNMENT	ACRQAS
ACTION_REQUEST_SOLUTION	ACRQSL
ACTION_REQUEST_STATUS	ACRQST
ACTION_STATUS	ACTSTT
ADDRESS	ADDRSS
ALTERNATE_PRODUCT_RELATIONSHIP	ALPRRL
AMOUNT_OF_SUBSTANCE_MEASURE_WITH_UNIT	AOSMWU

Table B.1 (continued)

Entity names	Short names
AMOUNT_OF_SUBSTANCE_UNIT	AOSU
AND_EXPRESSION	ANDEXP
ANGULAR_DIMENSION	ANGDMN
ANNOTATION_CURVE_OCCURRENCE	ANCROC
ANNOTATION_FILL_AREA	ANFLAR
ANNOTATION_FILL_AREA_OCCURRENCE	AFAO
ANNOTATION_OCCURRENCE	ANNOCC
ANNOTATION_OCCURRENCE_ASSOCIATIVITY	ANOCAS
ANNOTATION_OCCURRENCE_RELATIONSHIP	ANOCRL
ANNOTATION_SUBFIGURE_OCCURRENCE	ANSBOC
ANNOTATION_SYMBOL	ANNSYM
ANNOTATION_SYMBOL_OCCURRENCE	ANSYOC
ANNOTATION_TEXT	ANNTXT
ANNOTATION_TEXT_OCCURRENCE	ANTXOC
APPLICATION_CONTEXT	APPCNT
APPLICATION_CONTEXT_ELEMENT	APCNEL
APPLICATION_CONTEXT_RELATIONSHIP	APCNRL
APPLICATION_PROTOCOL_DEFINITION	APPRDF
APPLIED_ACTION_ASSIGNMENT	APACAS
APPLIED_ACTION_REQUEST_ASSIGNMENT	AARA

Table B.1 (continued)

Entity names	Short names
APPLIED_APPROVAL_ASSIGNMENT	APAPAS
APPLIED_CERTIFICATION_ASSIGNMENT	APCRAS
APPLIED_CLASSIFICATION_ASSIGNMENT	APCLAS
APPLIED_CONTRACT_ASSIGNMENT	APCNAS
APPLIED_DATE_AND_TIME_ASSIGNMENT	ADATA
APPLIED_DATE_ASSIGNMENT	APDTAS
APPLIED_DOCUMENT_REFERENCE	APDCRF
APPLIED_DOCUMENT_USAGE_CONSTRAINT_ASSIGNMENT	ADUCA
APPLIED_EFFECTIVITY_ASSIGNMENT	APEFAS
APPLIED_EVENT_OCCURRENCE_ASSIGNMENT	AEOA
APPLIED_EXTERNAL_IDENTIFICATION_ASSIGNMENT	AEIA
APPLIED_GROUP_ASSIGNMENT	APGRAS
APPLIED_IDENTIFICATION_ASSIGNMENT	APIDAS
APPLIED_INEFFECTIVITY_ASSIGNMENT	APINAS
APPLIED_ORGANIZATION_ASSIGNMENT	APORAS
APPLIED_ORGANIZATIONAL_PROJECT_ASSIGNMENT	AOPA
APPLIED_PERSON_AND_ORGANIZATION_ASSIGNMENT	APAOA
APPLIED_PRESENTED_ITEM	APPRIT
APPLIED_SECURITY_CLASSIFICATION_ASSIGNMENT	ASCA
APPLIED_TIME_INTERVAL_ASSIGNMENT	ATIA
APPROVAL	APPRVL

Table B.1 (continued)

Entity names	Short names
APPROVAL_ASSIGNMENT	APPASS
APPROVAL_DATE_TIME	APDTTM
APPROVAL_PERSON_ORGANIZATION	APPROR
APPROVAL_RELATIONSHIP	APPRLT
APPROVAL_ROLE	APPRL
APPROVAL_STATUS	APPSTT
AREA_IN_SET	ARINST
AREA_MEASURE_WITH_UNIT	AMWU
AREA_UNIT	ARUNT
ASIN_FUNCTION	ASNFC
ASSEMBLY_COMPONENT_USAGE	ASCMUS
ASSEMBLY_COMPONENT_USAGE_SUBSTITUTE	ACUS
ATAN_FUNCTION	ATNFNC
ATTRIBUTE_CLASSIFICATION_ASSIGNMENT	ATCLAS
ATTRIBUTE_LANGUAGE_ASSIGNMENT	ATLNAS
ATTRIBUTE_VALUE_ASSIGNMENT	ATVLAS
ATTRIBUTE_VALUE_ROLE	ATVLRL
AXIS2_PLACEMENT_2D	A2PL2D
AXIS2_PLACEMENT_3D	A2PL3D
B_SPLINE_CURVE	BSPCR
B_SPLINE_CURVE_WITH_KNOTS	BSCWK

Table B.1 (continued)

Entity names	Short names
BEZIER_CURVE	BZR CRV
BINARY_BOOLEAN_EXPRESSION	BNBLEX
BINARY_FUNCTION_CALL	BNFNCL
BINARY_GENERIC_EXPRESSION	BNGNEX
BINARY_NUMERIC_EXPRESSION	BNNMEX
BOOLEAN_EXPRESSION	BLNEXP
BOOLEAN_LITERAL	BLNLTR
BOOLEAN_VARIABLE	BLNVRB
BOUNDED_CURVE	BNDCRV
CALENDAR_DATE	CLNDT
CAMERA_IMAGE	CMRIMG
CAMERA_IMAGE_2D_WITH_SCALE	CI2WS
CAMERA_MODEL	CMRMDL
CAMERA_MODEL_D2	CMMDD2
CAMERA_USAGE	CMRUSG
CARTESIAN_POINT	CRTPNT
CARTESIAN_TRANSFORMATION_OPERATOR	CRTROP
CARTESIAN_TRANSFORMATION_OPERATOR_3D	CTO3
CELSIUS_TEMPERATURE_MEASURE_WITH_UNIT	CTMWU
CERTIFICATION	CRTFCT
CERTIFICATION_ASSIGNMENT	CRTASS

Table B.1 (continued)

Entity names	Short names
CERTIFICATION_TYPE	CRTTYP
CHARACTERIZED_CLASS	CHRCL
CHARACTERIZED_OBJECT	CHROBJ
CHARACTERIZED_OBJECT_RELATIONSHIP	CHOBRL
CIRCLE	CIRCLE
CLASS	CLASS
CLASS_SYSTEM	CLS1
CLASS_USAGE_EFFECTIVITY_CONTEXT_ASSIGNMENT	CUECA
CLASSIFICATION_ASSIGNMENT	CLSASS
CLASSIFICATION_ROLE	CLSRL
COLOUR	COLOUR
COLOUR_REPRESENTATION_ITEM	CLRPIT
COLOUR_RGB	CLRRGB
COLOUR_SPECIFICATION	CLRSPC
COMPARISON_EQUAL	CMPEQL
COMPARISON_EXPRESSION	CMPEXP
COMPARISON_GREATER	CMPGRT
COMPARISON_GREATER_EQUAL	CMGREQ
COMPARISON_LESS	CMPLESS
COMPARISON_LESS_EQUAL	CMLSEQ
COMPARISON_NOT_EQUAL	CMNTEQ

Table B.1 (continued)

Entity names	Short names
COMPOSITE_CURVE	CMPCRV
COMPOSITE_CURVE_SEGMENT	CMCRSG
COMPOSITE_TEXT	CMPTXT
COMPOSITE_TEXT_WITH_ASSOCIATED_CURVES	CTWAC
COMPOSITE_TEXT_WITH_BLANKING_BOX	CTWBB
COMPOSITE_TEXT_WITH_EXTENT	CTWE
COMPOUND_REPRESENTATION_ITEM	CMRPIT
CONCAT_EXPRESSION	CNCEXP
CONCEPT_FEATURE_OPERATOR	CNFTOP
CONCEPT_FEATURE_RELATIONSHIP	CNFTRL
CONCEPT_FEATURE_RELATIONSHIP_WITH_CONDITION	CFRWC
CONDITIONAL_CONCEPT_FEATURE	CNCNFT
CONFIGURABLE_ITEM	CNFO
CONFIGURATION_DESIGN	CNFDSG
CONFIGURATION_EFFECTIVITY	CNFEFF
CONFIGURATION_ITEM	CNFITM
CONFIGURED_EFFECTIVITY_ASSIGNMENT	CNEFAS
CONFIGURED_EFFECTIVITY_CONTEXT_ASSIGNMENT	CECA
CONIC	CONIC
CONNECTING_LINE_GROUP	CNLNGR
CONNECTING_LINE_GROUP_ASSIGNMENT	CLGA

Table B.1 (continued)

Entity names	Short names
CONNECTIVITY_DEFINITION	CNNDFN
CONTEXT_DEPENDENT_INVISIBILITY	CNDPIN
CONTEXT_DEPENDENT_OVER_RIDING_STYLED_ITEM	CDORSI
CONTEXT_DEPENDENT_UNIT	CNDPUN
CONTRACT	CNTRCT
CONTRACT_ASSIGNMENT	CNTASS
CONTRACT_TYPE	CNTTYP
CONVERSION_BASED_UNIT	CNBSUN
COORDINATED_UNIVERSAL_TIME_OFFSET	CUTO
COS_FUNCTION	CSFNC
CURVE	CURVE
CURVE_DIMENSION	CRVDMN
CURVE_STYLE	CRVSTY
CURVE_STYLE_FONT	CRSTFN
CURVE_STYLE_FONT_PATTERN	CSFP
CURVE_STYLE_WITH_ENDS_AND_CORNERS	CSWEAC
DATE	DATE
DATE_AND_TIME	DTANTM
DATE_AND_TIME_ASSIGNMENT	DATA
DATE_ASSIGNMENT	DTASS
DATE_ROLE	DTRL

Table B.1 (continued)

Entity names	Short names
DATE_TIME_ROLE	DTTMRL
DATED_EFFECTIVITY	DTDEFF
DATUM_FEATURE_CALLOUT	DTFTCL
DATUM_TARGET_CALLOUT	DTTRCL
DEFINED_CHARACTER_GLYPH	DFCHGL
DEFINED_SYMBOL	DFNSYM
DERIVED_UNIT	DRVUNT
DERIVED_UNIT_ELEMENT	DRUNEL
DERIVED_UNIT_VARIABLE	DRUNVR
DESCRIPTION_ATTRIBUTE	DSCATT
DESCRIPTIVE_REPRESENTATION_ITEM	DSRPIT
DIAMETER_DIMENSION	DMTDMN
DIMENSION_CALLOUT_COMPONENT_RELATIONSHIP	DCCR
DIMENSION_CALLOUT_RELATIONSHIP	DMCLRL
DIMENSION_CURVE	DMNCRV
DIMENSION_CURVE_DIRECTED_CALLOUT	DCDC
DIMENSION_CURVE_TERMINATOR	DMCRTR
DIMENSION_PAIR	DMNPR
DIMENSIONAL_EXPONENTS	DMNEXP
DIRECTED_ACTION	DRCACT
DIRECTION	DRCTN

Table B.1 (continued)

Entity names	Short names
DIV_EXPRESSION	DVEXP
DOCUMENT	DCMNT
DOCUMENT_DESIGNATION_ASSIGNMENT	DCDSAS
DOCUMENT_FILE	DCMFL
DOCUMENT_PRODUCT_ASSOCIATION	DCP1
DOCUMENT_PRODUCT_EQUIVALENCE	DCPREQ
DOCUMENT_REFERENCE	DCMRFR
DOCUMENT_RELATIONSHIP	DCMRLT
DOCUMENT_REPRESENTATION_TYPE	DCRPTY
DOCUMENT_TYPE	DCMTYP
DOCUMENT_USAGE_CONSTRAINT	DCUSCN
DOCUMENT_USAGE_CONSTRAINT_ASSIGNMENT	DUCA
DOCUMENT_USAGE_ROLE	DCUSRL
DRAUGHTING_ANNOTATION_OCCURRENCE	DRANOC
DRAUGHTING_CALLOUT	DRGCLL
DRAUGHTING_CALLOUT_RELATIONSHIP	DRCLRL
DRAUGHTING_ELEMENTS	DRGELM
DRAUGHTING_GROUP_ELEMENTS_ASSIGNMENT	DGEA
DRAUGHTING_MODEL	DRGMDL
DRAUGHTING_PRE_DEFINED_COLOUR	DPDC
DRAUGHTING_PRE_DEFINED_CURVE_FONT	DPDCF

Table B.1 (continued)

Entity names	Short names
DRAUGHTING_PRE_DEFINED_TEXT_FONT	DPDTF
DRAUGHTING_PRESENTED_ITEM	DRPRIT
DRAUGHTING_SPECIFICATION_REFERENCE	DRSPRF
DRAUGHTING_SUBFIGURE_REPRESENTATION	DRSBRP
DRAUGHTING_SYMBOL_REPRESENTATION	DRSYRP
DRAUGHTING_TEXT_LITERAL_WITH_DELINEATION	DTLWD
DRAUGHTING_TITLE	DRGTTL
DRAWING_DEFINITION	DRWDFN
DRAWING_REVISION	DRWRVS
DRAWING_REVISION_SEQUENCE	DRRVSQ
DRAWING_SHEET_LAYOUT	DRSHLY
DRAWING_SHEET_REVISION	DRSHRV
DRAWING_SHEET_REVISION_USAGE	DSRU
EDGE	EDGE
EDGE_CURVE	EDGCRV
EFFECTIVITY	EFFCTV
EFFECTIVITY_ASSIGNMENT	EFFASS
EFFECTIVITY_CONTEXT_ASSIGNMENT	EFC0
EFFECTIVITY_CONTEXT_ROLE	EFCNRL
EFFECTIVITY_RELATIONSHIP	EFFRL
ELECTRIC_CURRENT_MEASURE_WITH_UNIT	ECMWU

Table B.1 (continued)

Entity names	Short names
ELECTRIC_CURRENT_UNIT	ELCRUN
ELLIPSE	ELLPS
ENVIRONMENT	ENVRNM
EQUALS_EXPRESSION	EQLEXP
EQUIPMENT_MARKING	EQPMRK
EVENT_OCCURRENCE	EVNOCC
EVENT_OCCURRENCE_ASSIGNMENT	EVOCAS
EVENT_OCCURRENCE_CONTEXT_ASSIGNMENT	EOCA
EVENT_OCCURRENCE_CONTEXT_ROLE	EOCR
EVENT_OCCURRENCE_ROLE	EVOCR
EXCLUSIVE_PRODUCT_CONCEPT_FEATURE_CATEGORY	EPCFC
EXECUTED_ACTION	EXCACT
EXP_FUNCTION	EXPFNC
EXPRESSION	EXPRSS
EXPRESSION_CONVERSION_BASED_UNIT	ECBU
EXTERNAL_IDENTIFICATION_ASSIGNMENT	EXIDAS
EXTERNAL_SOURCE	EXTSRC
EXTERNALLY_DEFINED_CHARACTER_GLYPH	EDCG
EXTERNALLY_DEFINED_CLASS	EXD0
EXTERNALLY_DEFINED_CURVE_FONT	EDCF
EXTERNALLY_DEFINED_GENERAL_PROPERTY	EDGP

Table B.1 (continued)

Entity names	Short names
EXTERNALLY_DEFINED_HATCH_STYLE	EDHS
EXTERNALLY_DEFINED_ITEM	EXDFIT
EXTERNALLY_DEFINED_ITEM_RELATIONSHIP	EDIR
EXTERNALLY_DEFINED_SYMBOL	EXDFSY
EXTERNALLY_DEFINED_TEXT_FONT	EDTF
EXTERNALLY_DEFINED_TILE_STYLE	EDTS
FILL_AREA_STYLE	FLARST
FILL_AREA_STYLE_COLOUR	FASC
FILL_AREA_STYLE_HATCHING	FASH
FILL_AREA_STYLE_TILE_SYMBOL_WITH_STYLE	FASTSW
FILL_AREA_STYLE_TILES	FAST
FORMAT_FUNCTION	FRMFNC
FOUNDED_ITEM	FNDITM
FREE_SEGMENT	FRSGM
FUNCTIONALLY_DEFINED_TRANSFORMATION	FNDFTR
GENERAL_PROPERTY	GNRPRP
GENERAL_PROPERTY_ASSOCIATION	GNPRAS
GENERAL_PROPERTY_RELATIONSHIP	GNPRRL
GENERIC_EXPRESSION	GNREXP
GENERIC_LITERAL	GNRLTR
GENERIC_VARIABLE	GNRVRB

Table B.1 (continued)

Entity names	Short names
GEOMETRIC_REPRESENTATION_CONTEXT	GMRPCN
GEOMETRIC_REPRESENTATION_ITEM	GMRPIT
GEOMETRICAL_TOLERANCE_CALLOUT	GMTLCL
GLOBAL_UNCERTAINTY_ASSIGNED_CONTEXT	GC
GLOBAL_UNIT_ASSIGNED_CONTEXT	GUAC
GROUP	GROUP
GROUP_ASSIGNMENT	GRPASS
GROUP_RELATIONSHIP	GRPRLT
HYPERBOLA	HYPRBL
ID_ATTRIBUTE	IDATTR
IDENTIFICATION_ASSIGNMENT	IDNASS
IDENTIFICATION_ASSIGNMENT_RELATIONSHIP	IDASRL
IDENTIFICATION_ROLE	IDNRL
INCLUSION_PRODUCT_CONCEPT_FEATURE	IPCF
INDEX_EXPRESSION	INDEXP
INSTALLATION_LOCATION	INSLCT
INSTALLATION_NODE	INSND
INSTALLATION_ROUTE	INSRT
INSTALLATION_SECTION	INSSCT
INSTALLATION_SECTION_END	INSCEN
INSTALLATION_SECTION_INTERFACE	INSCIN

Table B.1 (continued)

Entity names	Short names
INSTALLATION_SEGMENT	INSSGM
INT_LITERAL	INTLTR
INT_NUMERIC_VARIABLE	INNMVR
INT_VALUE_FUNCTION	INVLFN
INTERFACE	INTRFC
INTERVAL_EXPRESSION	INTEXP
INVISIBILITY	INVSBL
ITEM_DEFINED_TRANSFORMATION	ITDFTR
ITEM_DESIGNATION_ASSIGNMENT	ITDSAS
KNOWN_SOURCE	KNWSRC
LANGUAGE	LNGG
LANGUAGE_ASSIGNMENT	LNGASS
LEADER_CURVE	LDRCRV
LEADER_DIRECTED_CALLOUT	LDDRCL
LEADER_DIRECTED_DIMENSION	LDDRDM
LEADER_TERMINATOR	LDRTRM
LENGTH_FUNCTION	LNGFNC
LENGTH_MEASURE_WITH_UNIT	LMWU
LENGTH_UNIT	LNGUNT
LIKE_EXPRESSION	LKEXPR
LINE	LINE

Table B.1 (continued)

Entity names	Short names
LINEAR_DIMENSION	LNRDMN
LITERAL_NUMBER	LTRNMB
LOCAL_TIME	LCLTM
LOG_FUNCTION	LGFNC
LOG10_FUNCTION	LG1FNC
LOG2_FUNCTION	LG2FNC
LOT_EFFECTIVITY	LTEFF
LUMINOUS_INTENSITY_MEASURE_WITH_UNIT	LIMWU
LUMINOUS_INTENSITY_UNIT	LMINUN
MAPPED_ITEM	MPPITM
MASS_MEASURE_WITH_UNIT	MMWU
MASS_UNIT	MSSUNT
MAXIMUM_FUNCTION	MXMFNC
MEASURE_REPRESENTATION_ITEM	MSRPIT
MEASURE_WITH_UNIT	MSWTUN
MINIMUM_FUNCTION	MNMFNC
MINUS_EXPRESSION	MNSEXP
MINUS_FUNCTION	MNSFNC
MOD_EXPRESSION	MDEXP
MULT_EXPRESSION	MLTEXP
MULTI_LANGUAGE_ATTRIBUTE_ASSIGNMENT	MLAA

Table B.1 (continued)

Entity names	Short names
MULTIPLE_ARITY_BOOLEAN_EXPRESSION	MABE
MULTIPLE_ARITY_FUNCTION_CALL	MAFC
MULTIPLE_ARITY_GENERIC_EXPRESSION	MAGE
MULTIPLE_ARITY_NUMERIC_EXPRESSION	MANE
NAME_ATTRIBUTE	NMATT
NAMED_UNIT	NMDUNT
NAMED_UNIT_VARIABLE	NMUNVR
NEXT_ASSEMBLY_USAGE_OCCURRENCE	NAUO
NOT_EXPRESSION	NTEXP
NOTE_REPRESENTATION	NTRPR
NOTIFICATION	NTFCTN
NUMERIC_EXPRESSION	NMREXP
NUMERIC_VARIABLE	NMRVRB
OBJECT_REFERENCE_DESIGNATION_ASSIGNMENT	ORDA
OBJECT_ROLE	OBJRL
ODD_FUNCTION	ODDFNC
ONE_DIRECTION_REPEAT_FACTOR	ODRF
OR_EXPRESSION	OREXP
ORDINATE_DIMENSION	ORDDMN
ORGANIZATION	ORGZT
ORGANIZATION_ASSIGNMENT	ORGASS

Table B.1 (continued)

Entity names	Short names
ORGANIZATION_RELATIONSHIP	ORGRLT
ORGANIZATION_ROLE	ORGRL
ORGANIZATIONAL_ADDRESS	ORGADD
ORGANIZATIONAL_PROJECT	ORGPRJ
ORGANIZATIONAL_PROJECT_ASSIGNMENT	ORPRAS
ORGANIZATIONAL_PROJECT_RELATIONSHIP	ORP0
ORGANIZATIONAL_PROJECT_ROLE	ORPRRL
ORIENTED_EDGE	ORNEDG
OVER_RIDING_STYLED_ITEM	ORSI
PACKAGE_PRODUCT_CONCEPT_FEATURE	PPCF
PAGE_CONNECTOR_GROUP	PGCNGR
PAGE_CONNECTOR_PRESENTATION_GROUP	PCPG
PAGE_CONNECTOR_REFERENCE_GROUP	PCRG
PAGE_CONNECTOR_REFERENCE_GROUP_ASSIGNMENT	PCRGA
PARABOLA	PRBL
PATH	PATH
PERSON	PERSON
PERSON_AND_ORGANIZATION	PRANOR
PERSON_AND_ORGANIZATION_ADDRESS	PAO0
PERSON_AND_ORGANIZATION_ASSIGNMENT	PAOA
PERSON_AND_ORGANIZATION_ROLE	PAOR

Table B.1 (continued)

Entity names	Short names
PERSONAL_ADDRESS	PRSADD
PHYSICALLY_MODELLED_PRODUCT_DEFINITION	PMPD
PLACEMENT	PLCMNT
PLANAR_BOX	PLNBX
PLANAR_EXTENT	PLNEXT
PLANE_ANGLE_MEASURE_WITH_UNIT	PAMWU
PLANE_ANGLE_UNIT	PLANUN
PLUS_EXPRESSION	PLSEXP
POINT	POINT
POLYLINE	PLYLN
POWER_EXPRESSION	PWREXP
PRE_DEFINED_COLOUR	PRDFCL
PRE_DEFINED_CURVE_FONT	PDCF
PRE_DEFINED_DIMENSION_SYMBOL	PDDS
PRE_DEFINED_GEOMETRICAL_TOLERANCE_SYMBOL	PDGTS
PRE_DEFINED_ITEM	PRDFIT
PRE_DEFINED_POINT_MARKER_SYMBOL	PDPMS
PRE_DEFINED_SYMBOL	PRDFSY
PRE_DEFINED_TERMINATOR_SYMBOL	PDT
PRE_DEFINED_TEXT_FONT	PDTF
PRECISION_QUALIFIER	PRCQLF

Table B.1 (continued)

Entity names	Short names
PREDEFINED_CONNECTIVITY_DEFINITION	PDCNDF
PRESENTATION_AREA	PRSAR
PRESENTATION_LAYER_ASSIGNMENT	PRLYAS
PRESENTATION_REPRESENTATION	PRSRPR
PRESENTATION_SET	PRSST
PRESENTATION_SIZE	PRSSZ
PRESENTATION_STYLE_ASSIGNMENT	PRSTAS
PRESENTATION_STYLE_BY_CONTEXT	PSBC
PRESENTATION_VIEW	PRSVW
PRESENTATION_WITH_ASSOCIATION	PRWA
PRESENTED_ITEM	PRSITM
PRESENTED_ITEM_REPRESENTATION	PRITRP
PRESENTED_ITEM_WITH_ASSOCIATION	PIWA
PROCESS_VARIABLE	PRCVRB
PRODUCT	PRDCT
PRODUCT_CATEGORY	PRDCTG
PRODUCT_CATEGORY_RELATIONSHIP	PRCTRL
PRODUCT_CLASS	PRDCLS
PRODUCT_CONCEPT	PRDCNC
PRODUCT_CONCEPT_CONTEXT	PRCNCN
PRODUCT_CONCEPT_FEATURE	PRCNFT

Table B.1 (continued)

Entity names	Short names
PRODUCT_CONCEPT_FEATURE_ASSOCIATION	PCFA
PRODUCT_CONCEPT_FEATURE_CATEGORY	PCF0
PRODUCT_CONCEPT_FEATURE_CATEGORY_USAGE	PCFCU
PRODUCT_CONCEPT_RELATIONSHIP	PRCNRL
PRODUCT_CONTEXT	PRDCNT
PRODUCT_DEFINITION	PRDDFN
PRODUCT_DEFINITION_CONTEXT	PRDFCN
PRODUCT_DEFINITION_CONTEXT_ASSOCIATION	PDCA
PRODUCT_DEFINITION_CONTEXT_ROLE	PDCR
PRODUCT_DEFINITION_EFFECTIVITY	PRDFEF
PRODUCT_DEFINITION_FORMATION	PRDFFR
PRODUCT_DEFINITION_FORMATION_RELATIONSHIP	PDFR
PRODUCT_DEFINITION_FORMATION_WITH_SPECIFIED_SOURCE	PDFWSS
PRODUCT_DEFINITION_OCCURRENCE_RELATIONSHIP	PDOR
PRODUCT_DEFINITION_RELATIONSHIP	PDDFRL
PRODUCT_DEFINITION_SHAPE	PRDFSH
PRODUCT_DEFINITION_SUBSTITUTE	PRDFSB
PRODUCT_DEFINITION_USAGE	PRDFUS
PRODUCT_DEFINITION_WITH_ASSOCIATED_DOCUMENTS	PDWAD
PRODUCT_IDENTIFICATION	PRDIDN
PRODUCT_RELATED_PRODUCT_CATEGORY	PRPC

Table B.1 (continued)

Entity names	Short names
PRODUCT_SPECIFICATION	PRDSPC
PROJECTION_CURVE	PRJCRV
PROJECTION_DIRECTED_CALLOUT	PRDRCL
PROMISSORY_USAGE_OCCURRENCE	PRUSOC
PROPERTY_DEFINITION	PRPDFN
PROPERTY_DEFINITION_RELATIONSHIP	PRDFR
PROPERTY_DEFINITION_REPRESENTATION	PRDFRP
QUALIFIED_REPRESENTATION_ITEM	QLRPIT
QUANTIFIED_ASSEMBLY_COMPONENT_USAGE	QACU
QUASI_UNIFORM_CURVE	QSUNCR
RADIUS_DIMENSION	RDSDMN
RATIO_MEASURE_WITH_UNIT	RMWU
RATIO_UNIT	RTUNT
RATIONAL_B_SPLINE_CURVE	RBSC
REAL_LITERAL	RLLTR
REAL_NUMERIC_VARIABLE	RLNMVR
REFERENCE_GRID_LAYOUT	RFGRLY
REFERENCE_GRID_REPRESENTATION	RFGRRP
RELATIVE_EVENT_OCCURRENCE	RLEVOC
REPRESENTATION	RPRSNT
REPRESENTATION_CONTEXT	RPRCNT

Table B.1 (continued)

Entity names	Short names
REPRESENTATION_ITEM	RPRITM
REPRESENTATION_ITEM_RELATIONSHIP	RPITRL
REPRESENTATION_MAP	RPRMP
REPRESENTATION_RELATIONSHIP	RPRRLT
REPRESENTATION_RELATIONSHIP_WITH_TRANSFORMATION	RRWT
RETENTION	RTNTN
ROLE_ASSOCIATION	RLASS
ROUTED_SEGMENT	RTDSGM
SECURITY_CLASSIFICATION	SCRCLS
SECURITY_CLASSIFICATION_ASSIGNMENT	SCCLAS
SECURITY_CLASSIFICATION_LEVEL	SCCLLV
SERIAL_NUMBERED_EFFECTIVITY	SRNMEF
SHAPE_ASPECT	SHPASP
SHAPE_ASPECT_RELATIONSHIP	SHASRL
SHAPE_DEFINITION_REPRESENTATION	SHDFRP
SHAPE_REPRESENTATION	SHPRPR
SHAPE_REPRESENTATION_RELATIONSHIP	SHRPRL
SI_UNIT	SUNT
SIGNAL	SIGNAL
SIGNAL_DESIGNATION_ASSIGNMENT	SGDSAS
SIMPLE_BOOLEAN_EXPRESSION	SMBLEX

Table B.1 (continued)

Entity names	Short names
SIMPLE_GENERIC_EXPRESSION	SMGNEX
SIMPLE_NUMERIC_EXPRESSION	SMNMEX
SIMPLE_STRING_EXPRESSION	SMSTEX
SIN_FUNCTION	SNFNC
SLASH_EXPRESSION	SLSEXP
SOLID_ANGLE_MEASURE_WITH_UNIT	SAMWU
SOLID_ANGLE_UNIT	SLANUN
SPECIFIED_HIGHER_USAGE_OCCURRENCE	SHUO
SQUARE_ROOT_FUNCTION	SQRTFN
STRING_EXPRESSION	STREXP
STRING_LITERAL	STRLTR
STRING_VARIABLE	STRVRB
STRUCTURED_DIMENSION_CALLOUT	STDMCL
STYLED_ITEM	STYITM
SUBSTRING_EXPRESSION	SBSEXP
SYMBOL_COLOUR	SYMCLR
SYMBOL_REPRESENTATION	SYMRPR
SYMBOL_REPRESENTATION_MAP	SYRPMP
SYMBOL_STYLE	SYMSTY
SYMBOL_TARGET	SYMTRG
TAN_FUNCTION	TNFNC

Table B.1 (continued)

Entity names	Short names
TERMINAL	TRMNL
TERMINAL_BUNDLE	TRMBDL
TERMINAL_DESIGNATION_ASSIGNMENT	TRDSAS
TERMINATOR_SYMBOL	TRMSYM
TEXT_LITERAL	TXTLTR
TEXT_LITERAL_WITH_ASSOCIATED_CURVES	TLWAC
TEXT_LITERAL_WITH_BLANKING_BOX	TLWBB
TEXT_LITERAL_WITH_DELINEATION	TLWD
TEXT_LITERAL_WITH_EXTENT	TLWE
TEXT_STYLE	TXTSTY
TEXT_STYLE_FOR_DEFINED_FONT	TSFDF
TEXT_STYLE_WITH_BOX_CHARACTERISTICS	TSWBC
TEXT_STYLE_WITH_MIRROR	TSWM
TEXT_STYLE_WITH_SPACING	TSWS
THERMODYNAMIC_TEMPERATURE_MEASURE_WITH_UNIT	TTMWU
THERMODYNAMIC_TEMPERATURE_UNIT	THTMUN
TIME_INTERVAL	TMINT
TIME_INTERVAL_ASSIGNMENT	TMINAS
TIME_INTERVAL_BASED_EFFECTIVITY	TIBE
TIME_INTERVAL_ROLE	TMINRL
TIME_INTERVAL_WITH_BOUNDS	TIWB

Table B.1 (continued)

Entity names	Short names
TIME_MEASURE_WITH_UNIT	TMW
TIME_UNIT	TMUNT
TOPOLOGICAL_REPRESENTATION_ITEM	TPRPIT
TRIMMED_CURVE	TRMCRV
TWO_DIRECTION_REPEAT_FACTOR	TDRF
TYPE_QUALIFIER	TYPQLF
UNARY_BOOLEAN_EXPRESSION	UNBLEX
UNARY_FUNCTION_CALL	UNFNCL
UNARY_GENERIC_EXPRESSION	UNGNEX
UNARY_NUMERIC_EXPRESSION	UNNMEX
UNCERTAINTY_MEASURE_WITH_UNIT	UMWU
UNIFORM_CURVE	UNFCRV
VALUE_FUNCTION	VLFNC

Table B.1 (concluded)

Entity names	Short names
VALUE_RANGE	VLRNG
VALUE_REPRESENTATION_ITEM	VLRPIT
VARIABLE	VRBL
VARIABLE_SEMANTICS	VRSMS
VECTOR	VECTOR
VERSIONED_ACTION_REQUEST	VRACRQ
VERTEX	VERTEX
VERTEX_POINT	VTXPNT
VOLUME_MEASURE_WITH_UNIT	VMWU
VOLUME_UNIT	VLMUNT
XOR_EXPRESSION	XREXP

Annex C

(normative)

Implementation method specific requirements

The implementation method defines what types of exchange behaviour are required with respect to this part of ISO 10303. Conformance to this part of ISO 10303 shall be realized in an exchange structure. The file format shall be encoded according to the syntax and EXPRESS language mapping defined in ISO 10303-21 and in the AIM defined in annex A of this part of ISO 10303. The header of the exchange structure shall identify use of this part of ISO 10303 by the schema name 'electrotechnical_design_and_installation'.

Annex D

(normative)

Protocol Implementation Conformance Statement (PICS) proforma

This clause lists the optional elements of this part of ISO 10303. An implementation may choose to support any combination of these optional elements. However, certain combinations of options are likely to be implemented together. These combinations are called conformance classes and are described in the subclauses of this annex.

This annex is in the form of a questionnaire. This questionnaire is intended to be filled out by the implementor and may be used in preparation for conformance testing by a testing laboratory. The completed PICS proforma is referred to as a PICS.

NOTE The framework for conformance testing is given in ISO 10303-31 (Conformance testing methodology and framework: General concepts) and ISO 103303-32 (Conformance testing methodology and framework: Requirements on testing laboratories and clients). Refer to Clause 6 of this part of ISO 10303 for the conformance requirements. Refer to ISO 10303-312¹ (Abstract test suite: Electrotechnical design and installation) for the test purposes and test cases relevant for the conformance testing of an ISO 10303-212 implementation.

A number of options are identified in this standard for possible use by conforming implementations. Some of these options may be dynamically (run-time) selected for use or non-use, for instance, OPTIONAL attributes of an entity. Others shall be statically (configuration-time) selected for use or non-use, such as a particular style of geometry as defined in a conformance class.

Questions:

For simplicity of reference, an identifier for the product or system with which the tested STEP implementation is packaged in or procured by is required.

1. Product or system identifier (or name): _____

A conforming implementation shall support at least one conformance class. Fifteen conformance classes are identified in this part of ISO 10303. Each class specifies a subset of ISO/IEC 10303-212 AIM constructs. These classes are identified in clause 6 of this part of ISO 10303.

2. Please indicate the classes for which conformance is claimed:

- Class 1: Design_physical_characterization
- Class 2: Design_characterization
- Class 3: Spatial_arrangement
- Class 4: Design_characterization_and_spatial_arrangement
- Class 5: Spatial_arrangement_and_configuration_data

¹ To be published.

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- Class 6: Documented_design_characterization
- Class 7: Documented_item_characterization
- Class 8: Complete_system_characterization
- Class 9: Product_structure_and_work_management_data
- Class 10: Design_structure_and_work_management_data
- Class 11: Location_information_and_work_management_data
- Class 12: Design_structure_and_configuration_data
- Class 13: Item_structure_and_configuration_data
- Class 14: Documented_design_structure_and_configuration_data
- Class 15: Documented_item_structure_and_configuration_data

Conformance to this part of ISO 10303 may be realized in one or more of several different implementation methods. The implementation methods define what types of implementation behaviour are required with respect to this part of ISO 10303.

3. Please indicate the claimed implementation forms:

- Implementation methods: Clear text encoding of the exchange structure (ISO 10303-21)
- Implementation methods: Standard data access interface specification (ISO 10303-22)

If the implementation receives data that do not comply with the requirements in this part of ISO 10303 for the selected conformance class(es), or with the requirements of the 20's series of parts of ISO 10303 for the selected implementation method, it shall execute a default response. A default response shall be statically set.

4. Default response: _____

A conforming implementation shall maintain the static options selected throughout subsequent dynamic assessment (testing) without required modification. In a user environment, a conforming implementation shall permanently maintain the provision of selected static options, or it shall provide users discretionary control over the changing and setting of the static options, or both (depending on the option).

5. Does the implementation under test (IUT) provide any user discretion over the changing and setting of the static options ?

Yes or No: _____

6. If yes, which ones ?

a) Conformance class(es): _____

b) Default response: _____

A statement of conformance shall include identification of at least one party deeming conformance for the implementation.

7. Evaluator(s) (tester or certifier or accreditor): _____

Annex E

(normative)

Information object registration

E.1 Document identification

In order to provide for unambiguous identification of an information object in an open system, the object identifier

{ iso standard 10303 part(212) version(0) }

is assigned to this part of ISO 10303. The meaning of this value is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

E.2 Schema identification

To provide for unambiguous identification of the schema specifications given in this application protocol Electrotechnical-design schema in an open information system, object identifiers are assigned as follows:

{ iso standard 10303 part(212) version(0) object(1) electrotechnical-design-schema }

is assigned to the Electrotechnical-design schema expanded schema (see annex A).

The meaning of these values is defined in ISO/IEC 8824-1, and is described in ISO 10303-1.

Annex F

(informative)

Application activity model

The application activity model (AAM) is provided as an aid to understanding the scope and information requirements defined in this application protocol. The model is presented as a set of figures that contain the activity diagrams and a set of definitions of the activities and their data. The application activity model is given in Figures F.1 through F.7. Activities and data flows that are out of scope are marked with an asterisk.

The viewpoint of the application activity model is that of the supplier of an electrotechnical system who has the responsibility of designing, implementing, and delivering an electrotechnical system. For the purpose of this part of ISO 10303 it is irrelevant whether or not the associated activities are performed by the supplier of the system himself or by subcontractors.

F.1 Application activity model definitions and abbreviations

The following terms are used in the application activity model. Terms marked with an asterisk are outside the scope of this application protocol.

The definitions given in this annex do not supersede the definitions given in the main body of the text.

F.1.1 Available components: the components that are available to be used in the electrotechnical industrial system.

EXAMPLE Due to delivery failures particular components cannot be used to implement a design at a given point in time. Those components are not part of the available components list.

NOTE See Figure F.6 for the context.

F.1.2 Budgets *: framework of estimated expenses with respect to time, finance, material, and labour.

NOTE See Figures F.2, F.3, and F.4 for the context.

F.1.3 Change request: any formal or informal request to modify an existing design or concept.

NOTE See Figures F.2, F.4, F.5, F.6, and F.7 for the context.

F.1.4 Components: parts or pieces of equipment used in the electrotechnical system.

NOTE See Figures F.1, F.2, and F.6 for the context.

F.1.5 Component test reports: Documents or data verifying tested characteristics of a component.

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NOTE 1 In many cases the test reports are produced by using specific testing or simulation systems. Even though test and simulation is out of scope of this part of ISO 10303 the test reports may be referenced by using the concepts of the external_reference UoF.

NOTE 2 See Figure F.6 for the context.

F.1.6 Conduct inquiry (AAM A11): the activities taken to investigate whether a vendor offers electrotechnical systems that meet the requirements of the customer.

NOTE See Figure F.3 for the context.

F.1.7 Contract: an agreement between two or more parties, intended to be enforceable by law.

NOTE See Figures F.2, F.3, and F.4 for the context.

F.1.8 Contracted list of requirements: list of requirements as laid down in the contract.

NOTE See Figures F.2, F.3, and F.4 for the context.

F.1.9 Contracted system: an electrotechnical system that represents the technical content of the contract.

NOTE See Figures F.2, F.3, and F.4 for the context.

F.1.10 Customer requirements: needs, specifications, or demands concerning design, operation, or any other aspect of the electrotechnical system as laid down by the customer.

NOTE See Figures F.1, F.2, and F.3 for the context.

F.1.11 Design requirements: the specific requirements the design must fulfill. These requirements are refinements of the more general contract requirements.

NOTE See Figure F.5 for the context.

F.1.12 Design system (AAM A31): the activities to develop a detailed design of the system based on the results of the conceptual design activities.

NOTE 1 This activity comprises all sub-activities needed to specify how a system needs to be implemented to meet the requirements laid down in the system's specification.

NOTE 2 See Figure F.5 for the context.

F.1.13 Detailed list of requirements: a document containing the complete set of requirements the electrotechnical system has to fulfill.

NOTE 1 This set of requirements includes the contracted list of requirements as a subset. This document does not reflect on the realization of those requirements.

NOTE 2 See Figure F.4 for the context.

F.1.14 Develop conceptual design (AAM A2): the sub-activities associated with transforming a customer's requirement or request from ideas to a conceptual design.

NOTE See Figure F.2 for the context.

F.1.15 Develop specification (AAM A24): the sub-activities associated with the process of making a specification.

NOTE See Figure F.4 for the context.

F.1.16 Develop system (AAM A3): the engineering activities that perform the detailed design and the analyses to verify aspects of performance of the design in its intended environment. The activities required to transform the conceptual design into an implementable electrotechnical system are within this activity.

NOTE See Figure F.2 for the context.

F.1.17 Do detailed planning (AAM A21): the sub-activities associated with the process of working out or updating detailed budgets, schedules, workloads and the like.

NOTE See Figure F.4 for the context.

F.1.18 Document system design (AAM A32): the activities needed to describe the specifics of the system.

NOTE See Figure F.5 for the context.

F.1.19 Documentation: documentation subsumes the information and data used to describe any aspect of the system.

NOTE 1 Parts of the documentation will be handed over to the customer as instruction manuals or training material.

NOTE 2 In many cases the documentation is produced by using desktop publishing systems. Even though the data created by those systems can be structured in a way that is not supported by this part of ISO 10303 such data may be referenced by using the concepts of the external_-reference UoF.

EXAMPLE Paper documents, SGML- files, Postscript- files, or mock-ups are examples for documentation.

NOTE 3 See Figure F.1, F.2, and F.5 for the context.

F.1.20 Electrotechnical system as delivered: an electrotechnical system that is in a state where the commissioning and the hand over to the customer has taken place.

NOTE See Figures F.1, F.2, and F.7 for the context.

F.1.21 Engineer electrotechnical system (AAM A0): the sub-activities to design, erect or validate an electrotechnical system.

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NOTE 1 In most cases subcontractors perform some of the related activities. This is due to the current business practice to set up contractual relationships between the organizational units that collaborate in the engineering of a system. This part of ISO 10303 supports the related data regardless whether or not the activity is performed by a subcontractor.

NOTE 2 See Figure F.1 for the context.

F.1.22 Erect system (AAM 42): any actions to be taken to assemble and to put up the equipment using the available components.

NOTE See Figure F.6 for the context.

F.1.23 Explanatory documents: any material or documentation intended to explain the design or technology of the system or any other related matter.

NOTE 1 In many cases explanatory documents are produced by using desktop publishing systems. Even though the data created by those systems may be structured in a way that is not supported by this part of ISO 10303 such data may be referenced by using the concepts of the external_reference UoF.

NOTE 2 See Figure F.3 for the context.

F.1.24 Function describing data: documents or data describing the function of an electrotechnical system or portions thereof, like circuit diagrams, function diagrams, signal lists.

NOTE See Figure F.5 for the context.

F.1.25 Functional overview: documents or data giving an overview about the functional building blocks and their structural breakdown.

NOTE See Figure F.4 for the context.

F.1.26 Guidelines *: principles or criteria guiding or directing the various activities throughout the process of designing the system.

NOTE See Figures F.2 and F.4 for the context.

F.1.27 Identify system (AAM A1): the sub-activities required to identify new electrotechnical systems.

NOTE 1 The activities can be initiated from within the enterprise or as the result of an external customer request or requirement.

NOTE 2 See Figure F.2 for the context.

F.1.28 Implement system (AAM A4): the activities associated with the process of realizing the system's design.

NOTE See Figure F.2 for the context.

F.1.29 Install system (AAM A51): any actions to be taken to achieve the product as installed - milestone.

NOTE 1 In many cases specific settings need to be performed to ensure that the system as a whole meets the functionality and performance requirements of the customer.

NOTE 2 See Figure F.7 for the context.

F.1.30 Instruction manuals: any documents and data used to inform the end-user how to operate or maintain the system.

NOTE 1 In many cases instruction manuals are produced by using desktop publishing systems. Even though the data created by those systems may be structured in a way that is not supported by this part of ISO 10303 such data may be referenced by using the concepts of the external_ -reference UoF.

NOTE 2 See Figure F.5 for the context.

F.1.31 List of allowed components: a list of the parts or products that are allowed to be used in the design of the system.

EXAMPLE Customer requirements or environmental considerations can lead to the exclusion of particular products from the list of allowed components.

NOTE See Figures F.2, F.4, and F.5 for the context.

F.1.32 List of available components: a list of those parts and products that are available for use in the design of the system.

EXAMPLE Due to delivery failures a particular motor was deleted from the list of available components. It was replaced by a substitute.

NOTE 2 See Figure F.5 for the context.

F.1.33 List of requirements: a relatively precise list of features, capabilities and other parameters specifying the desired design of the system.

NOTE See Figure F.3 for the context.

F.1.34 Location describing data: documents or data mainly describing the topographical or geometrical position of electrotechnical systems or portions thereof.

EXAMPLE Assembly drawings describing geometric placement of components and cable routing diagrams providing information about the cableways.

NOTE See Figure F.5 for the context.

F.1.35 Location-on-site data: data providing information about the location of facilities on site.

NOTE See Figures F.1, F.2, and F.5 for the context.

F.1.36 Make contract (AAM A13): the sub-activities that lead to a contractual agreement between customer and vendor of an electrotechnical system.

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NOTE See Figure F.3 for the context.

F.1.37 Make detailed list of requirements (AAM A22): the sub-activities that are associated to the process of detailing the initial list of requirements to work out a binding basis for the subsequent design process.

NOTE See Figure F.4 for the context.

F.1.38 Make offer (AAM A12): the sub-activities associated to the process of making an offer.

NOTE See Figure F.3 for the context.

F.1.39 Management issues *: data about the different activities throughout the completion of the design process of the system.

EXAMPLE Examples include plans and schedules concerning resources, personnel, cost, material, and time.

NOTE See Figures F.2 and F.4 for the context.

F.1.40 Material *: any material used in the process of designing and manufacturing the equipment.

NOTE See Figures F.1, F.2, and F.6 for the context.

F.1.41 Negotiated changes: any modification that is the result of consultations between customer and supplier.

NOTE See Figure F.3 for the context.

F.1.42 Offer *: proposal of the supplier to solve the customers requirements.

NOTE See Figure F.3 for the context.

F.1.43 Offered system: an electrotechnical system that represents the technical content of the offer.

NOTE See Figure F.3 for the context.

F.1.44 Order components from subcontractor (AAM A33): any action to be taken to procure the products required to implement the system.

NOTE See Figure F.5 for the context.

F.1.45 Orders to subcontractors: data about the ordered items and the related contracts.

EXAMPLE Examples include kind of ordered items, number, contractor, or identifier of the assigned contract.

NOTE See Figures F.2, F.5, and F.6 for the context.

F.1.46 Parts list: data on the items that make up the system.

NOTE See Figure F.5 for the context.

F.1.47 People and machines *: any people and machinery used to design or to manufacture the system.

EXAMPLE Examples include workers, engineers, managers, and machine-tools.

NOTE See Figure F.1 for the context.

F.1.48 Product describing data: the documentation or data that characterizes the equipment used in the system.

EXAMPLE The documentation may include information like the assembly hierarchy of products, bill-of-material, spare parts, label lists, assembly and installation instructions.

NOTE See Figure F.5 for the context.

F.1.49 Promotional material *: any material that supports the offer of the supplier and helps to convince the customer to buy the offered equipment.

NOTE See Figure F.3 for the context.

F.1.50 Put system into operation (AAM A5): the activities associated with the start-up and commissioning of the system.

NOTE See Figure F.2 for the context.

F.1.51 Receive ordered components (AAM A41): any actions to be taken to receive and to administer the procured components.

NOTE 1 This activity includes the sub-activities like an incoming inspection or a preparation of the components for their intended use.

NOTE 2 See Figure F.6 for the context.

F.1.52 Refined budgets *: reworked or updated budget information.

NOTE See Figures F.2 and F.4 for the context.

F.1.53 Select equipment from subcontractors (AAM A23): any actions to be taken to choose components, machinery and other apparatus from subcontractors that meet the requirements specified in the detailed list of requirements.

NOTE See Figure F.4 for the context.

F.1.54 Simulate designed system (AAM A34): simulation of a planned or existing electrotechnical system to verify or to improve the design.

NOTE See Figure F.5 for the context.

F.1.55 Specification: any detailed description of the particulars of some projected work together with directions to be followed by the implementor.

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NOTE 1 That includes data like functional description, dimensions or materials to be used. Specifications may contain schematic diagrams, tables or figures.

NOTE 2 See Figures F.2, F.4, and F.5 for the context.

F.1.56 Standards and rules *: any international, national or company standards and rules used during the design process of an electrotechnical system.

NOTE See Figure F.1 for the context.

F.1.57 System as built: the electrotechnical system is in this state when it is actually manufactured or constructed. Any change orders issued since release of the product-as-designed milestone are incorporated.

NOTE See Figures F.2, F.6, and F.7 for the context.

F.1.58 System as designed: the electrotechnical system is in this state when the conceptual design, according to the contractual requirements or according to the specification, is completed. The parts of the electrotechnical system are specified completely.

NOTE See Figures F.2, F.5, and F.6 for the context.

F.1.59 System as installed: the electrotechnical system is in this state when it is in place at the customers site, the process of doing the settings has taken place, and the system meets the requirements of the customer.

NOTE See Figure F.7 for the context.

F.1.60 Test (AAM A43): any actions to be taken to verify the ability of the electrotechnical system, or parts thereof, to satisfy the specified functionality and performance.

NOTE See Figure F.6 for the context.

F.1.61 Test reports: documents or data verifying tested characteristics of an item.

NOTE 1 In many cases test reports are produced by using desktop publishing systems. Even though the data created by those systems may be structured in a way that is not supported by this part of ISO 10303 such data may be referenced by using the concepts of the external_reference UoF.

NOTE 2 See Figures F.2, F.6, and F.7 for the context.

F.1.62 Test system (AAM A52): final inspection of the functionality and performance of the installed system to validate its ability to satisfy the requirements of the customer.

NOTE See Figure F.7 for the context.

F.1.63 Tests *: the data used to determine the ability of the design or its implementation to satisfy particular requirements.

EXAMPLE Examples include abstract test cases or executable test cases.

NOTE See Figures F.2, F.5, F.6, and F.7 for the context.

F.1.64 Training material: any documents and data used to educate the end-user.

NOTE 1 In many cases training material is produced by using desktop publishing systems. Even though the data created by those systems may be structured in a way that is not supported by this part of ISO 10303 such data may be referenced by using the concepts of the external_ -reference UoF.

NOTE 2 See Figure F.5 for the context.

F.2 Application activity model diagrams

The application activity model diagrams are given in Figures F.1 through F.7. The graphical form of the application activity model is presented in the IDEF0 activity modeling format. Activities and data flows that are out of scope are marked with asterisks.

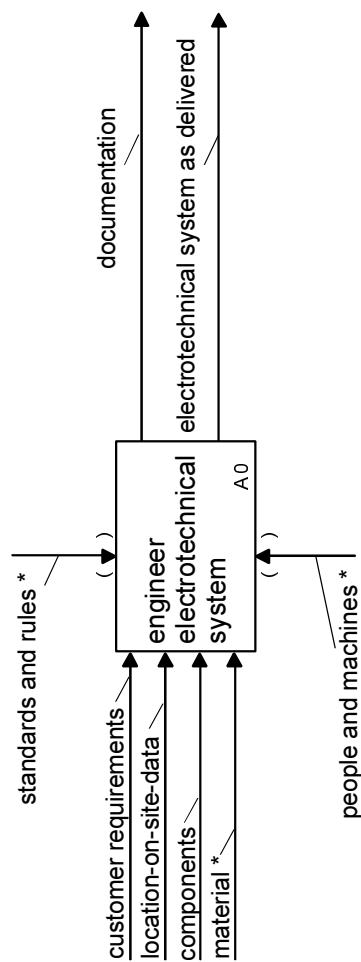


Figure F.1 - AAM diagram of node A-0 : Electrotechnical design and installation

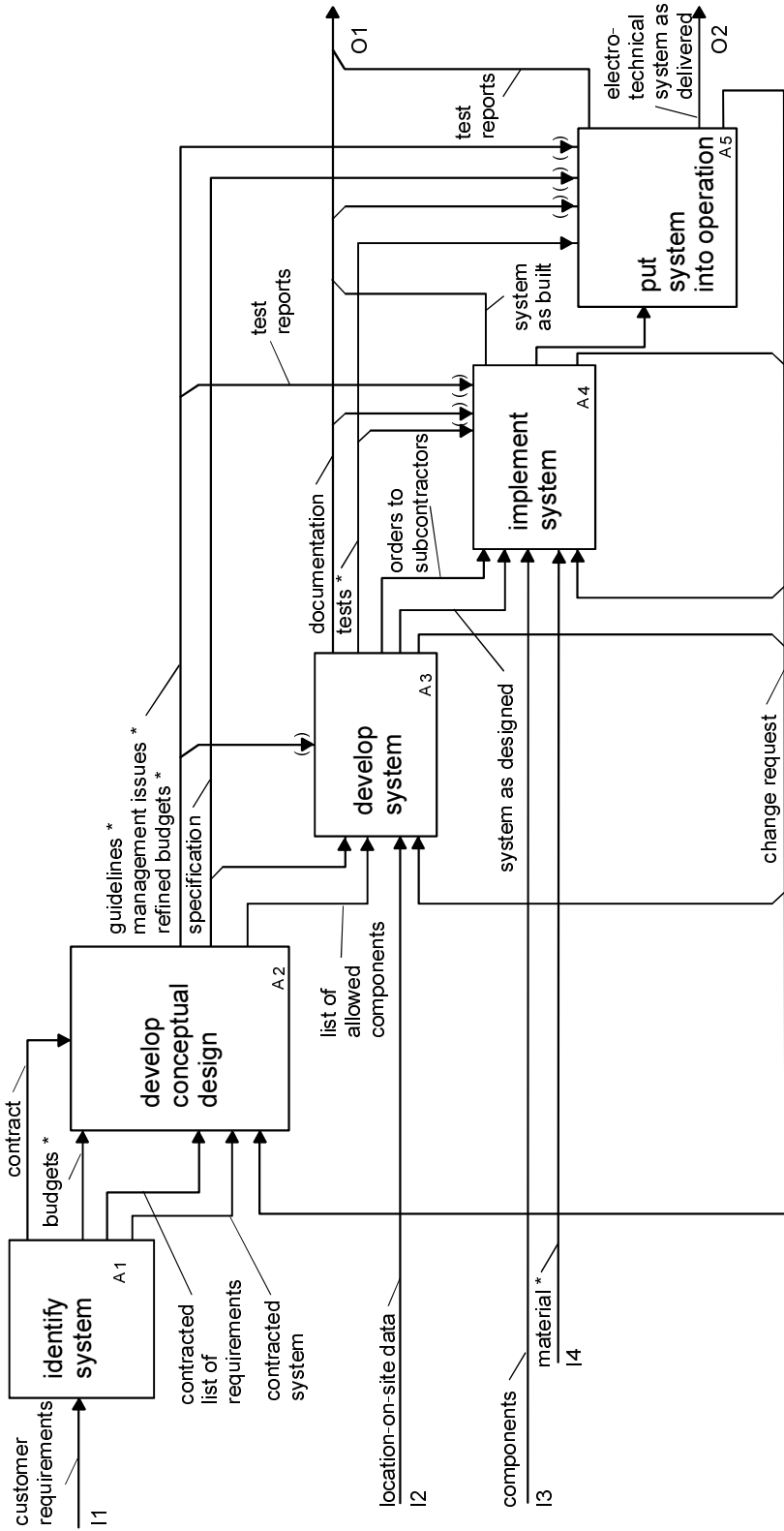


Figure F.2 - AAM diagram of node A0: Engineer electrotechnical system

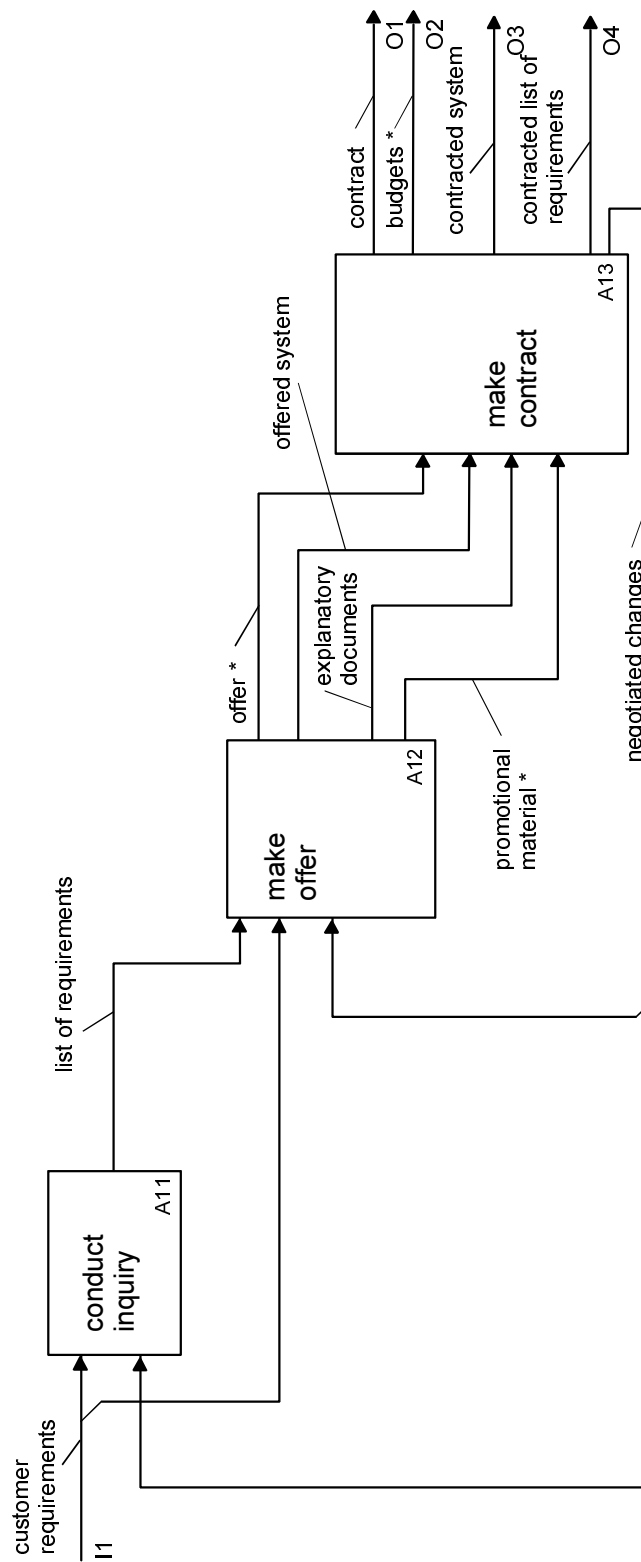


Figure F.3 - AAM diagram of node A1: Identify system

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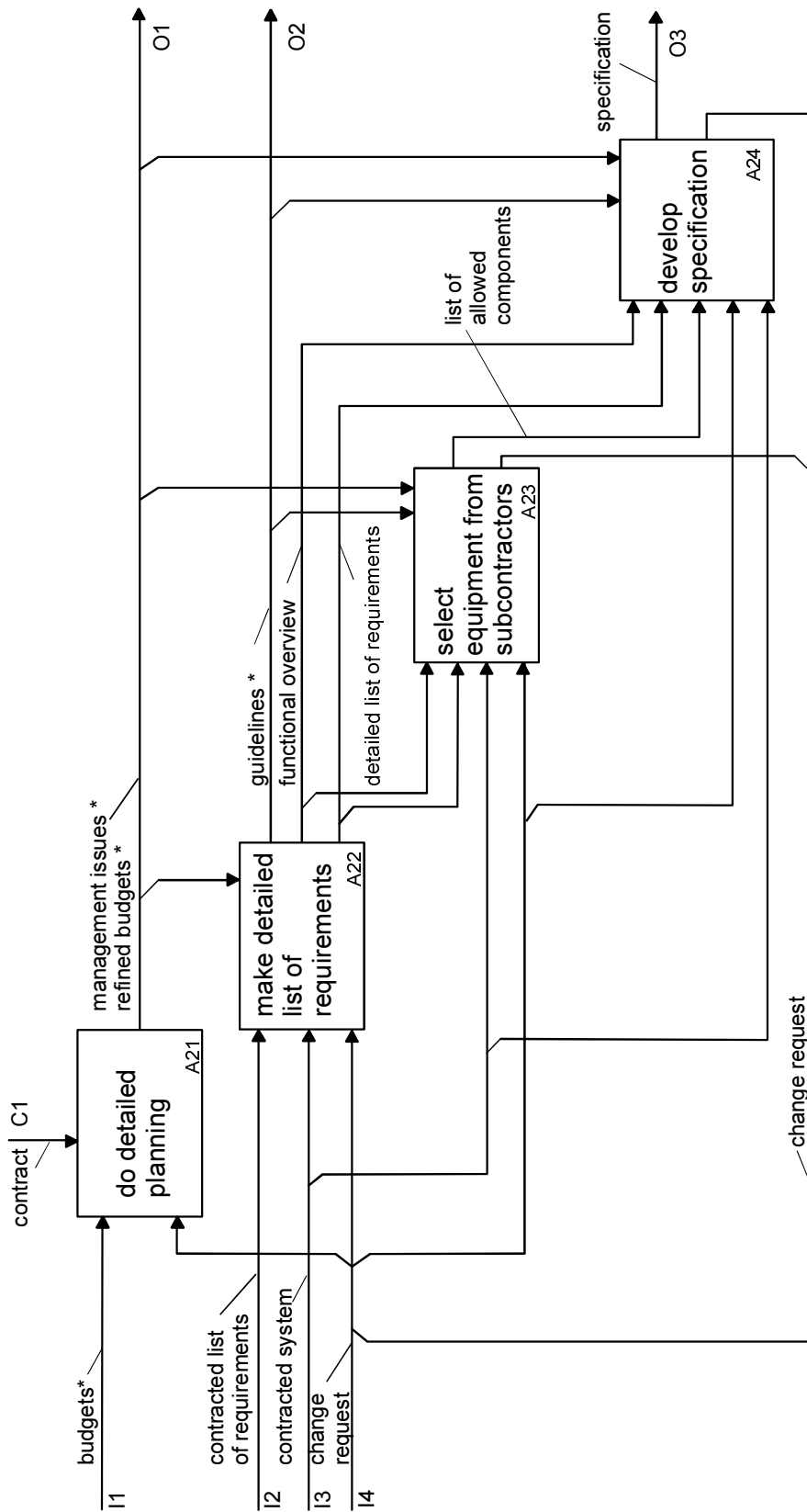


Figure F.4 - AAM diagram of node A2: Develop conceptual design

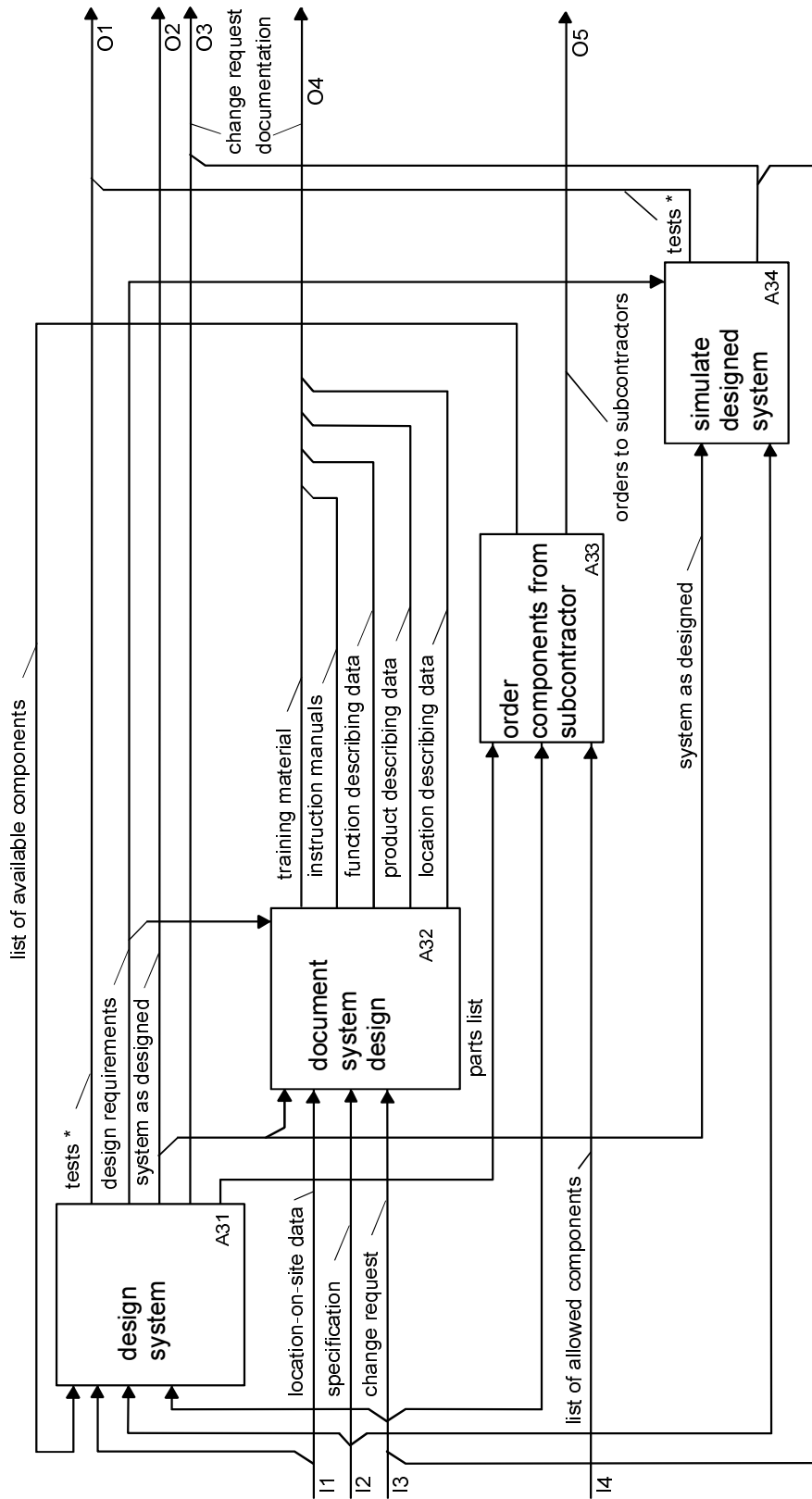


Figure F.5 - AAM diagram of node A3: Develop system

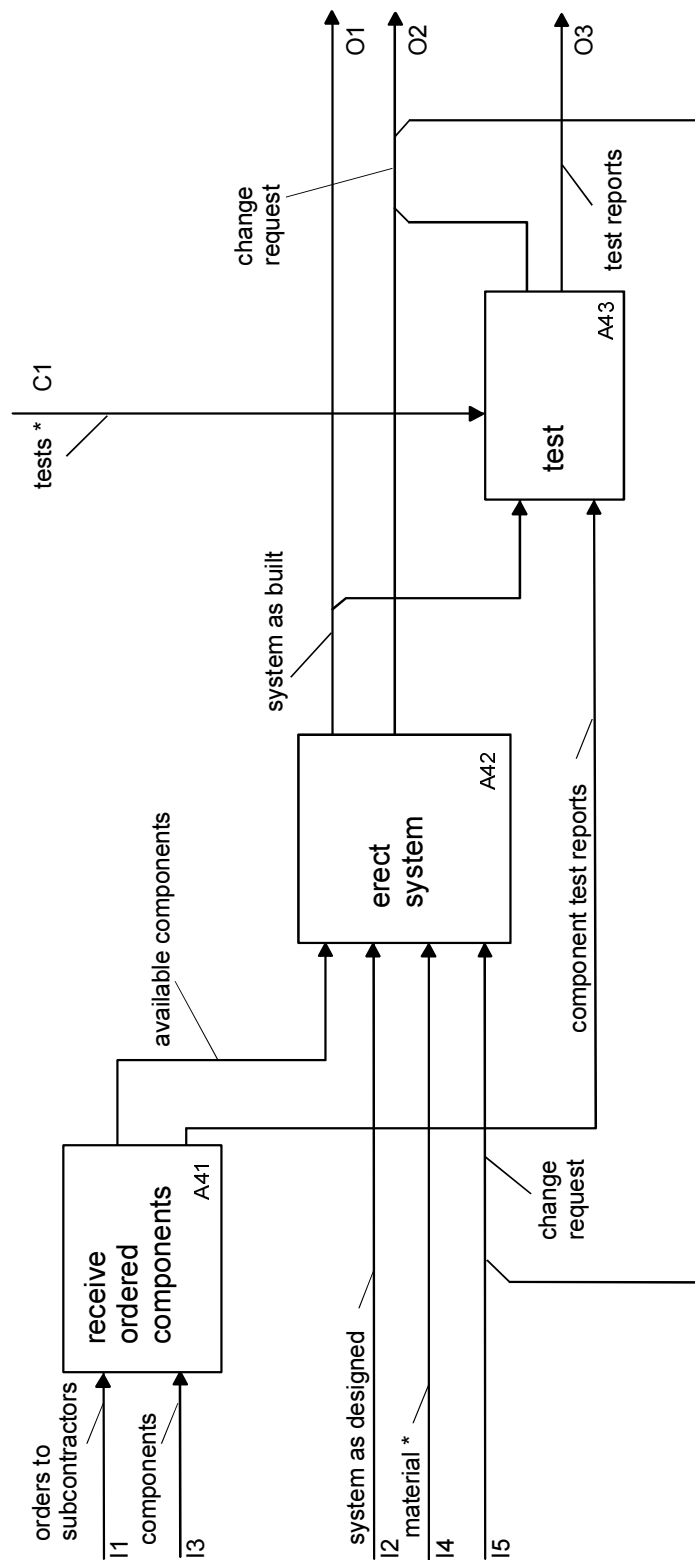


Figure F.6 - AAM diagram of node A4: Implement system

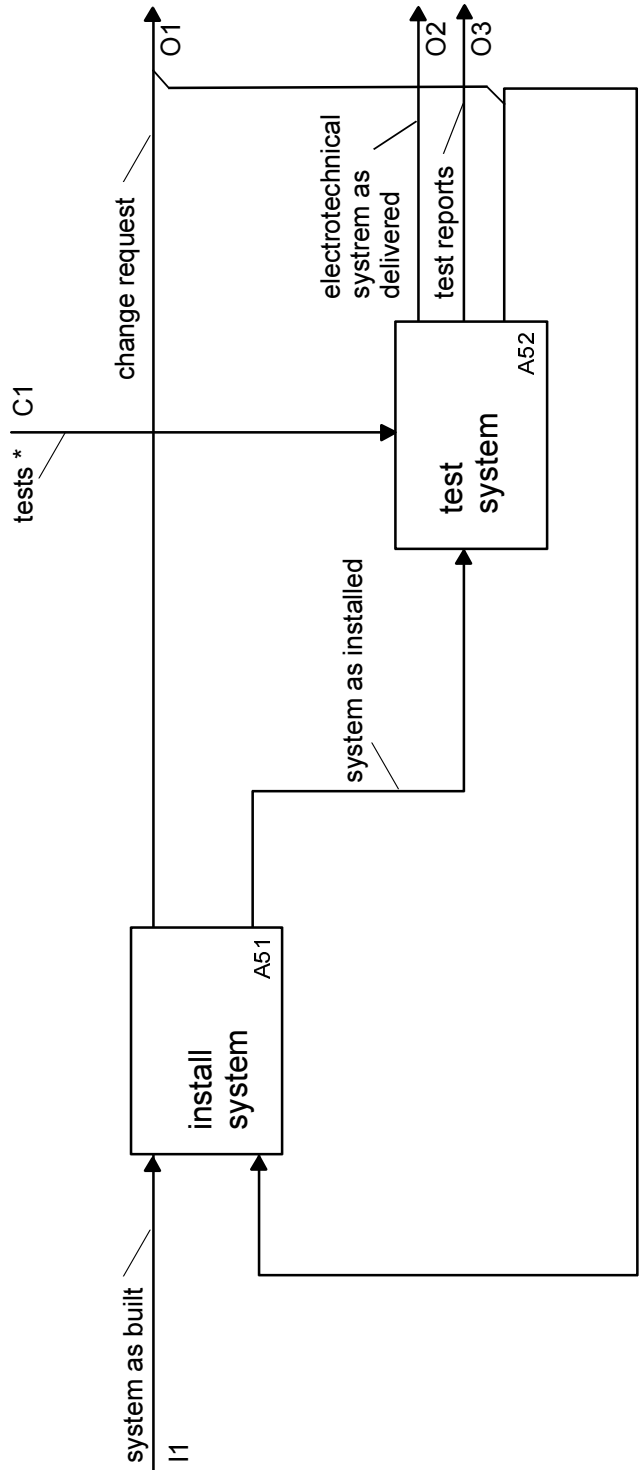


Figure F.7 -AAM diagram of node A5: Put system into operation

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Table F.1 consists of five columns. The first column contains the name of the data class in the AAM. In the columns two, three and four the data classes are marked to be in scope or out of scope.

The classification "in scope - full support" means that corresponding application objects are provided in clause 4 of this part of ISO 10303.

The classification "in scope - reference only" means that the explicit description of the data is not specified by this part of ISO 10303, but it may be referenced to.

EXAMPLE 1 The data description of a documentation done with a desktop publishing system is not specified by this part of ISO 10303. The reference to this data, the knowledge about its existence and about its type, creator, etc, is supported by this part of ISO 10303.

Data classes classified as "out of scope" are not supported by this part of ISO 10303. In the figures data classes that are out of scope are marked with asterisk after its names.

The fifth column of Table F.1 lists the correspondence of the data classes to the UoFs specified in clause 4.

NOTE The table reflects the assignment of UoFs that is considered to be highly probable. Depending from the actual situation the data may contain information from other UoFs.

EXAMPLE 2 UoFs `organizational_data`, `properties`, `classification`, `item_designation`

Table F.1 - AAM - data classes

Data flow	In scope		Out of scope	UoF correspondence
	full support	reference only		
Available components	X			product_structure, physical_connectivity, properties, classification, properties, organizational_data
Budgets			X	
Change request	X			documentation, schematic_documentation, work_management, configuration_management, effectiveness, organizational_data
Components	X			product_structure, physical_connectivity, classification, properties, external_reference, organizational_data
Component test reports		X		documentation, schematic_documentation, external_reference, organizational_data
Contract	X			organizational_data
Contracted list of requirements	X			conditions, documentation, classification, organizational_data
Contracted system	X			all Units of Functionality
Customer requirements	X			conditions, documentation, external_reference, classification, properties
Design requirements	X			conditions, documentation, external_reference, classification, properties

Table F.1 - AAM - data classes (continued)

Data flow	In scope		Out of scope	UoF correspondence
	full support	reference only		
Detailed list of requirements	X			conditions, documentation, external_reference, classification, properties, organizational_data
Documentation	X			all Units of Functionality
Electrotechnical system as delivered	X			all Units of Functionality
Explanatory documents	X			documentation, dimensioned_documentation, schematic_document, external_reference, classification
Function describing data	X			function_structure, functional_connectivity, messages, properties, documentation, schematic_dedocumentation, dimensioned_documentation, external_reference, classification, effectivity
Functional overview	X			function_structure, functional_connectivity, messages, properties, classification
Guidelines			X	
Instruction manuals	X			documentation, dimensioned_documentation, schematic_documentation, external_reference, classification

Table F.1 - AAM - data classes (continued)

Data flow	In scope		Out of scope	UoF correspondence
	full support	reference only		
List of allowed components	X			product_structure, physical_connectivity, classification, effectivity
List of available components	X			product_structure, physical_connectivity, classification
List of requirements	X			conditions, documentation, external_reference, classification, schematic_documentation
Location describing data	X			installation, course, site, properties, documentation, dimensioned_documentation, properties, classification
Location-on-site data	X			installation, course, site, properties, documentation, dimensioned_documentation, properties, classification
Management issues			X	
Material			X	
Negotiated changes	X			conditions, configuration_management, documentation, properties, classification
Offer			X	
Offered system	X			all Units of Functionality
Orders to subcontractors	X			organizational_data
Parts list	X			product_structure, classification

Table F.1 - AAM - data classes (concluded)

Data flow	In scope		Out of scope	UoF correspondence
	full support	reference only		
People and machines			X	
Product describing data	X			product_structure, physical_connectivity, properties, documentation, properties, classification
Promotional material			X	
Refined budgets			X	
Specification	X			all Units of Functionality
Standards and rules			X	
System as built	X			all Units of Functionality
System as designed	X			all Units of Functionality
System as installed	X			all Units of Functionality
Test reports		X		documentation, classification, external_reference
Tests			X	
Training material	X			documentation, schematic_documentation, dimensioned_documentation, classification, external_reference

Annex G

(informative)

Application reference model

This annex provides the application reference model for this part of ISO 10303 and is given in figures G.1 through G.89. The application reference model is a graphical representation of the structure and constraints of the application objects specified in clause 4. The graphical form of the application reference model is presented EXPRESS-G. The application reference model is independent from any implementation method.

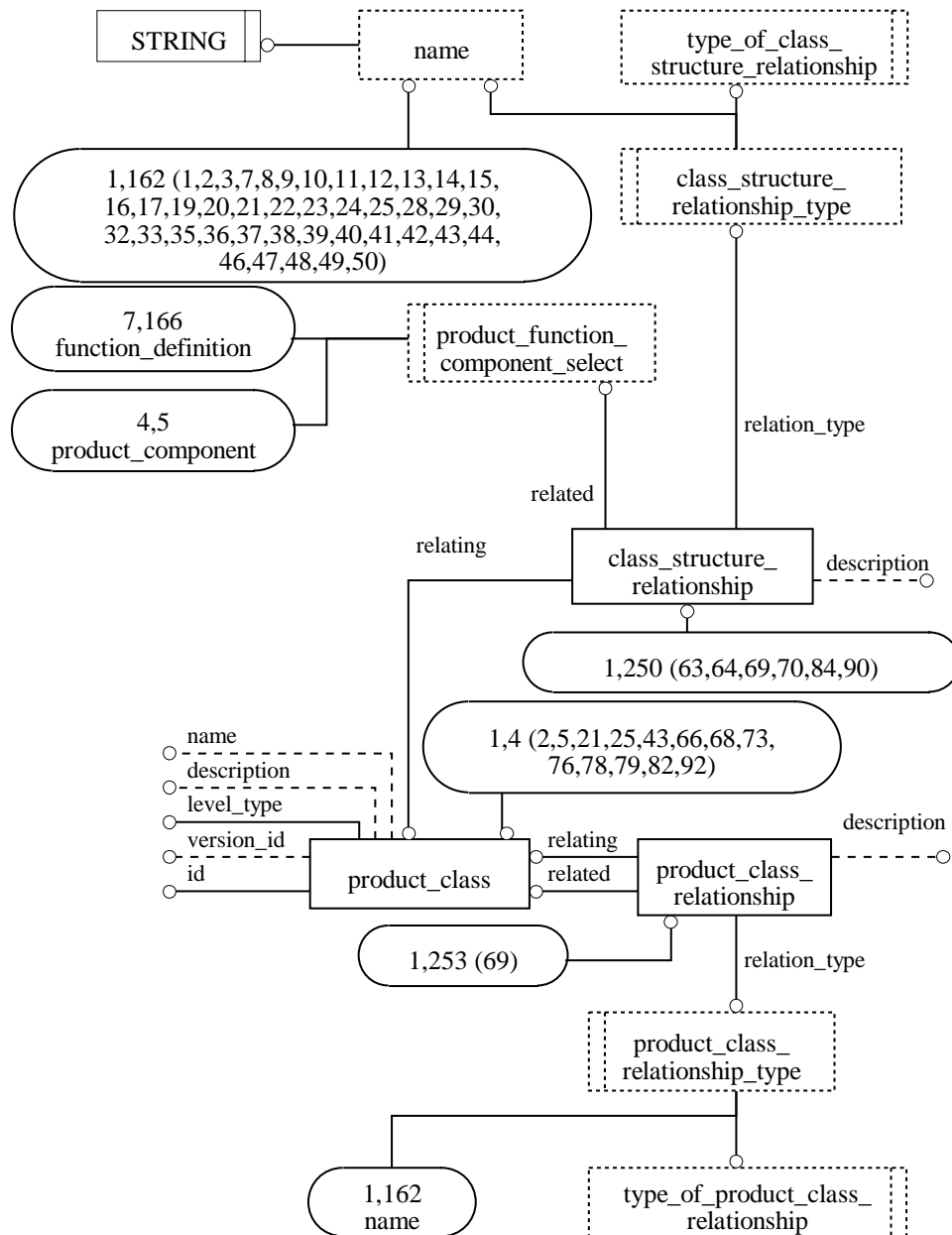


Figure G.1 - ARM diagram in EXPRESS-G: 1 of 93

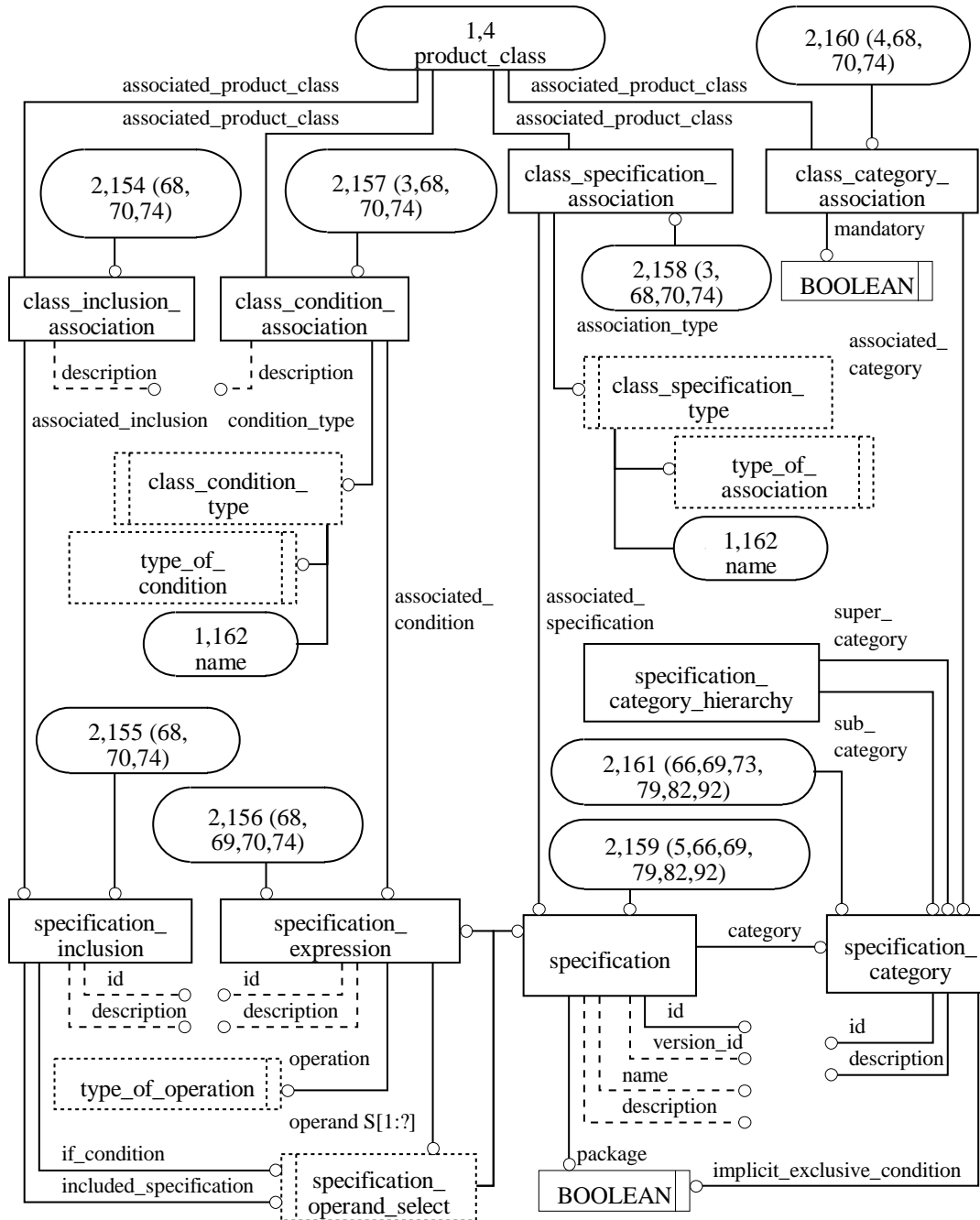


Figure G.2 - ARM diagram in EXPRESS-G: 2 of 93

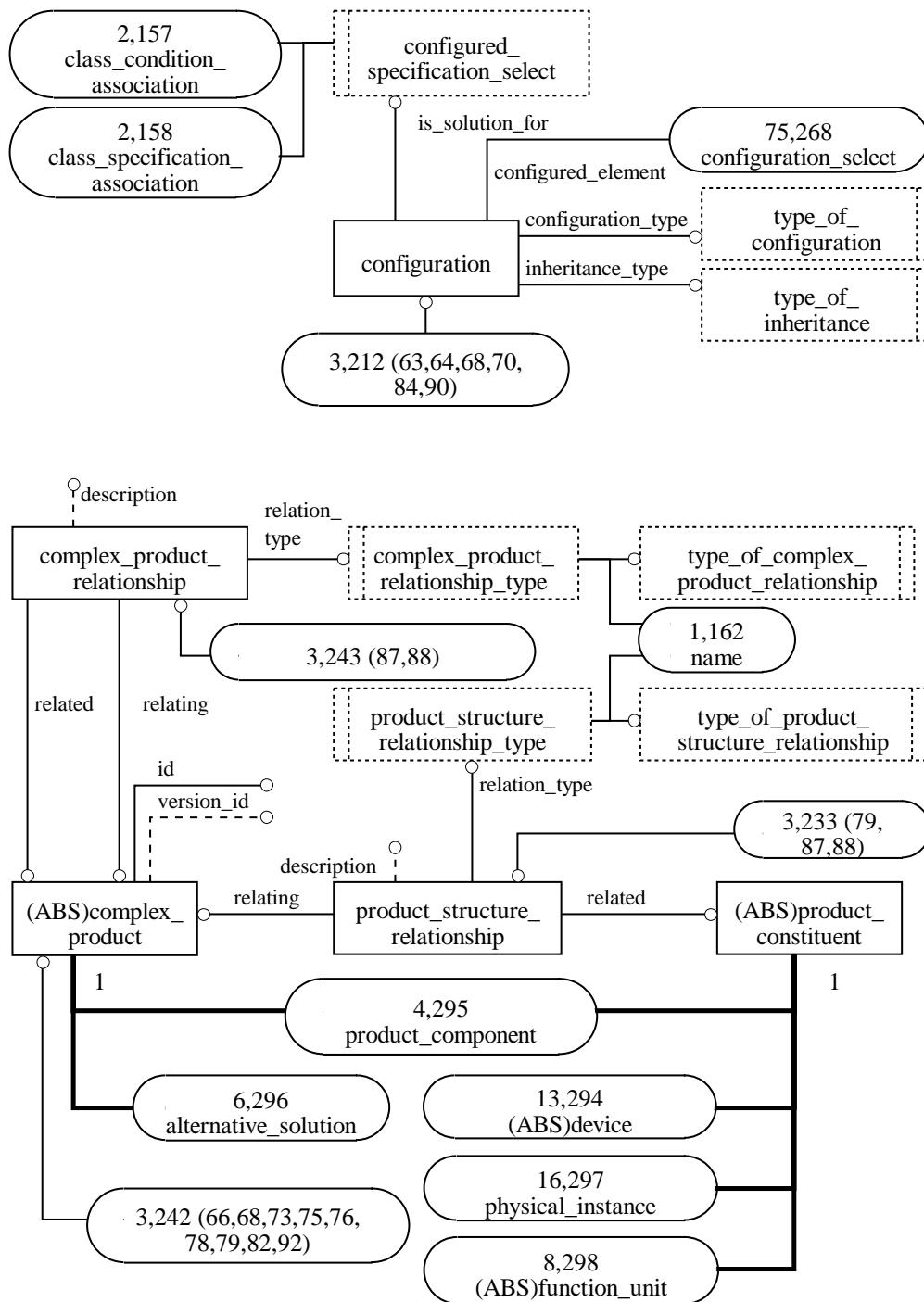


Figure G.3 - ARM diagram in EXPRESS-G: 3 of 93

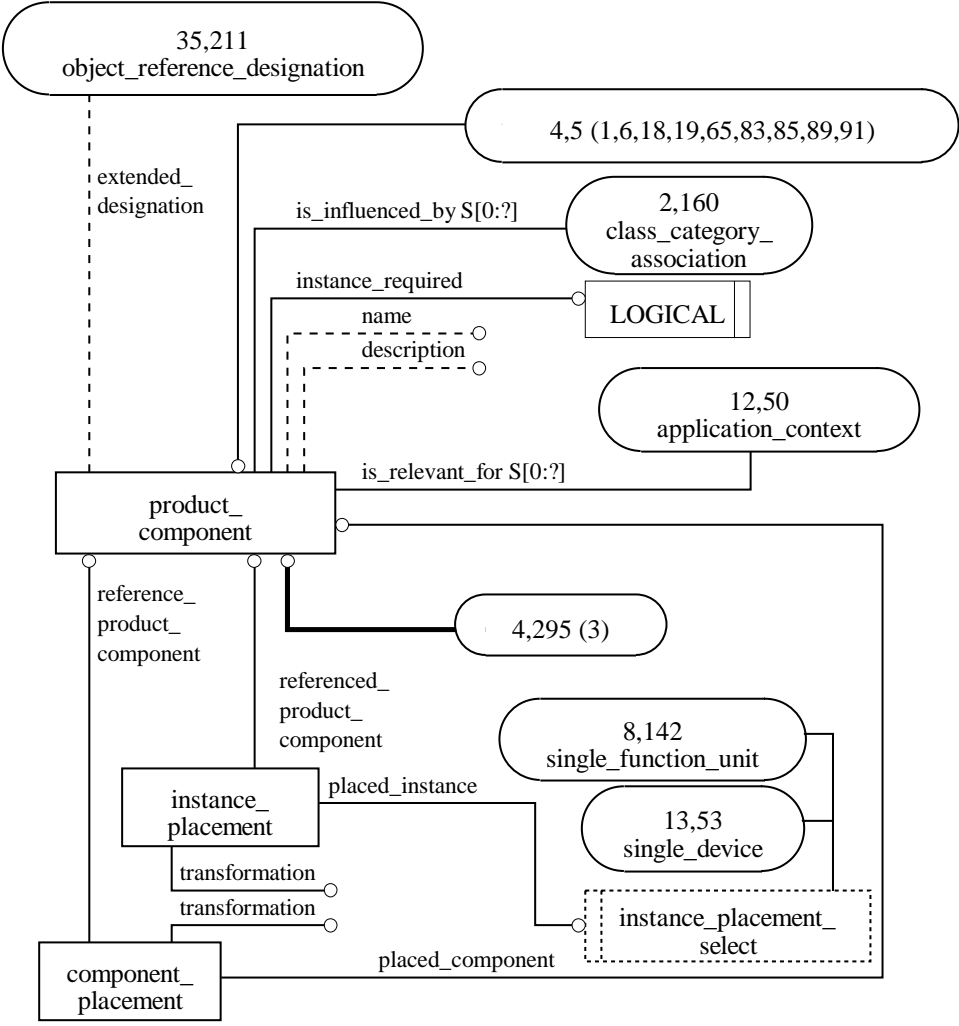


Figure G.4 - ARM diagram in EXPRESS-G: 4 of 93

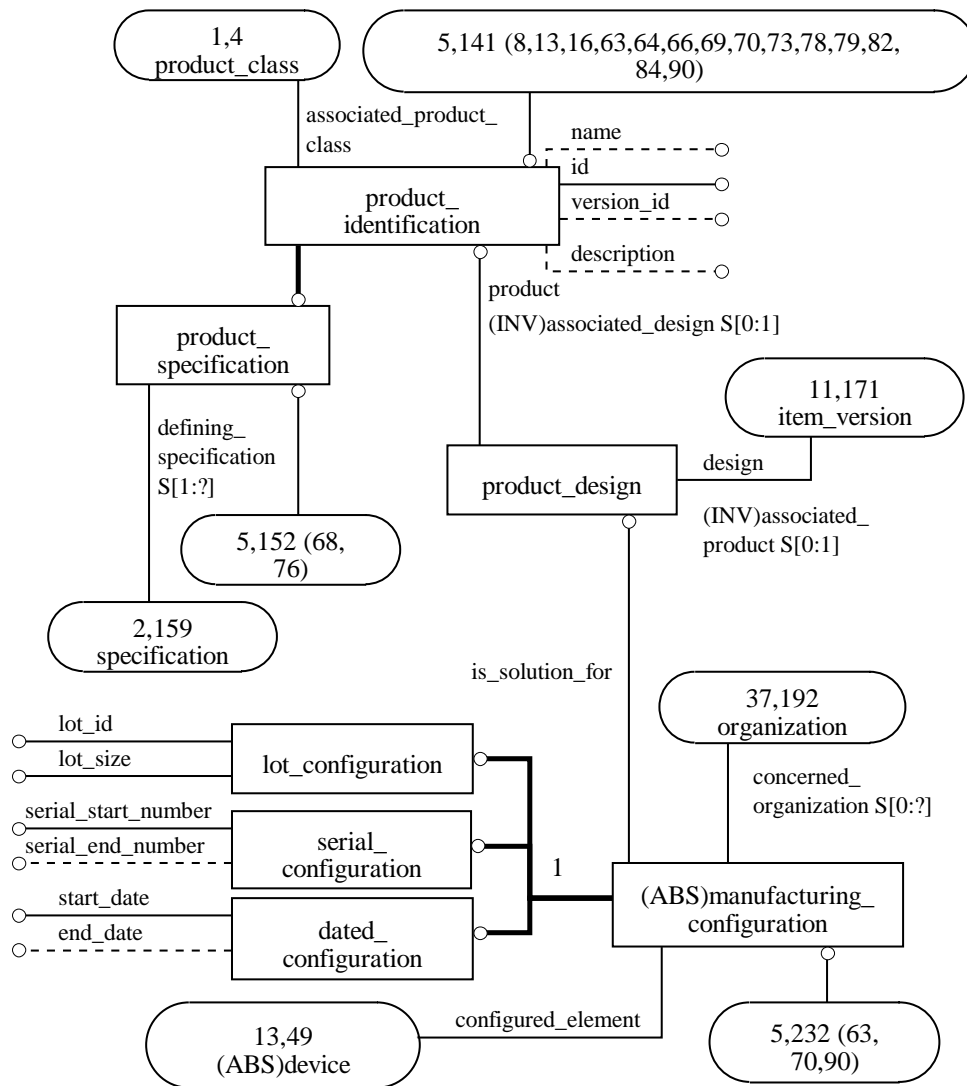


Figure G.5 - ARM diagram in EXPRESS-G: 5 of 93

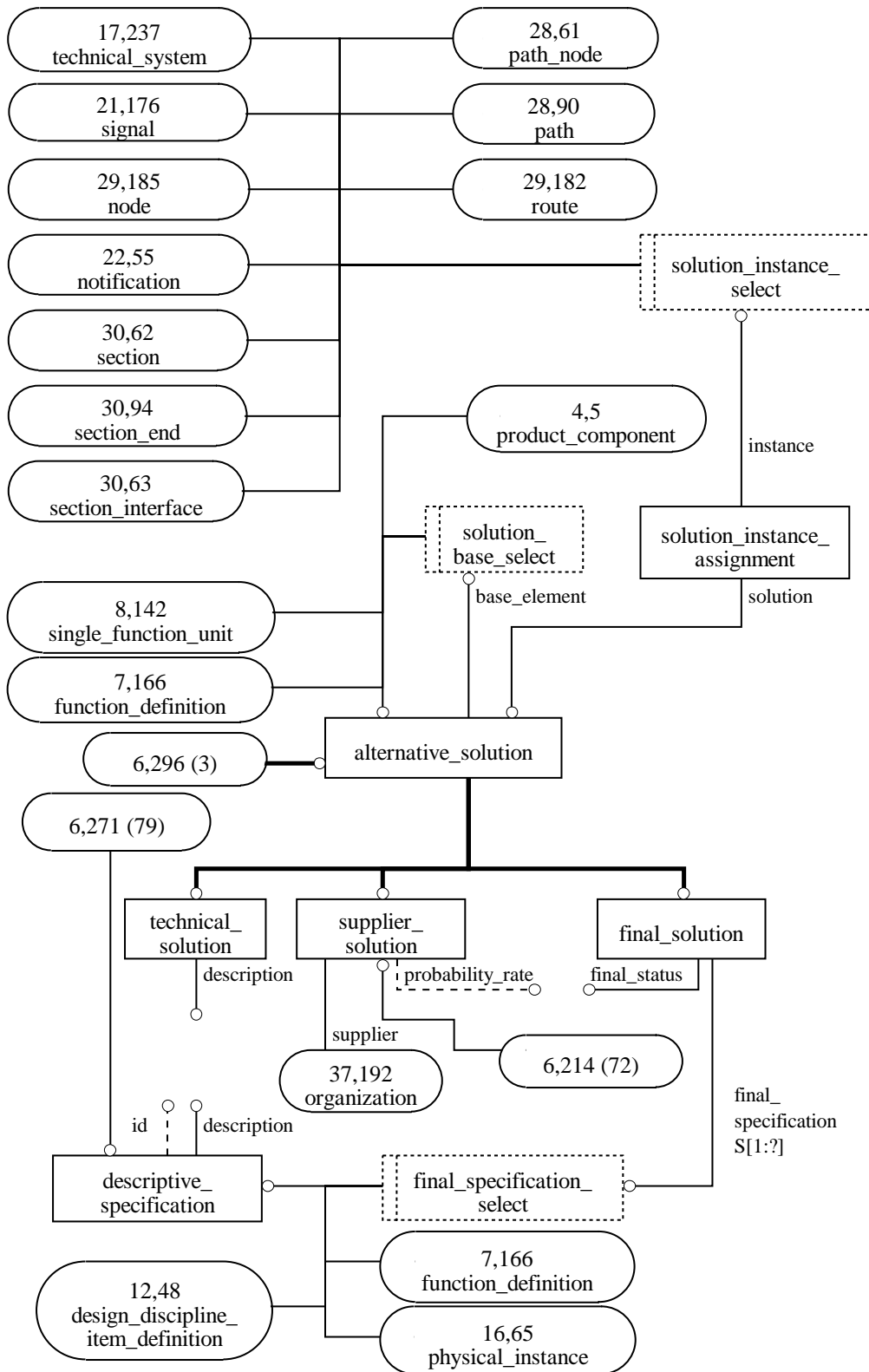


Figure G.6 - ARM diagram in EXPRESS-G: 6 of 93

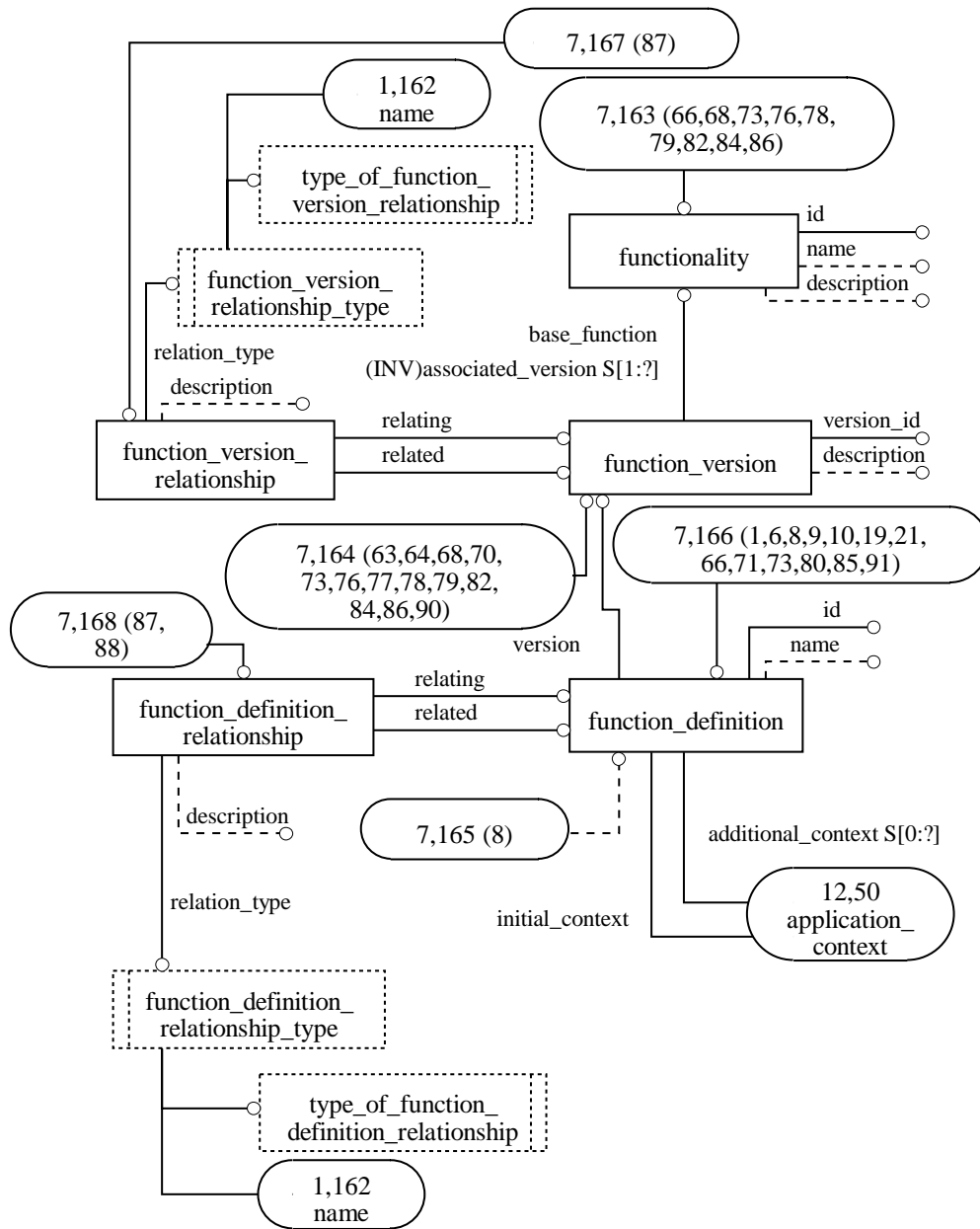


Figure G.7 - ARM diagram in EXPRESS-G: 7 of 93

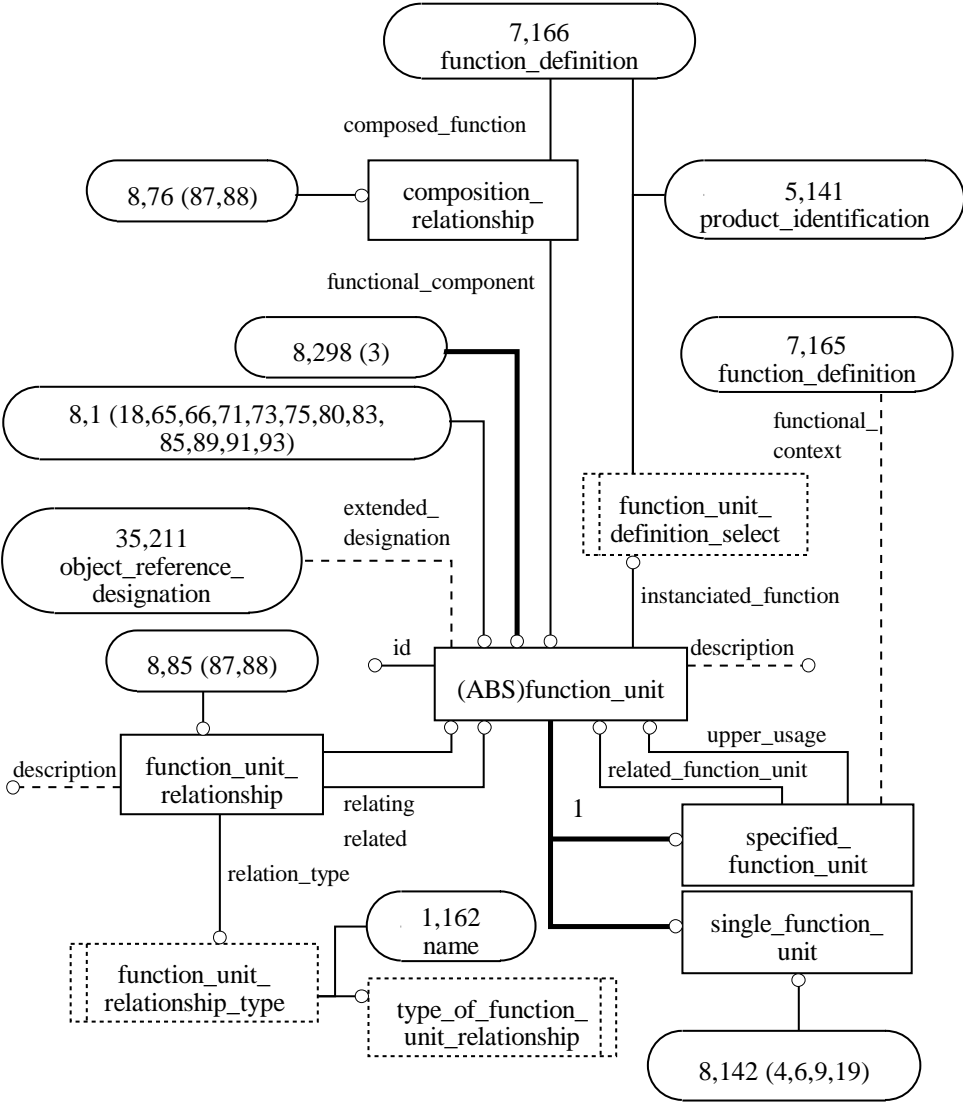


Figure G.8 - ARM diagram in EXPRESS-G: 8 of 93

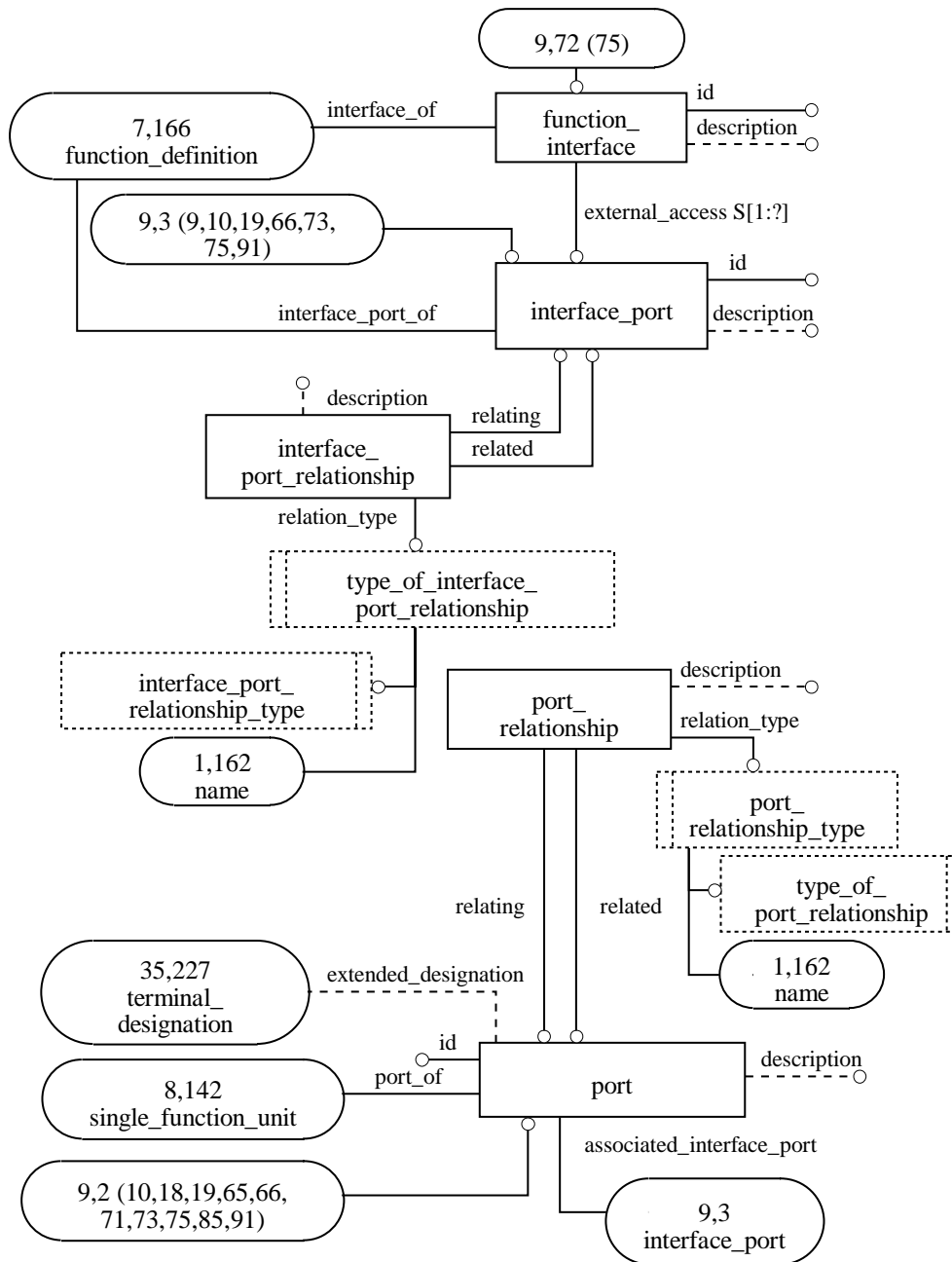


Figure G.9 - ARM diagram in EXPRESS-G: 9 of 93

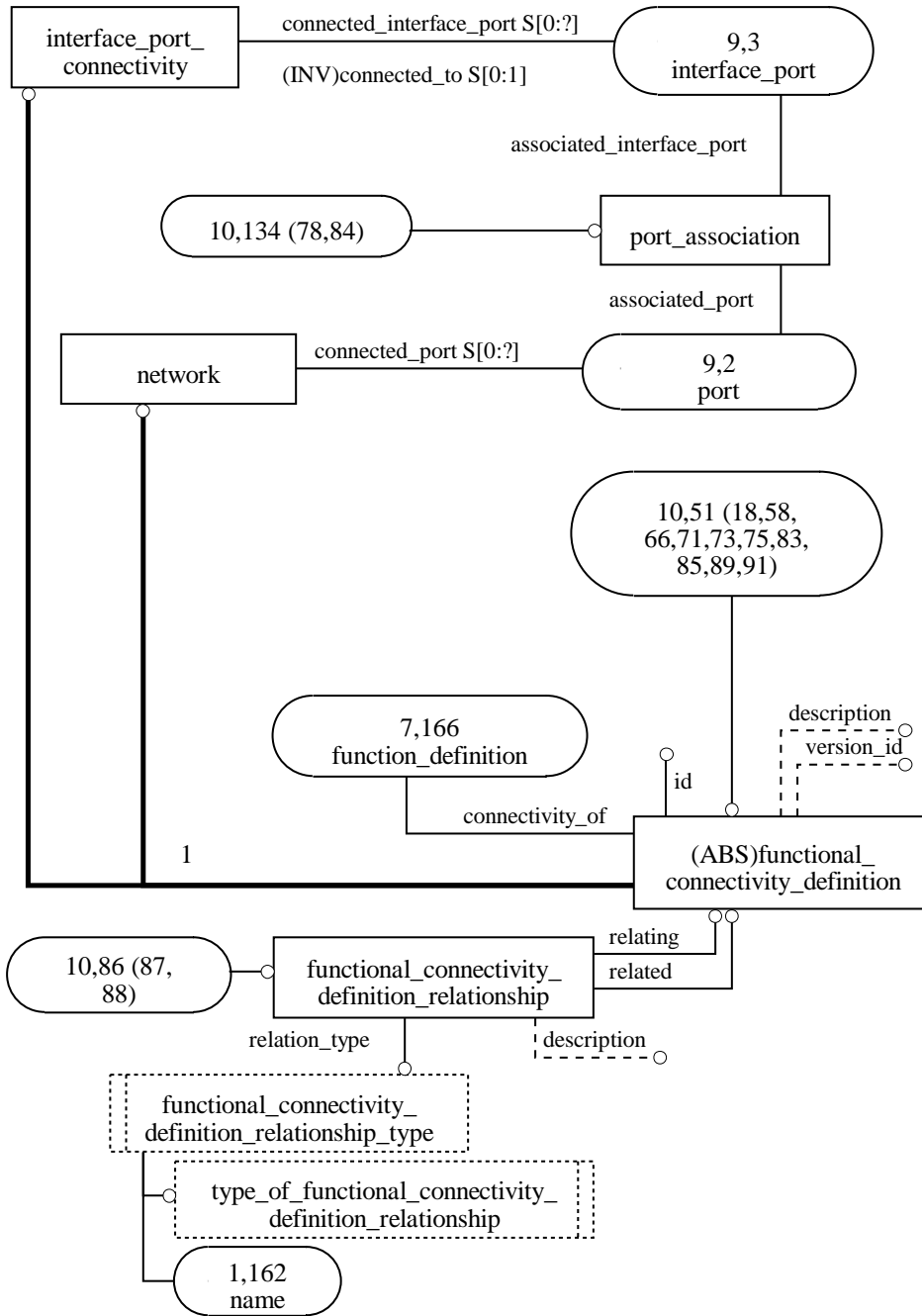


Figure G.10 - ARM diagram in EXPRESS-G: 10 of 93

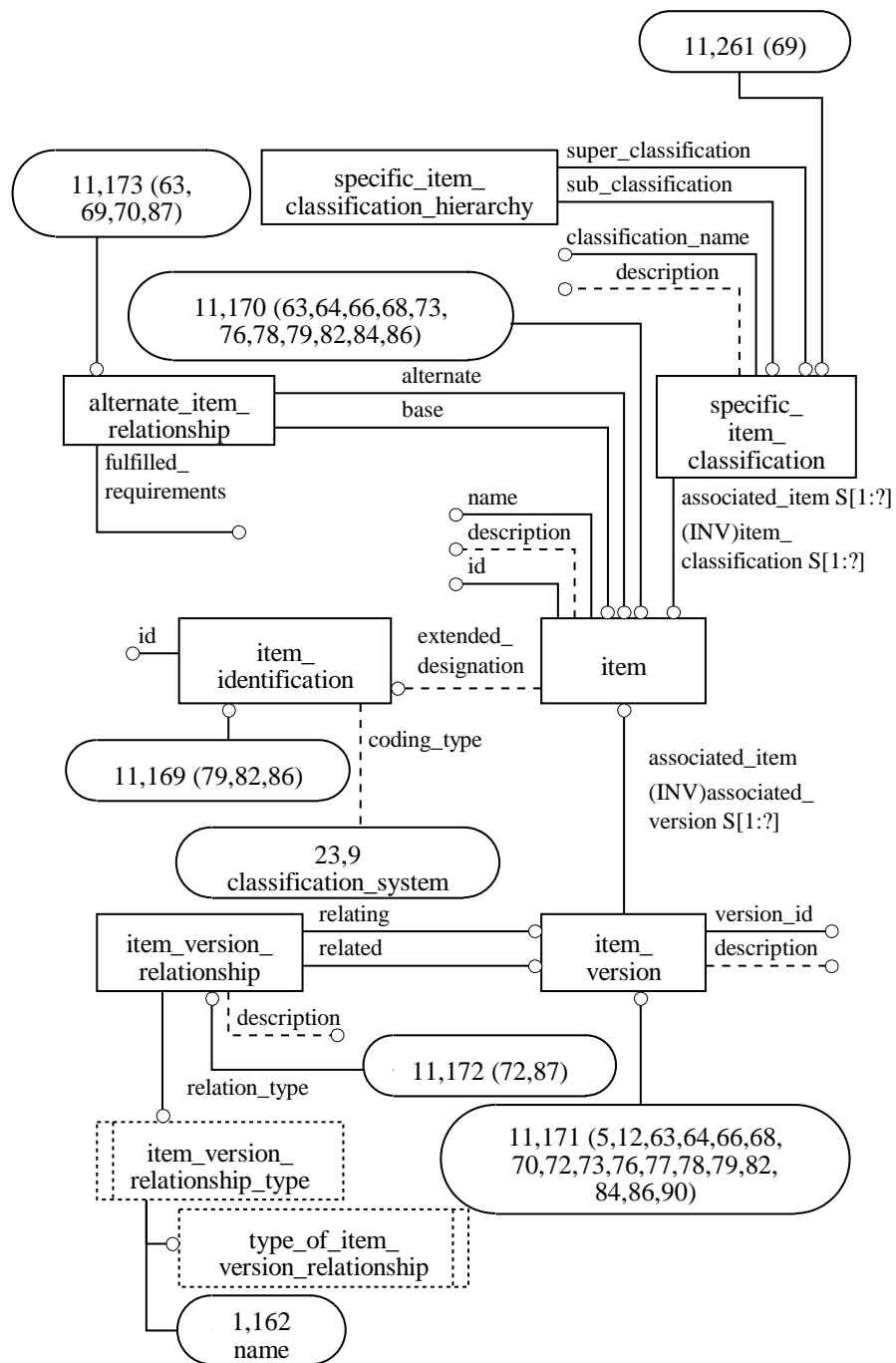


Figure G.11 - ARM diagram in EXPRESS-G: 11 of 93

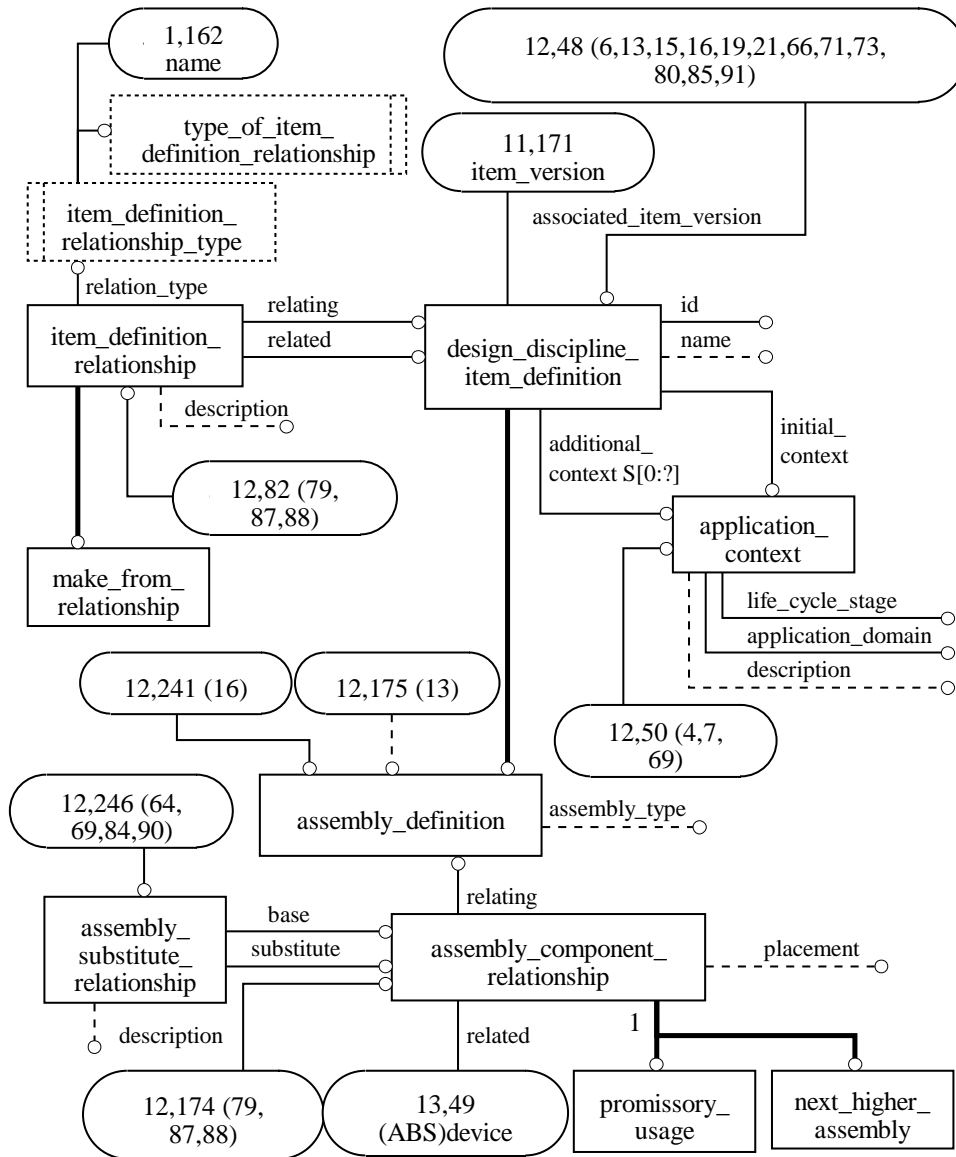


Figure G.12 - ARM diagram in EXPRESS-G: 12 of 93

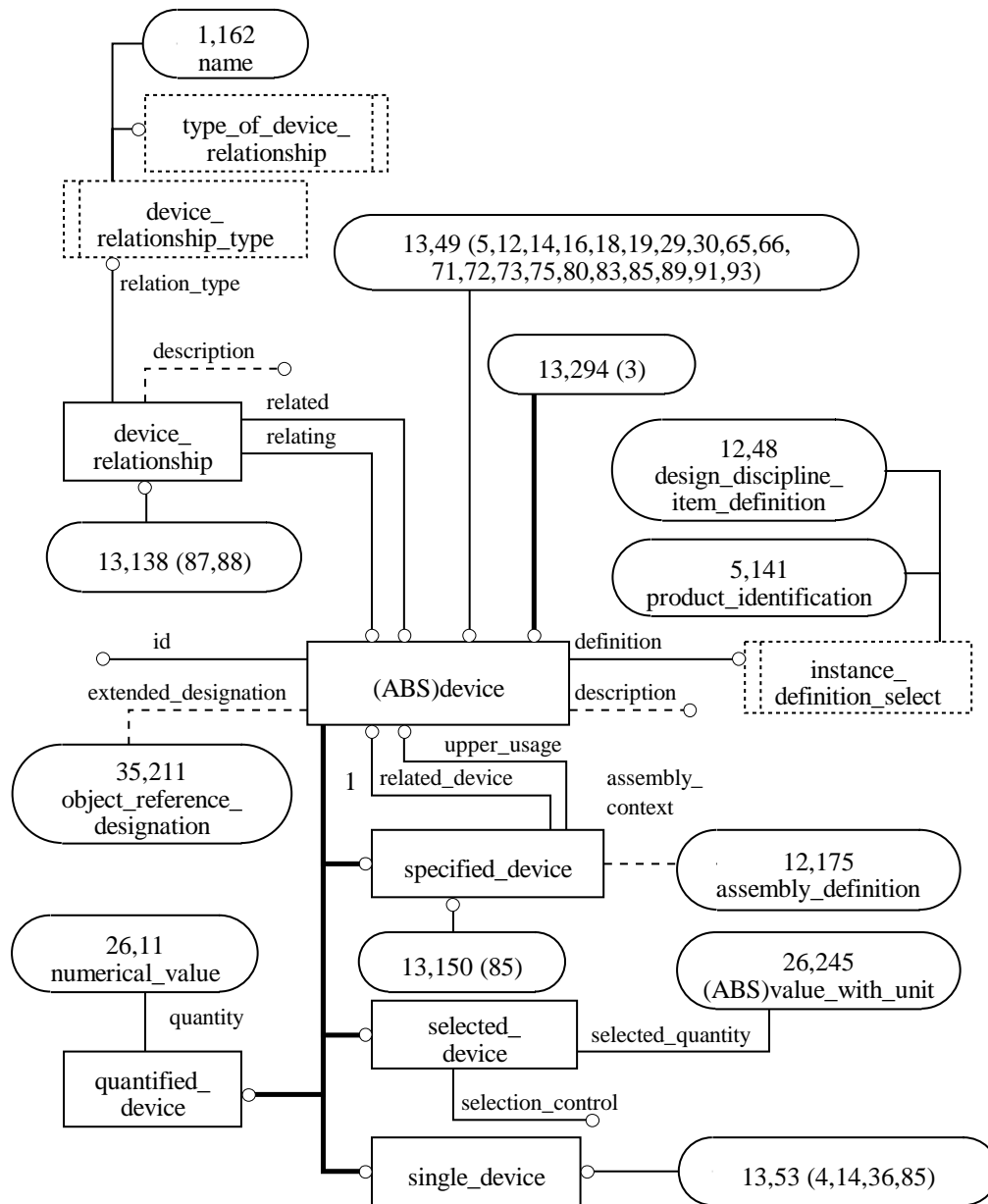


Figure G.13 - ARM diagram in EXPRESS-G: 13 of 93

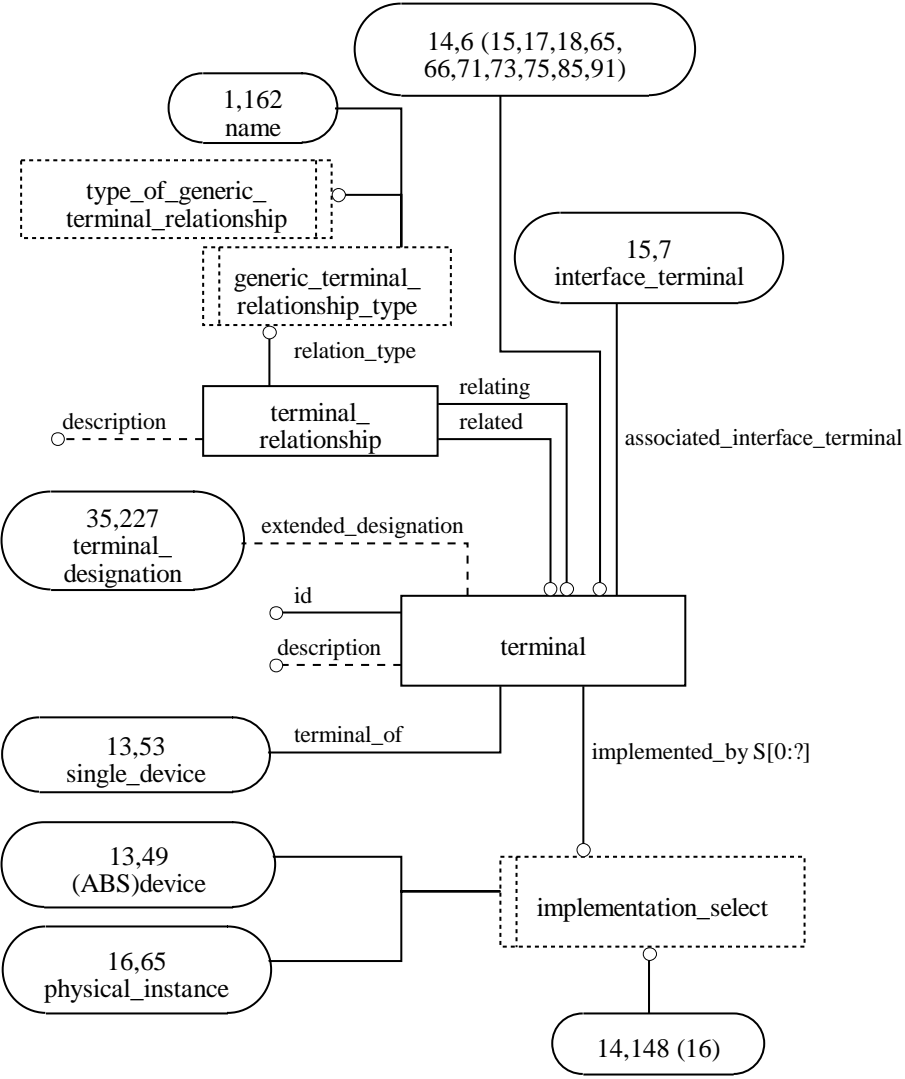


Figure G.14 - ARM diagram in EXPRESS-G: 14 of 93

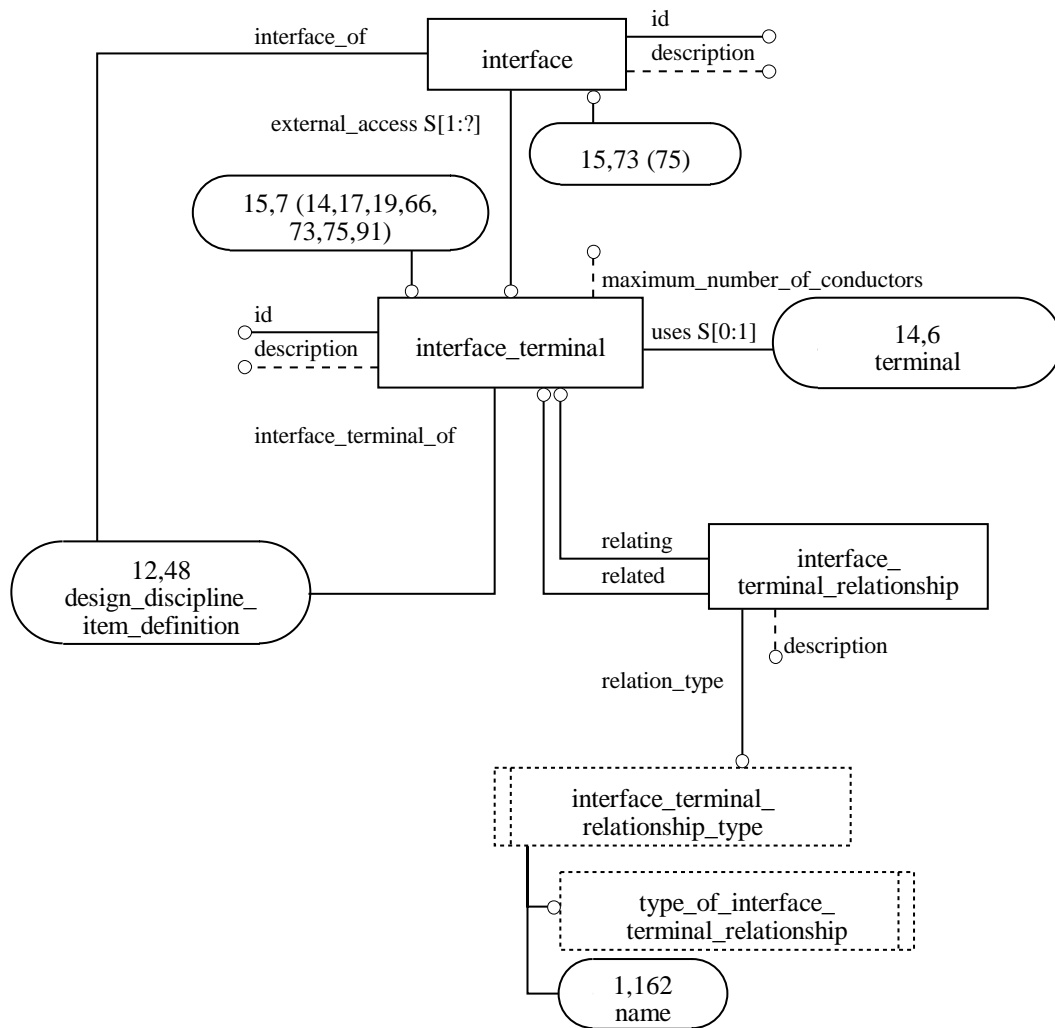


Figure G.15 - ARM diagram in EXPRESS-G: 15 of 93

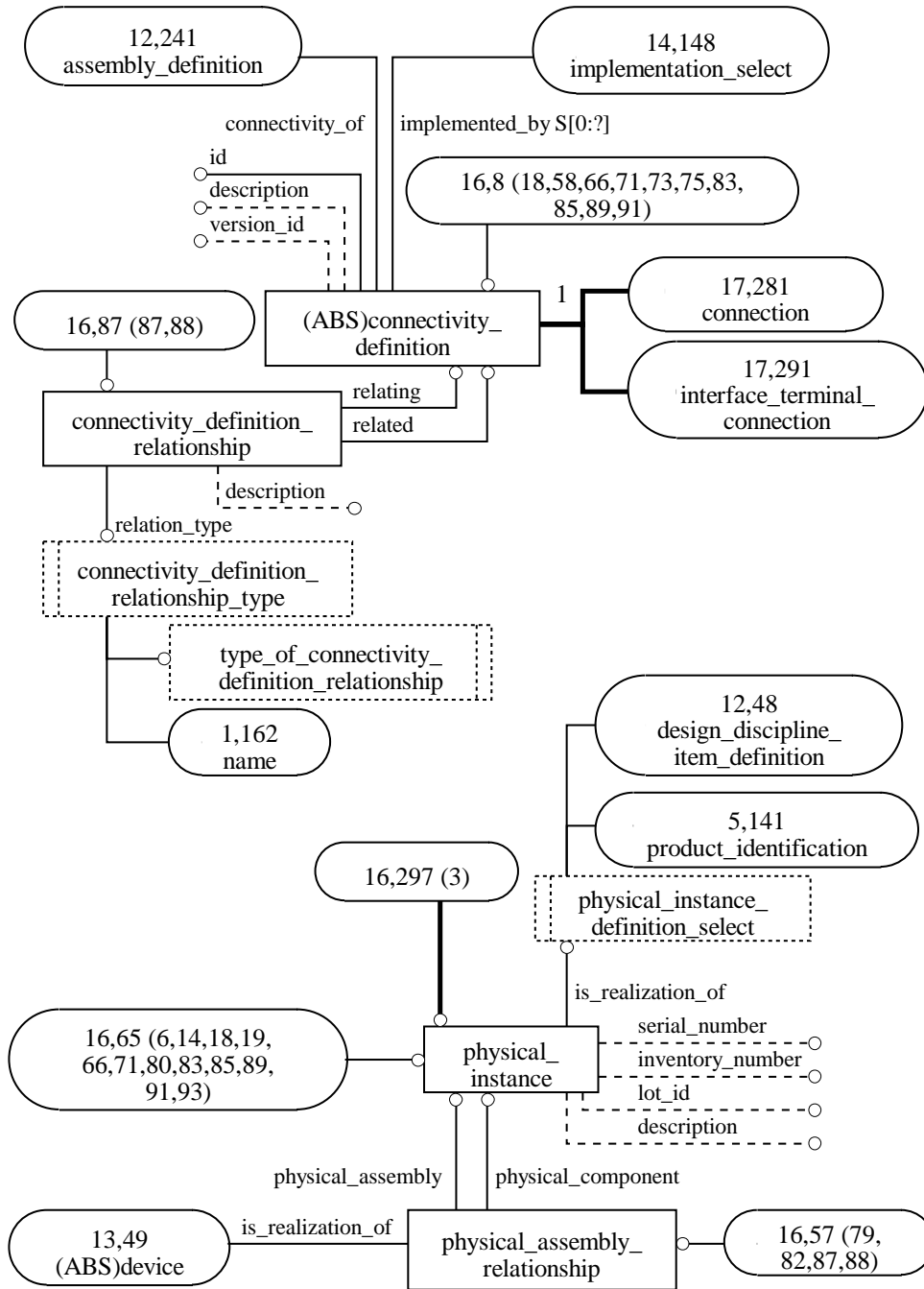


Figure G.16 - ARM diagram in EXPRESS-G: 16 of 93

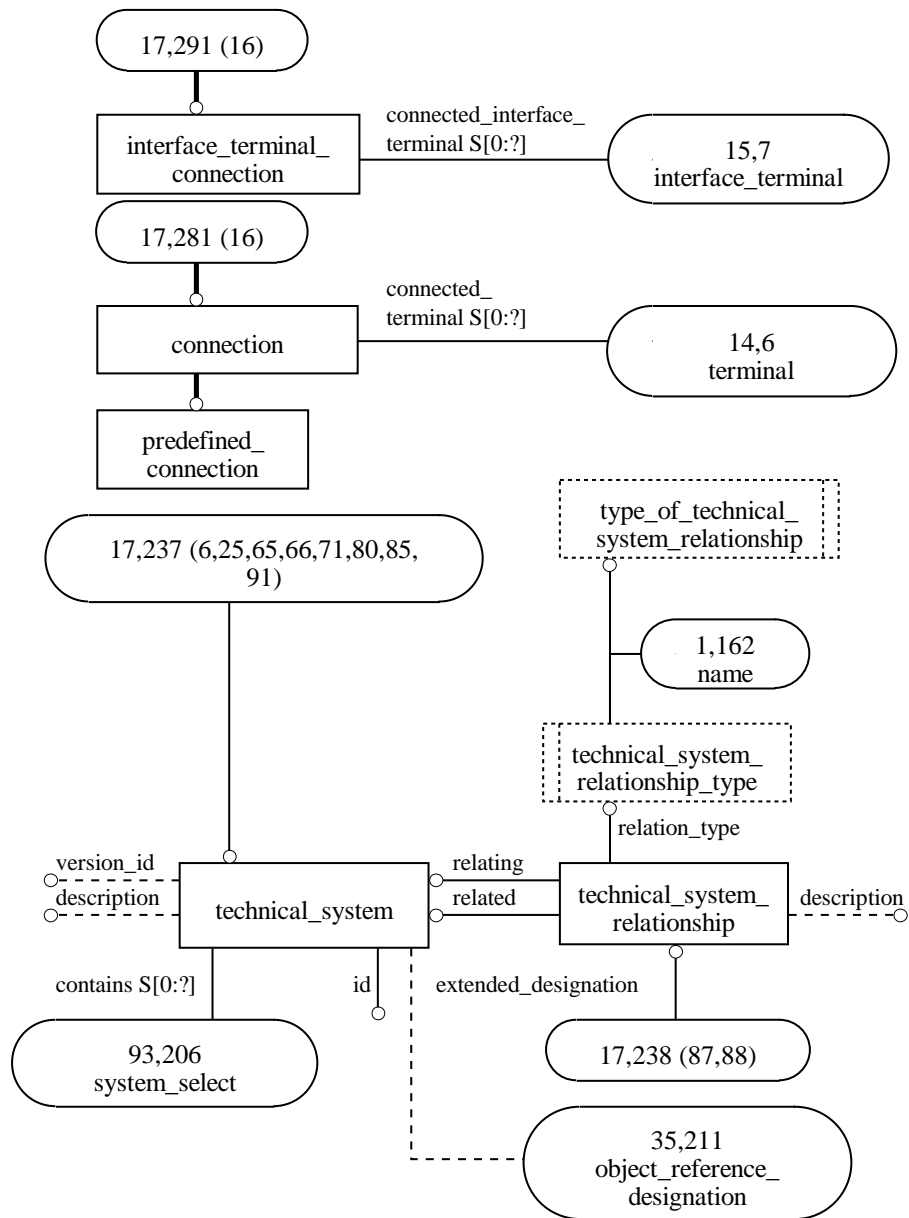


Figure G.17 - ARM diagram in EXPRESS-G: 17 of 93

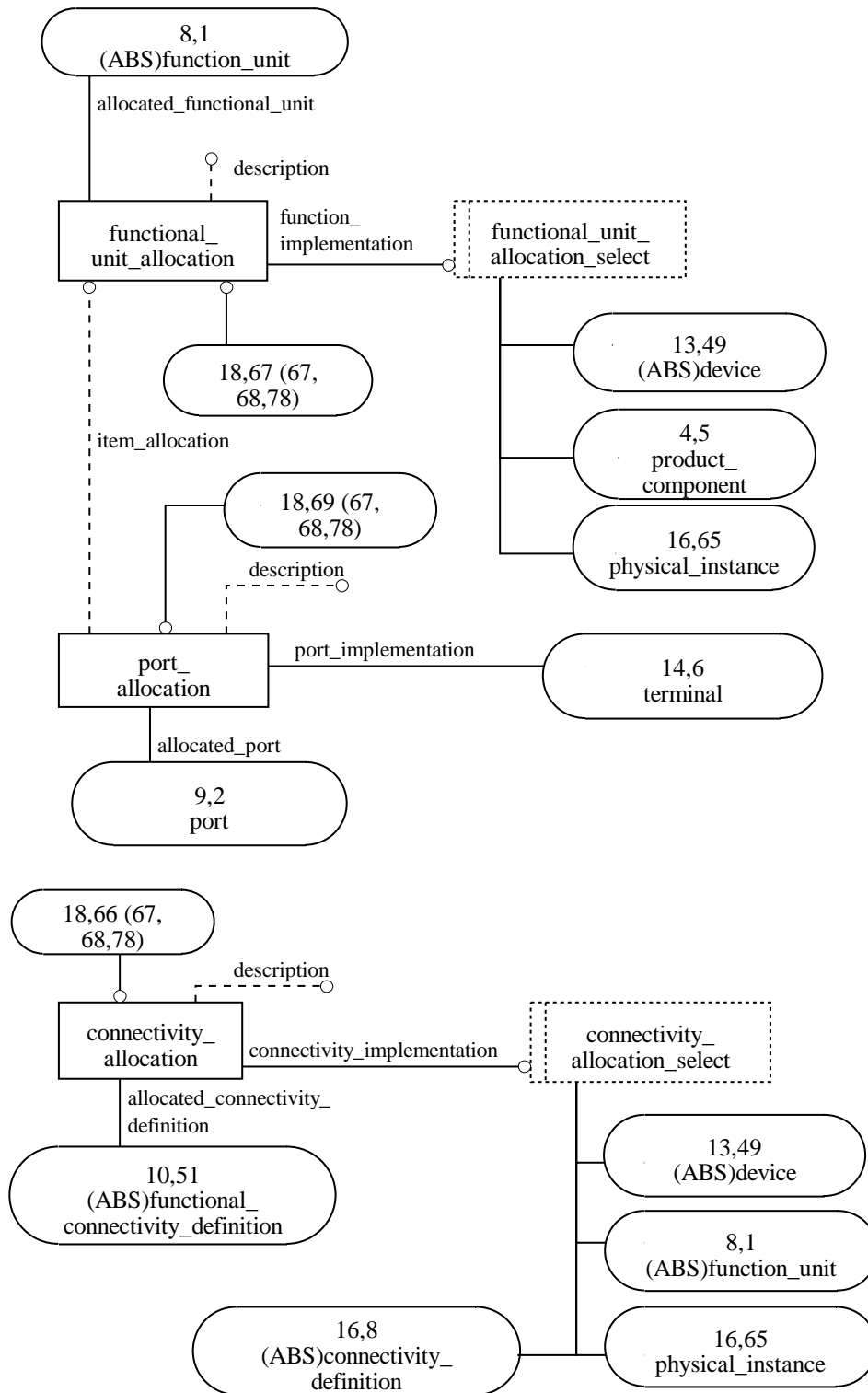


Figure G.18 - ARM diagram in EXPRESS-G: 18 of 93

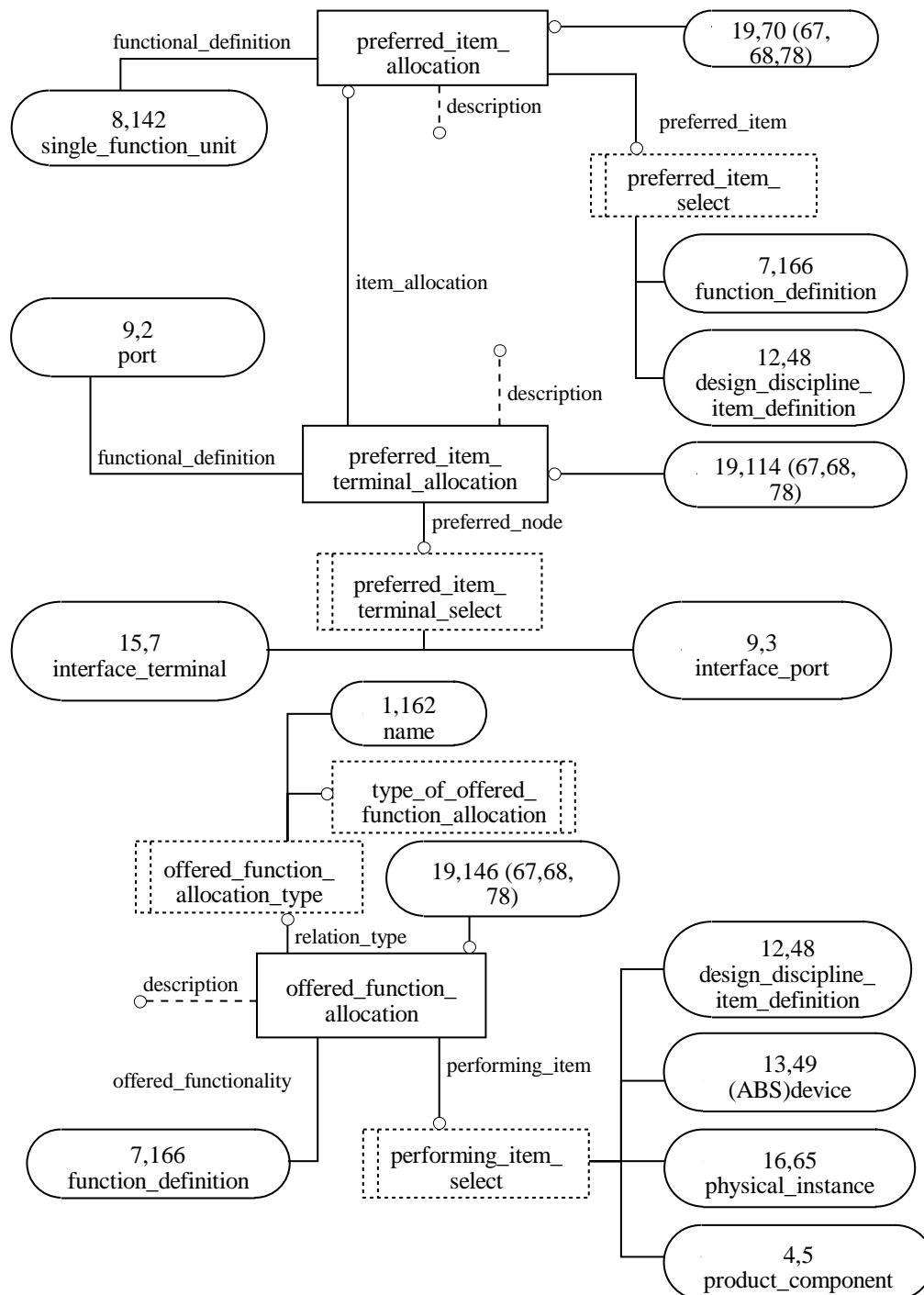


Figure G.19 - ARM diagram in EXPRESS-G: 19 of 93

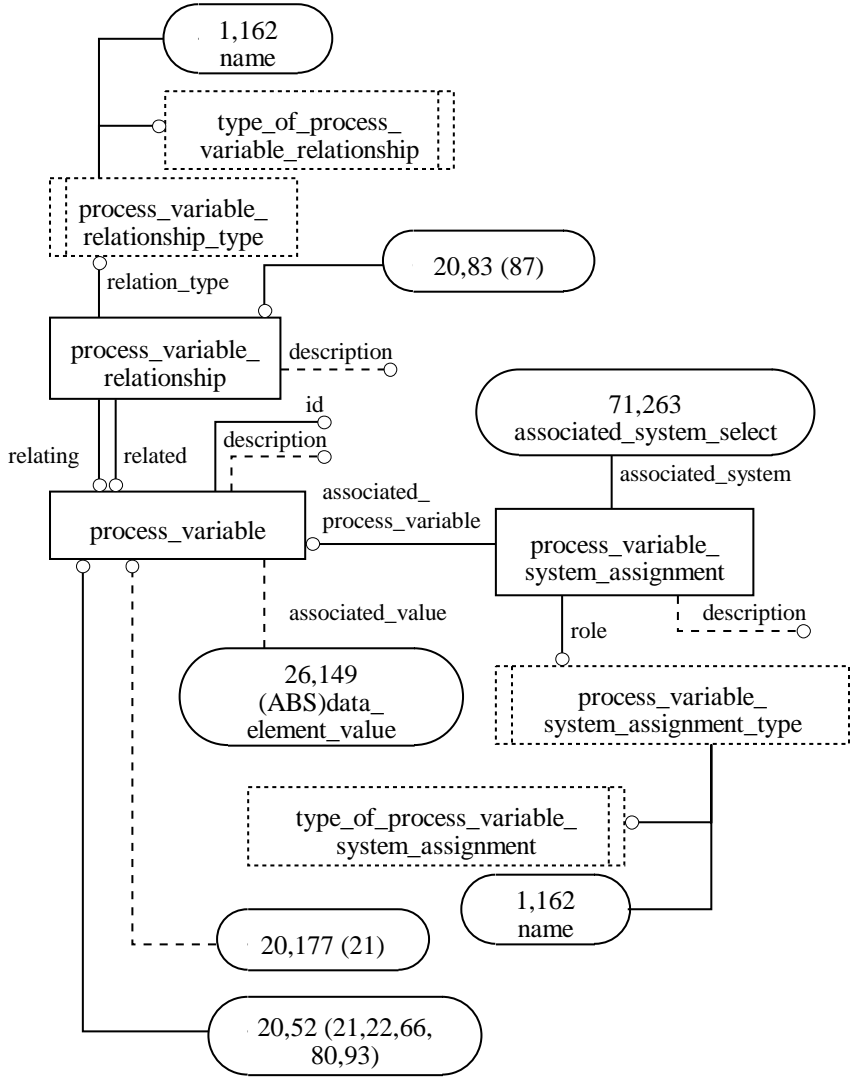


Figure G.20 - ARM diagram in EXPRESS-G: 20 of 93

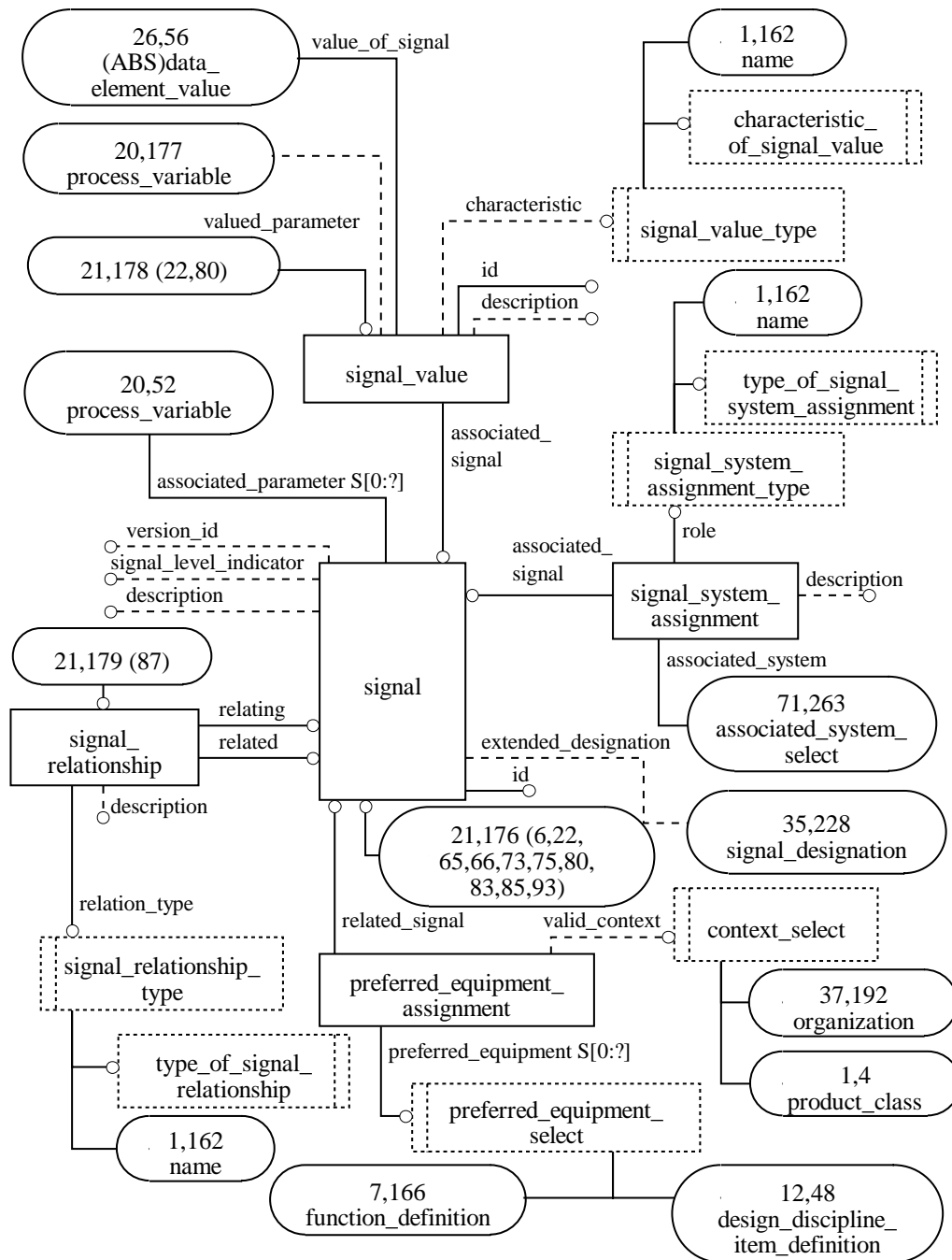


Figure G.21 - ARM diagram in EXPRESS-G: 21 of 93

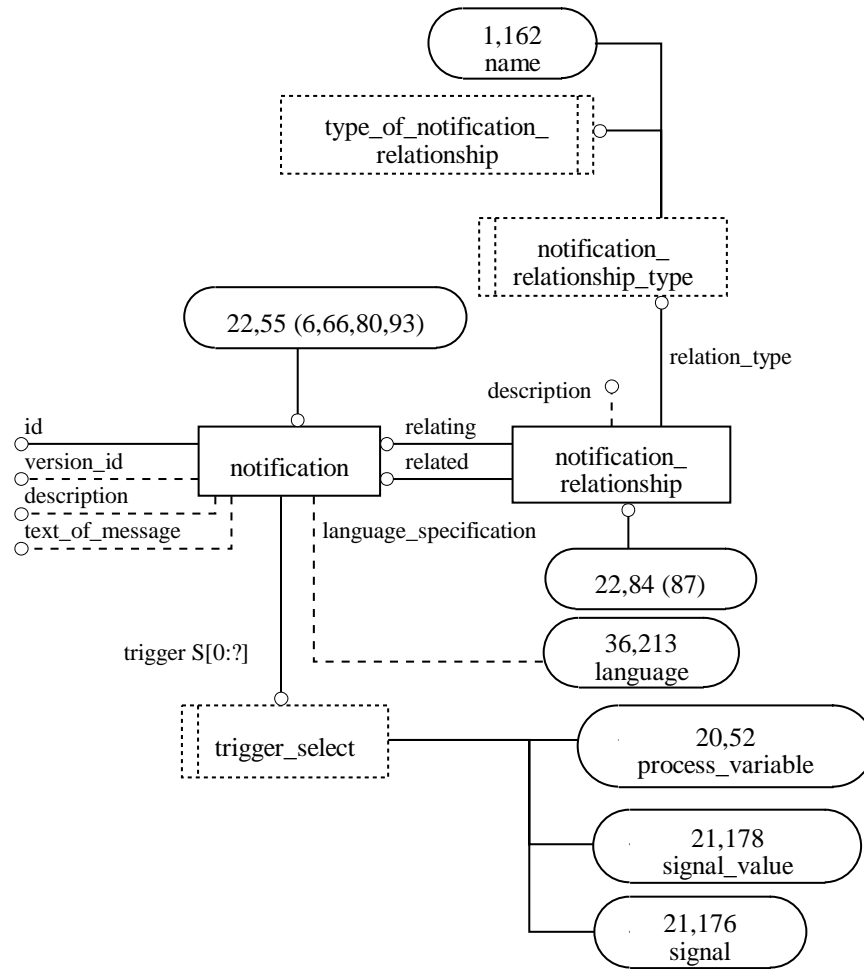


Figure G.22 - ARM diagram in EXPRESS-G: 22 of 93

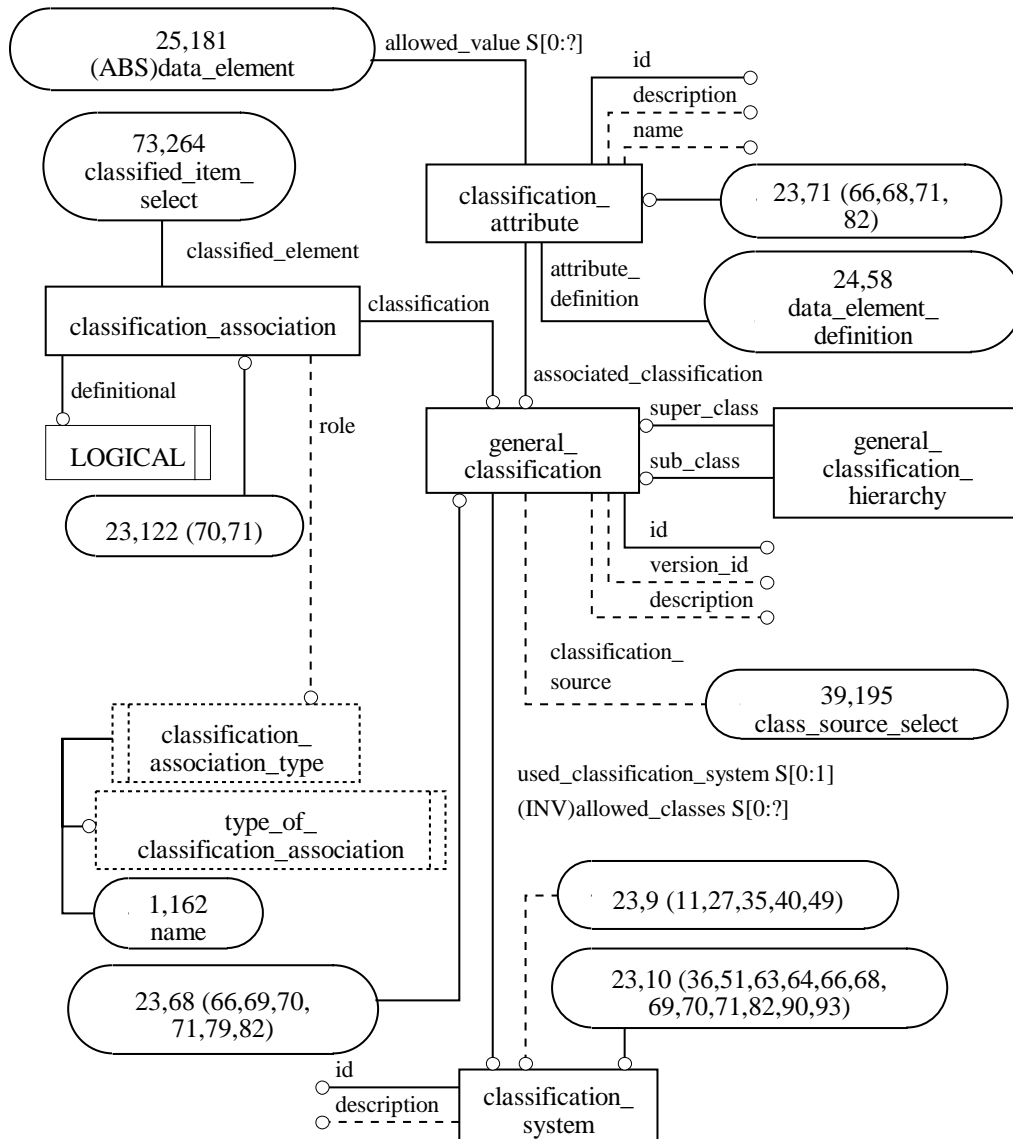


Figure G.23 - ARM diagram in EXPRESS-G: 23 of 93

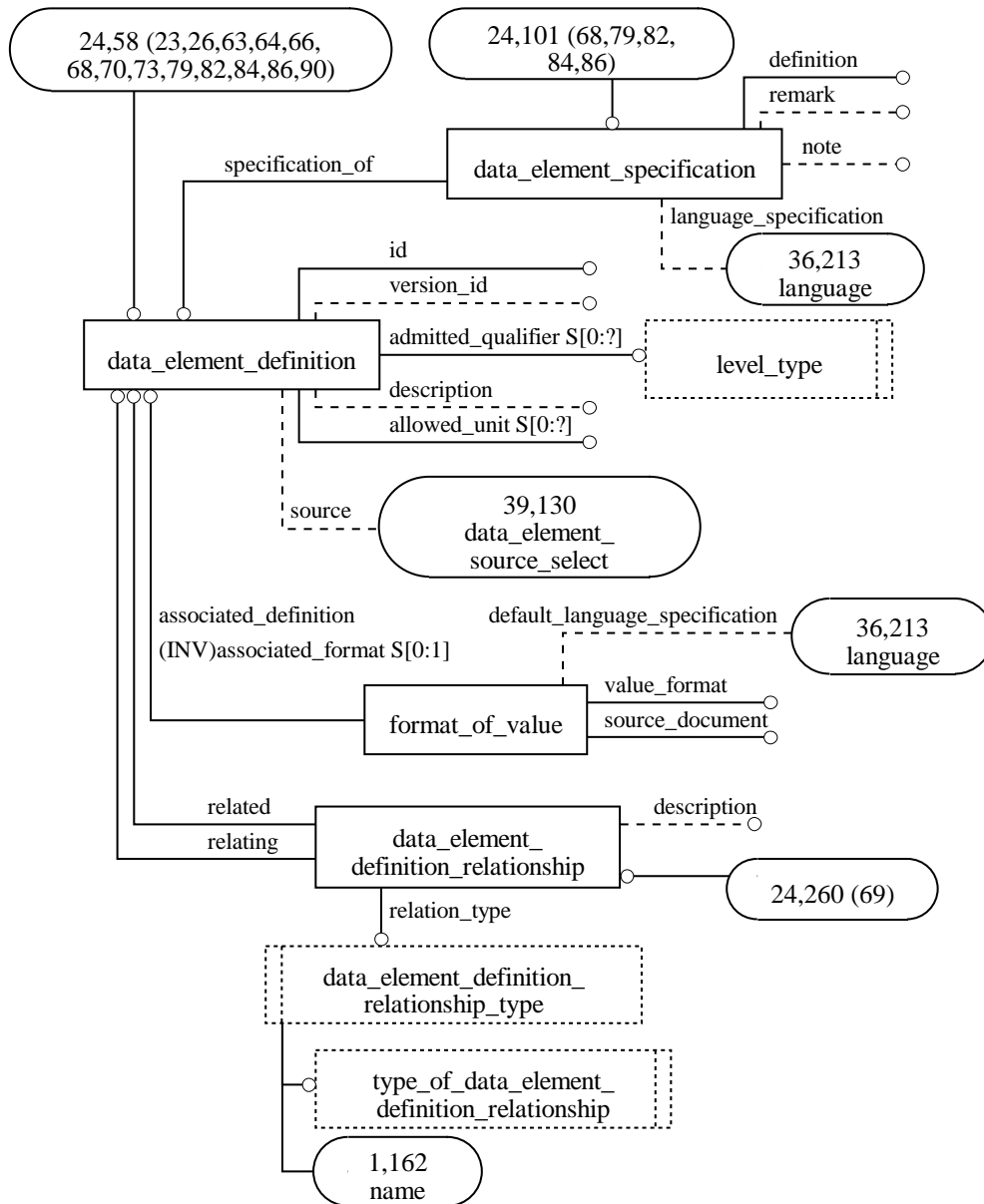


Figure G.24 - ARM diagram in EXPRESS-G: 24 of 93

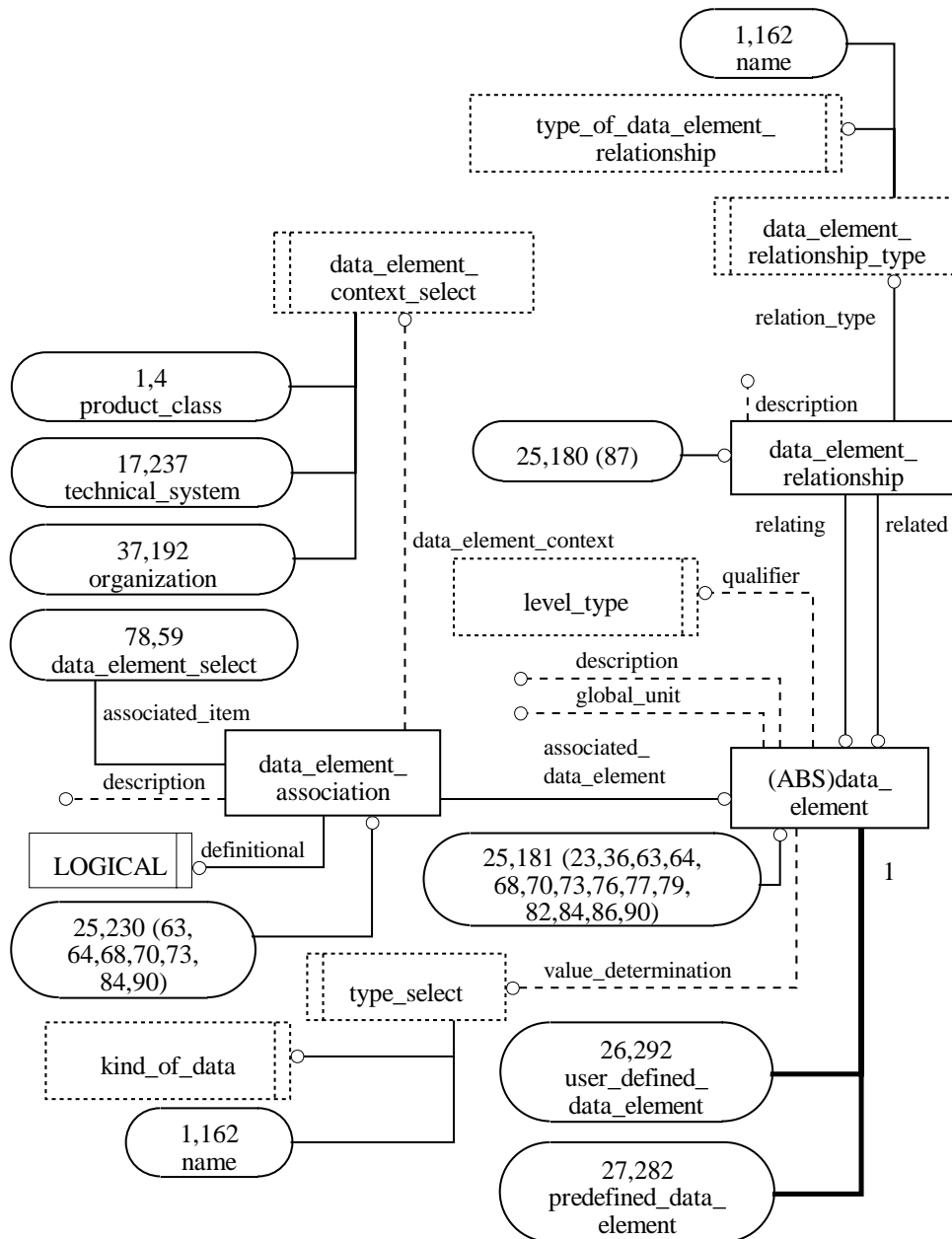


Figure G.25 - ARM diagram in EXPRESS-G: 25 of 93

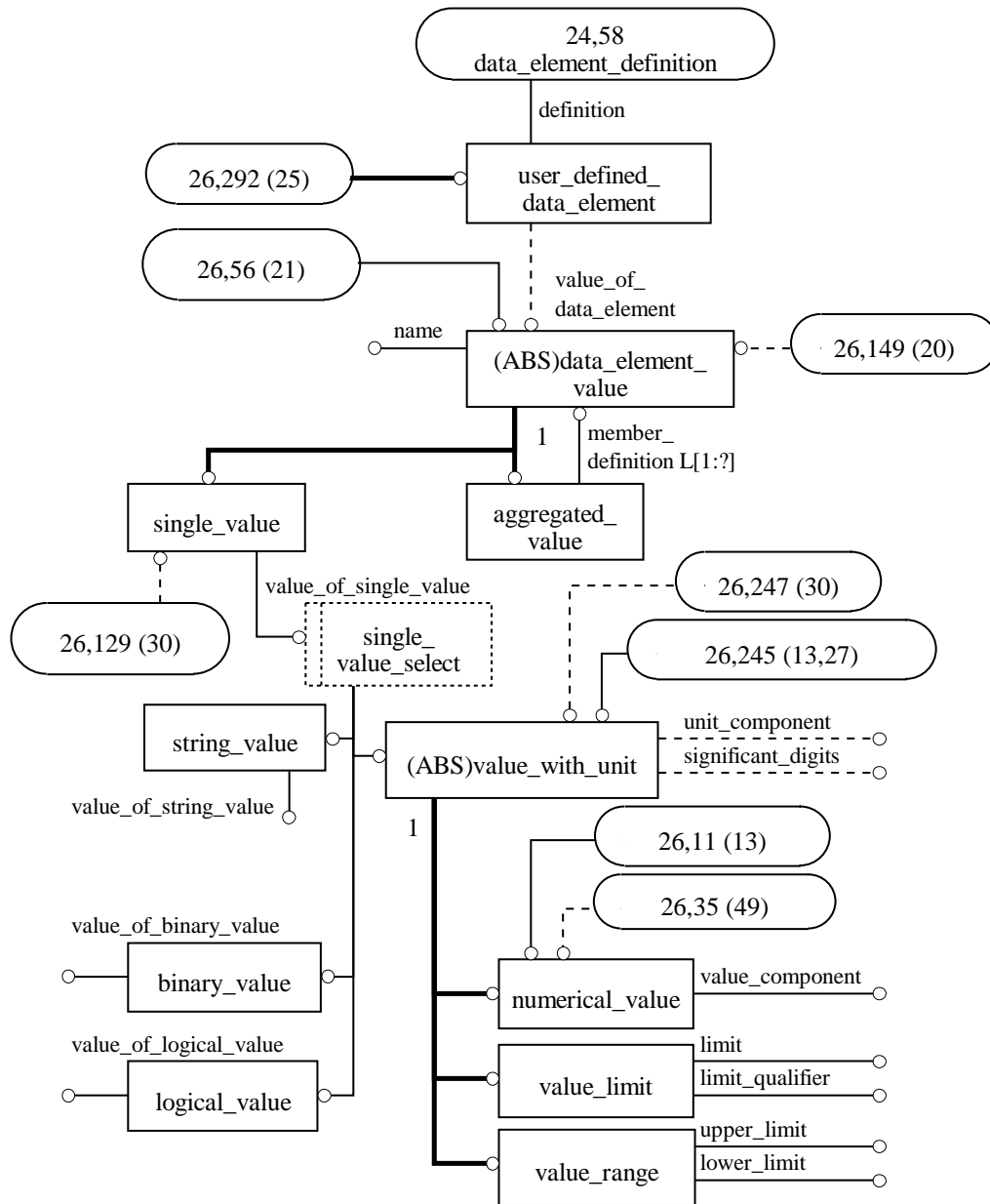


Figure G.26 - ARM diagram in EXPRESS-G: 26 of 93

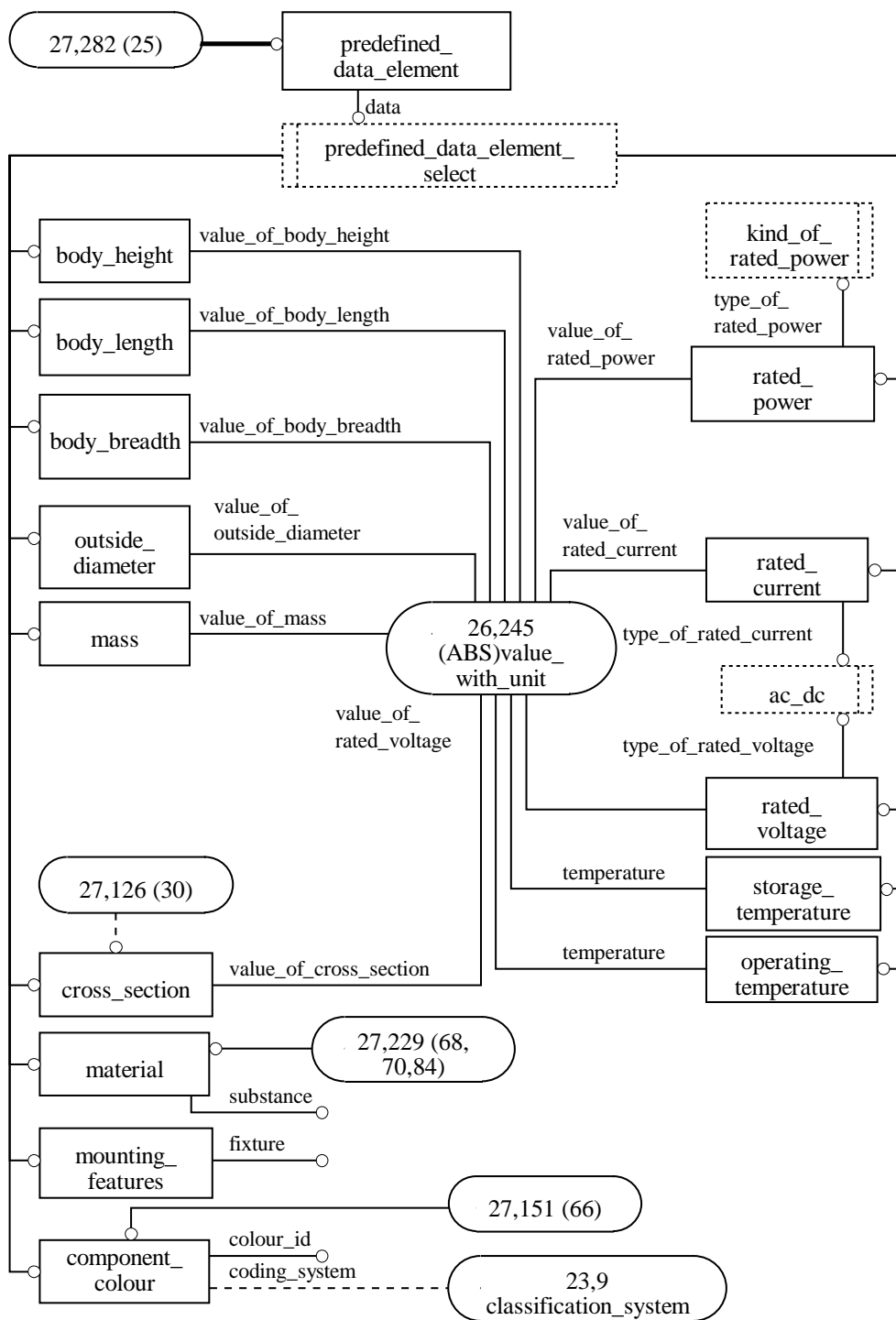


Figure G.27 - ARM diagram in EXPRESS-G: 27 of 93

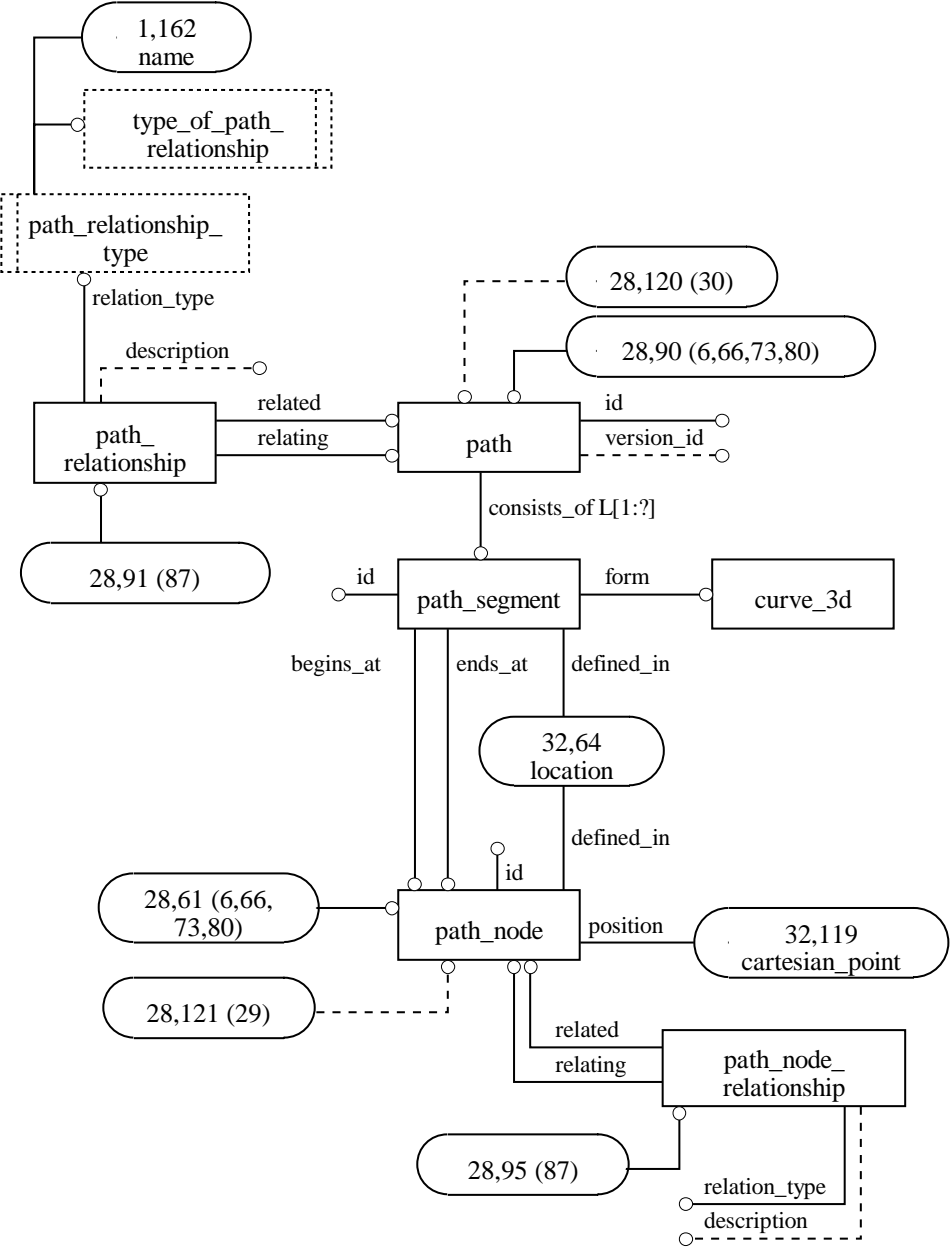


Figure G.28 - ARM diagram in EXPRESS-G: 28 of 93

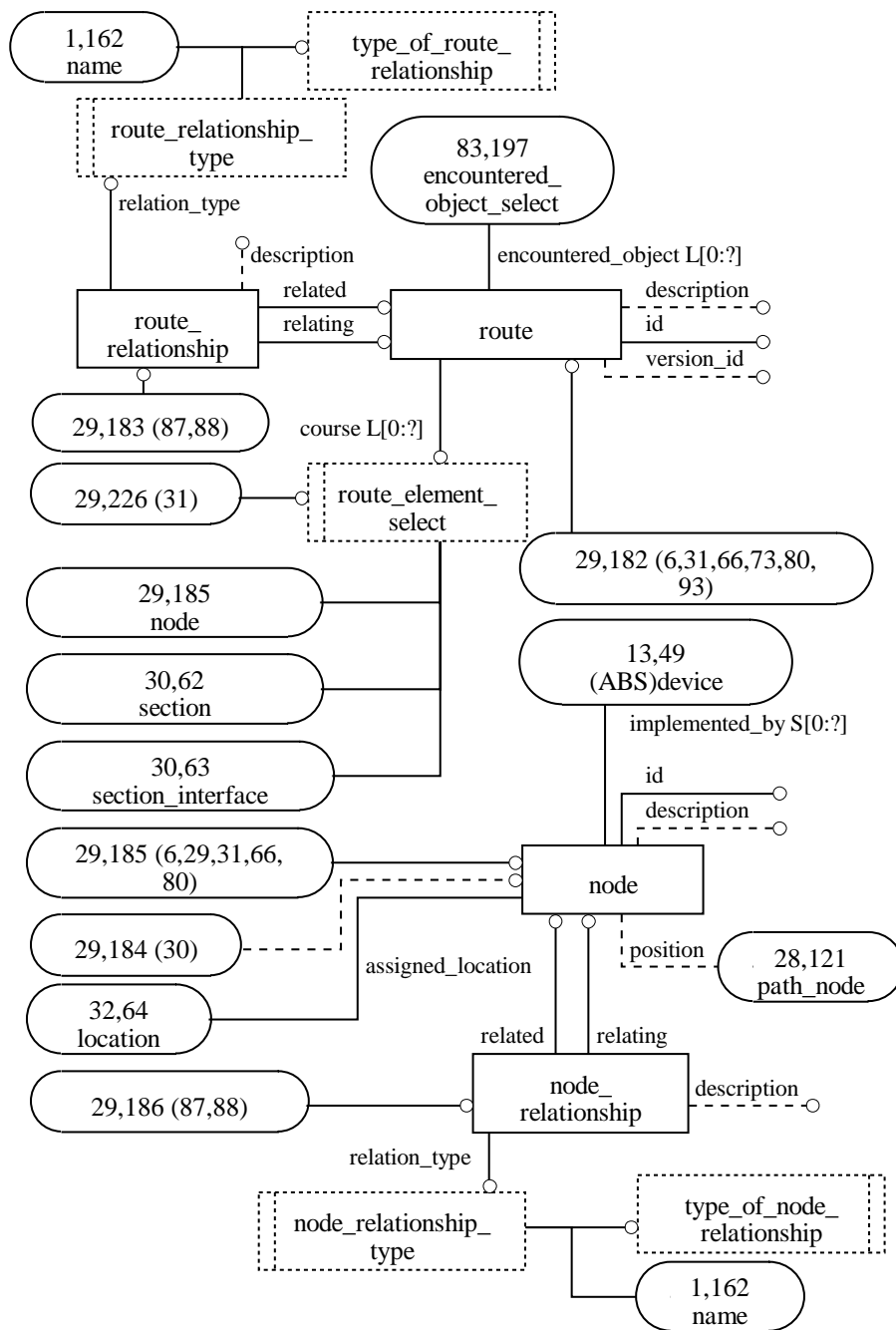


Figure G.29 - ARM diagram in EXPRESS-G: 29 of 93

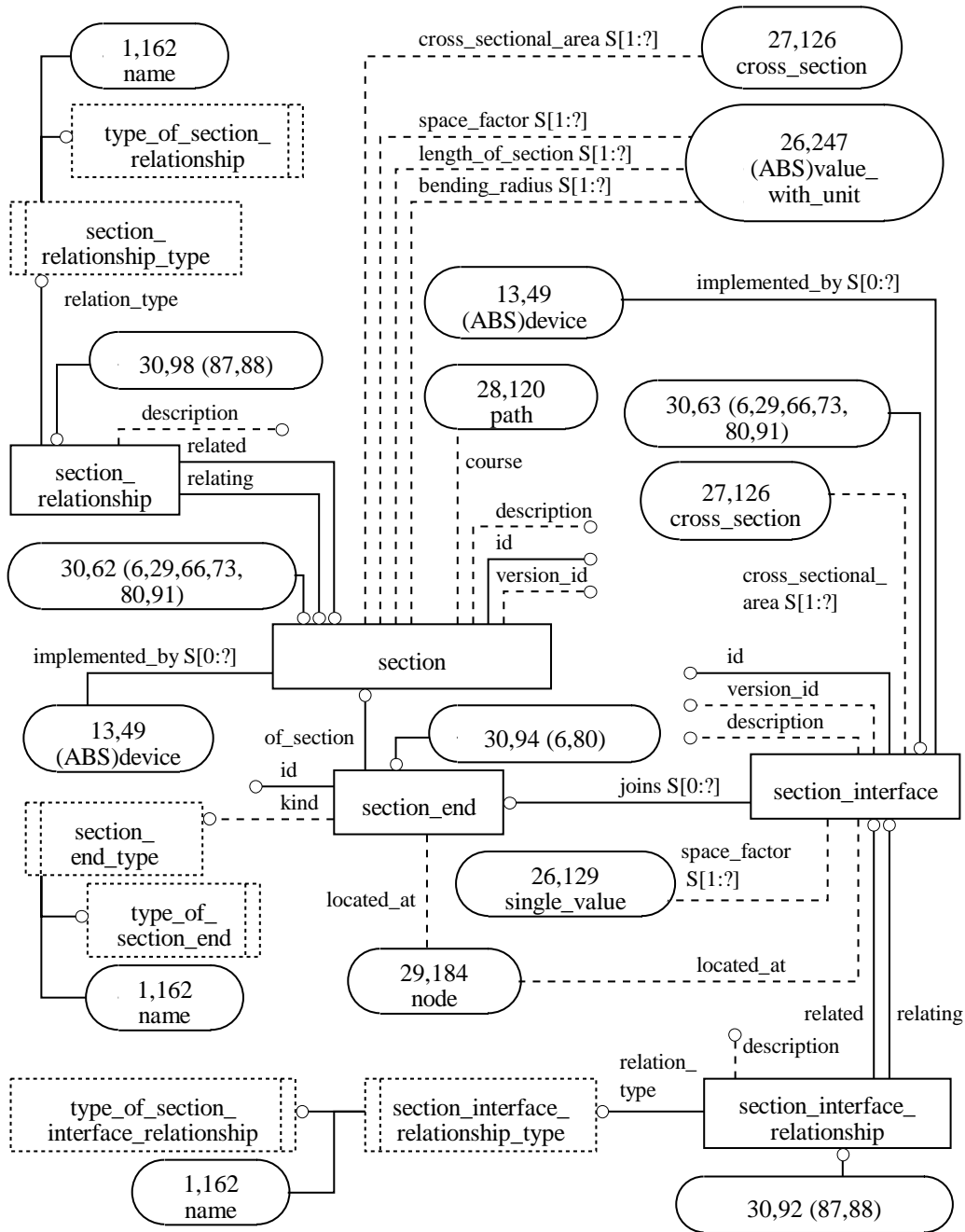


Figure G.30 - ARM diagram in EXPRESS-G: 30 of 93

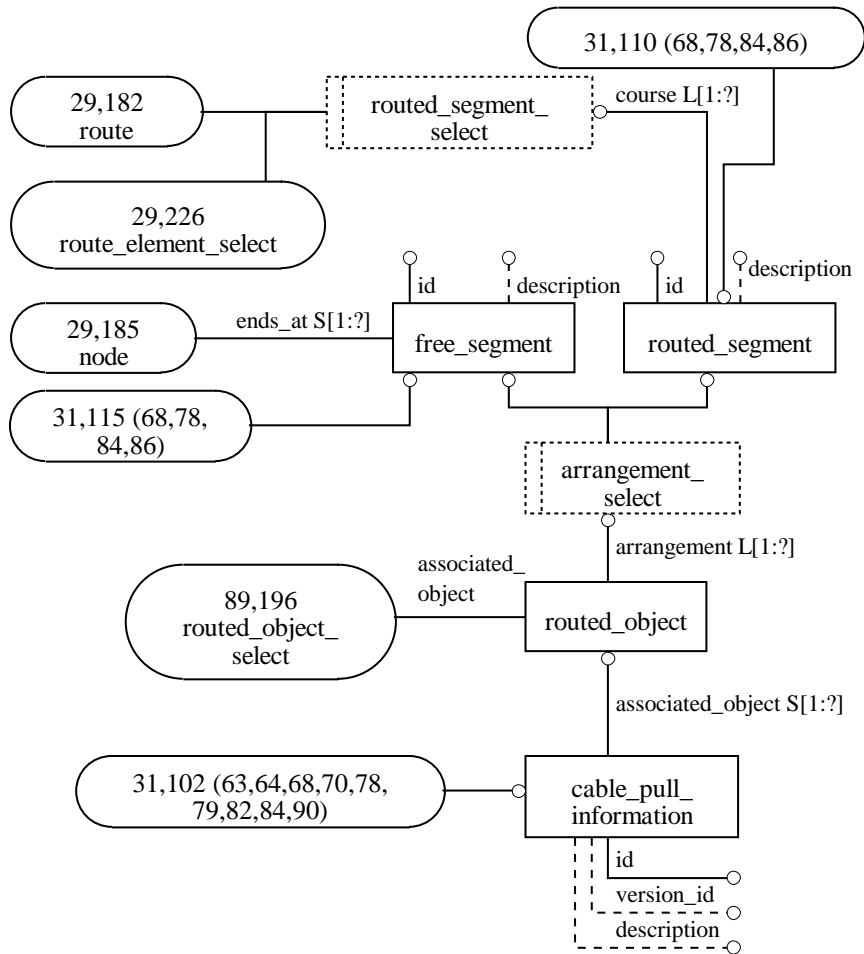


Figure G.31 - ARM diagram in EXPRESS-G: 31 of 93

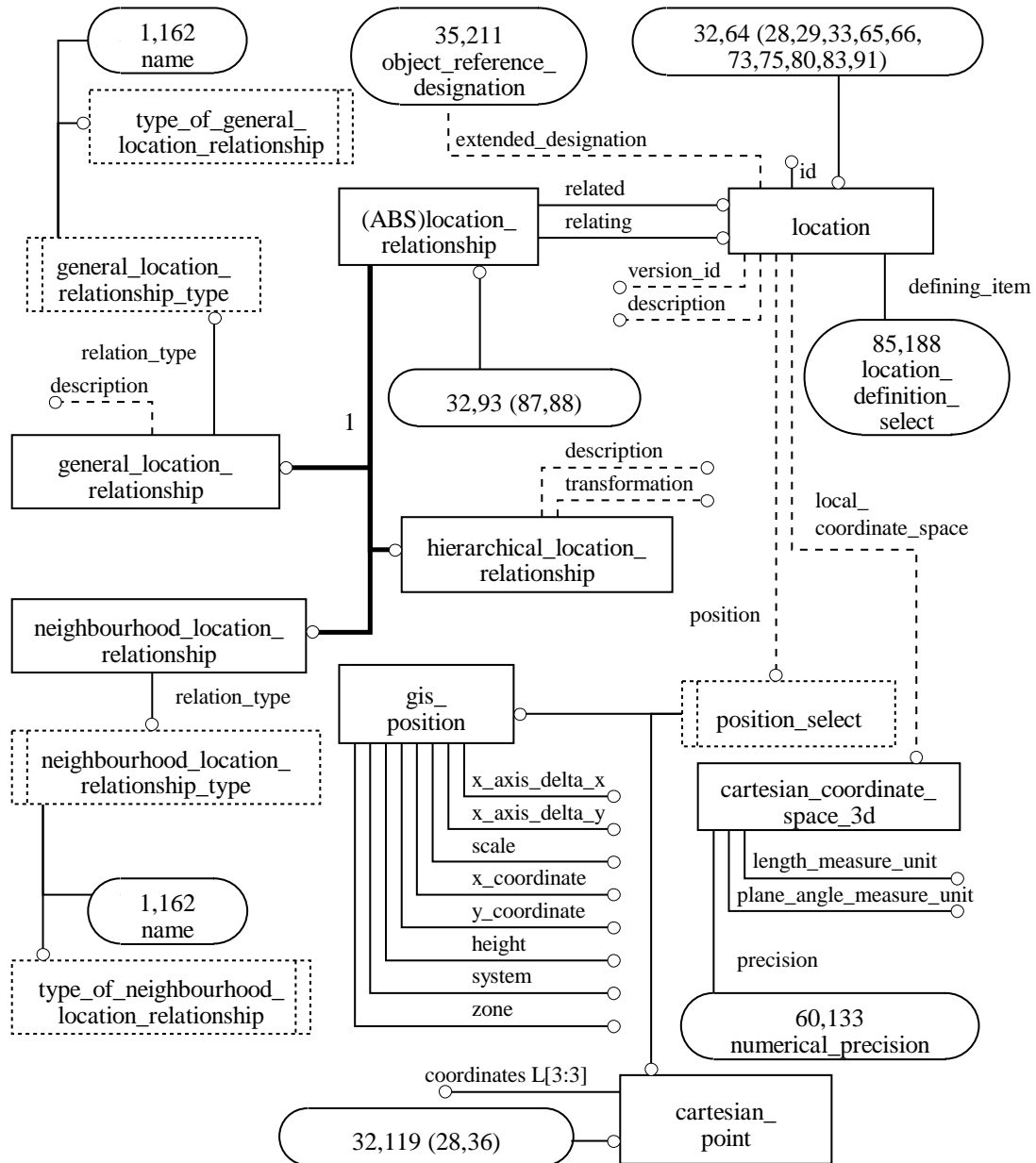


Figure G.32 - ARM diagram in EXPRESS-G: 32 of 93

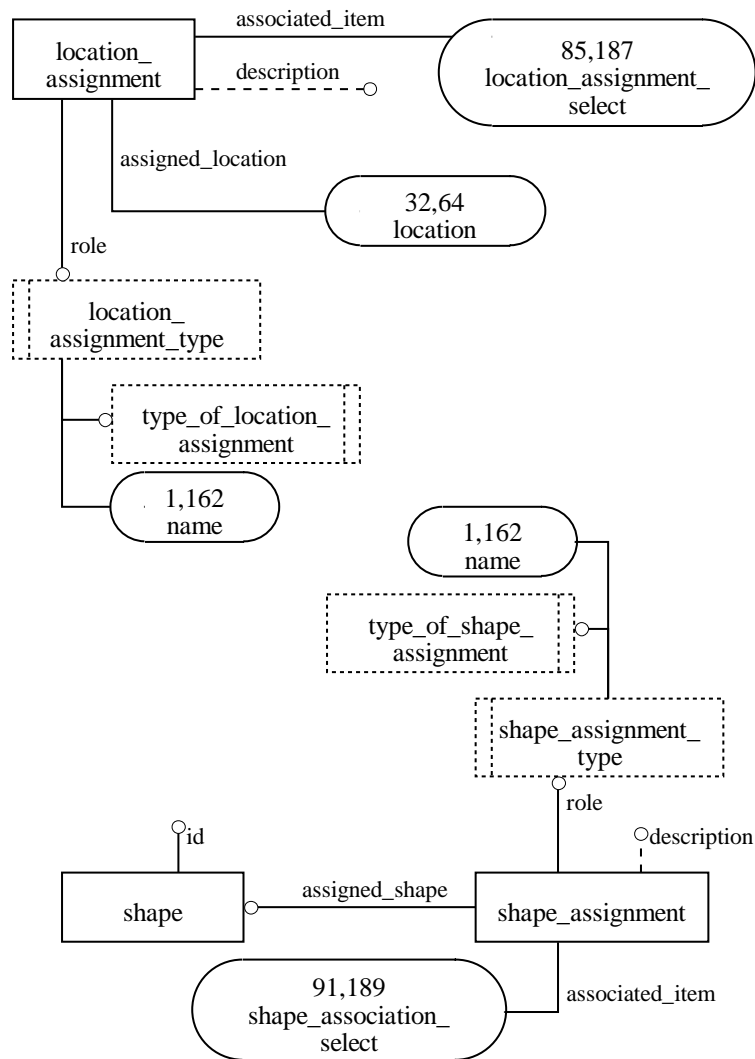


Figure G.33 - ARM diagram in EXPRESS-G: 33 of 93

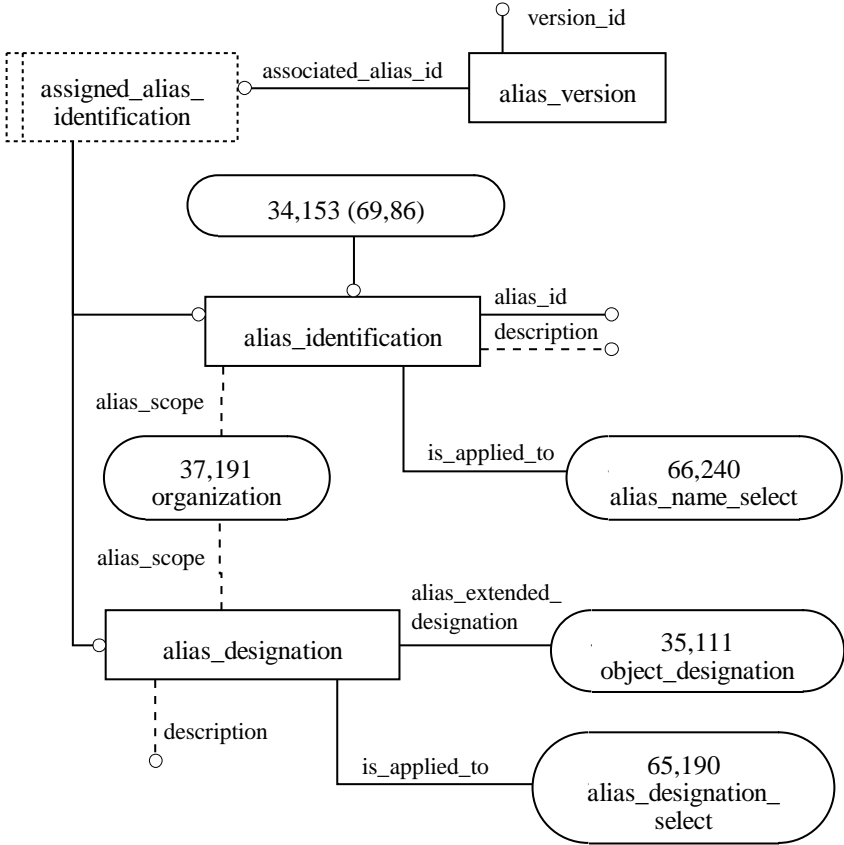


Figure G.34 - ARM diagram in EXPRESS-G: 34 of 93

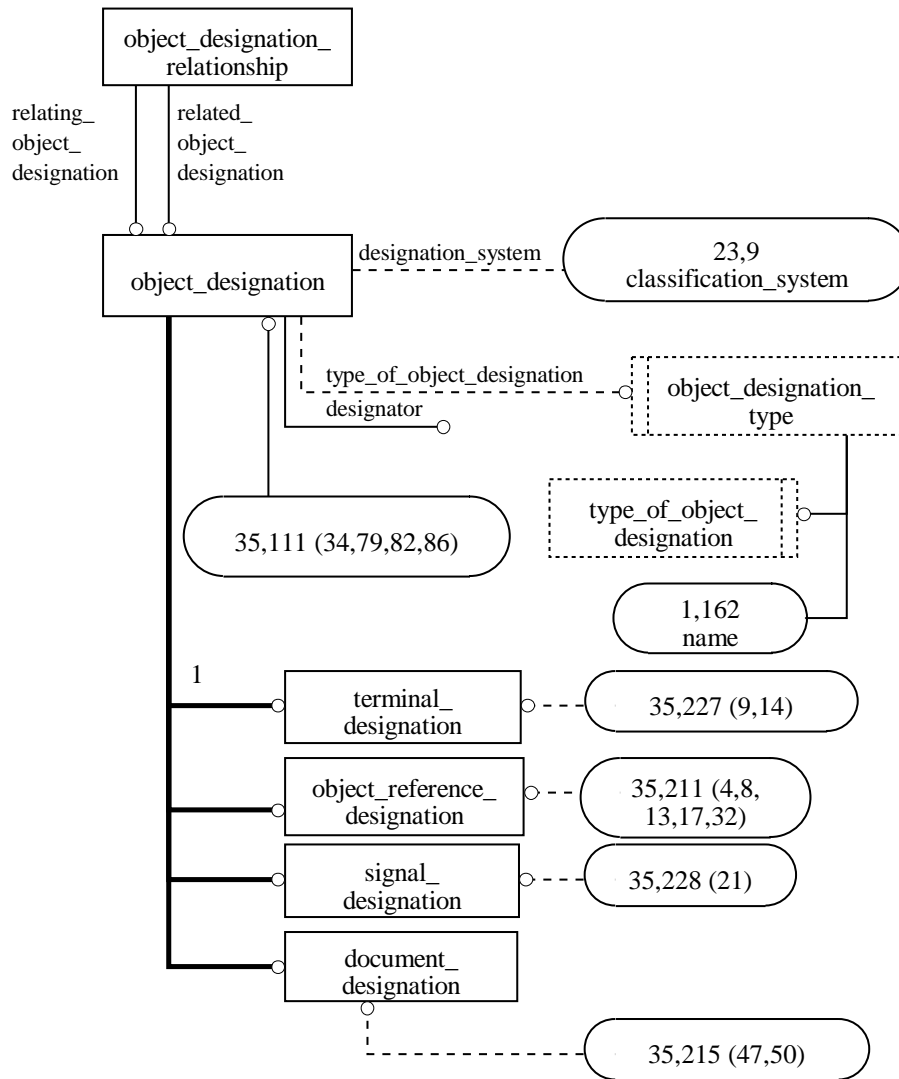


Figure G.35 - ARM diagram in EXPRESS-G: 35 of 93

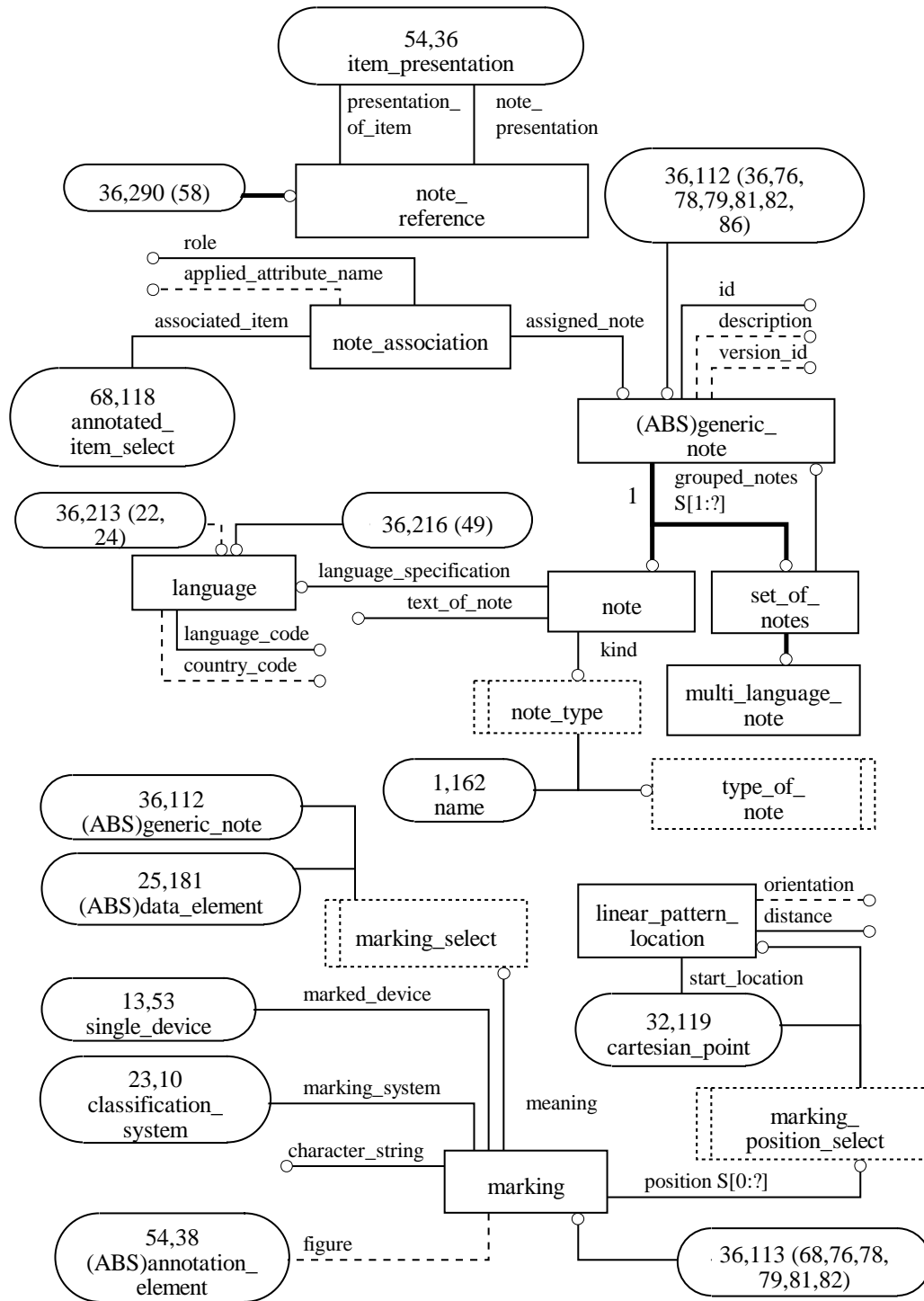


Figure G.36 - ARM diagram in EXPRESS-G: 36 of 93

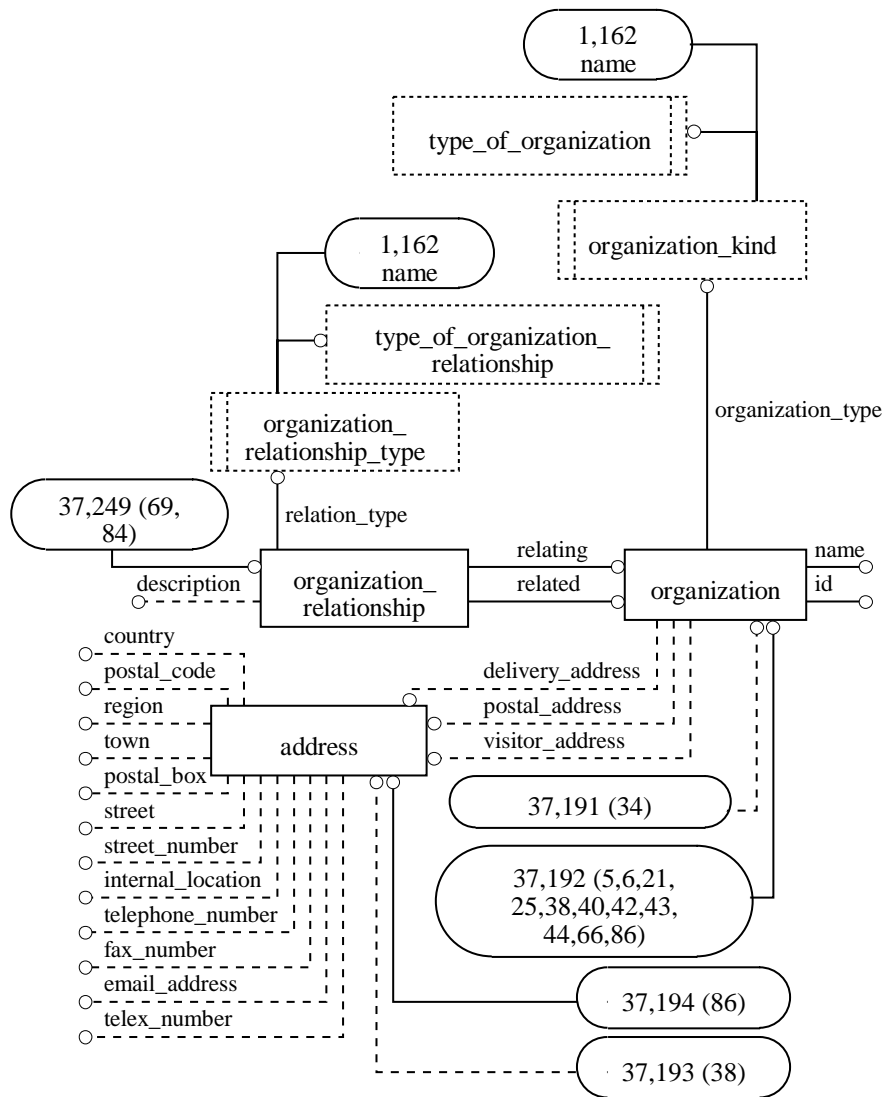


Figure G.37 - ARM diagram in EXPRESS-G: 37 of 93

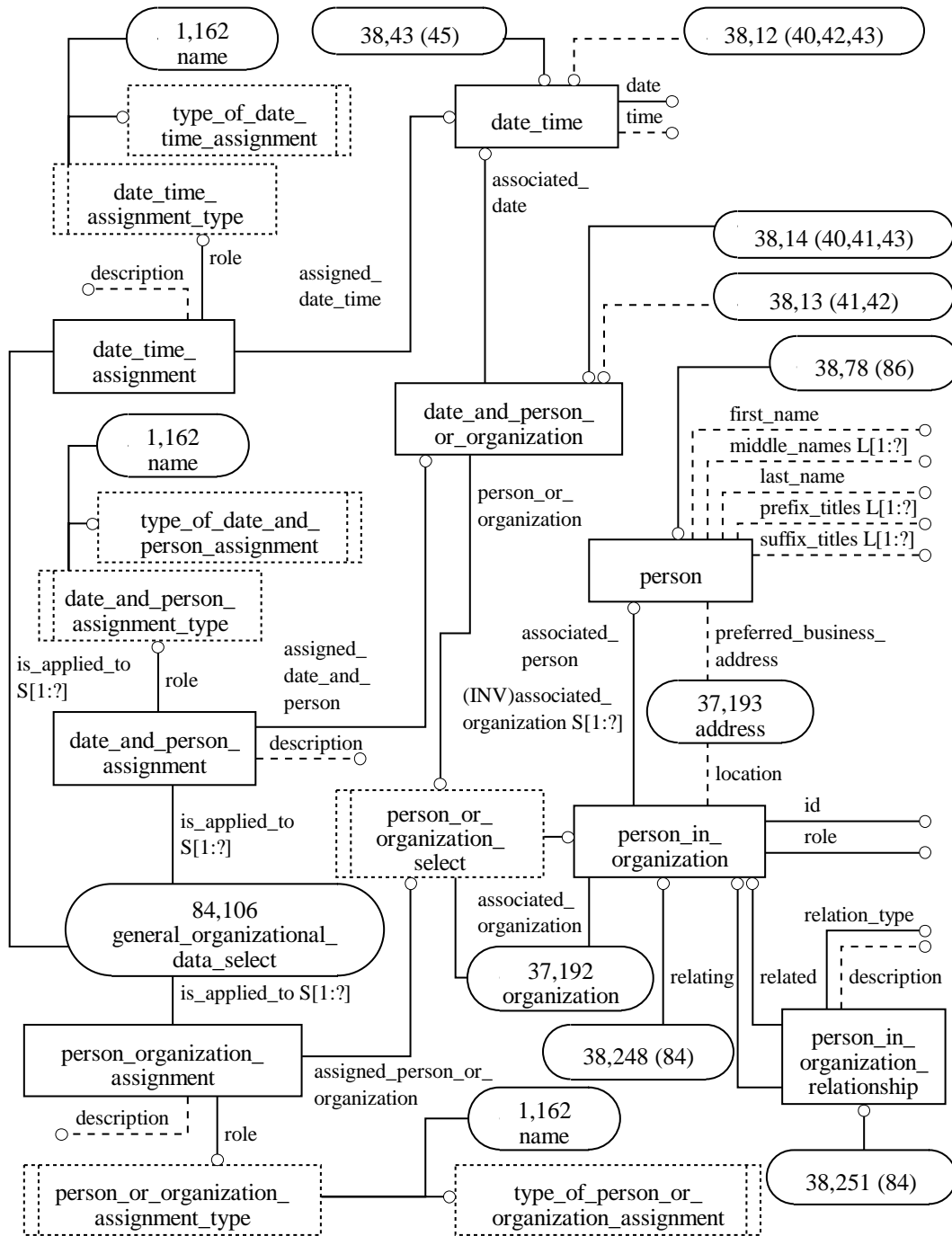


Figure G.38 - ARM diagram in EXPRESS-G: 38 of 93

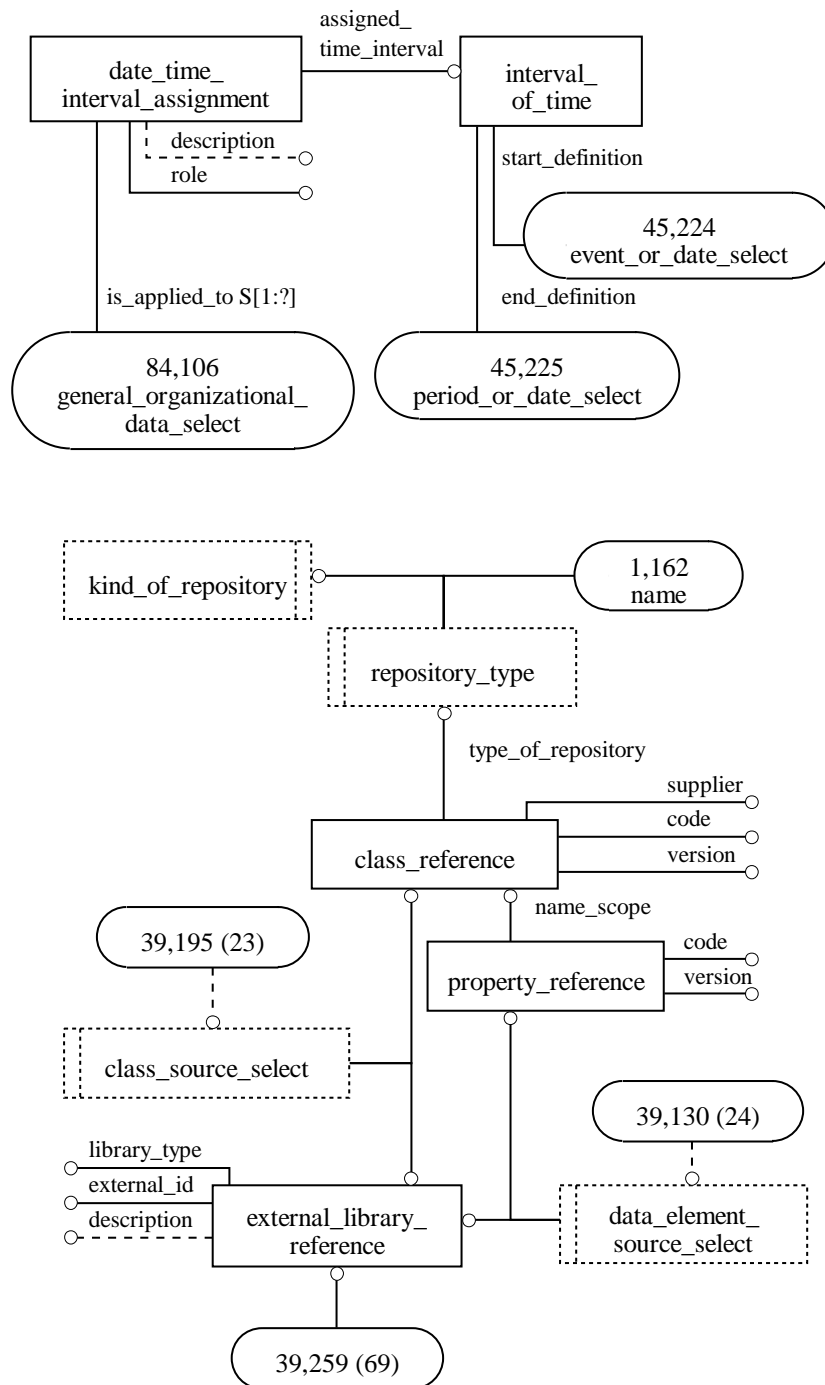


Figure G.39 - ARM diagram in EXPRESS-G: 39 of 93

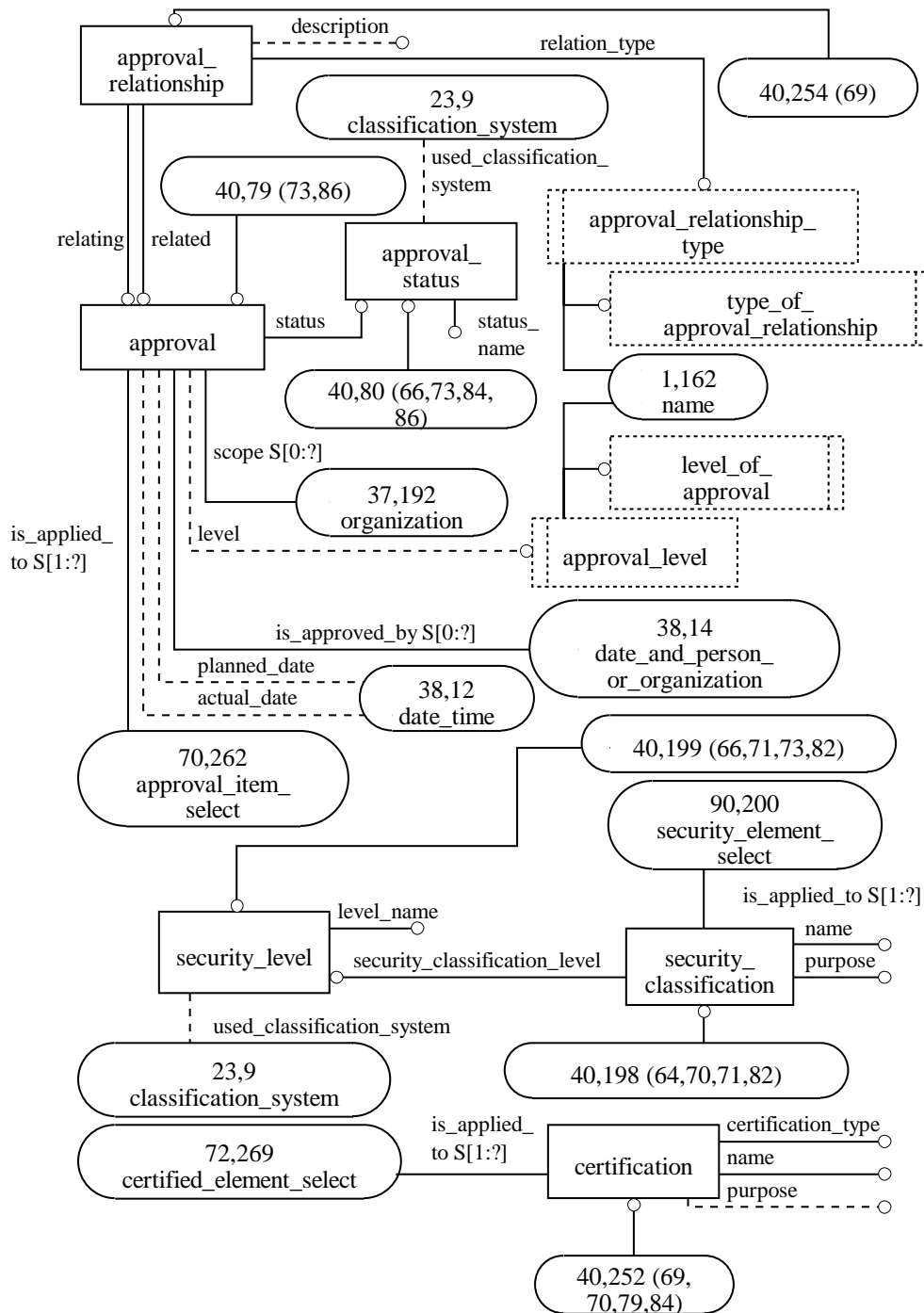


Figure G.40 - ARM diagram in EXPRESS-G: 40 of 93

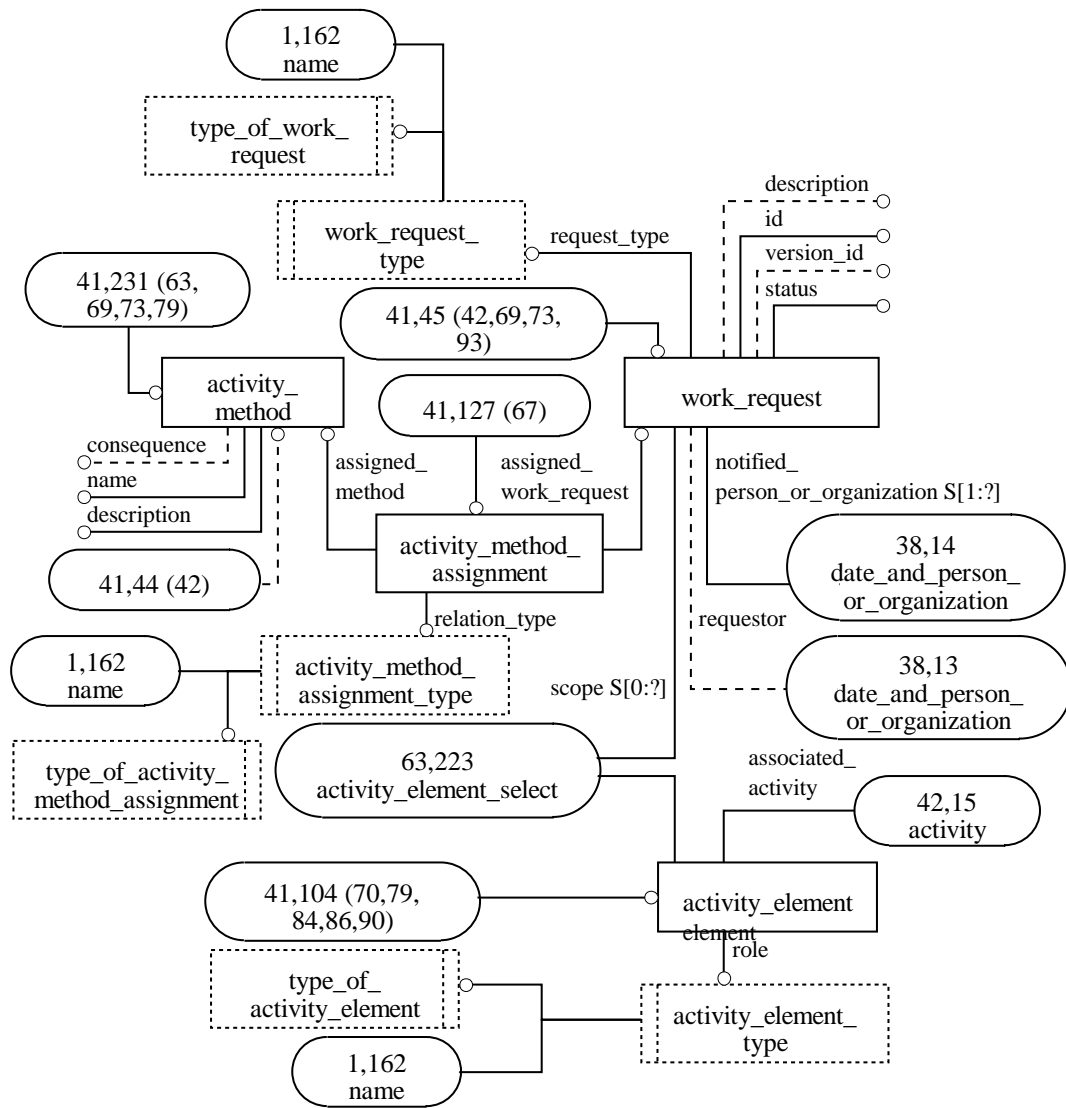


Figure G.41 - ARM diagram in EXPRESS-G: 41 of 93

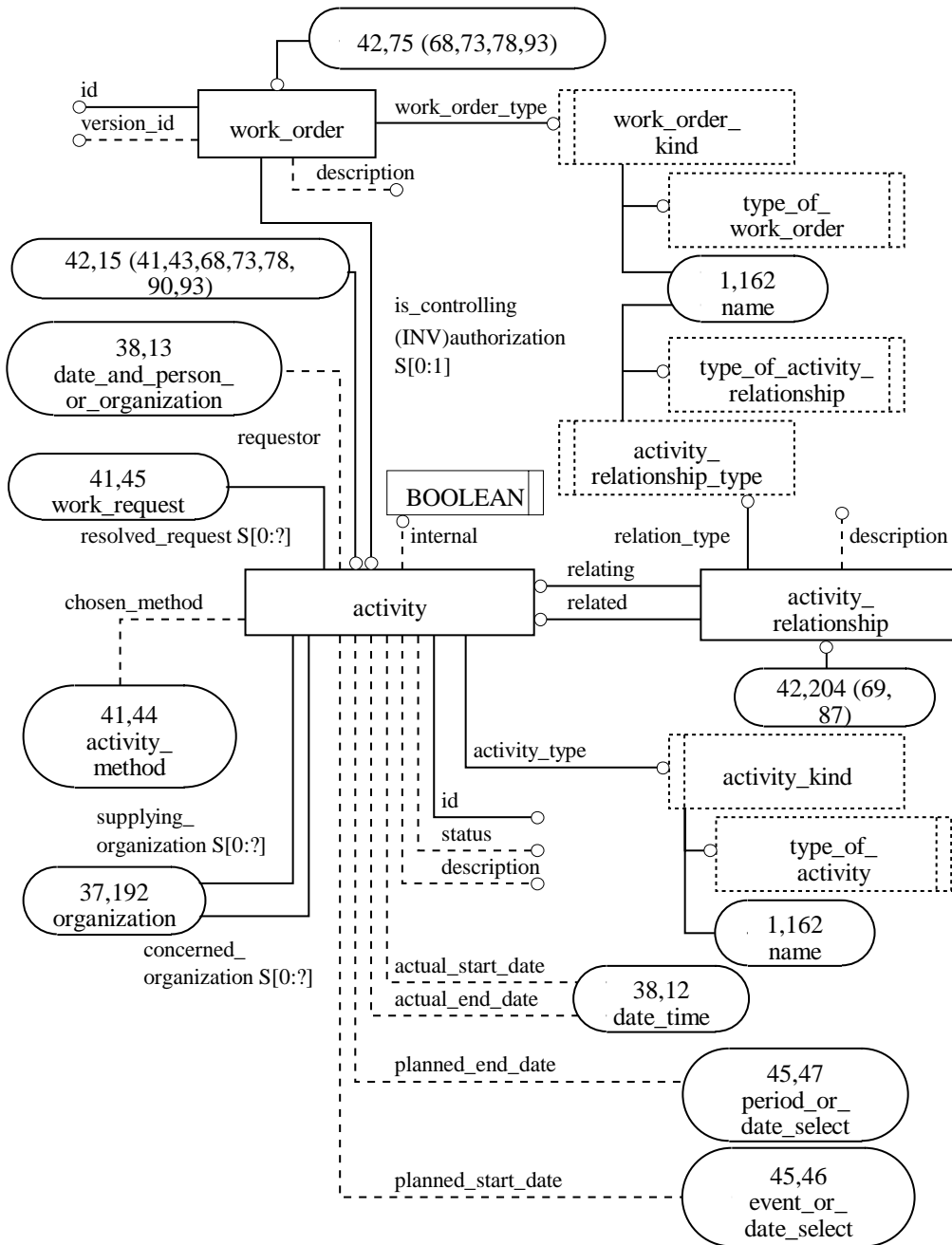


Figure G.42 - ARM diagram in EXPRESS-G: 42 of 93

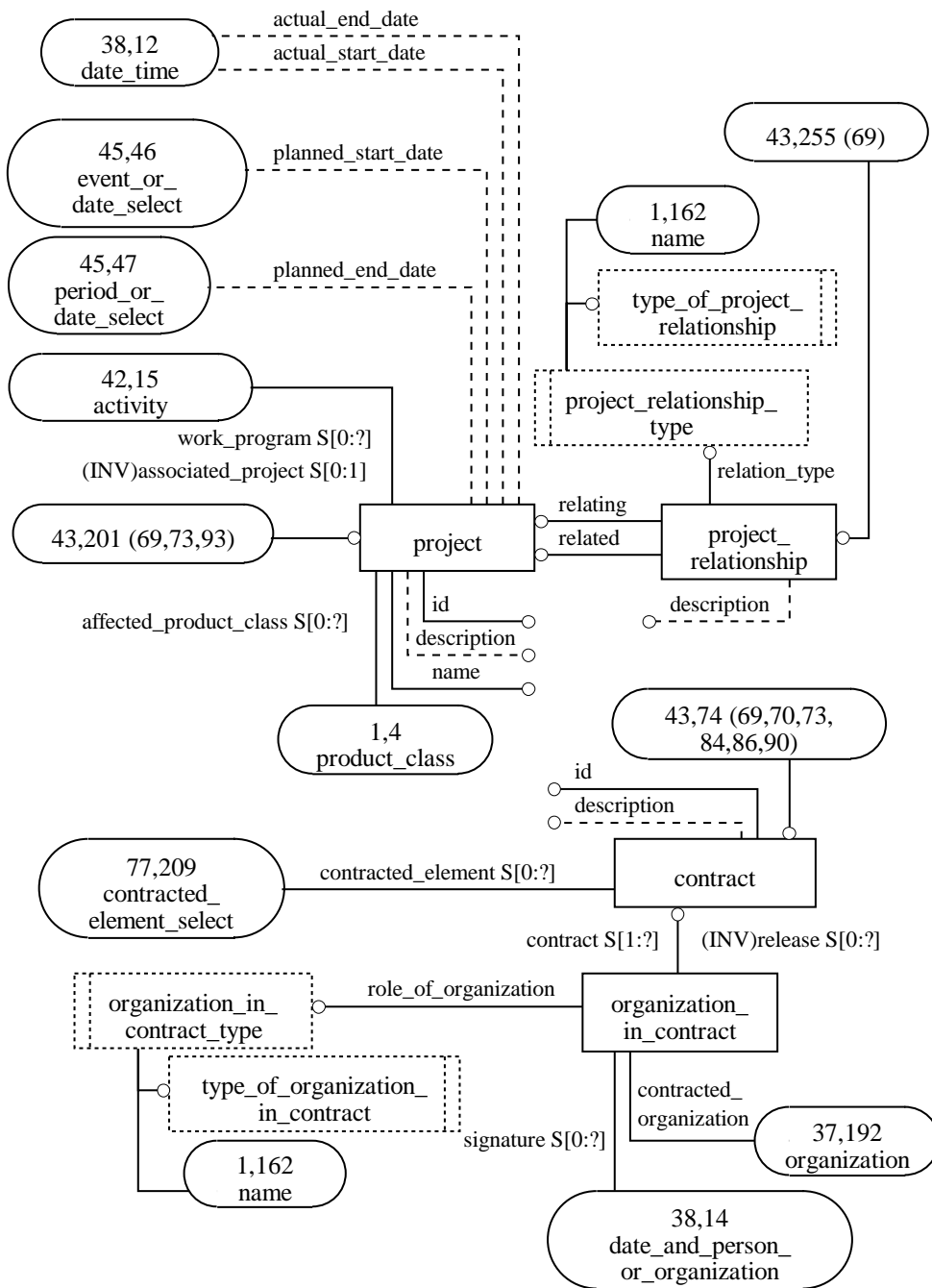


Figure G.43 - ARM diagram in EXPRESS-G: 43 of 93

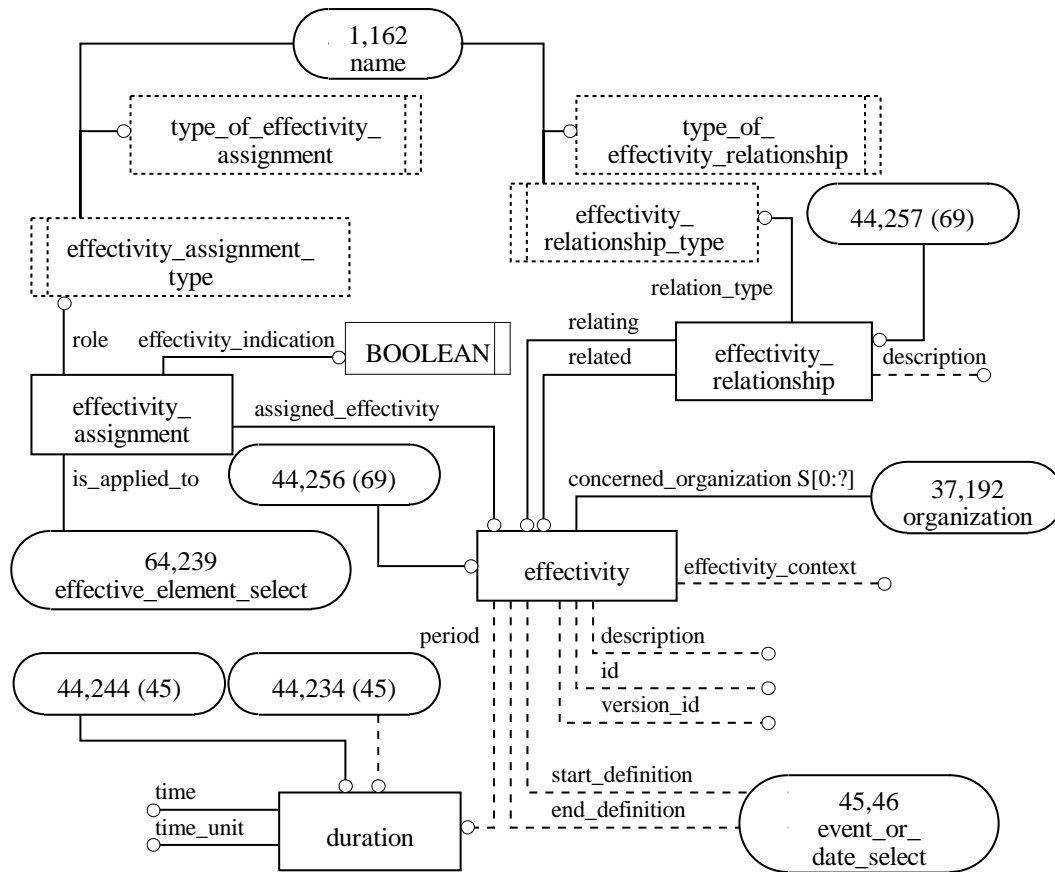


Figure G.44 - ARM diagram in EXPRESS-G: 44 of 93

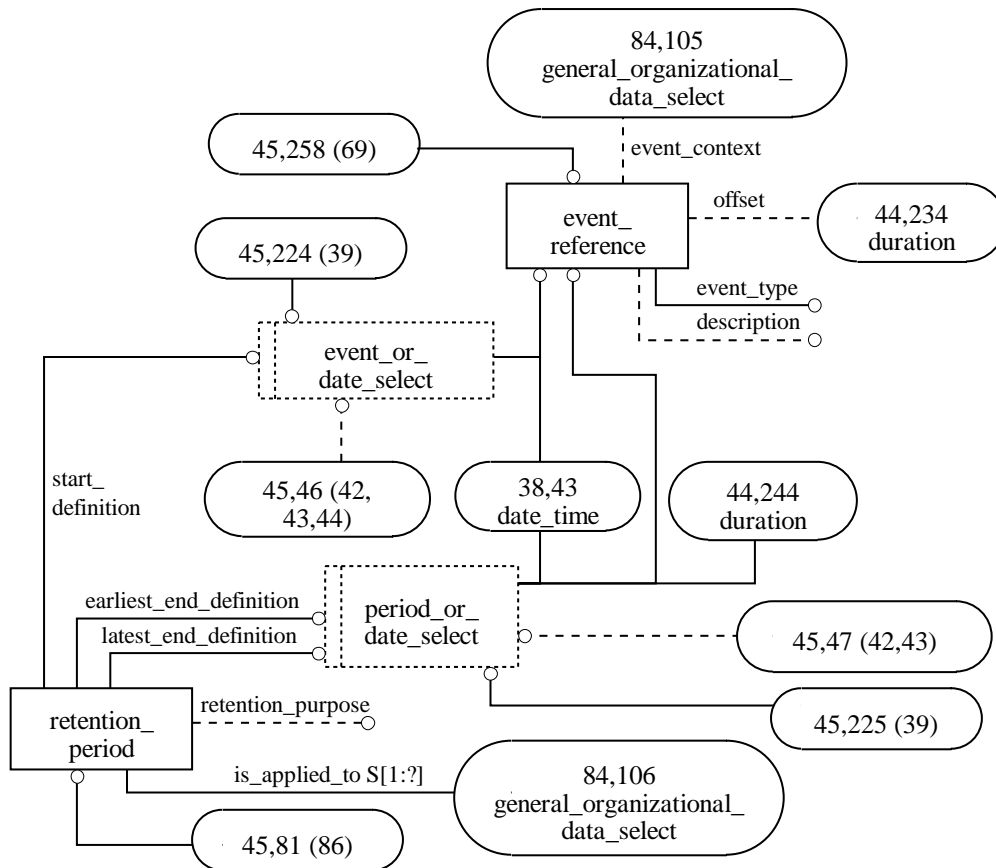


Figure G.45 - ARM diagram in EXPRESS-G: 45 of 93

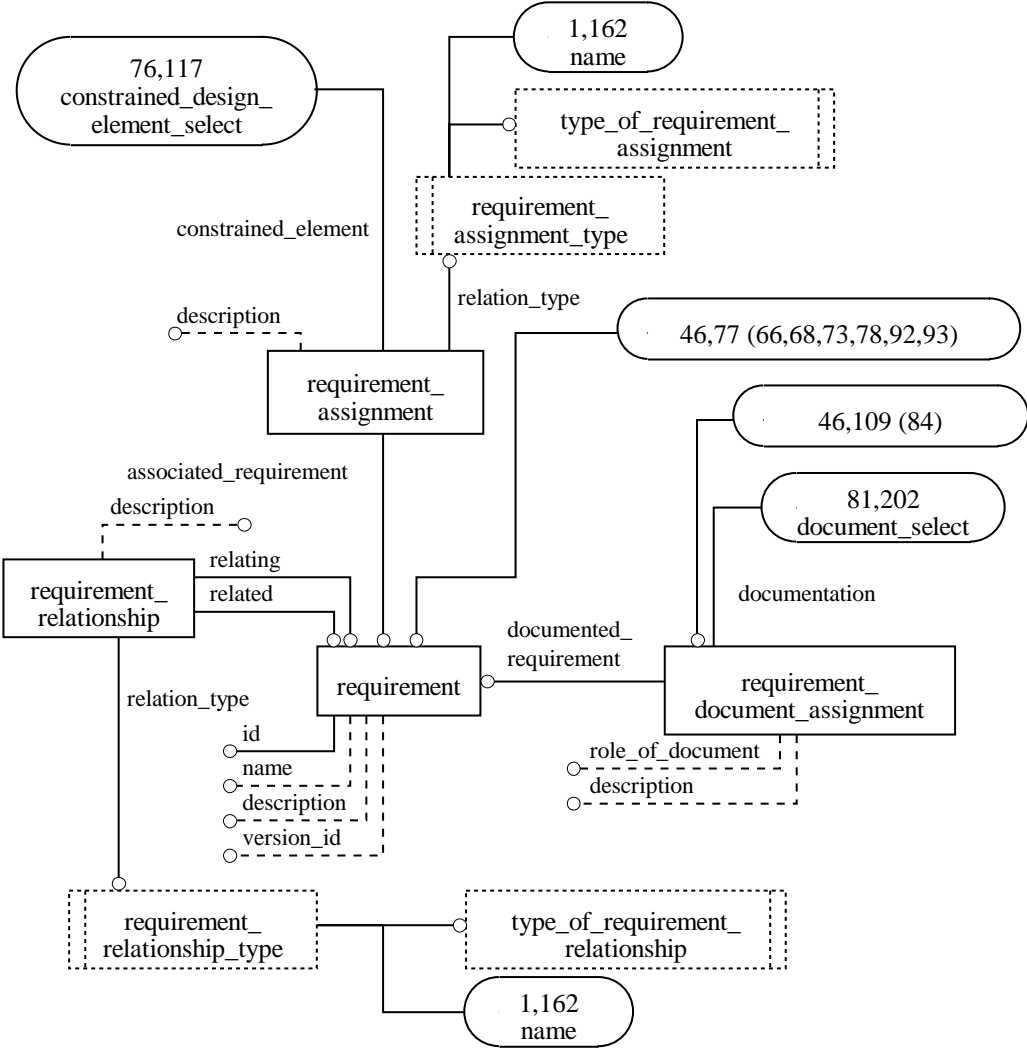


Figure G.46 - ARM diagram in EXPRESS-G: 46 of 93

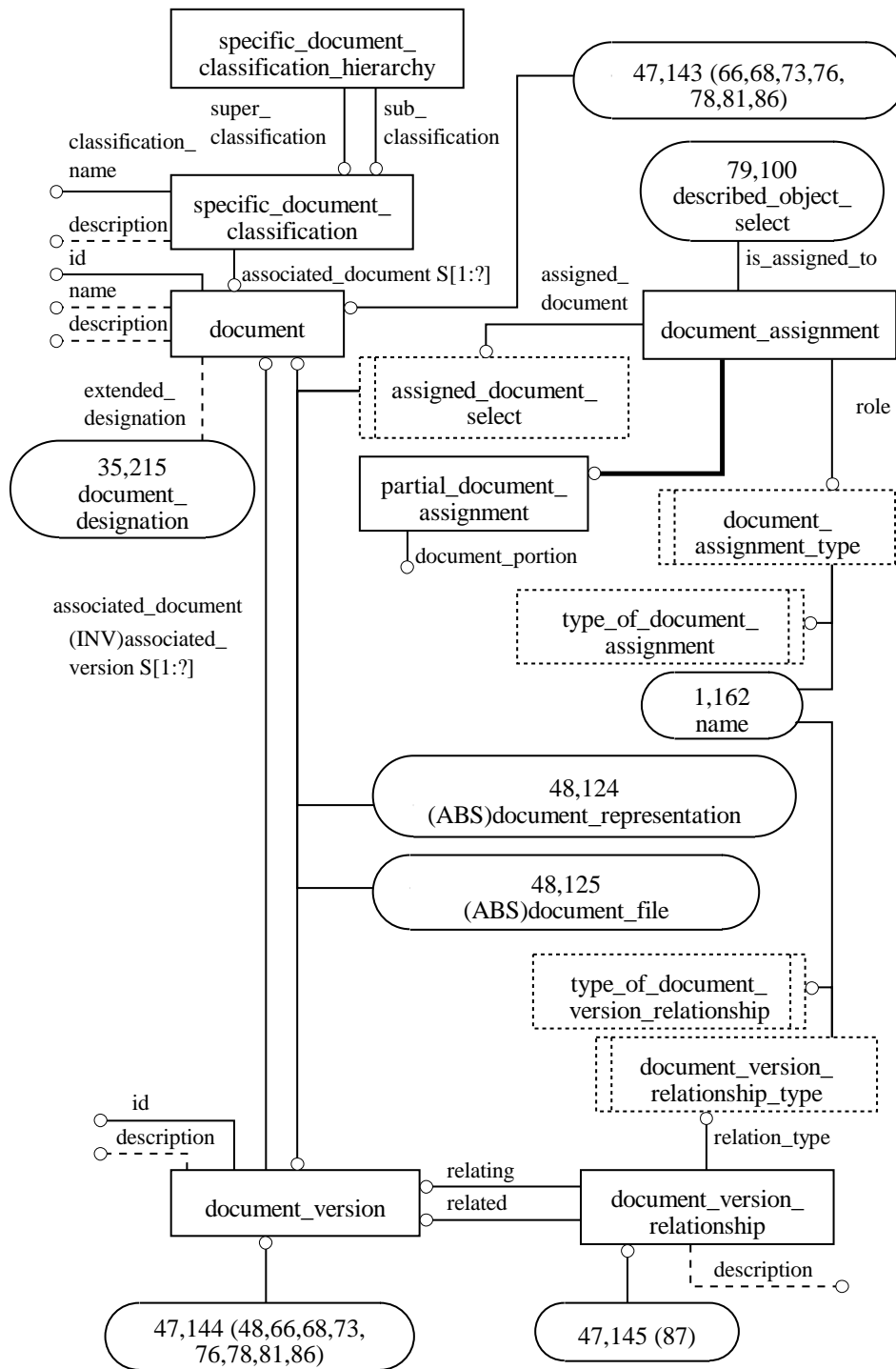


Figure G.47 - ARM diagram in EXPRESS-G: 47 of 93

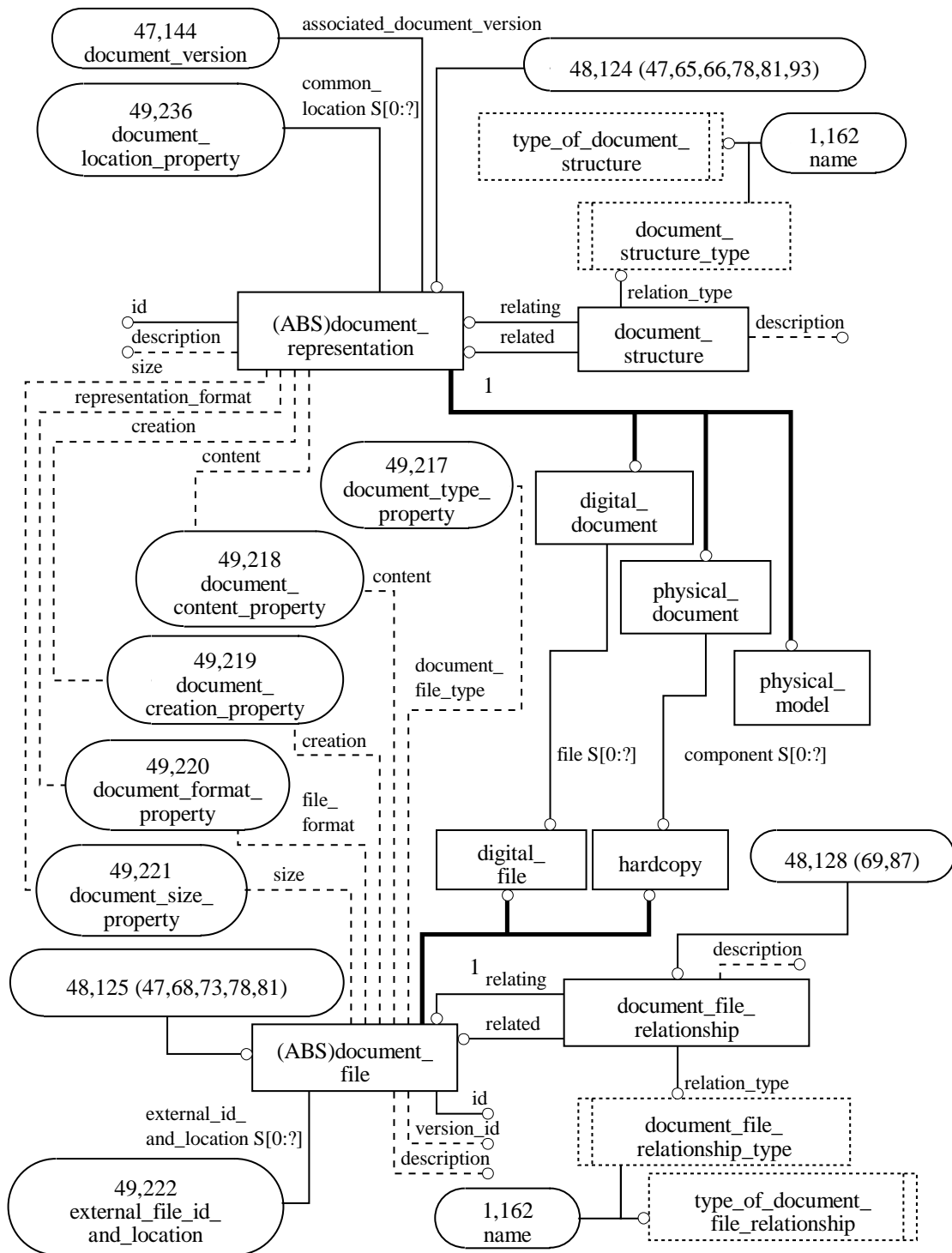


Figure G.48 - ARM diagram in EXPRESS-G: 48 of 93

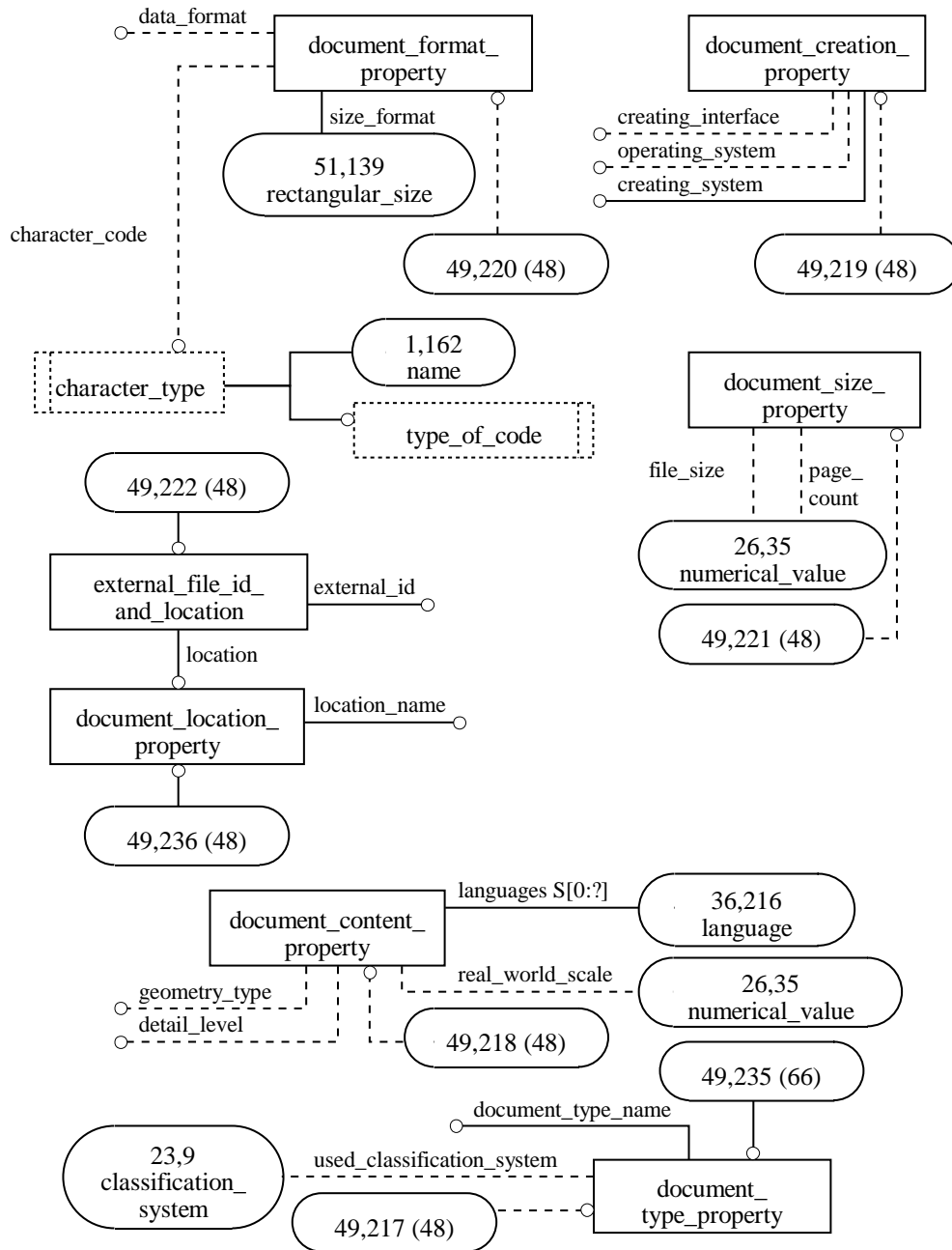


Figure G.49 - ARM diagram in EXPRESS-G: 49 of 93

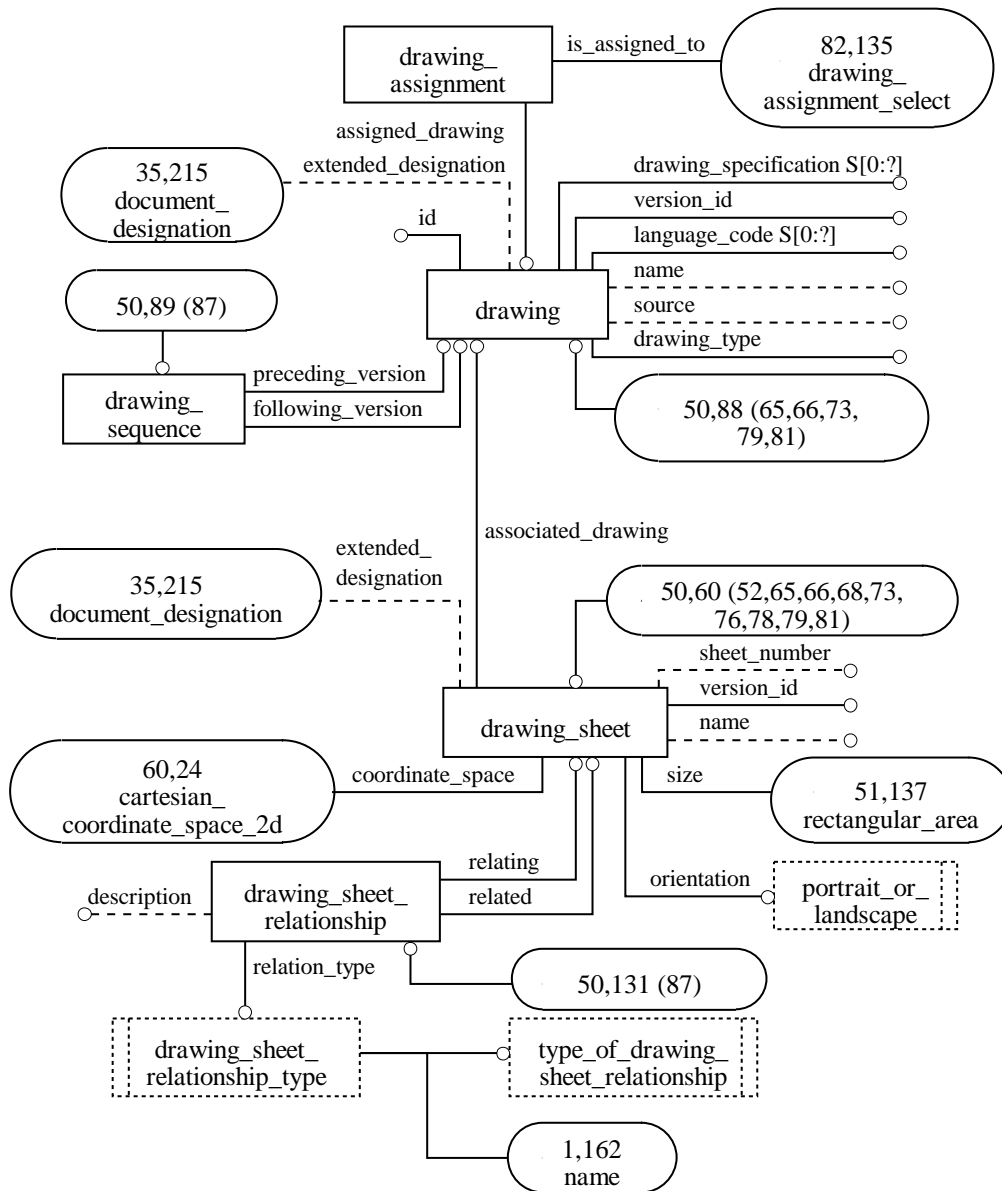


Figure G.50 - ARM diagram in EXPRESS-G: 50 of 93

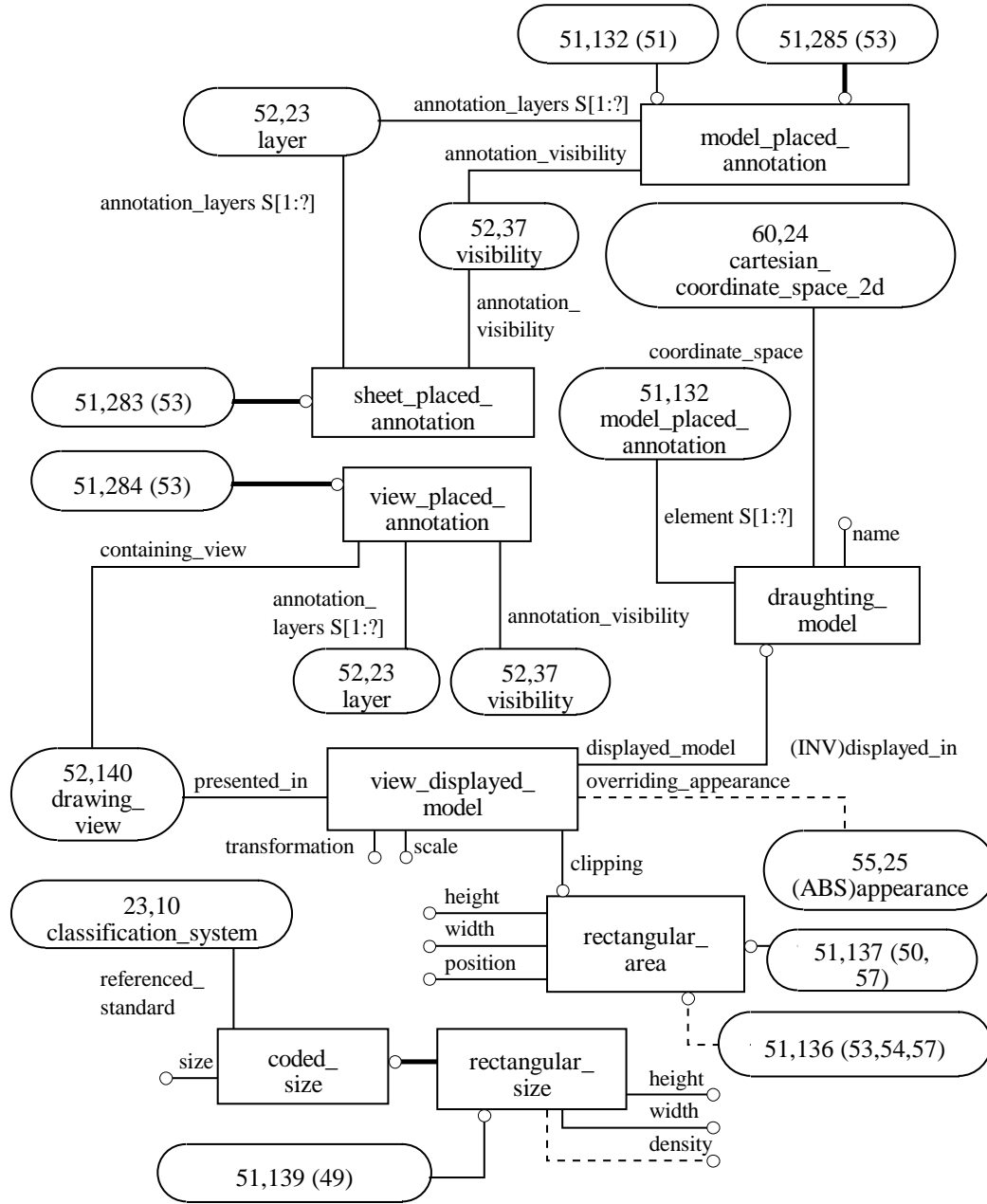


Figure G.51 - ARM diagram in EXPRESS-G: 51 of 93

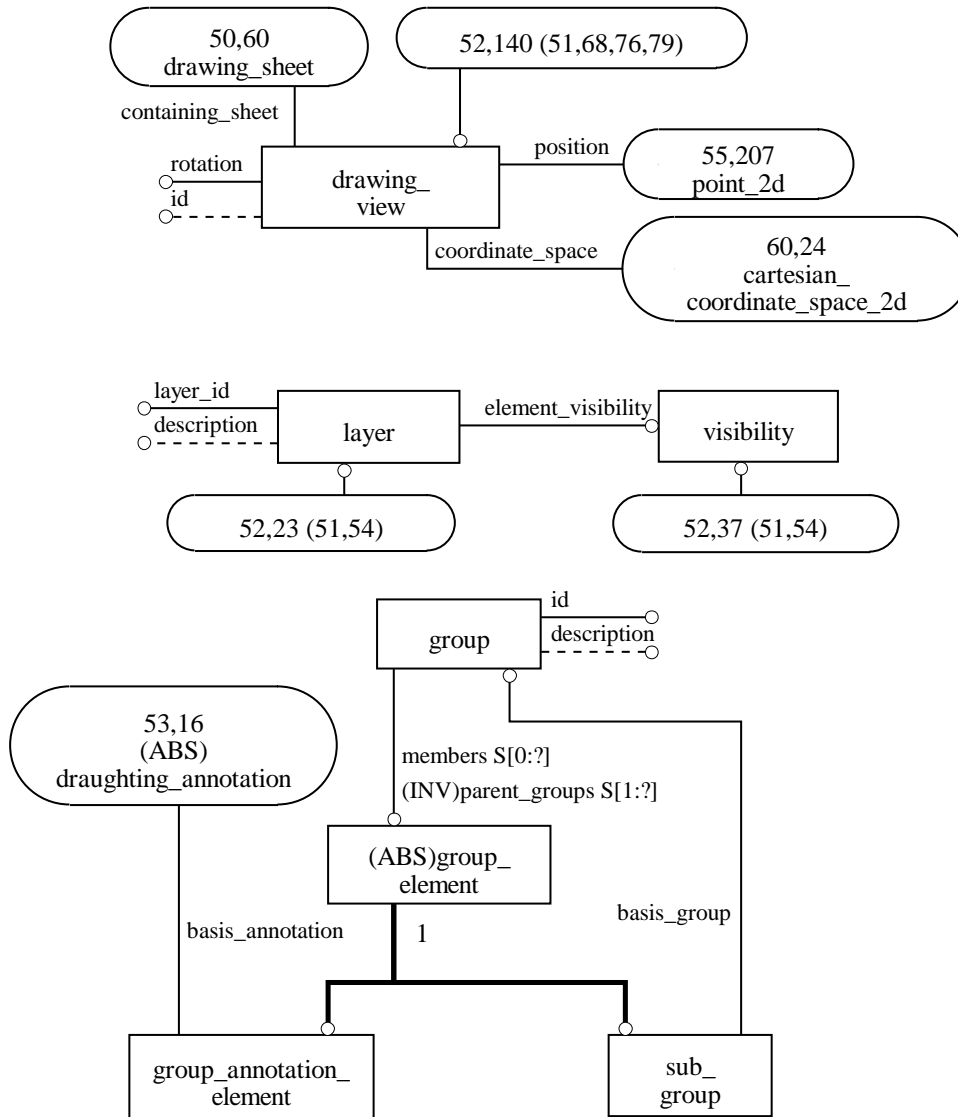


Figure G.52 - ARM diagram in EXPRESS-G: 52 of 93

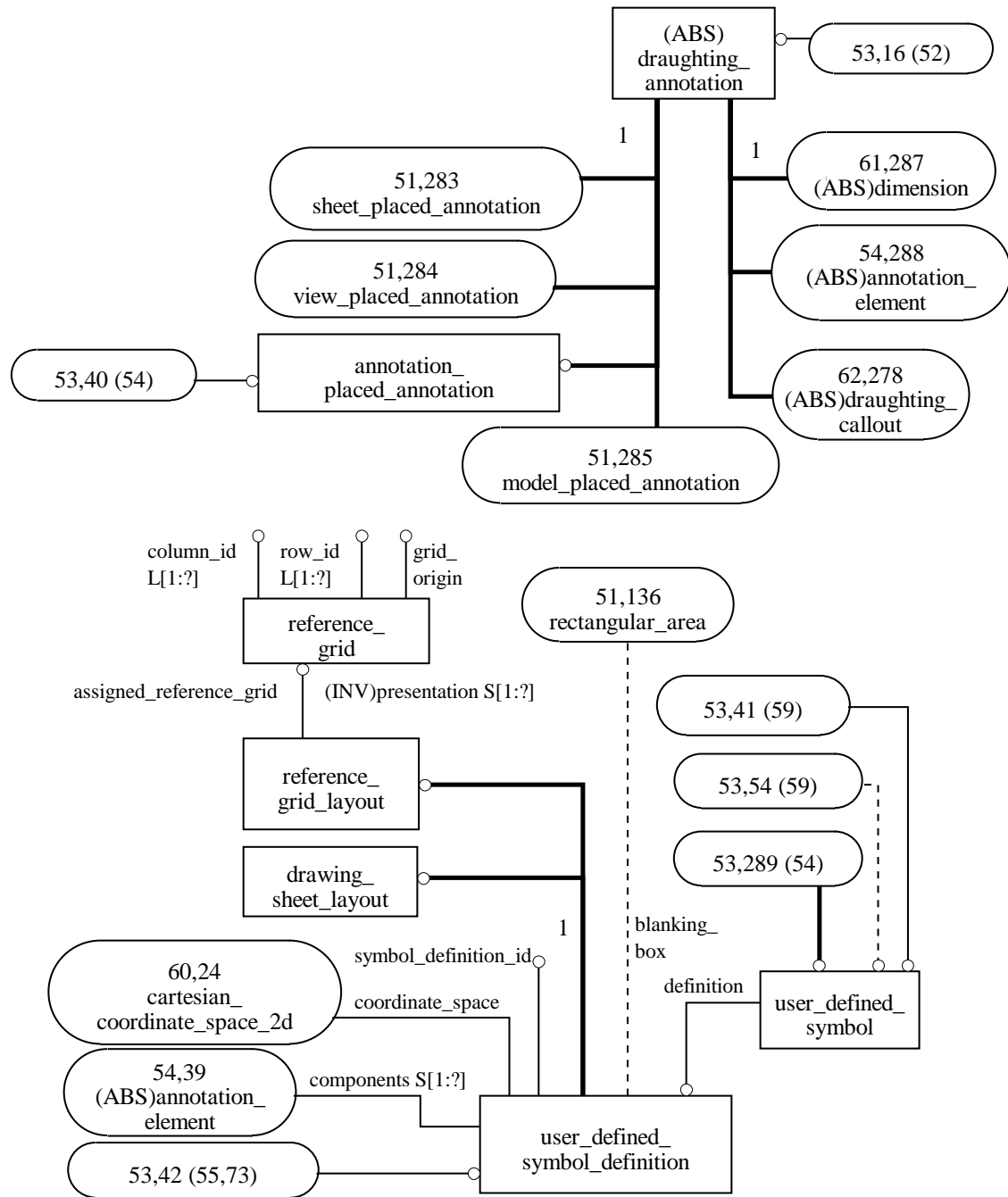


Figure G.53 - ARM diagram in EXPRESS-G: 53 of 93

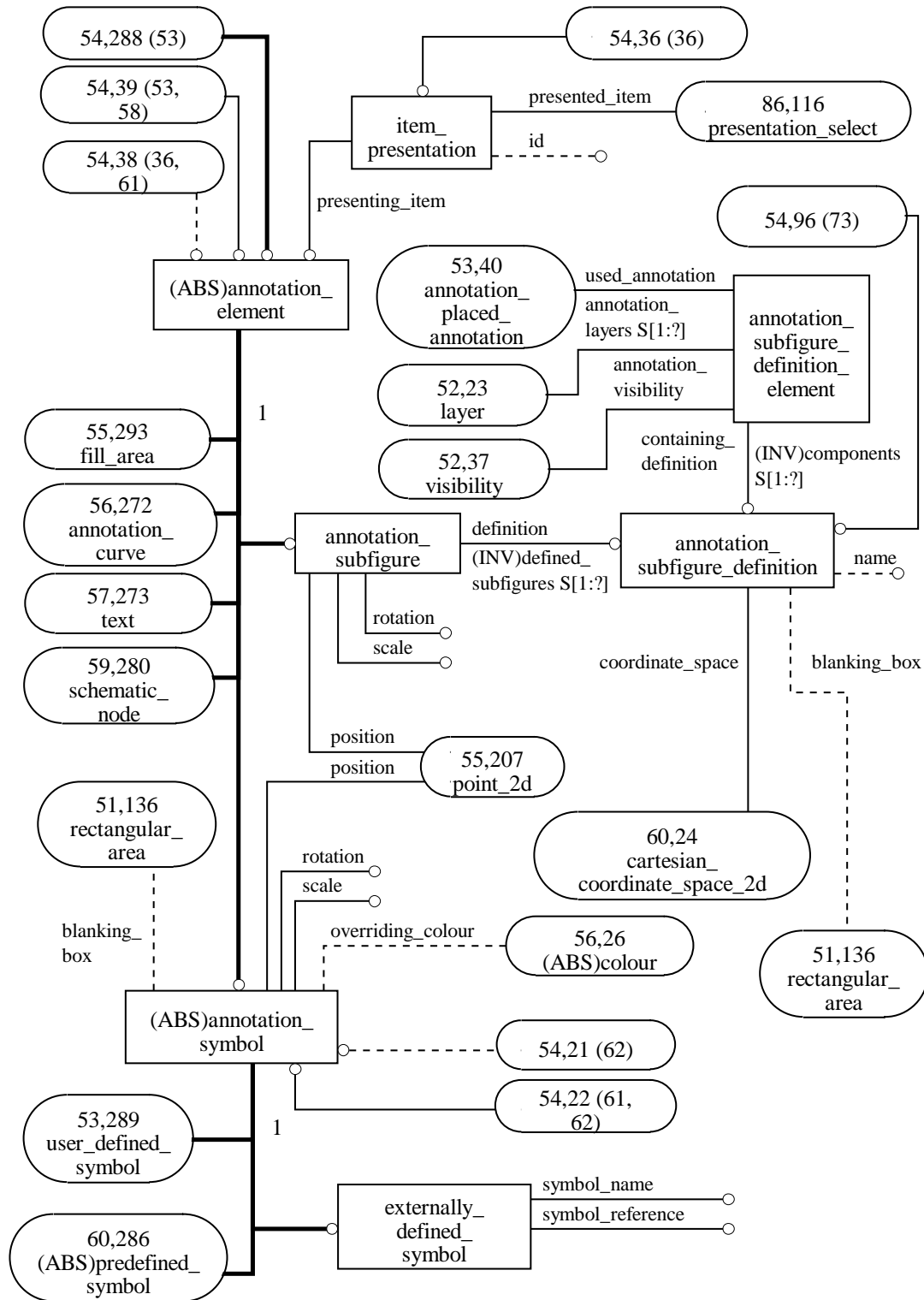


Figure G.54 - ARM diagram in EXPRESS-G: 54 of 93

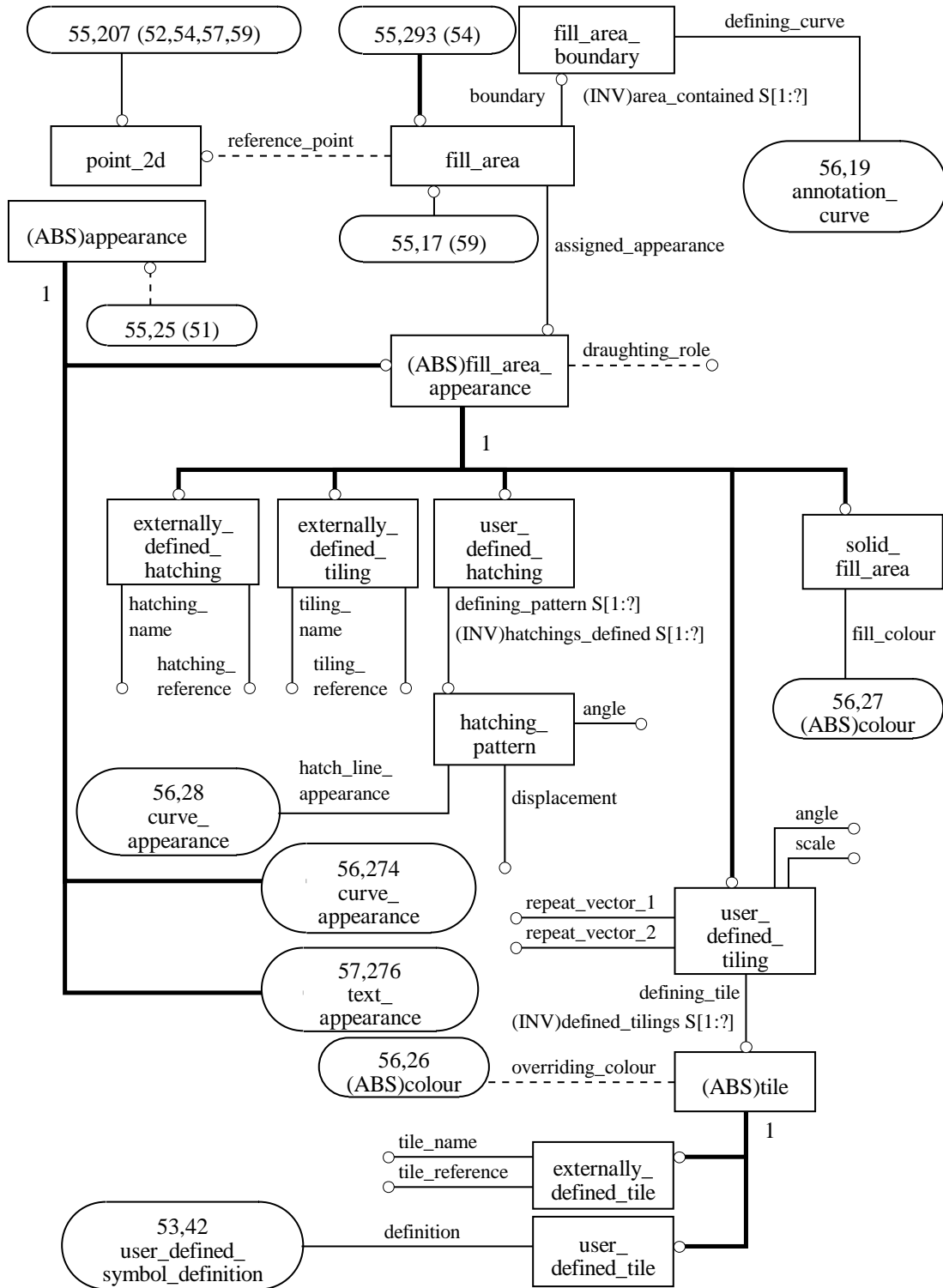


Figure G.55 - ARM diagram in EXPRESS-G: 55 of 93

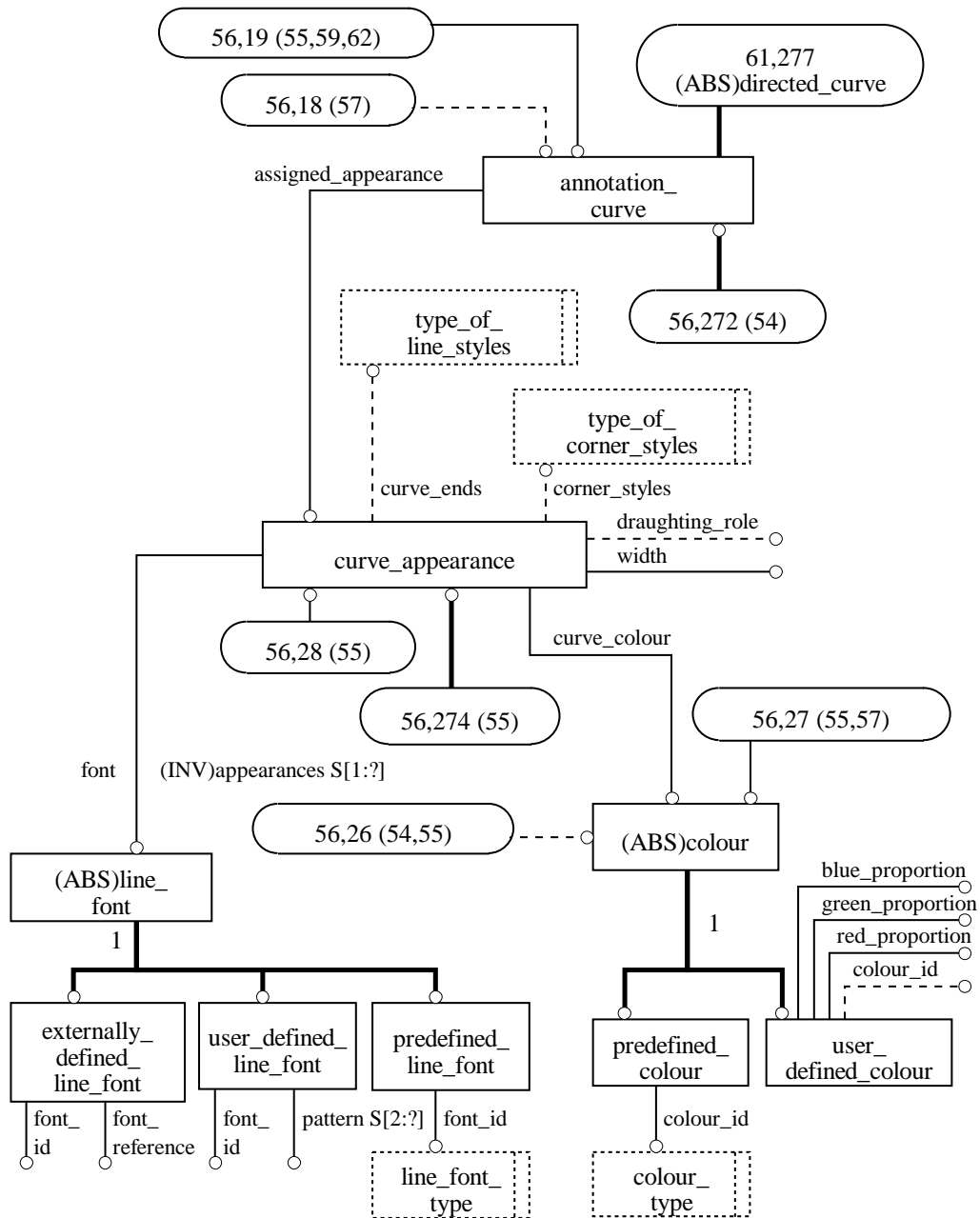


Figure G.56 - ARM diagram in EXPRESS-G: 56 of 93

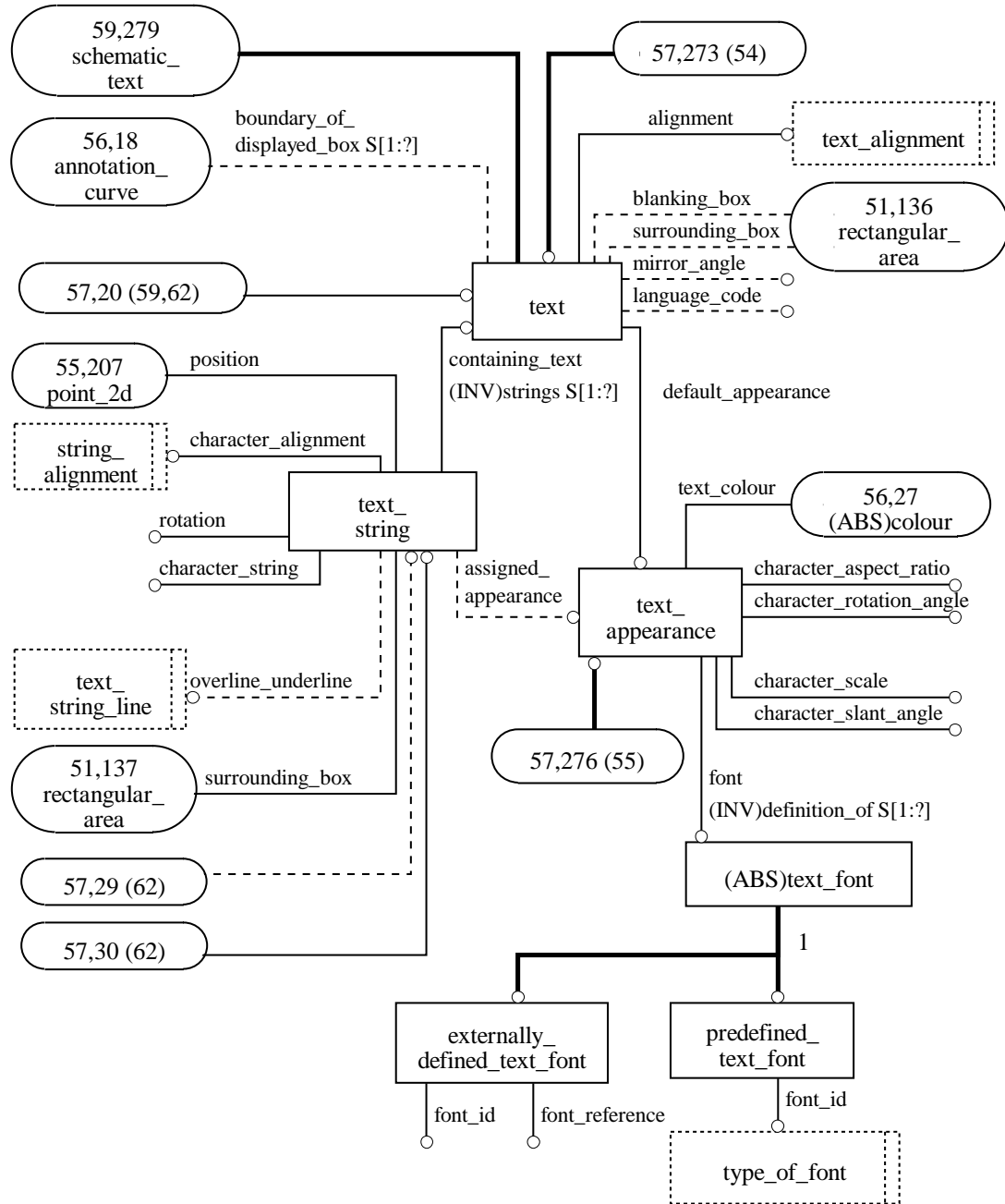


Figure G.57 - ARM diagram in EXPRESS-G: 57 of 93

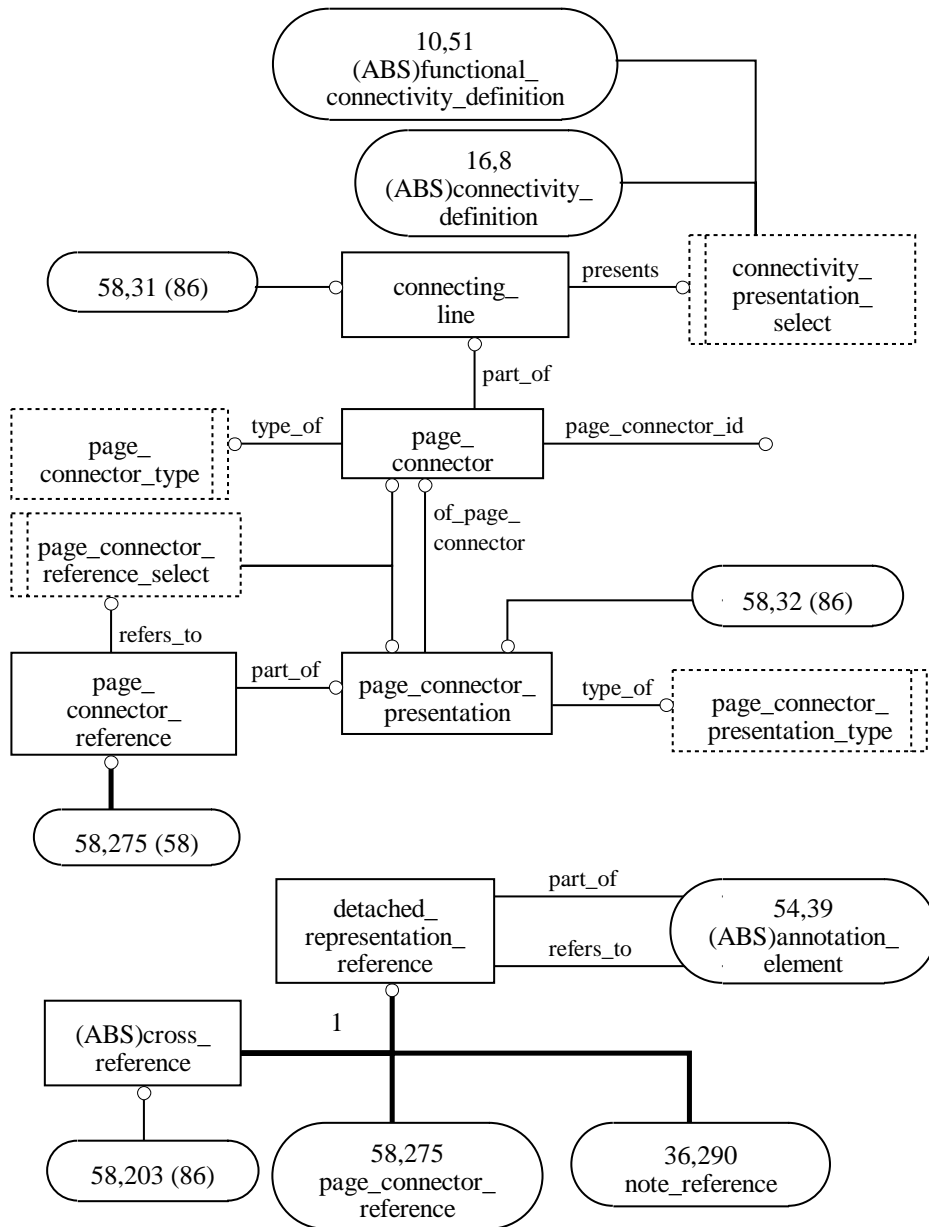


Figure G.58 - ARM diagram in EXPRESS-G: 58 of 93

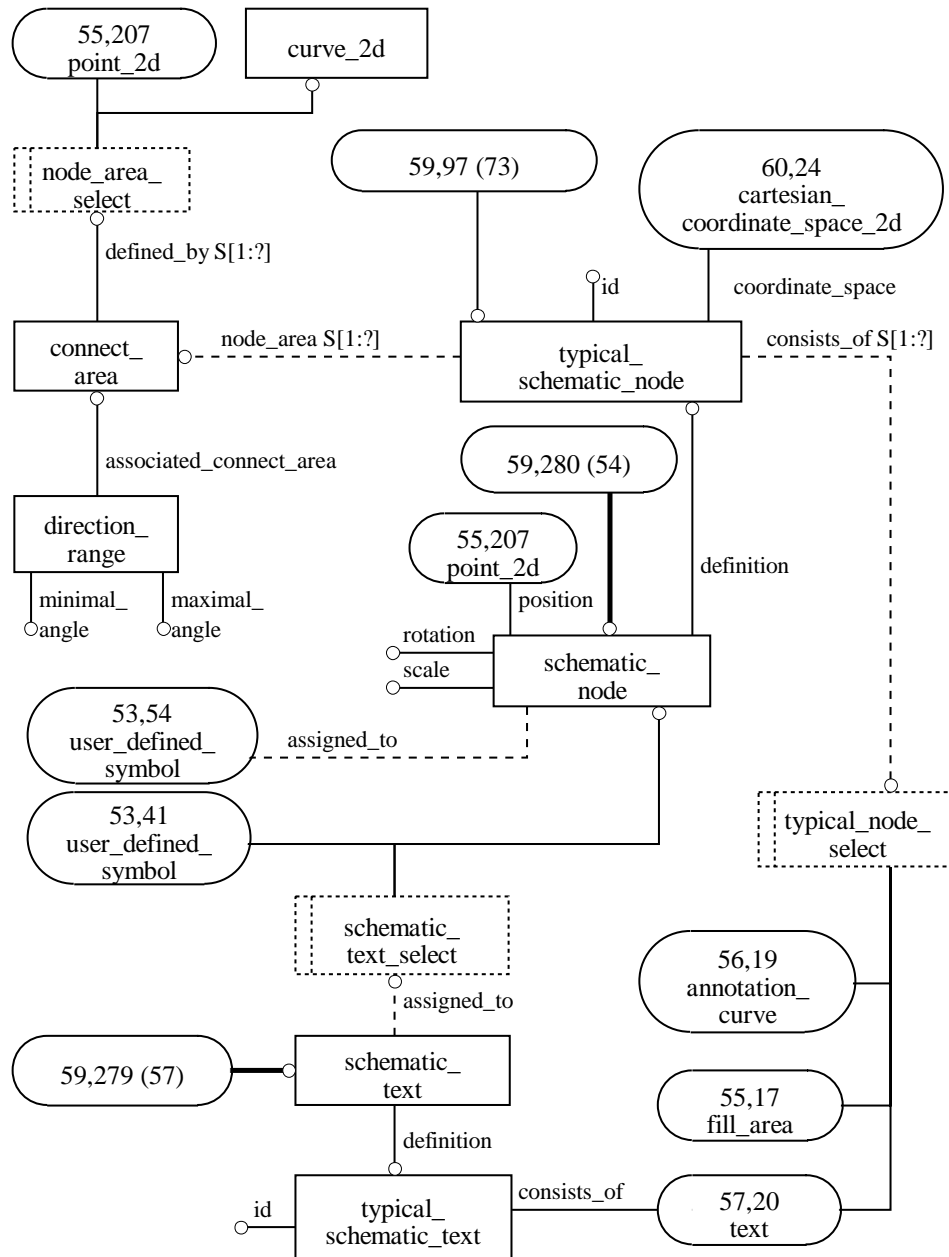


Figure G.59 - ARM diagram in EXPRESS-G: 59 of 93

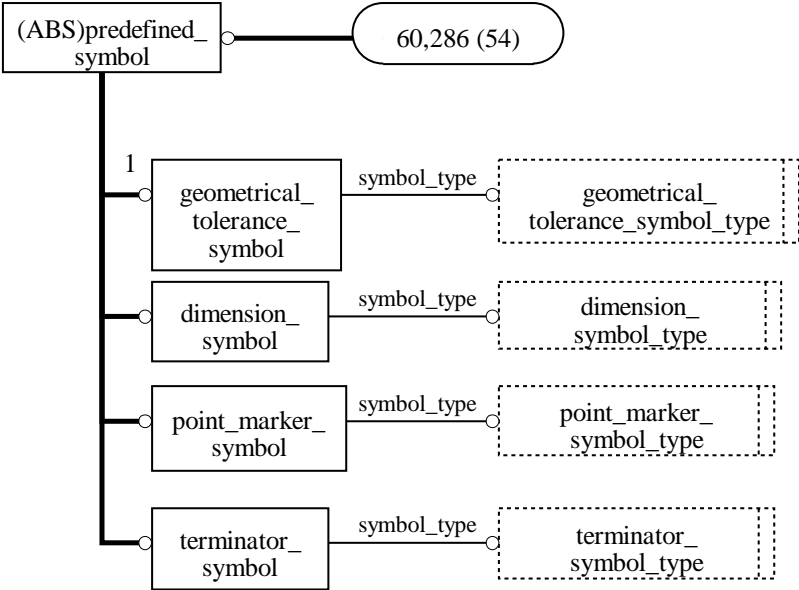
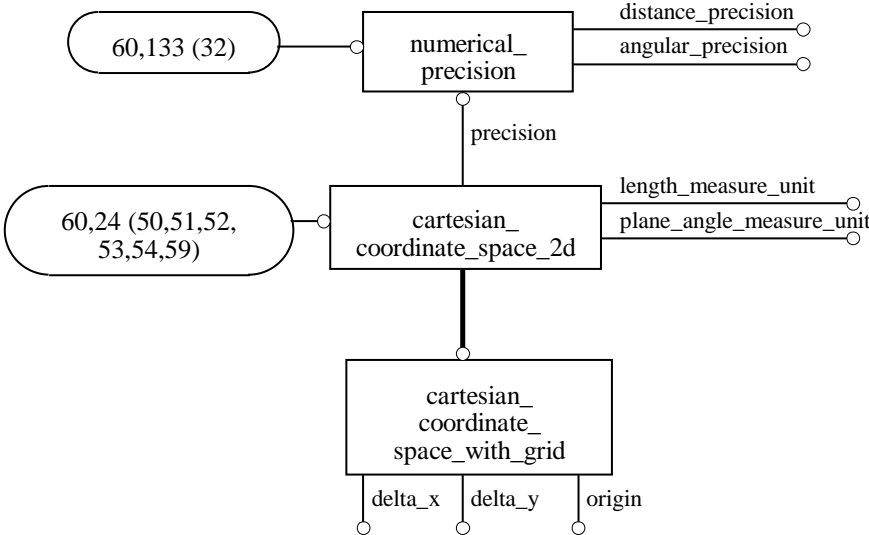


Figure G.60 - ARM diagram in EXPRESS-G: 60 of 93

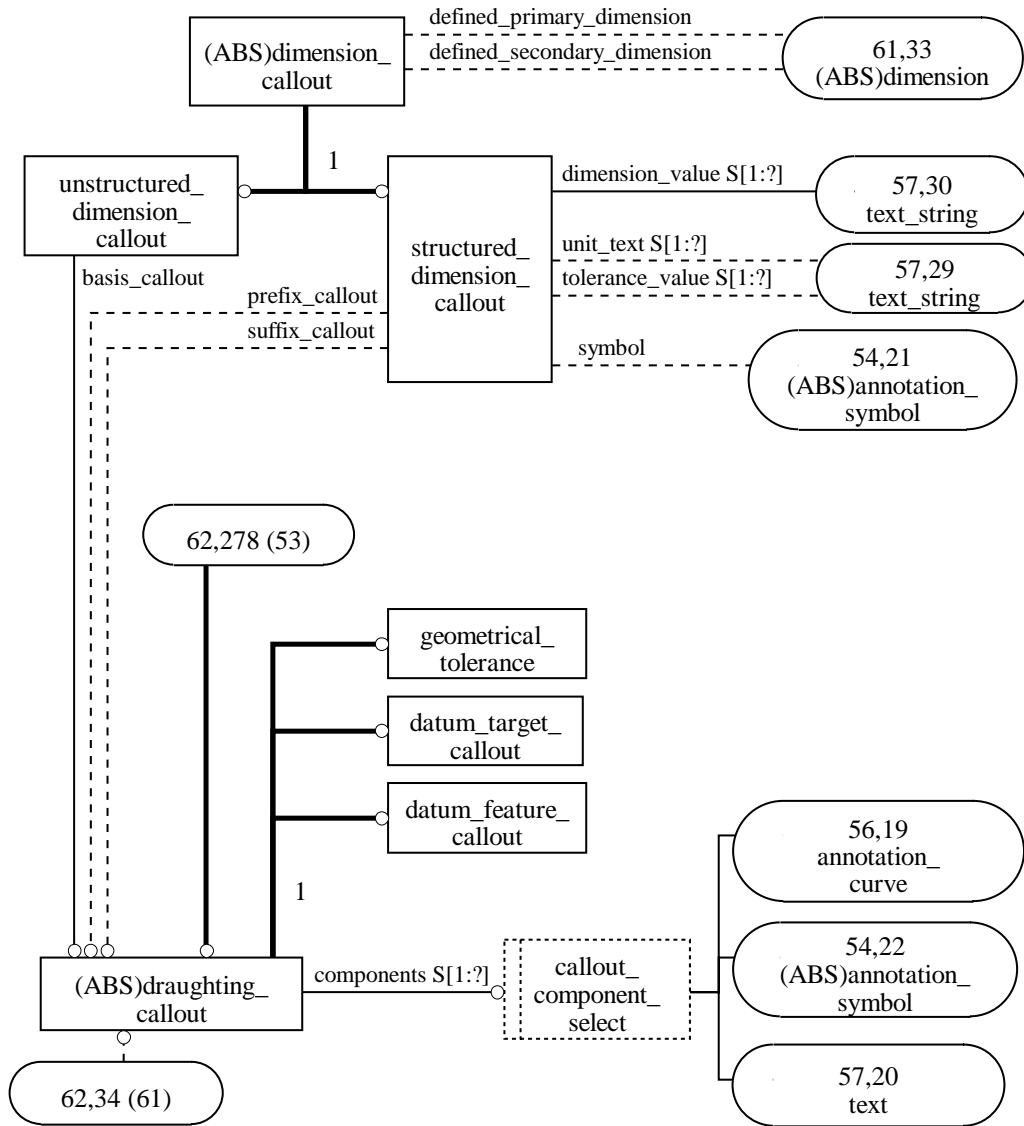


Figure G.62 - ARM diagram in EXPRESS-G: 62 of 93

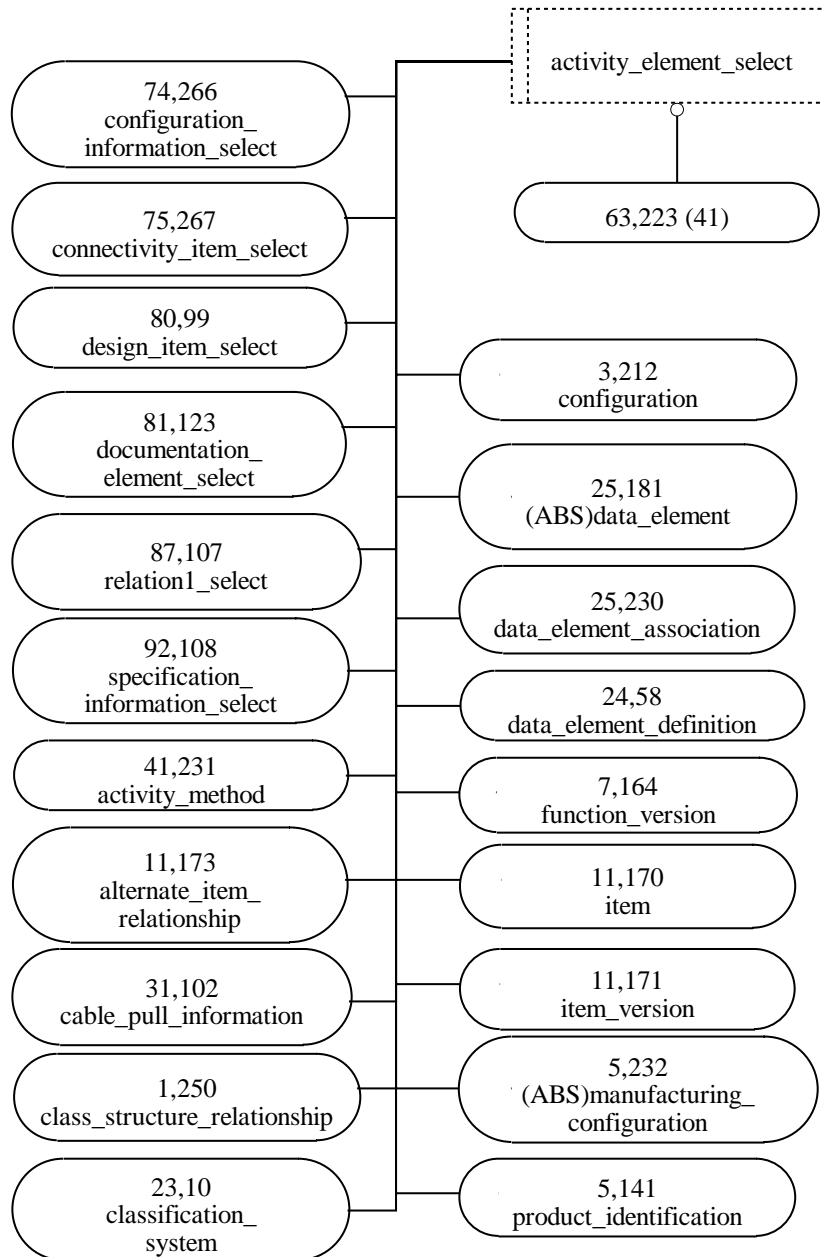


Figure G.63 - ARM diagram in EXPRESS-G: 63 of 93

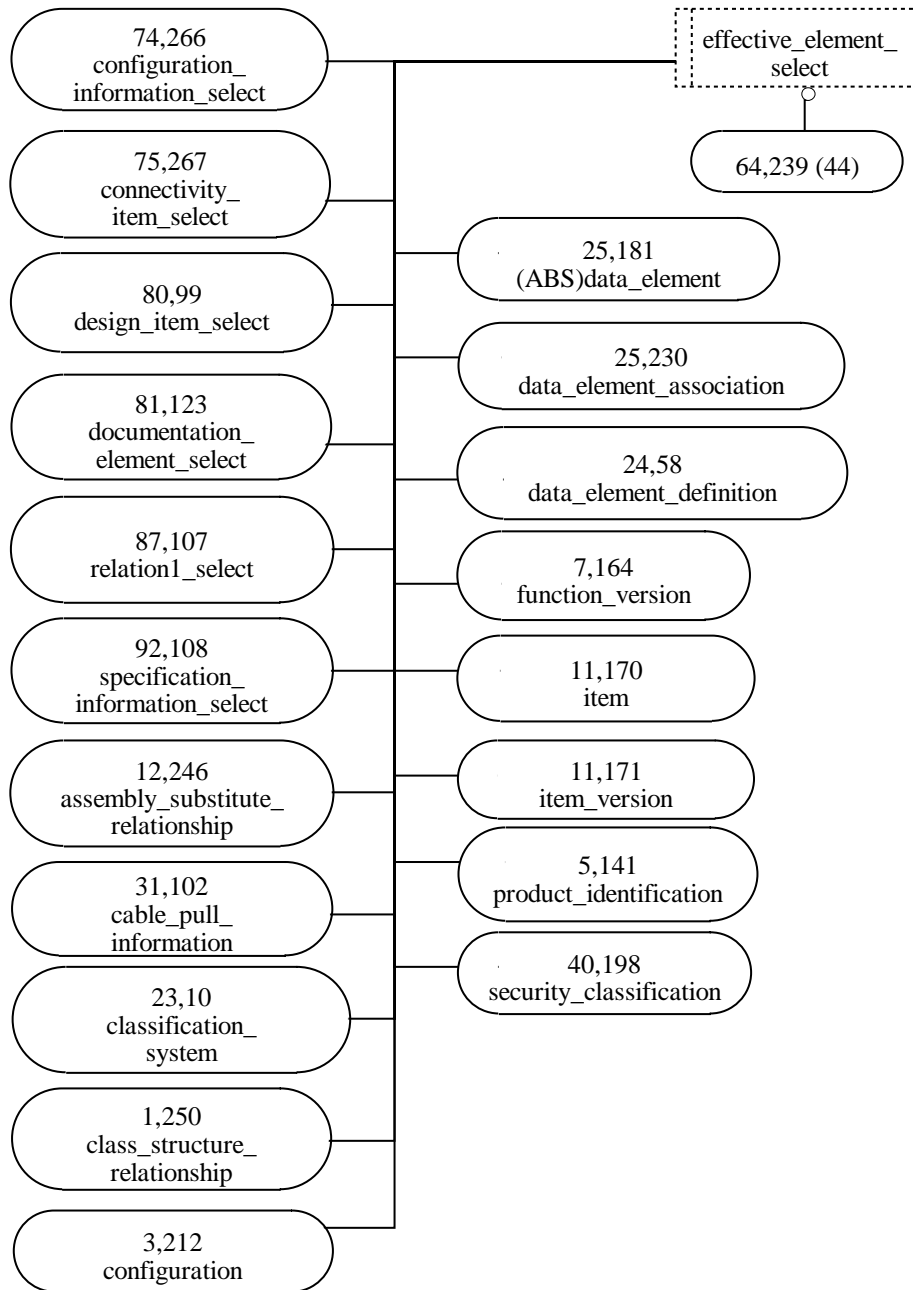


Figure G.64 - ARM diagram in EXPRESS-G: 64 of 93

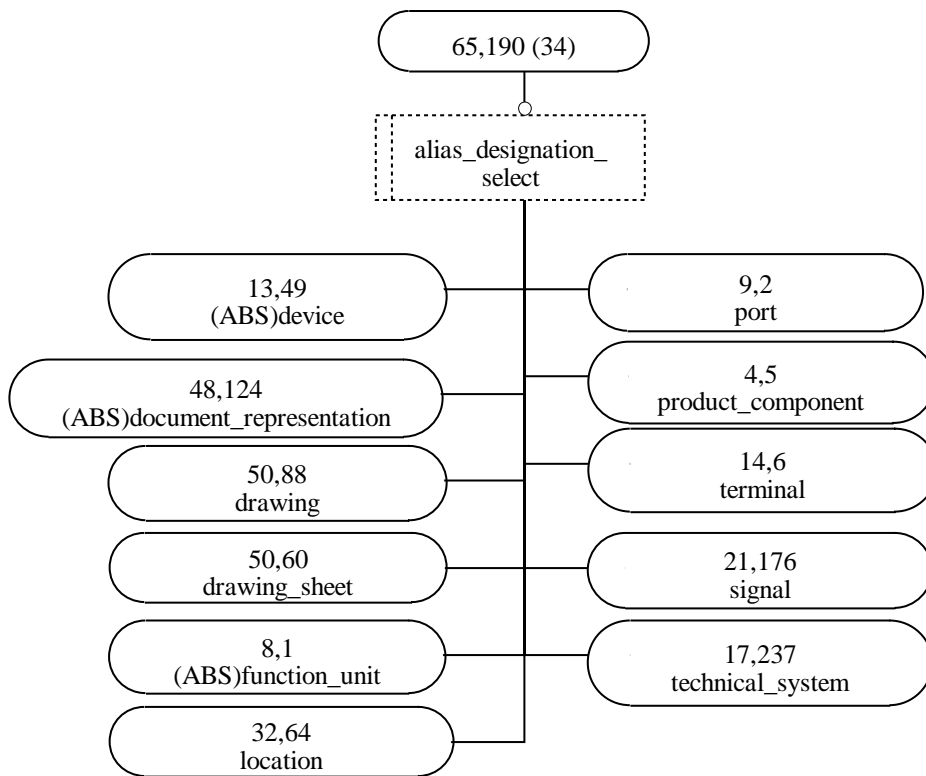


Figure G.65 - ARM diagram in EXPRESS-G: 65 of 93

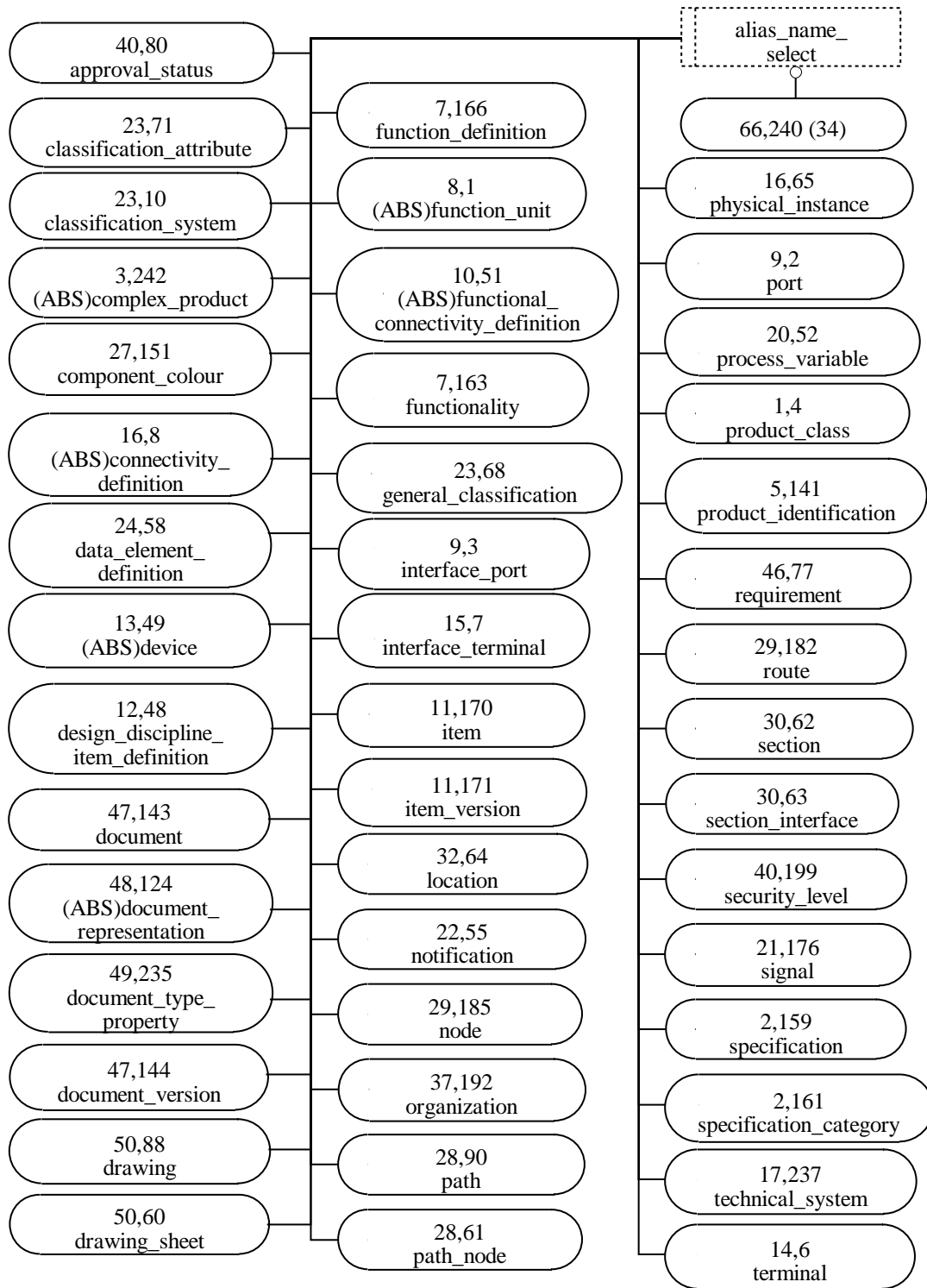


Figure G.66 - ARM diagram in EXPRESS-G: 66 of 93

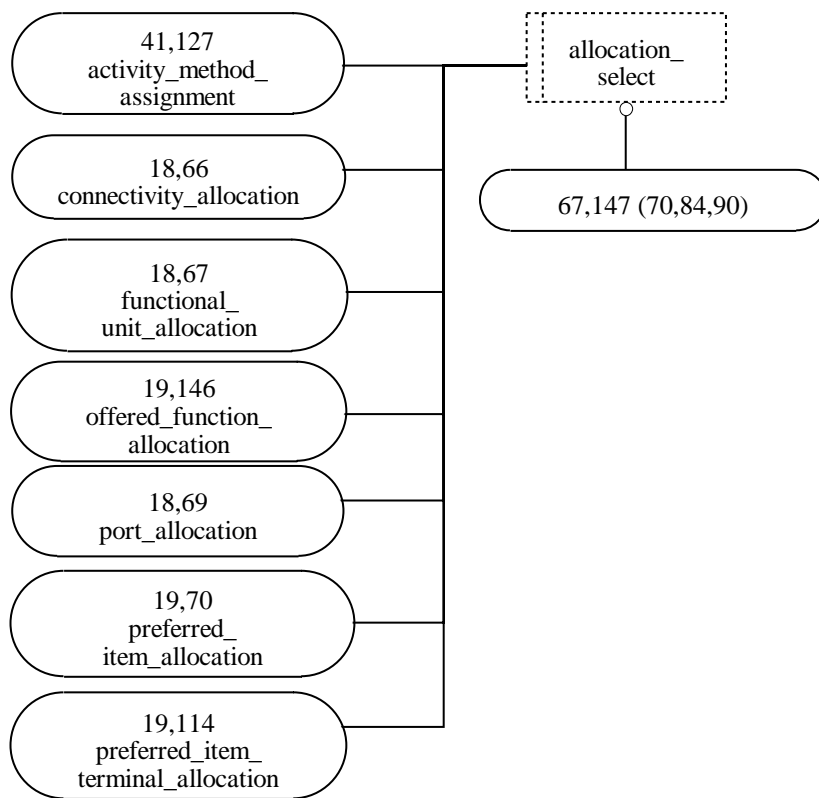


Figure G.67 - ARM diagram in EXPRESS-G: 67 of 93

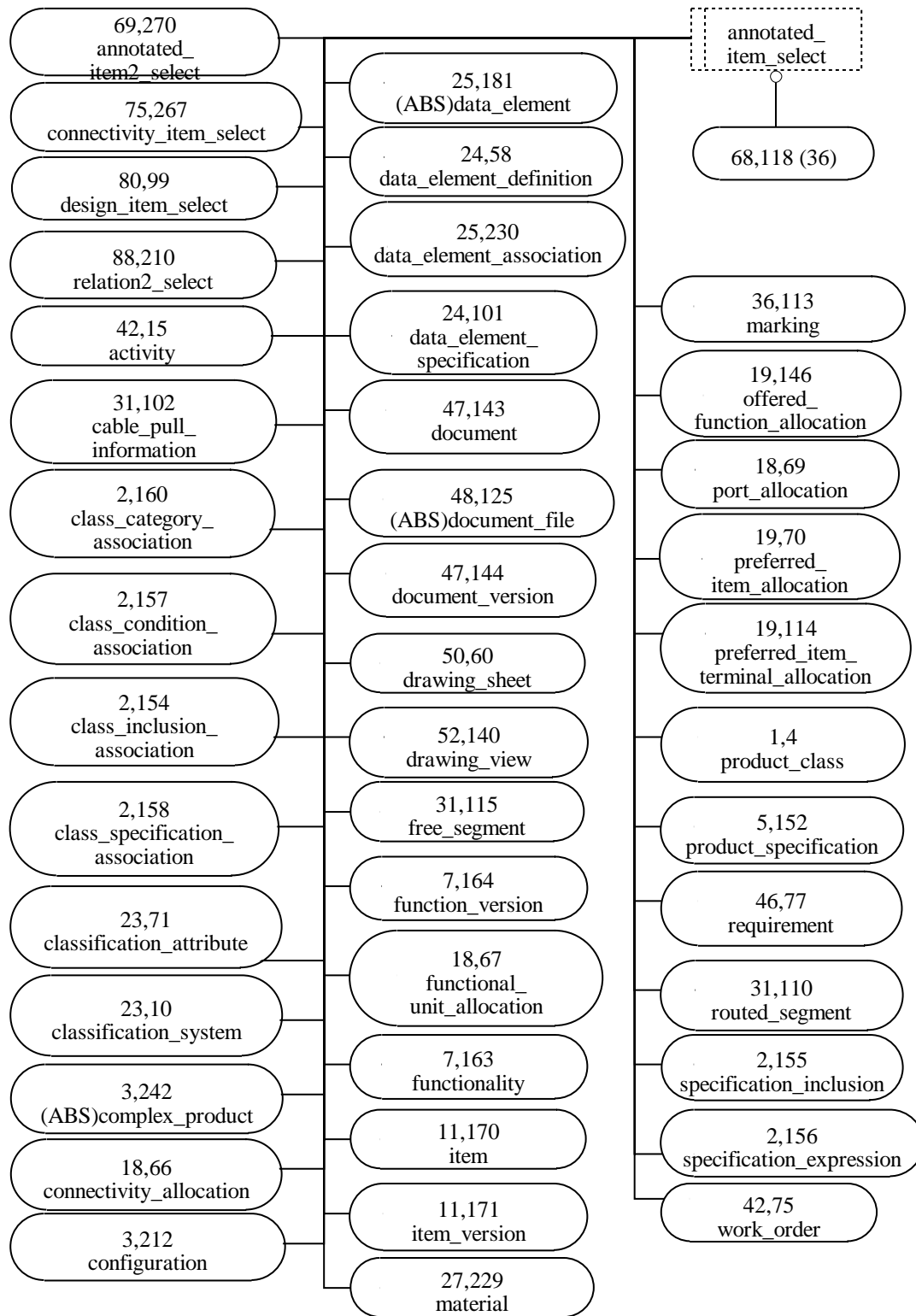


Figure G.68 - ARM diagram in EXPRESS-G: 68 of 93

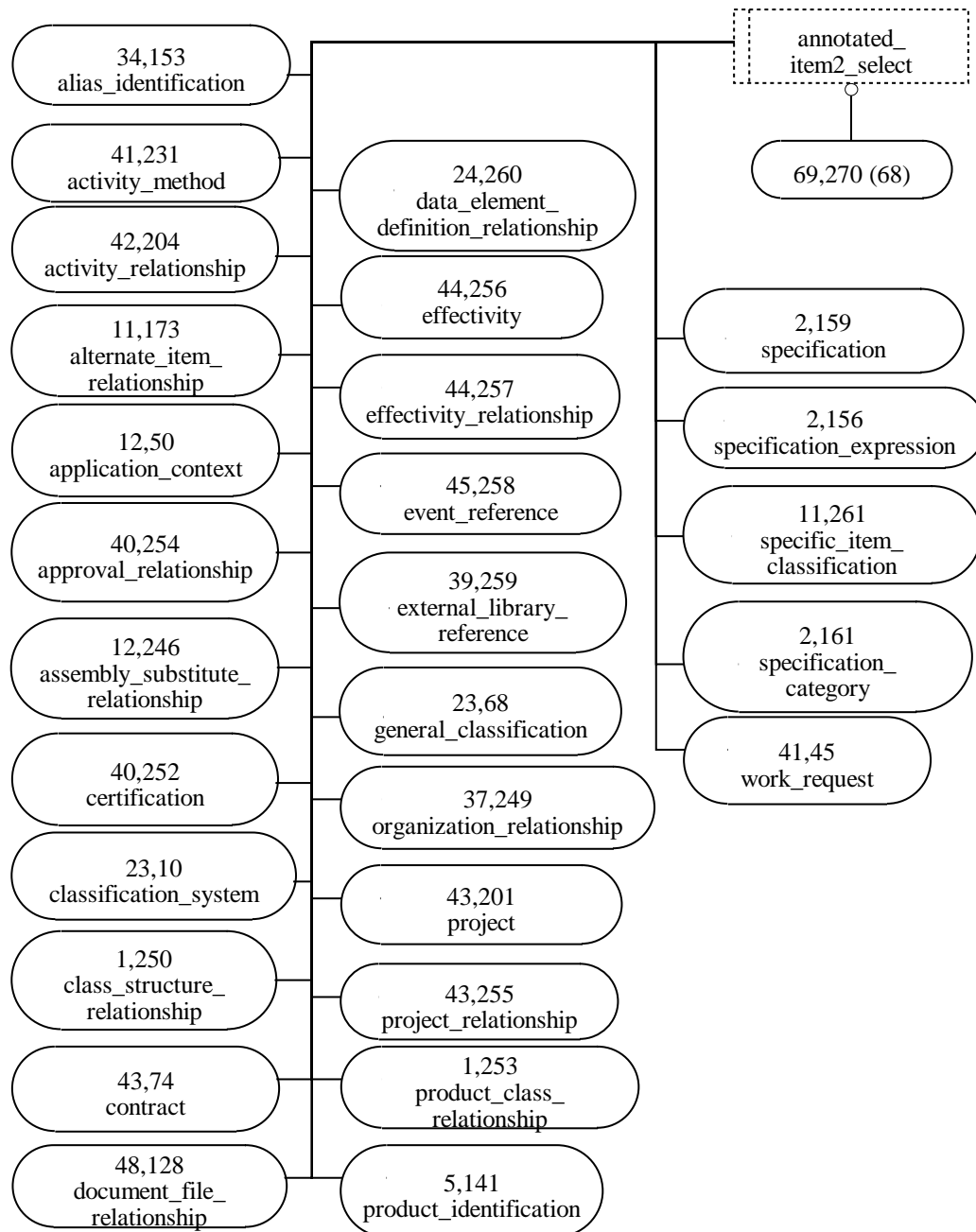


Figure G.69 - ARM diagram in EXPRESS-G: 69 of 93

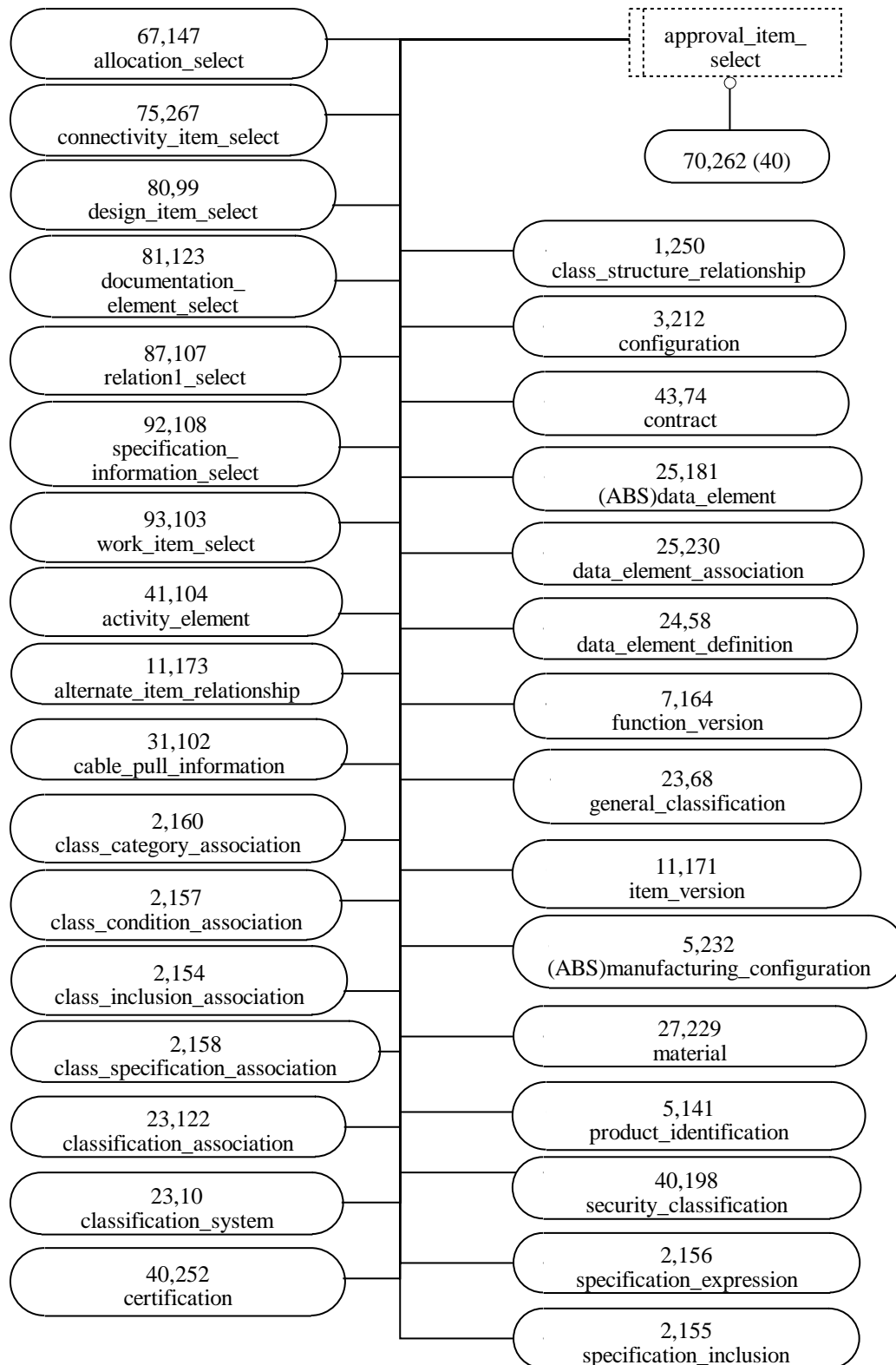


Figure G.70 - ARM diagram in EXPRESS-G: 70 of 93

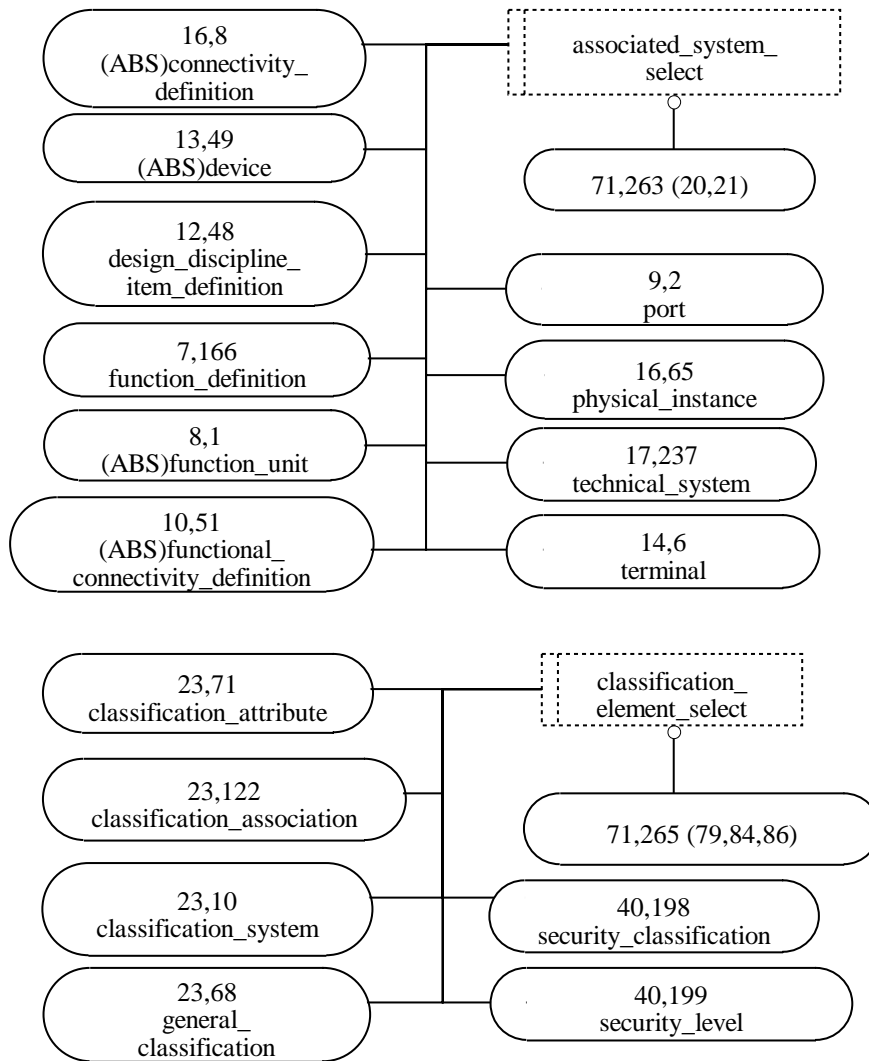


Figure G.71 - ARM diagram in EXPRESS-G: 71 of 93

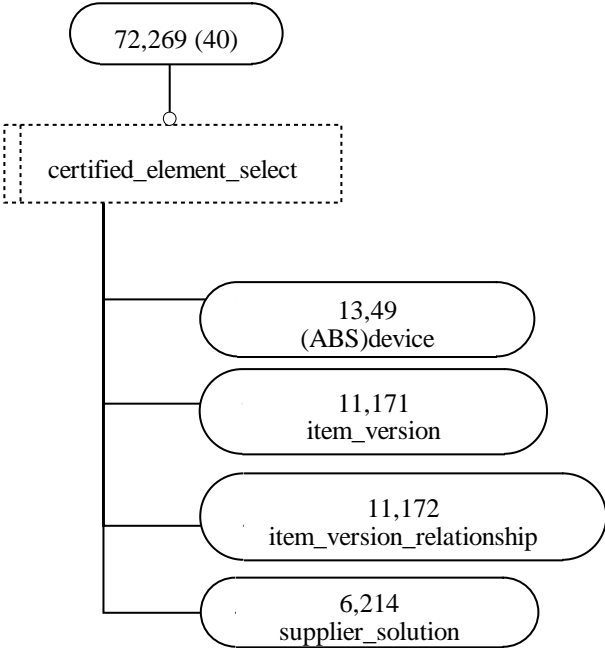


Figure G.72 - ARM diagram in EXPRESS-G: 72 of 93

ISO 10303-212:2001(E)

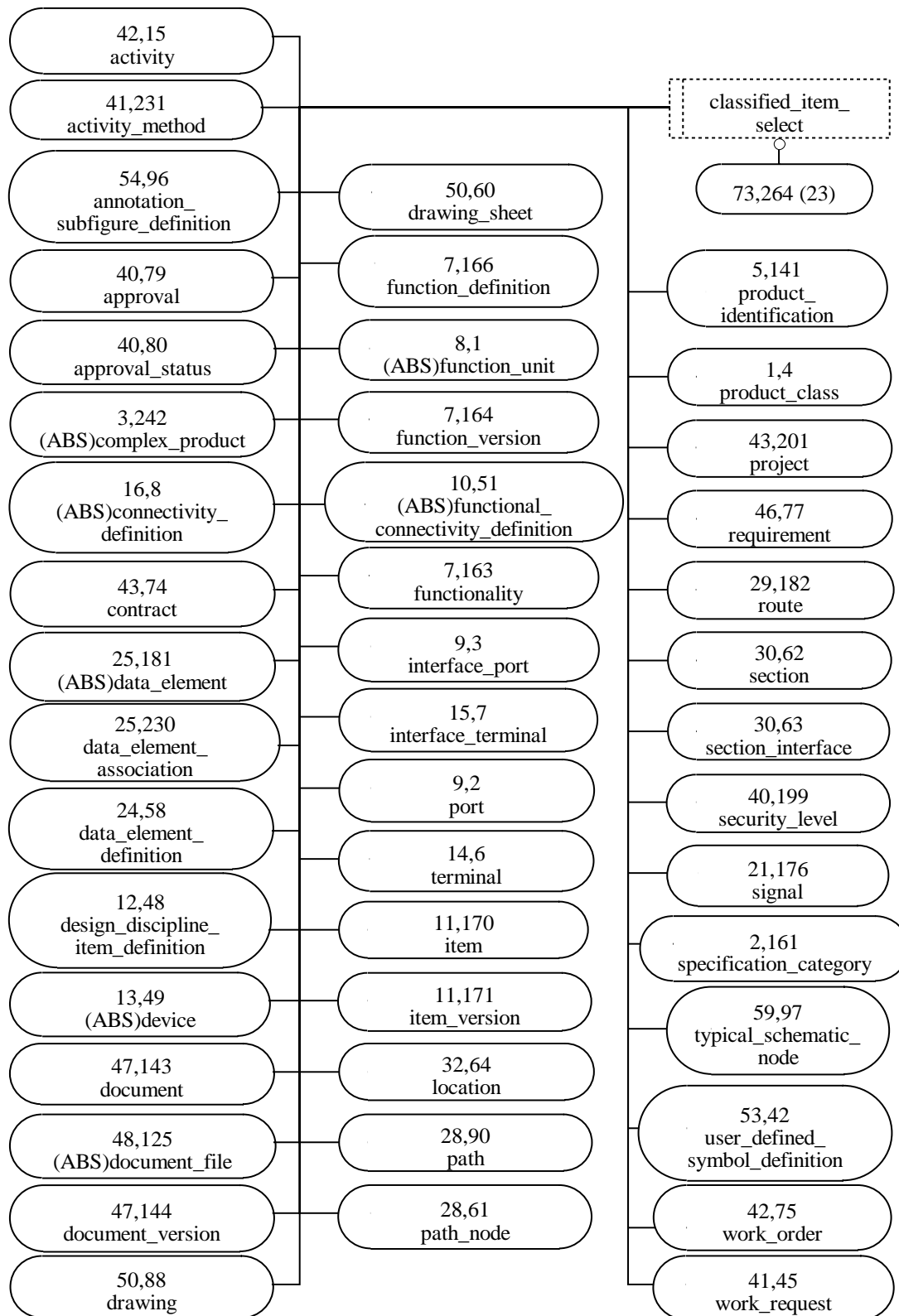


Figure G.73 - ARM diagram in EXPRESS-G: 73 of 93

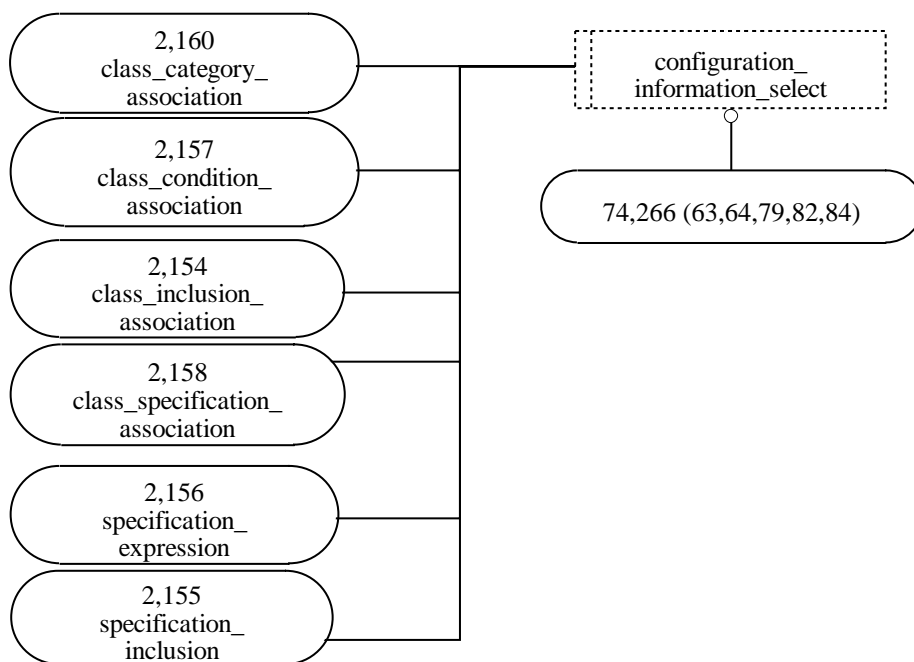


Figure G.74 - ARM diagram in EXPRESS-G: 74 of 93

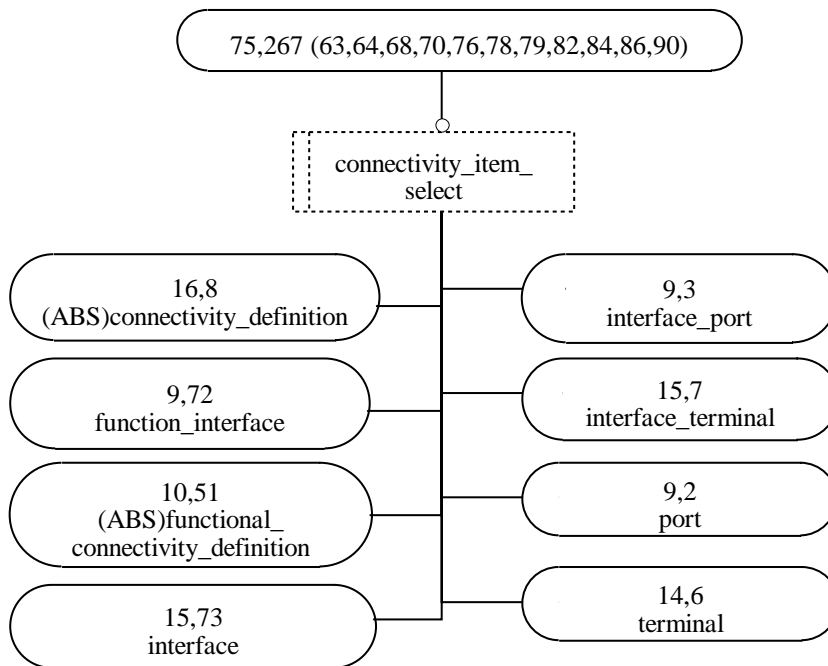
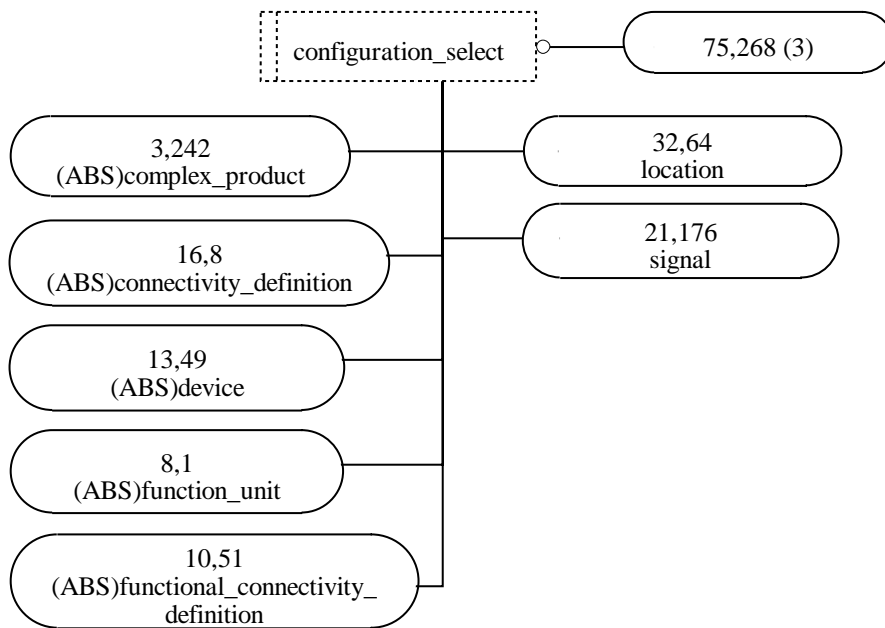


Figure G.75 - ARM diagram in EXPRESS-G: 75 of 93

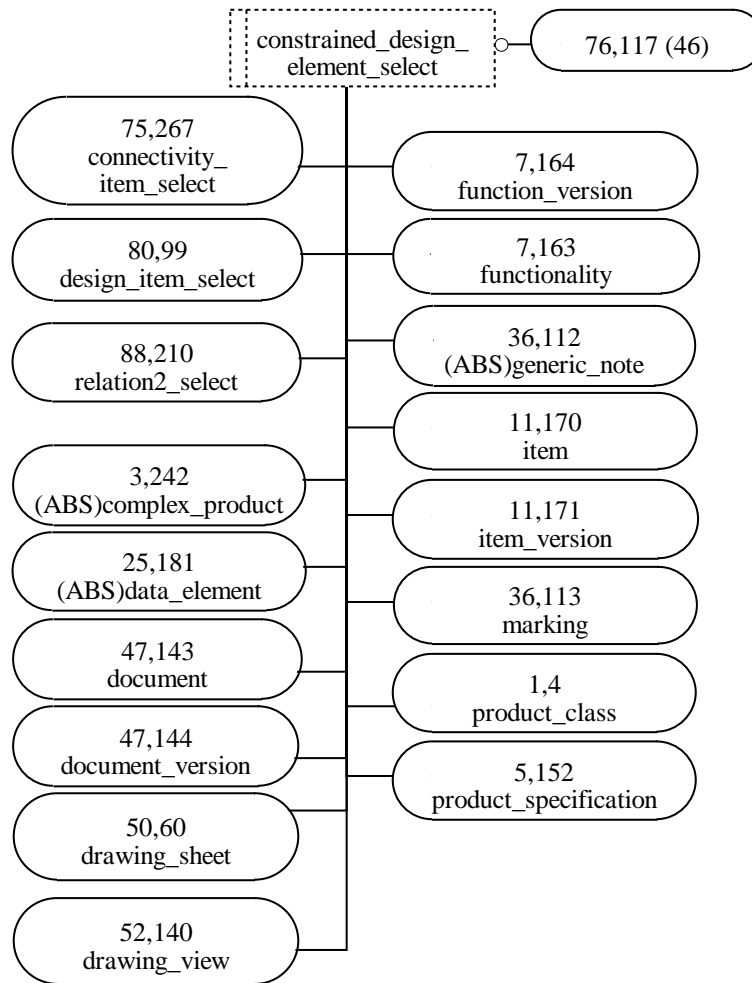


Figure G.76 - ARM diagram in EXPRESS-G: 76 of 93

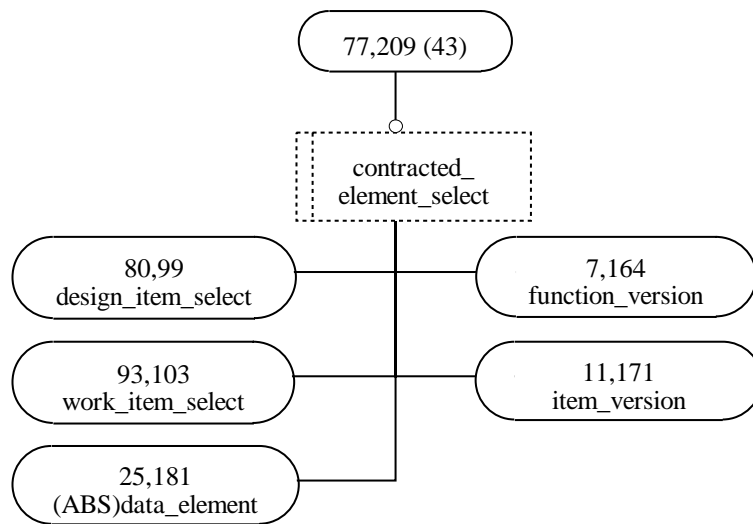


Figure G.77 - ARM diagram in EXPRESS-G: 77 of 93

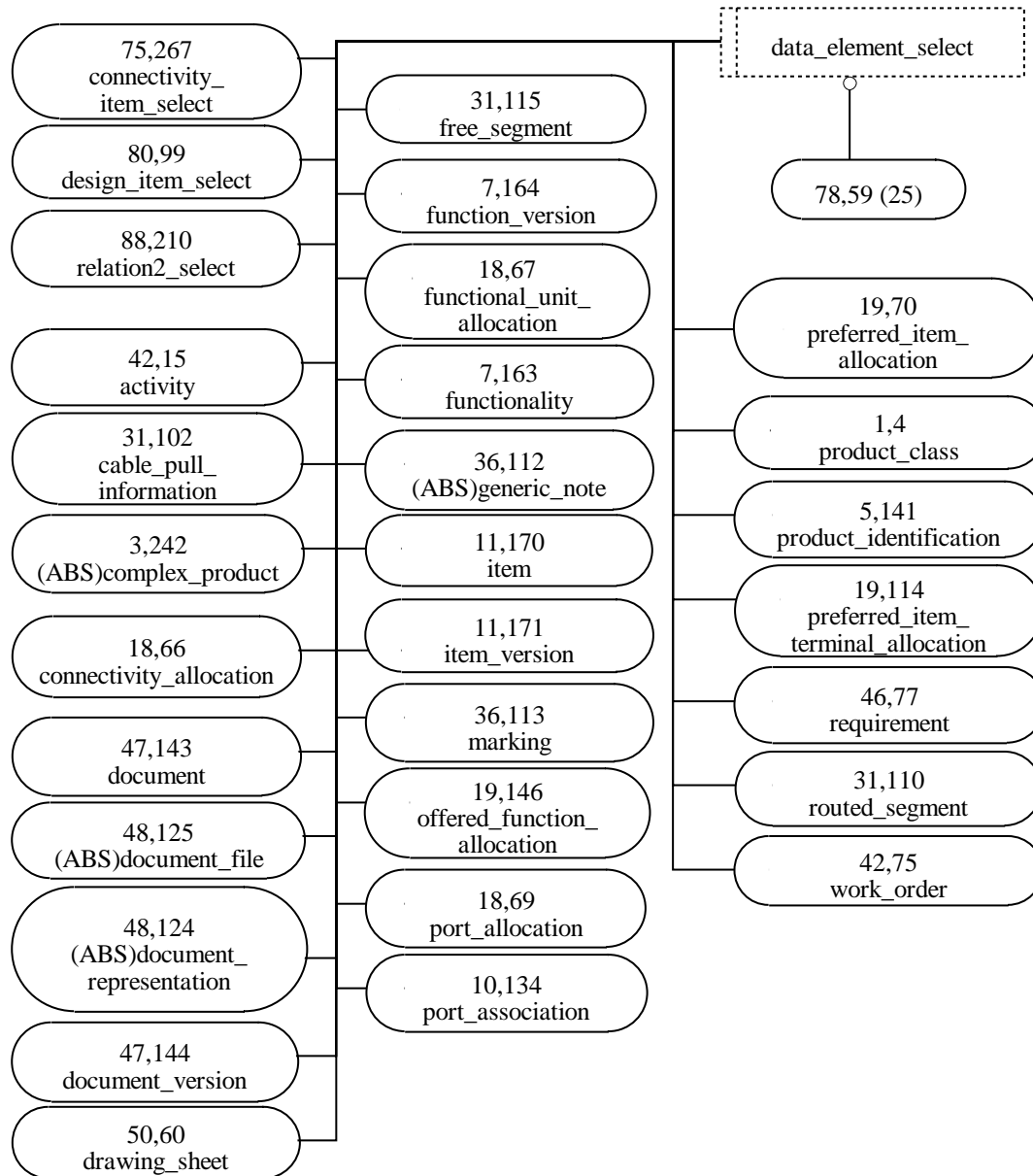


Figure G.78 - ARM diagram in EXPRESS-G: 78 of 93

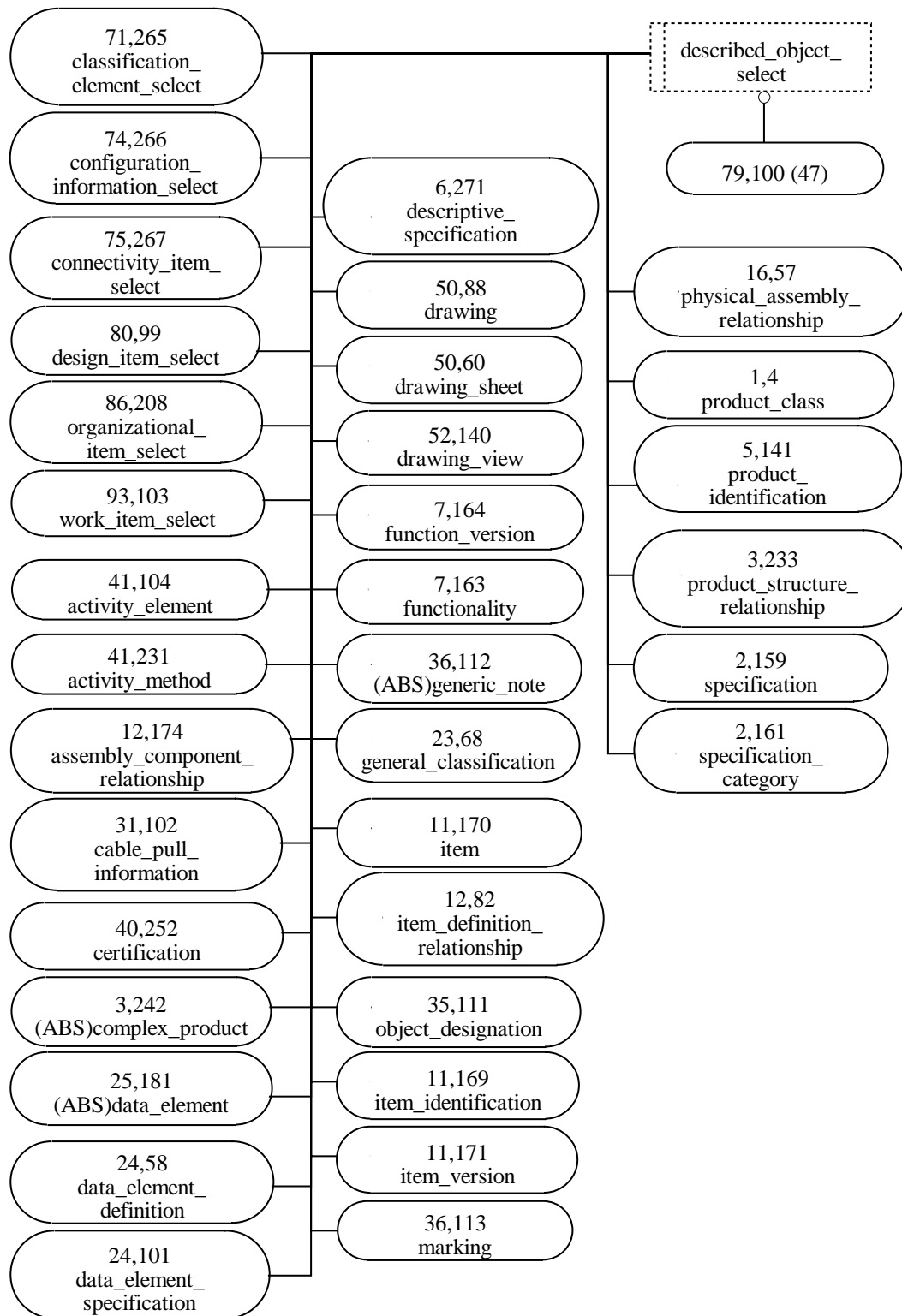


Figure G.79 - ARM diagram in EXPRESS-G: 79 of 93

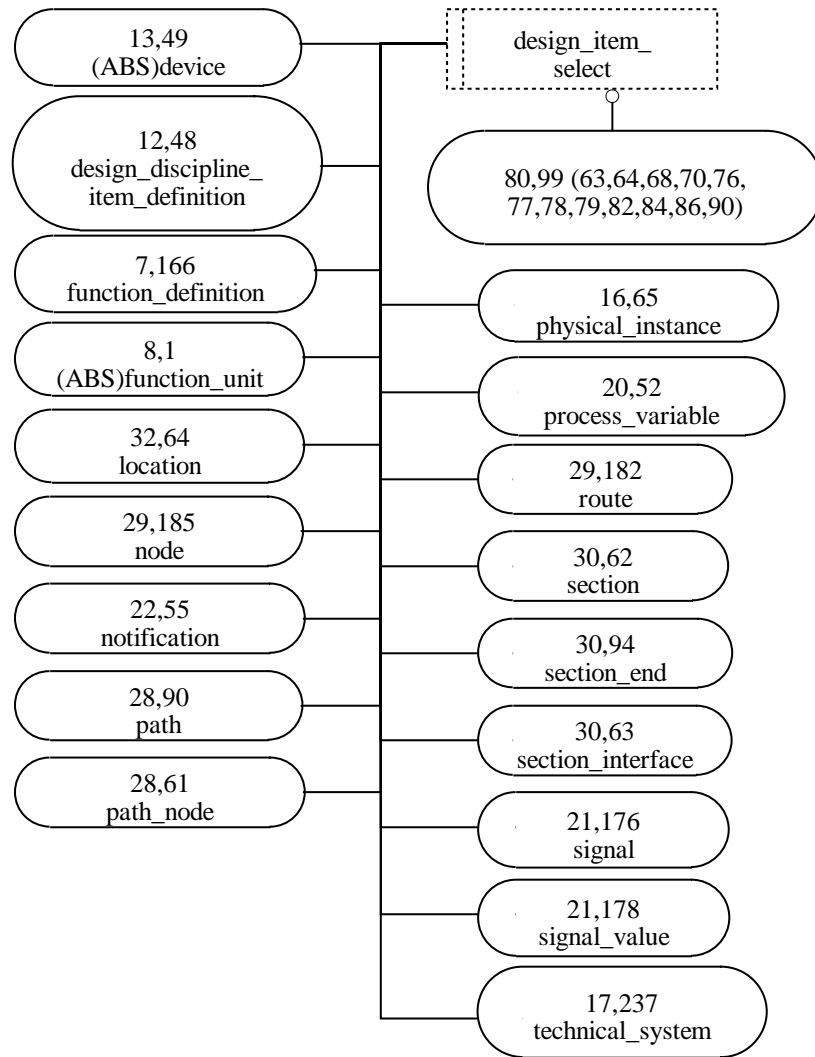


Figure G.80 - ARM diagram in EXPRESS-G: 80 of 93

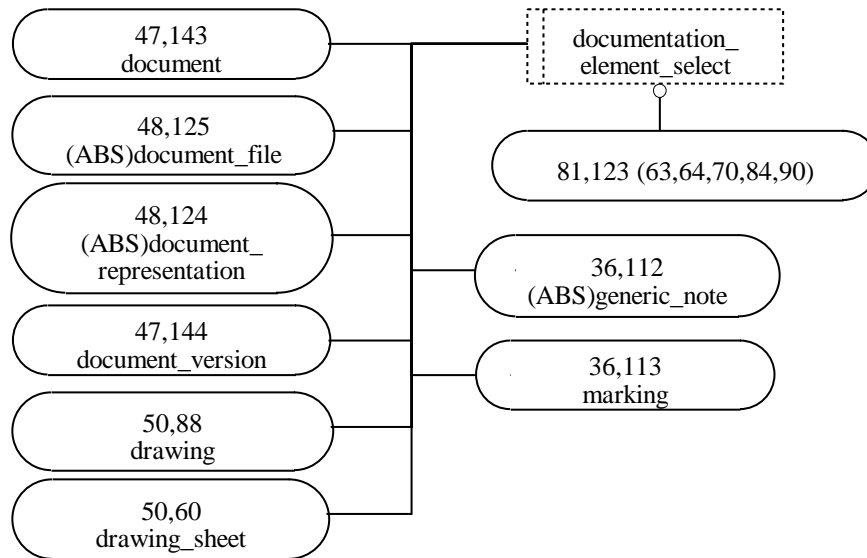
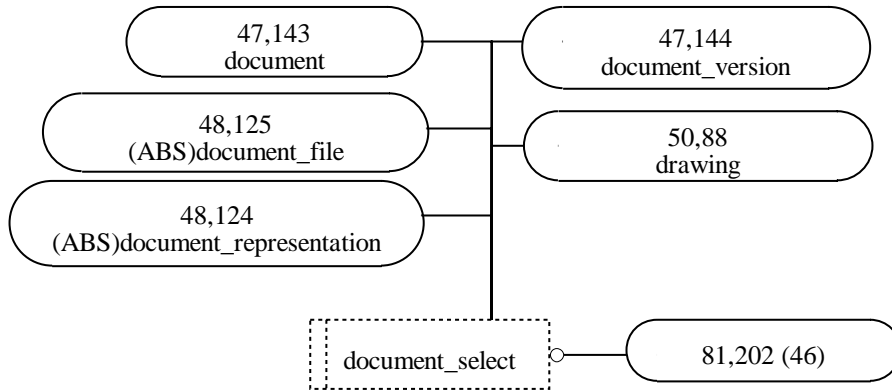


Figure G.81 - ARM diagram in EXPRESS-G: 81 of 93

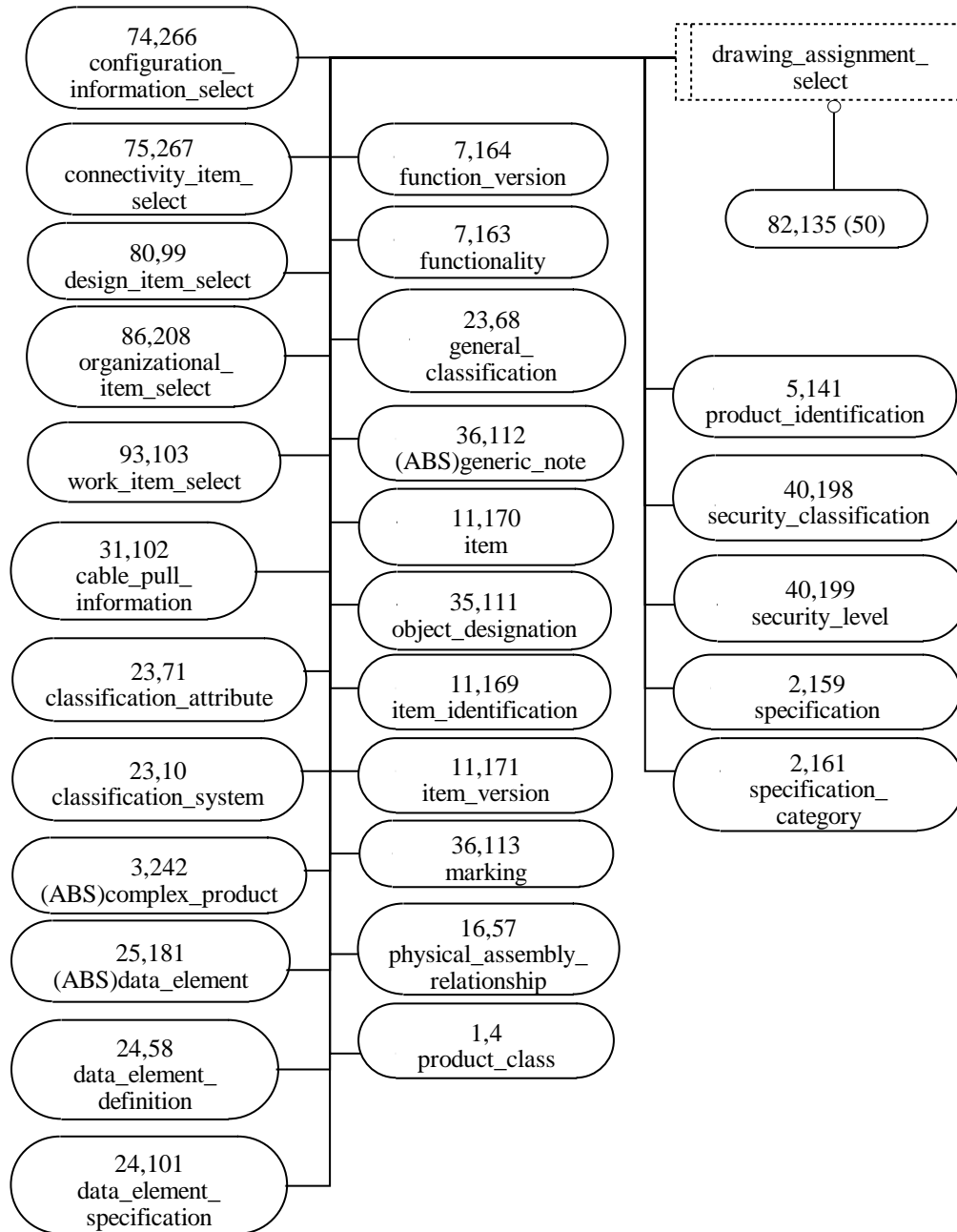


Figure G.82 - ARM diagram in EXPRESS-G: 82 of 93

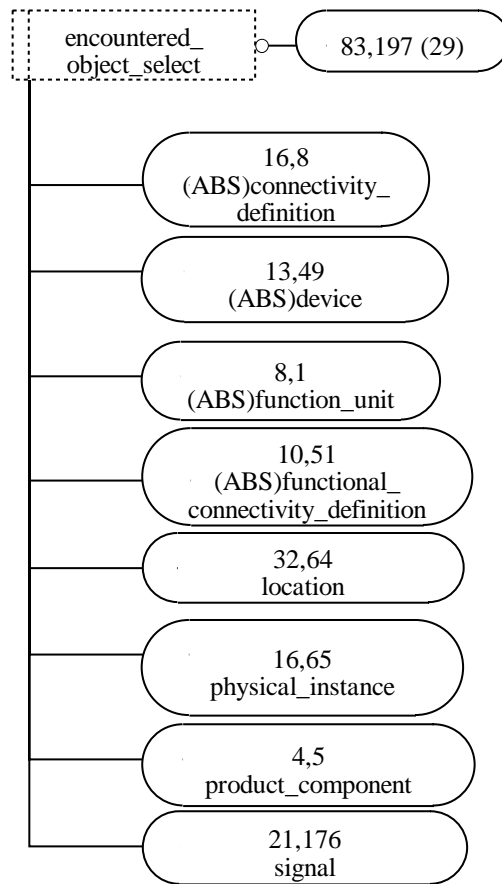


Figure G.83 - ARM diagram in EXPRESS-G: 83 of 93

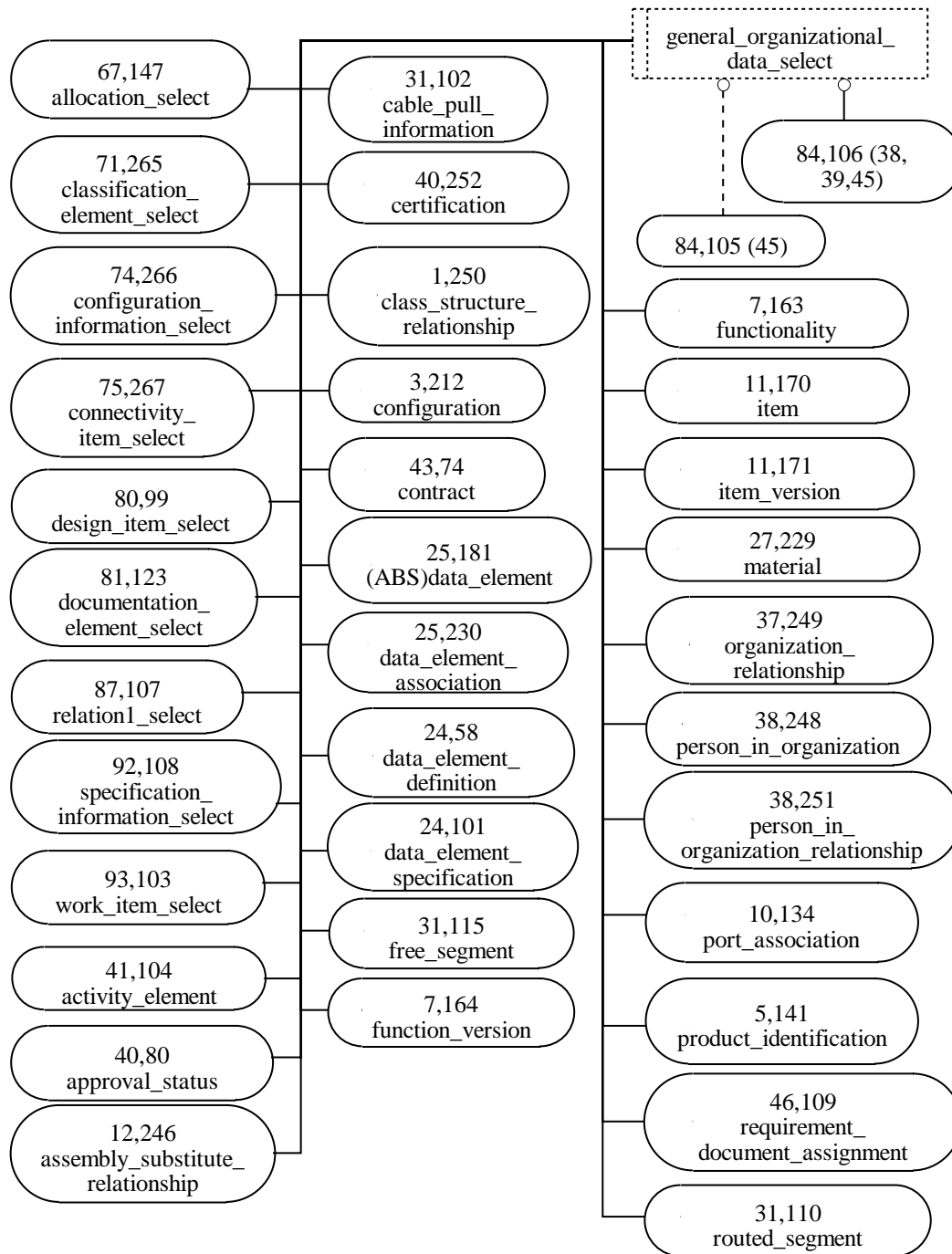


Figure G.84 - ARM diagram in EXPRESS-G: 84 of 93

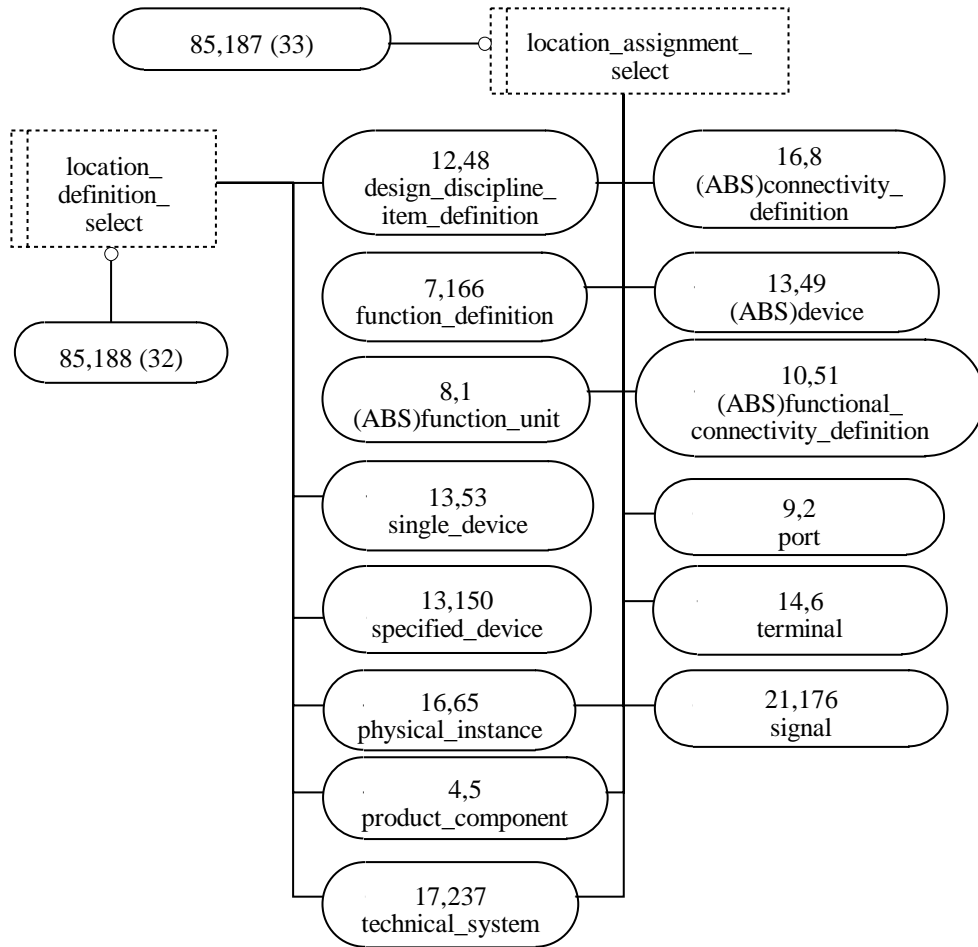


Figure G.85 - ARM diagram in EXPRESS-G: 85 of 93

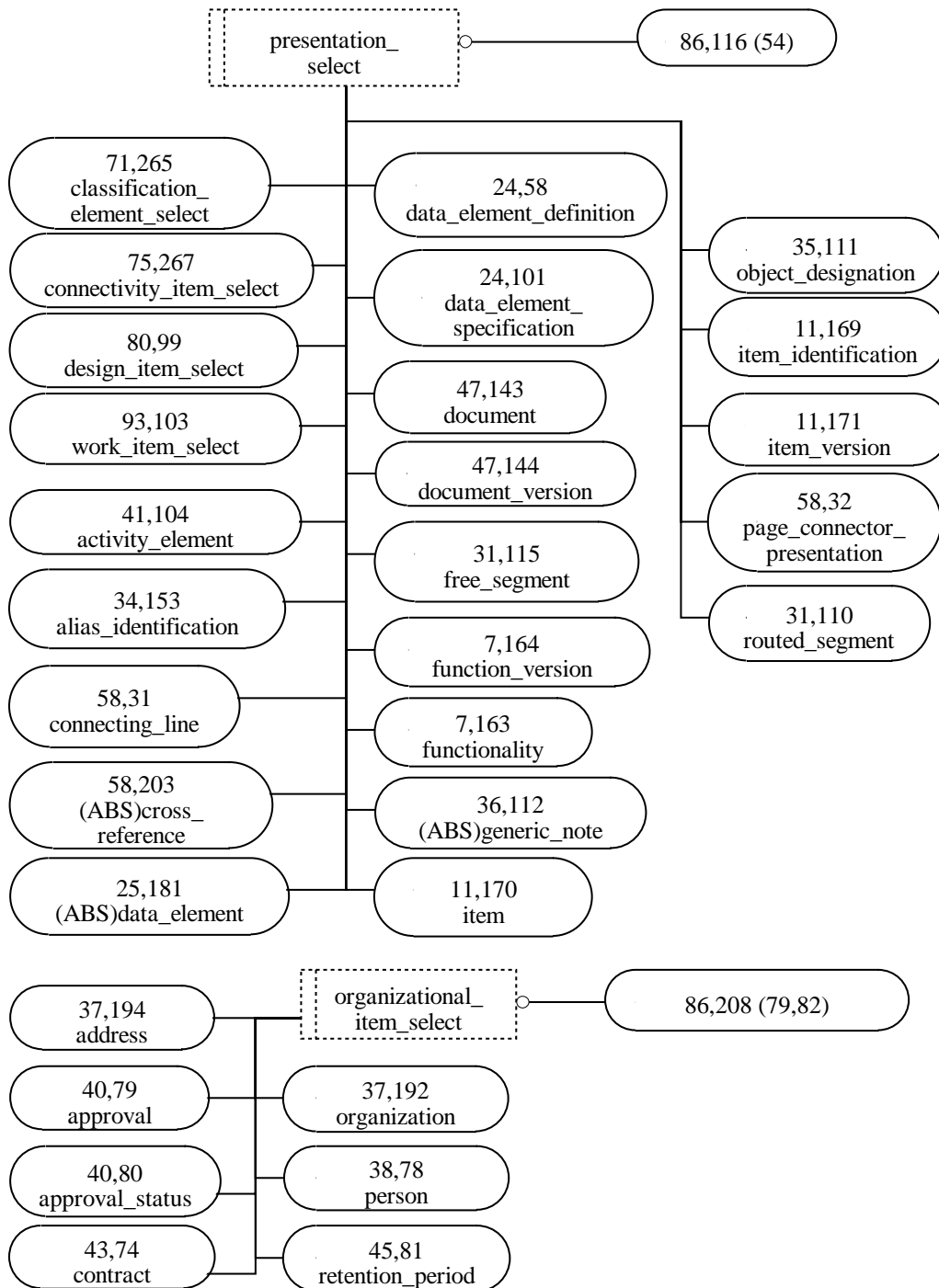


Figure G.86 - ARM diagram in EXPRESS-G: 86 of 93

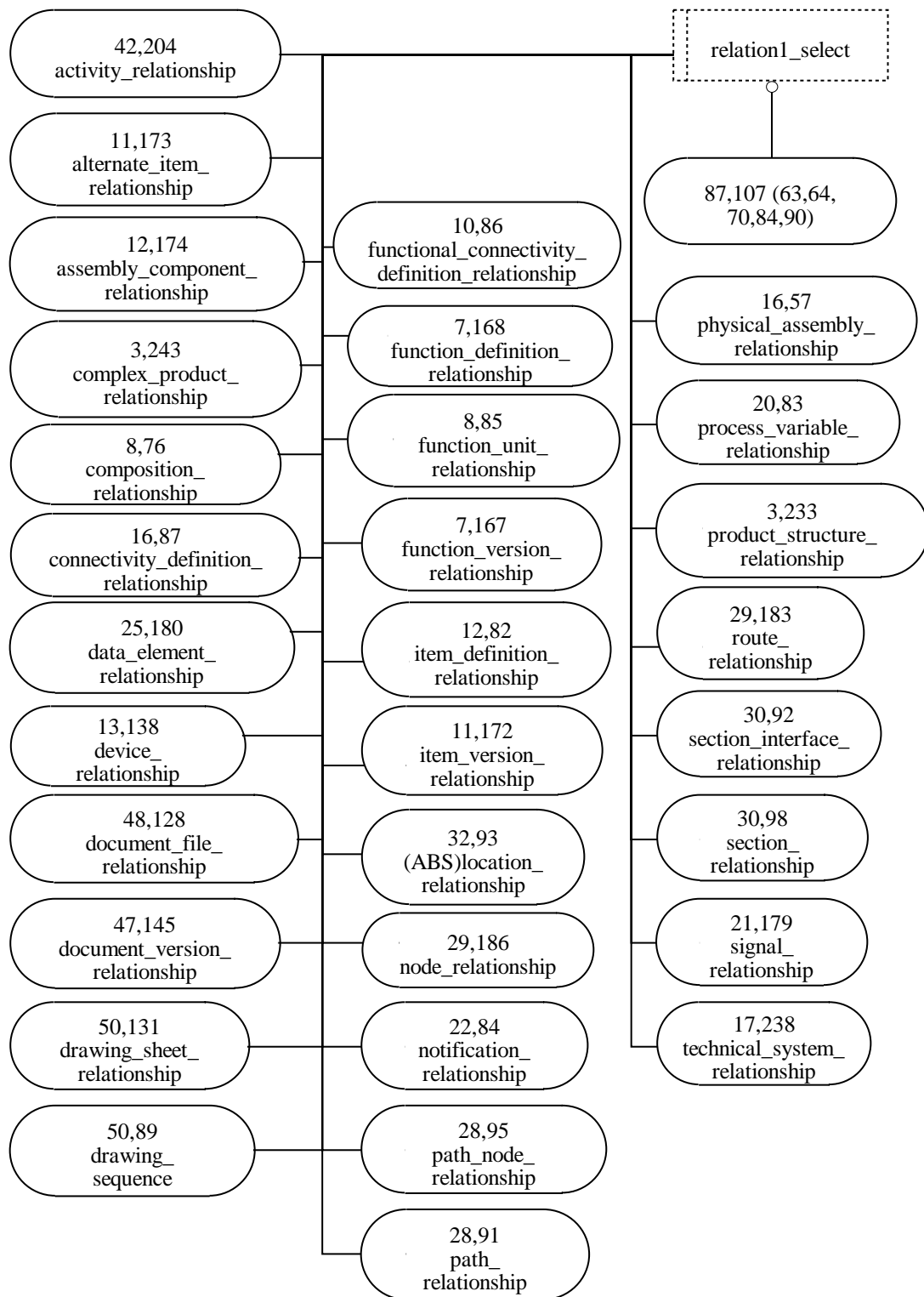


Figure G.87 - ARM diagram in EXPRESS-G: 87 of 93

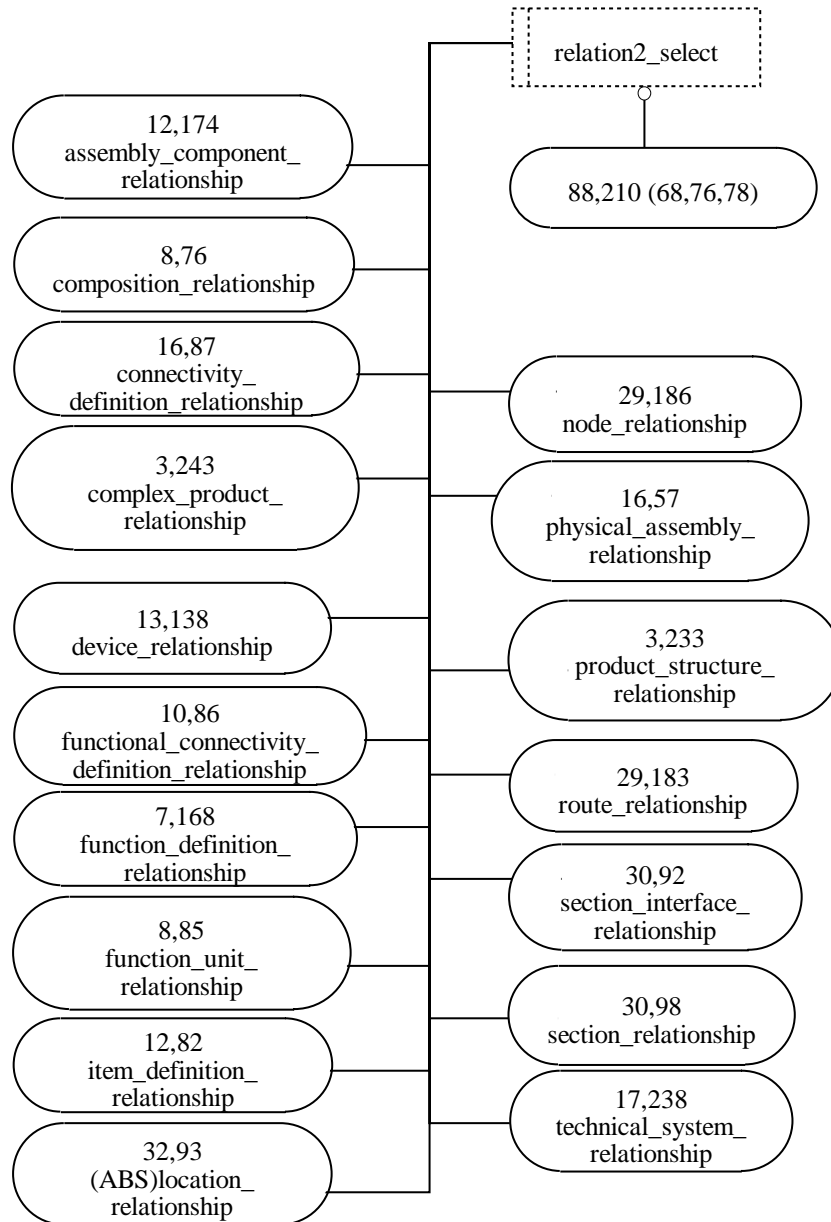


Figure G.88 - ARM diagram in EXPRESS-G: 88 of 93

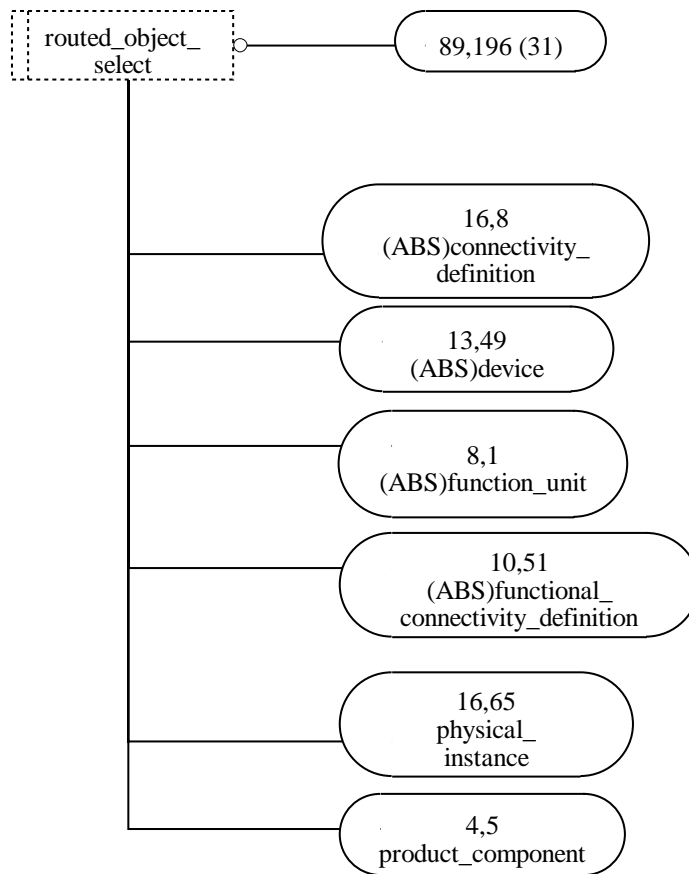


Figure G.89 - ARM diagram in EXPRESS-G: 89 of 93

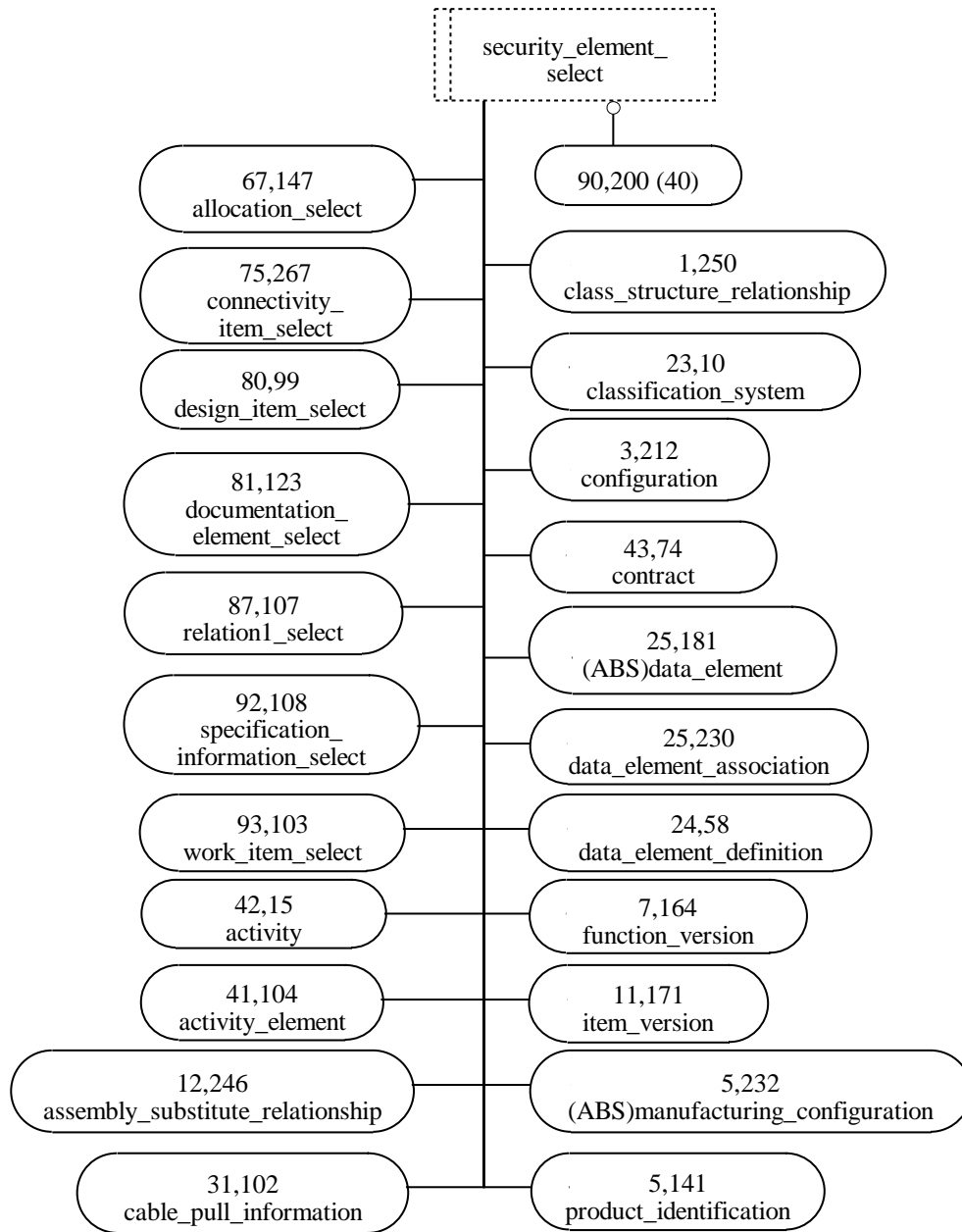


Figure G.90 - ARM diagram in EXPRESS-G: 90 of 93

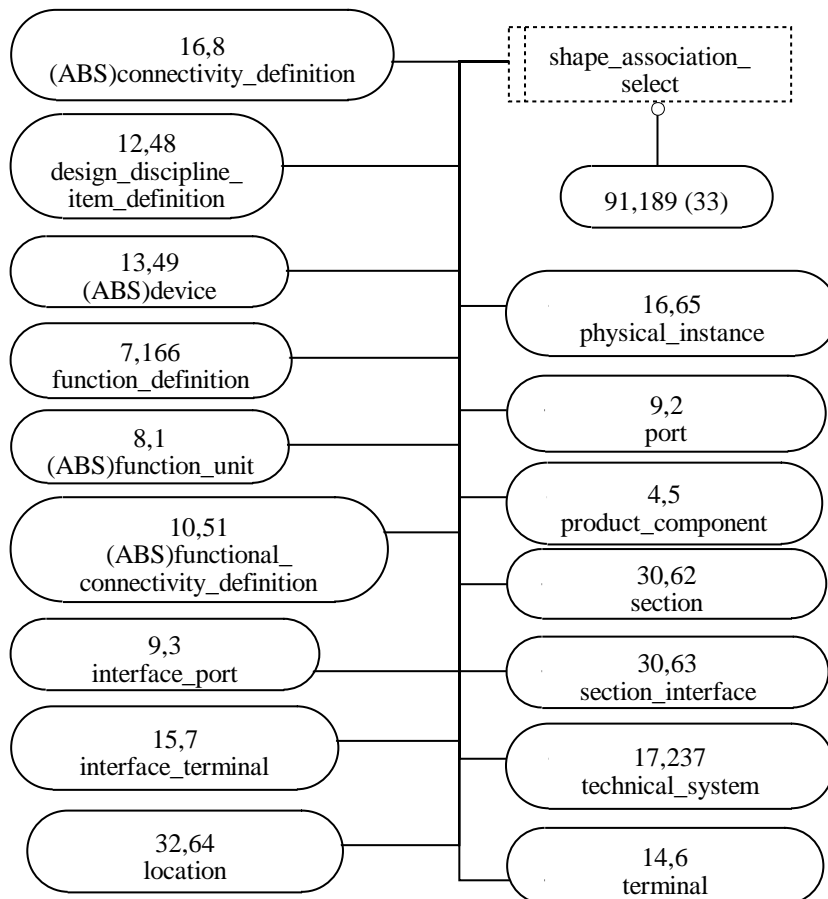


Figure G.91 - ARM diagram in EXPRESS-G: 91 of 93

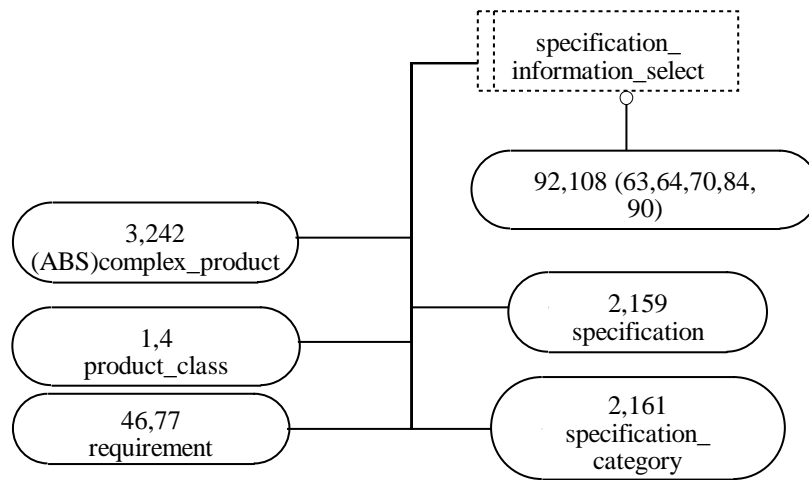


Figure G.92 - ARM diagram in EXPRESS-G: 92 of 93

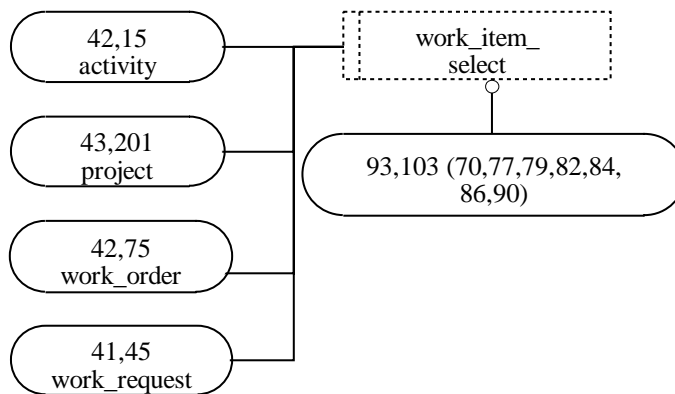
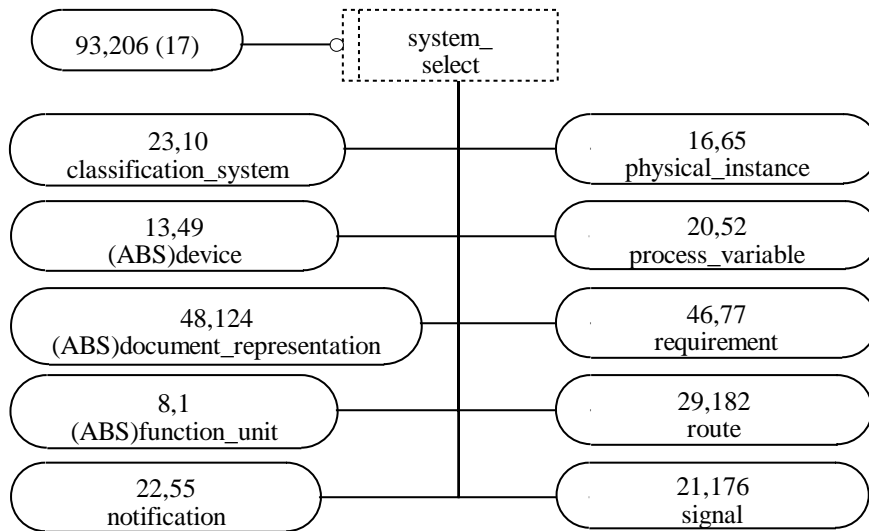


Figure G.93 - ARM diagram in EXPRESS-G: 93 of 93

Annex H

(informative)

AIM EXPRESS-G

Figures H.1 through H.96 correspond to the AIM EXPRESS expanded listing given in annex A. The diagrams use the EXPRESS-G graphical notation for the EXPRESS language. EXPRESS-G is defined in annex D of ISO 10303-11.

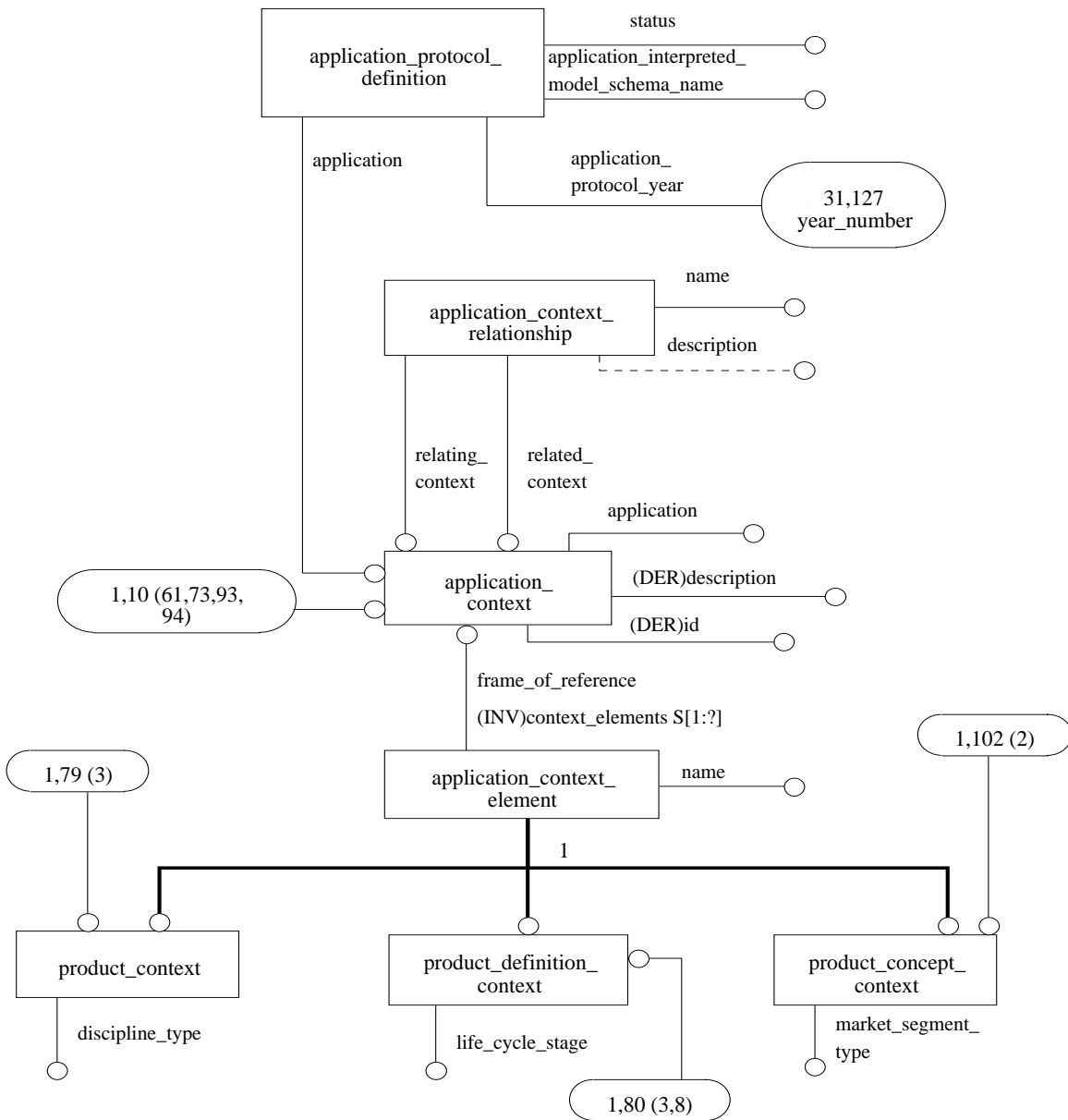


Figure H.1 - AIM diagram in EXPRESS-G: 1 of 96

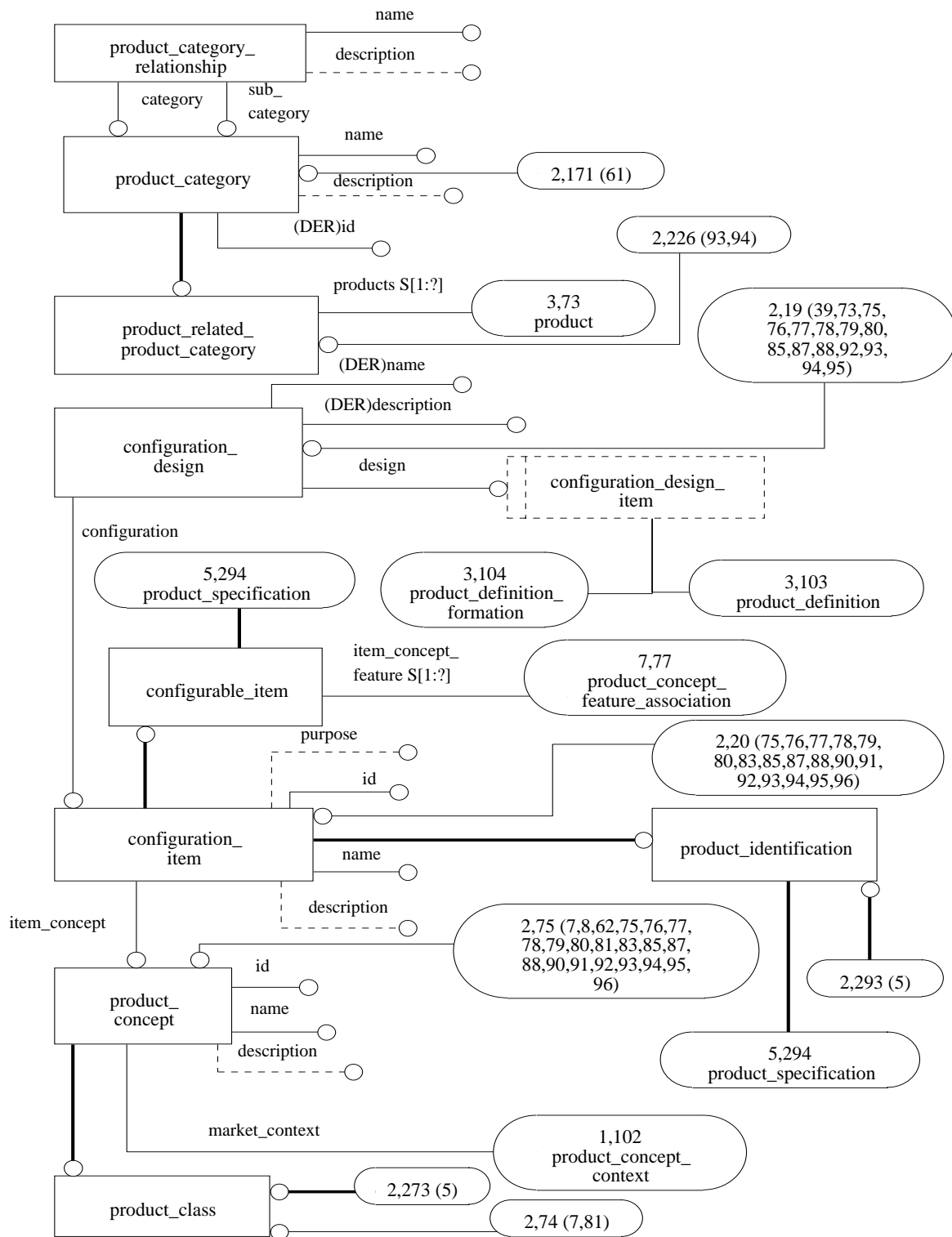


Figure H.2 - AIM diagram in EXPRESS-G: 2 of 96

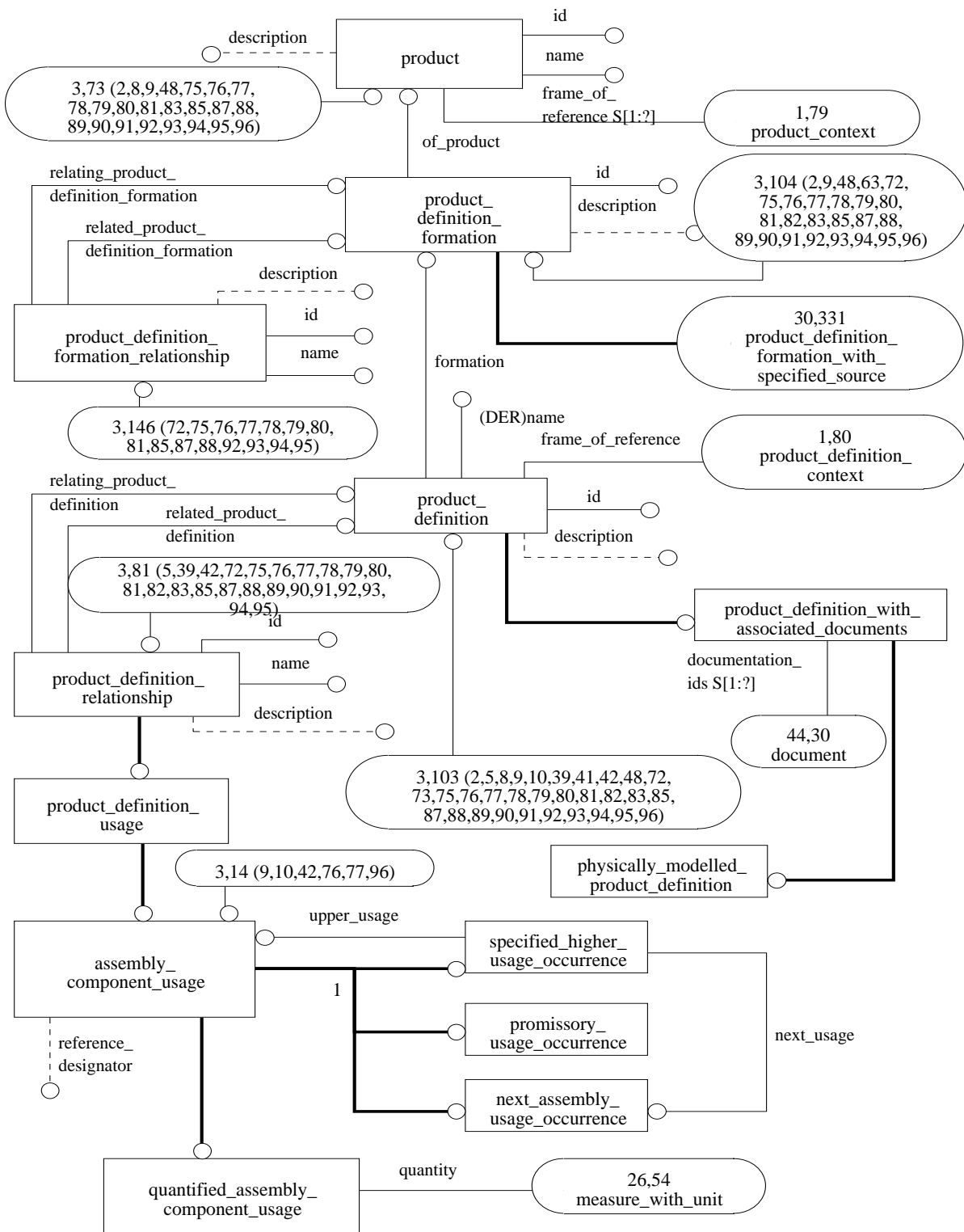


Figure H.3 - AIM diagram in EXPRESS-G: 3 of 96

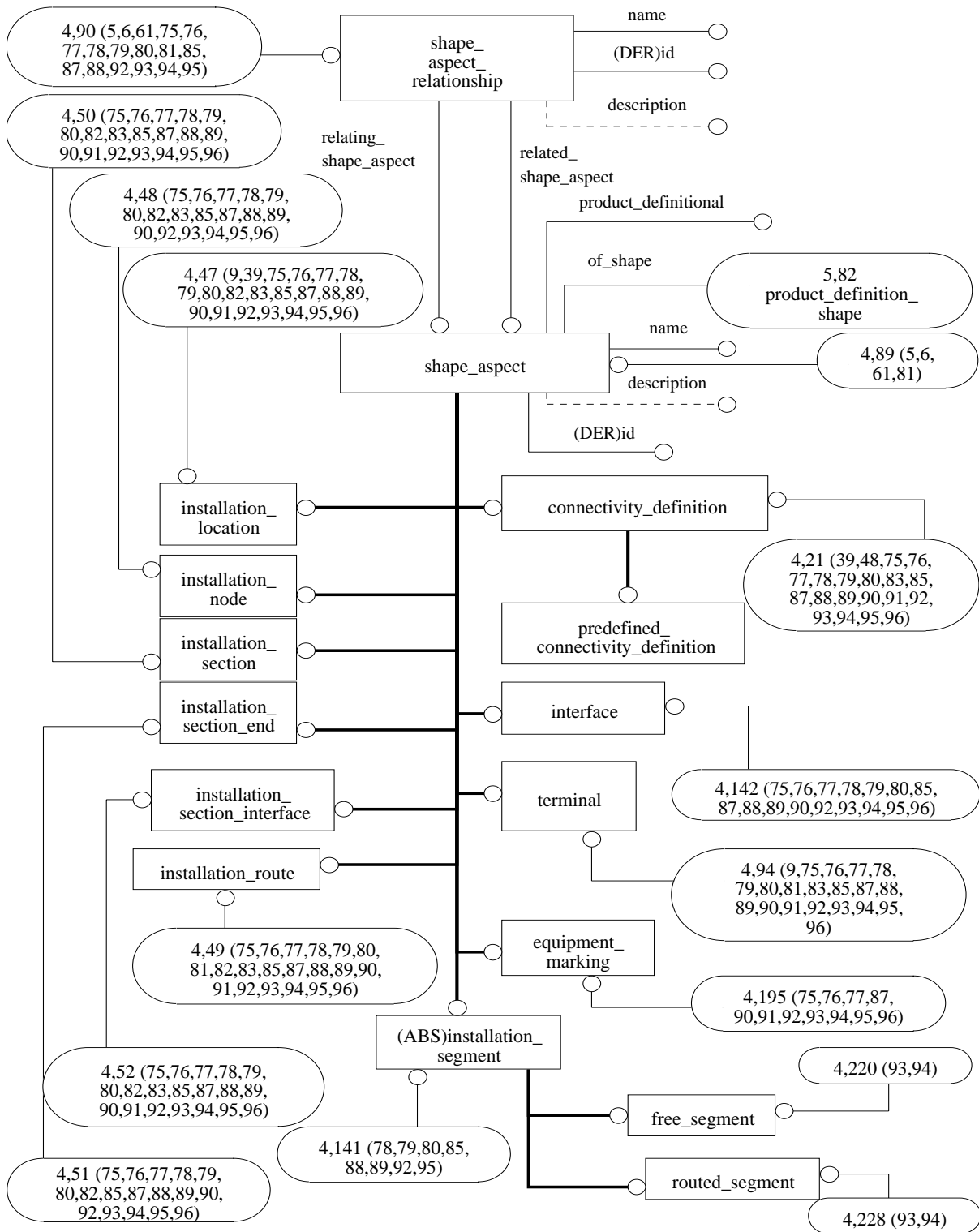


Figure H.4 - AIM diagram in EXPRESS-G: 4 of 96

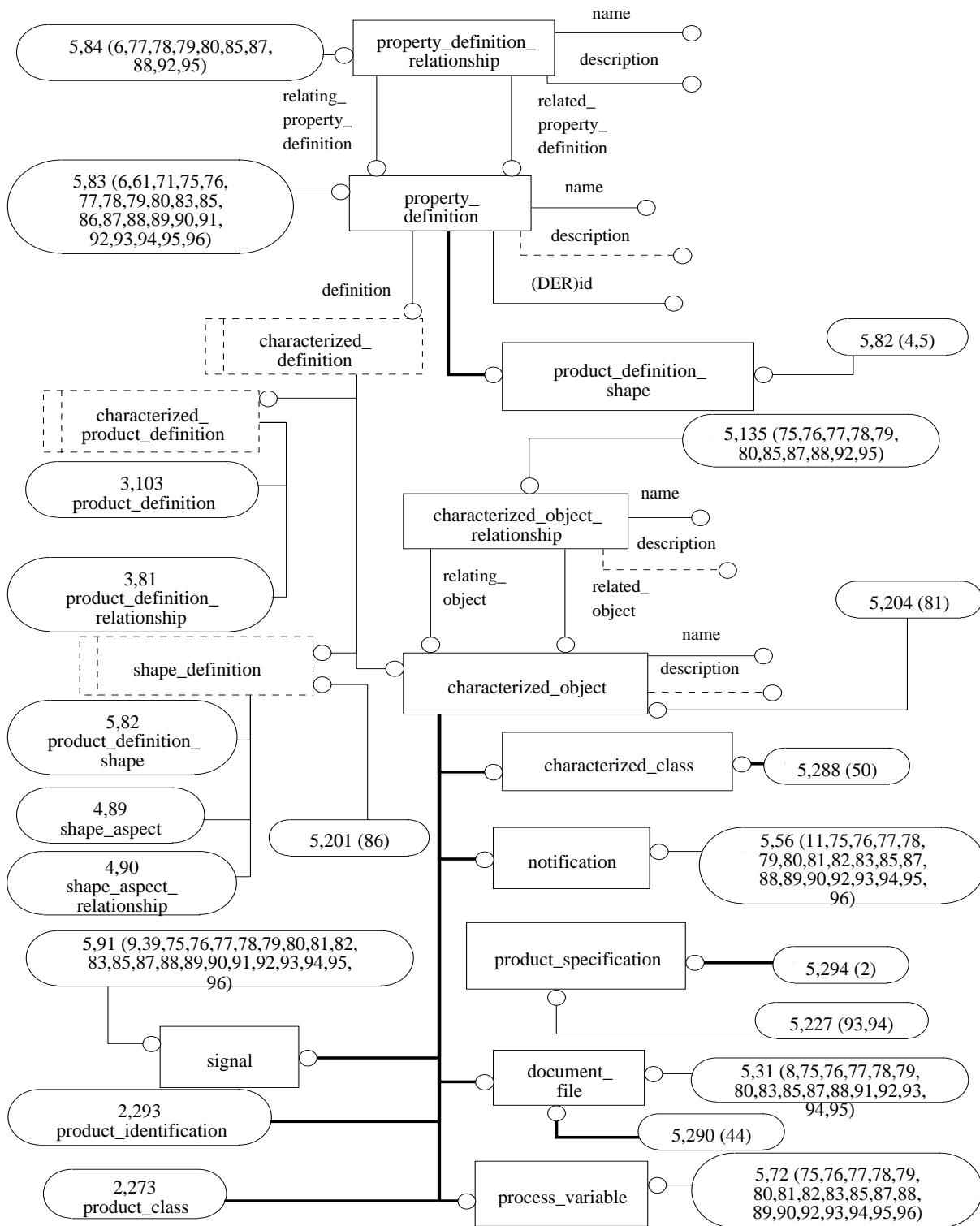


Figure H.5 - AIM diagram in EXPRESS-G: 5 of 96

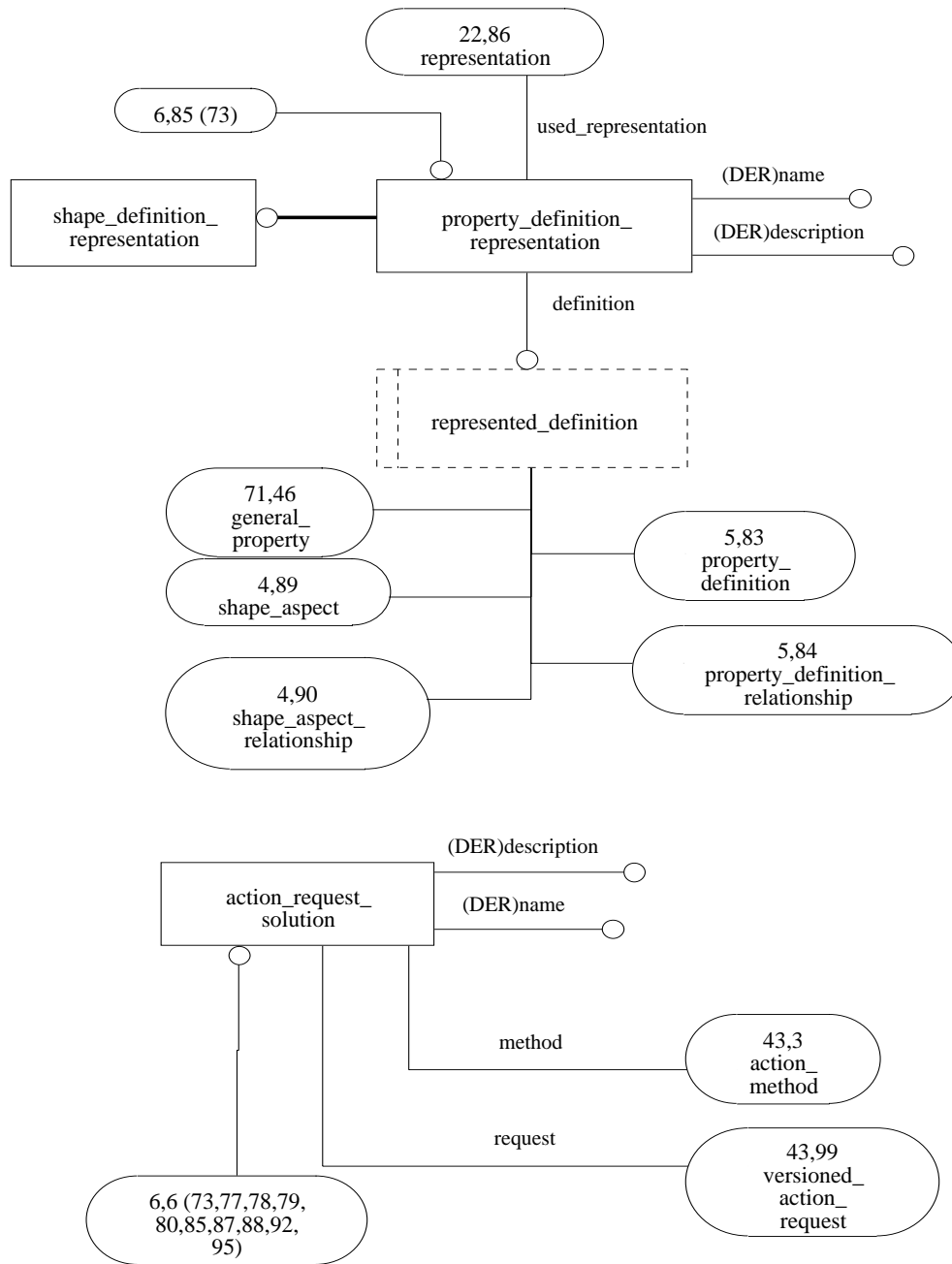


Figure H.6 - AIM diagram in EXPRESS-G: 6 of 96

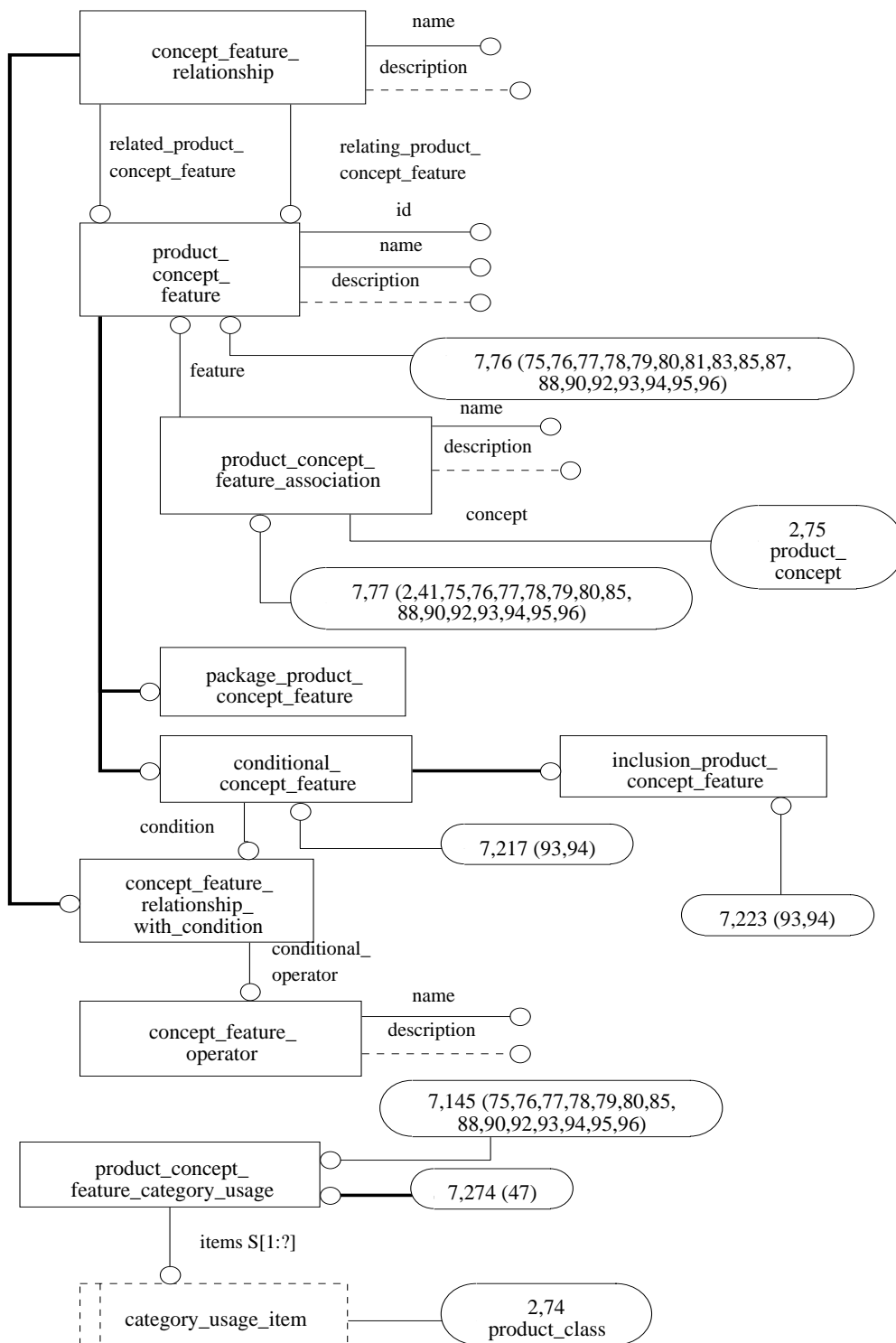


Figure H.7 - AIM diagram in EXPRESS-G: 7 of 96

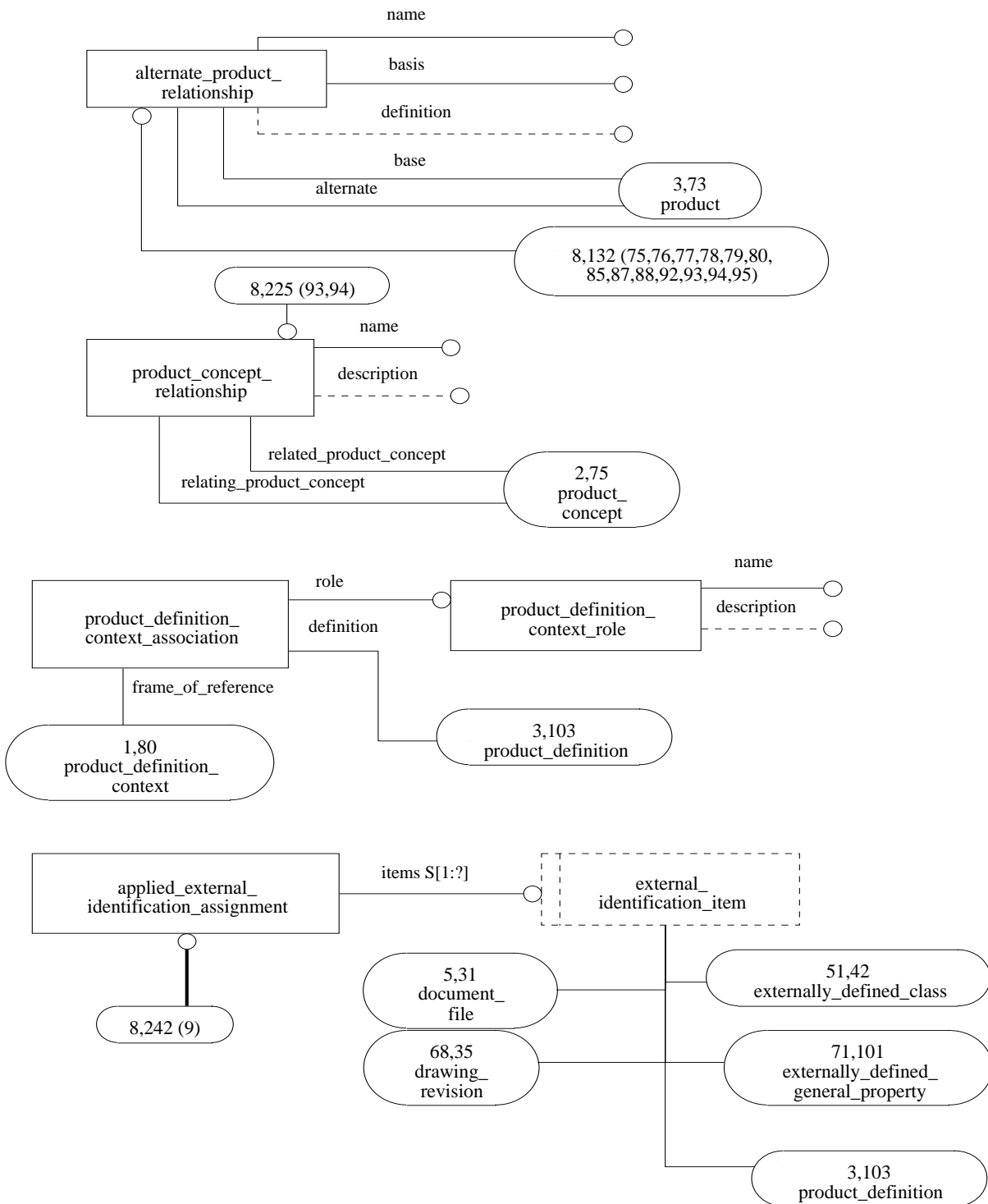


Figure H.8 - AIM diagram in EXPRESS-G: 8 of 96

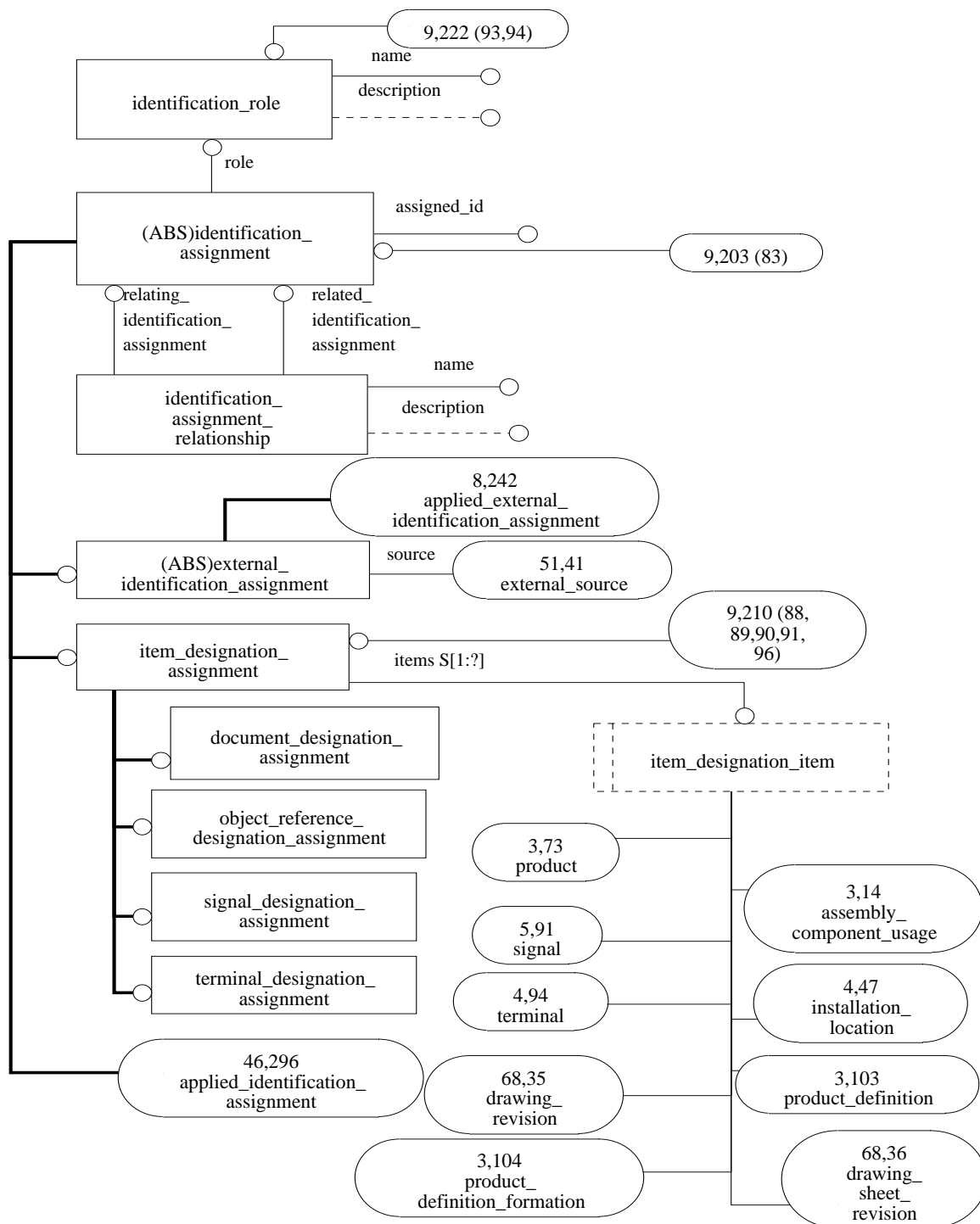


Figure H.9 - AIM diagram in EXPRESS-G: 9 of 96

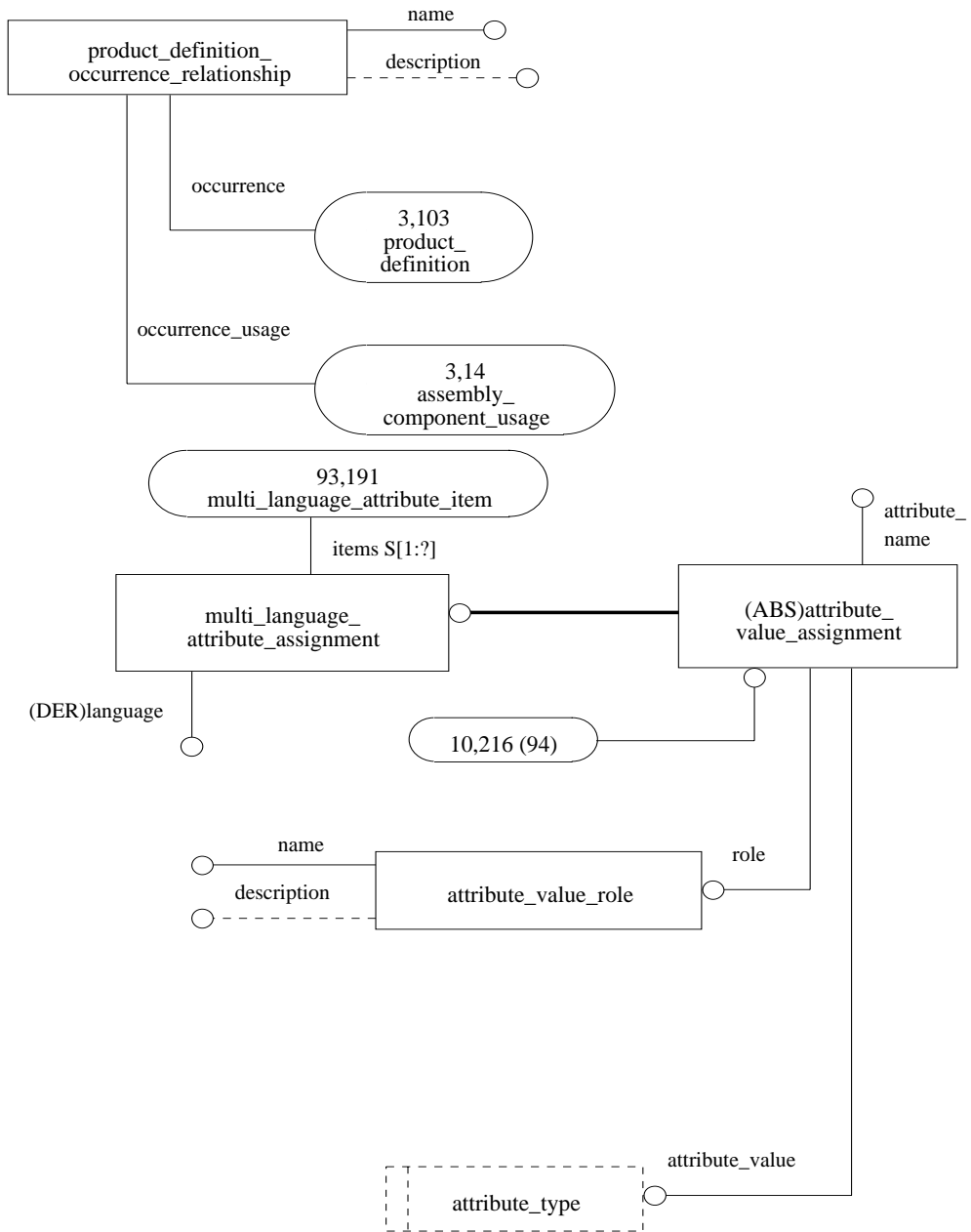


Figure H.10 - AIM diagram in EXPRESS-G: 10 of 96

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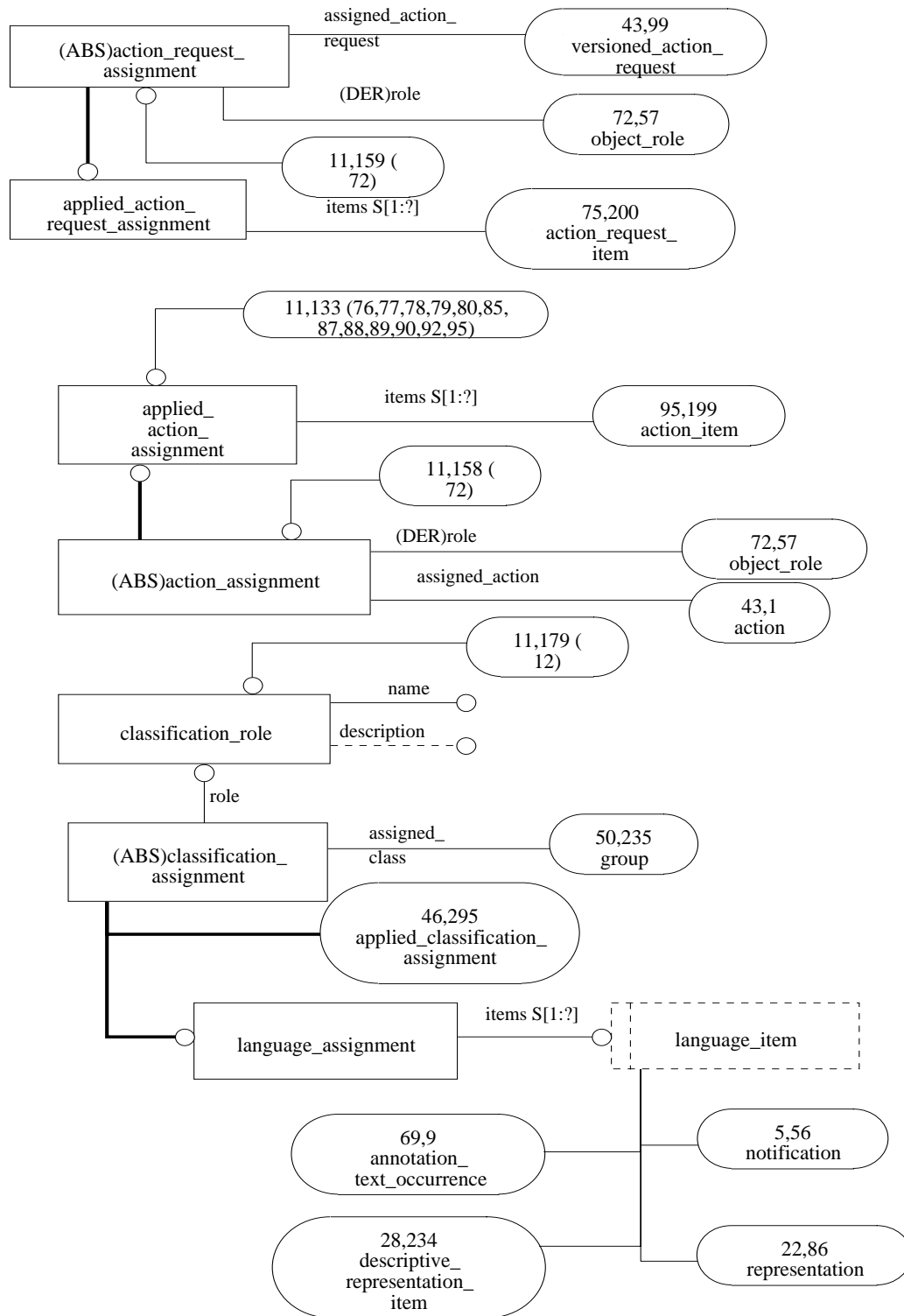


Figure H.11 - AIM diagram in EXPRESS-G: 11 of 96

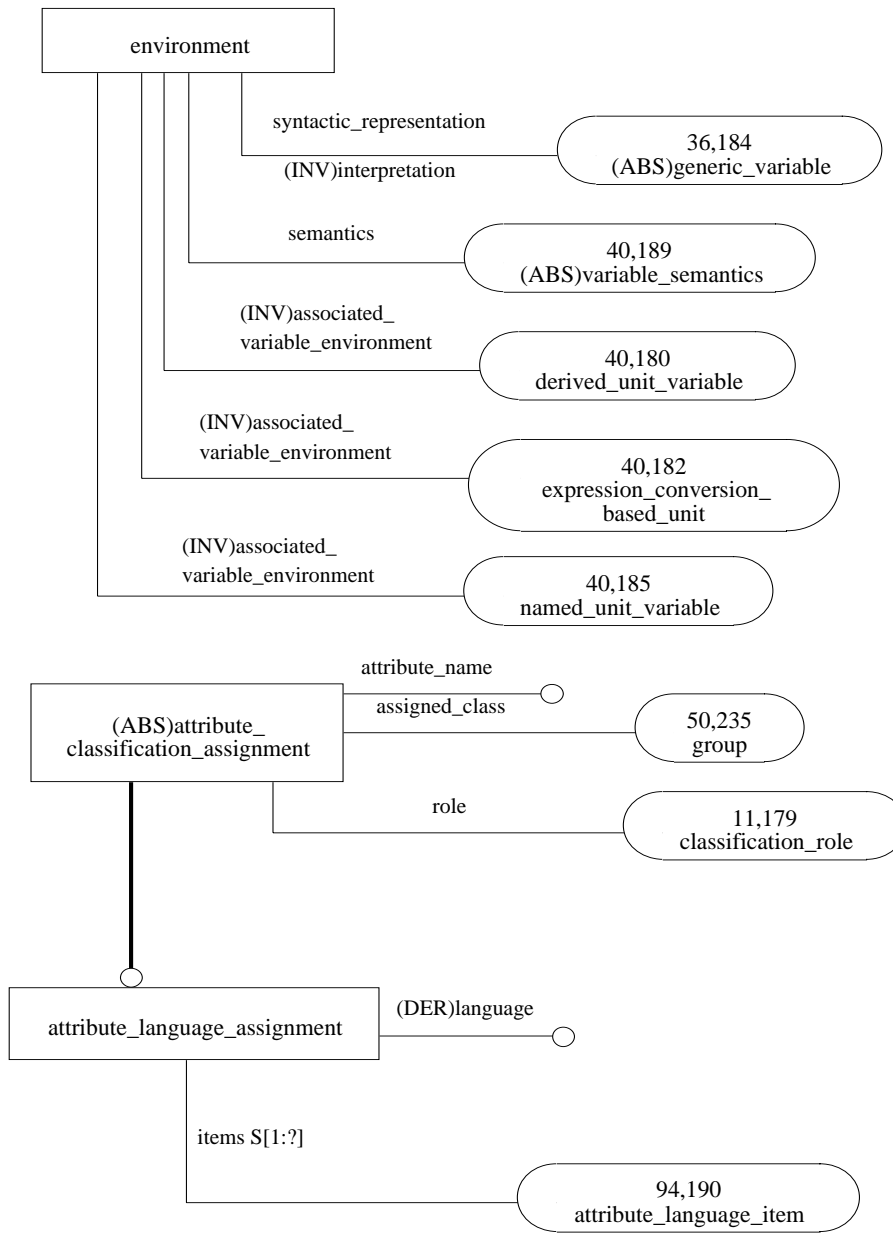


Figure H.12 - AIM diagram in EXPRESS-G: 12 of 96

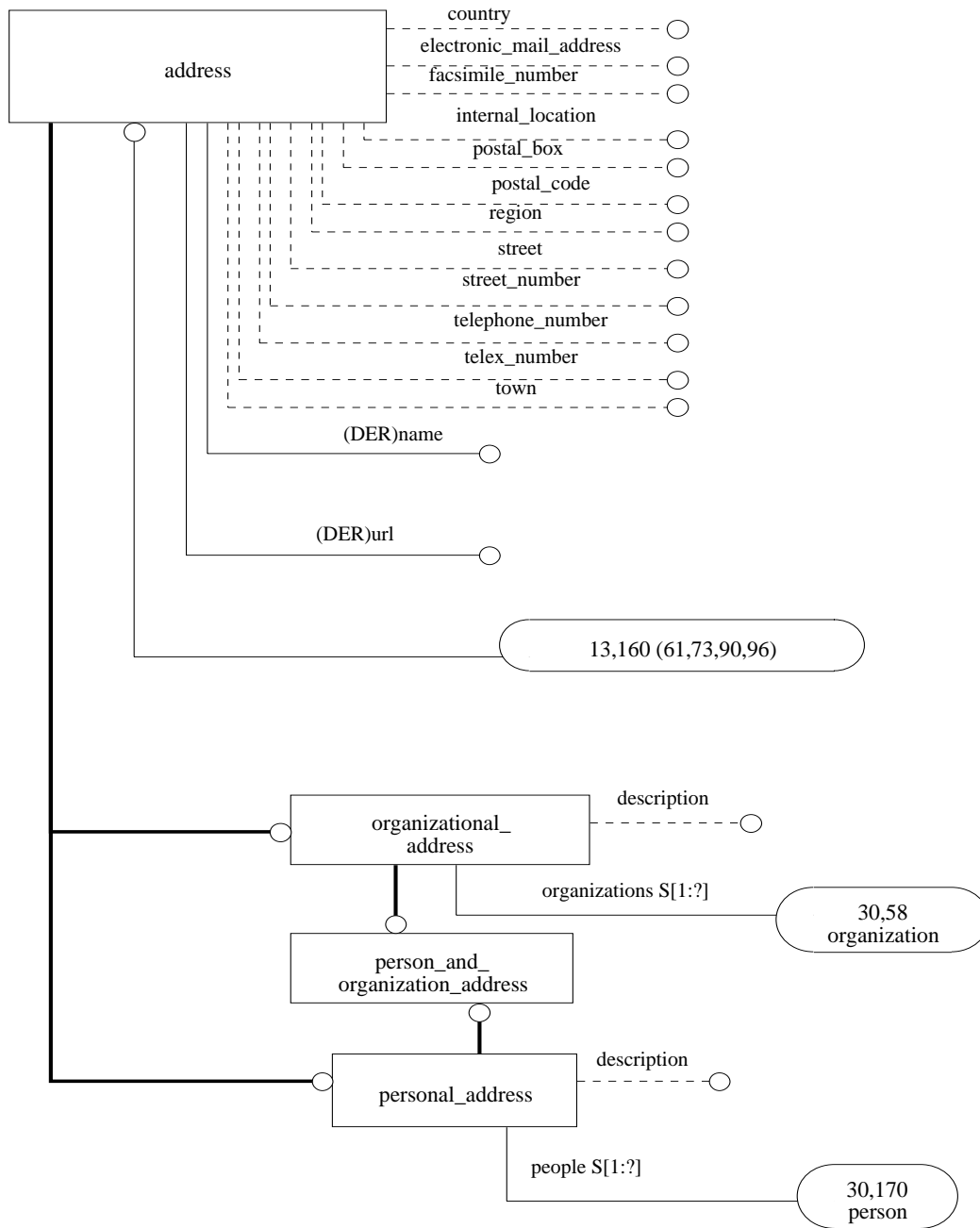


Figure H.13 - AIM diagram in EXPRESS-G: 13 of 96

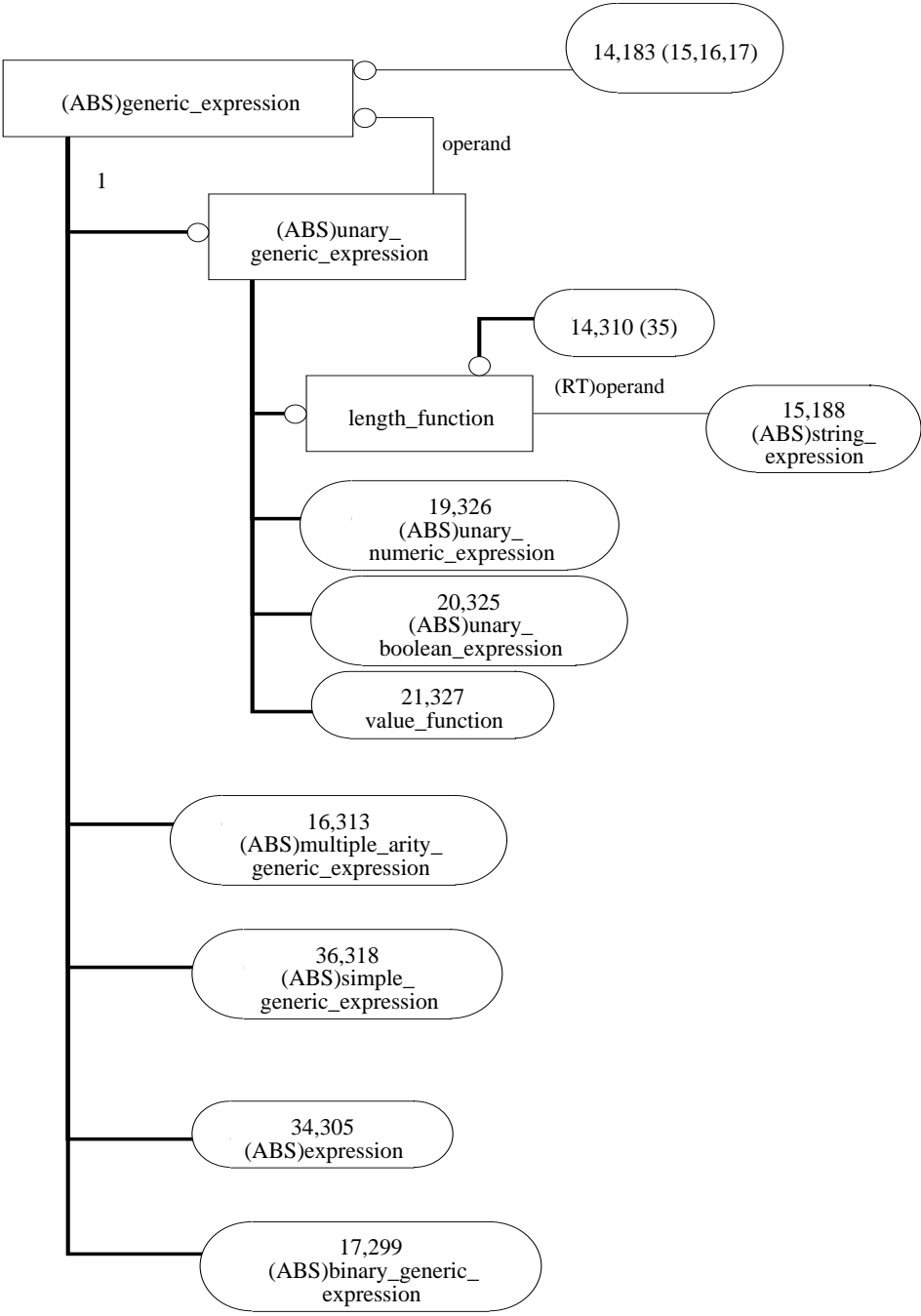


Figure H.14 - AIM diagram in EXPRESS-G: 14 of 96

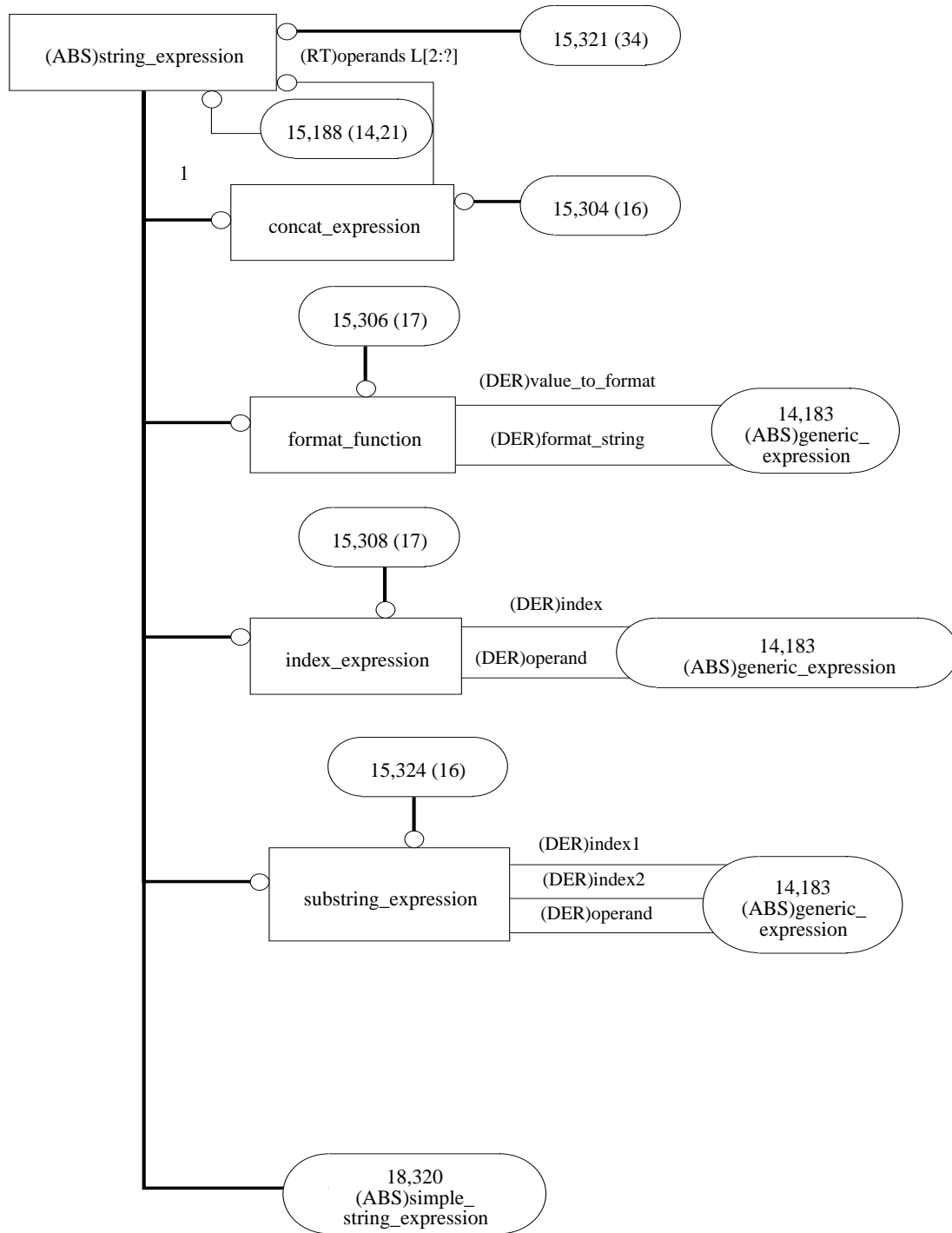


Figure H.15 - AIM diagram in EXPRESS-G: 15 of 96

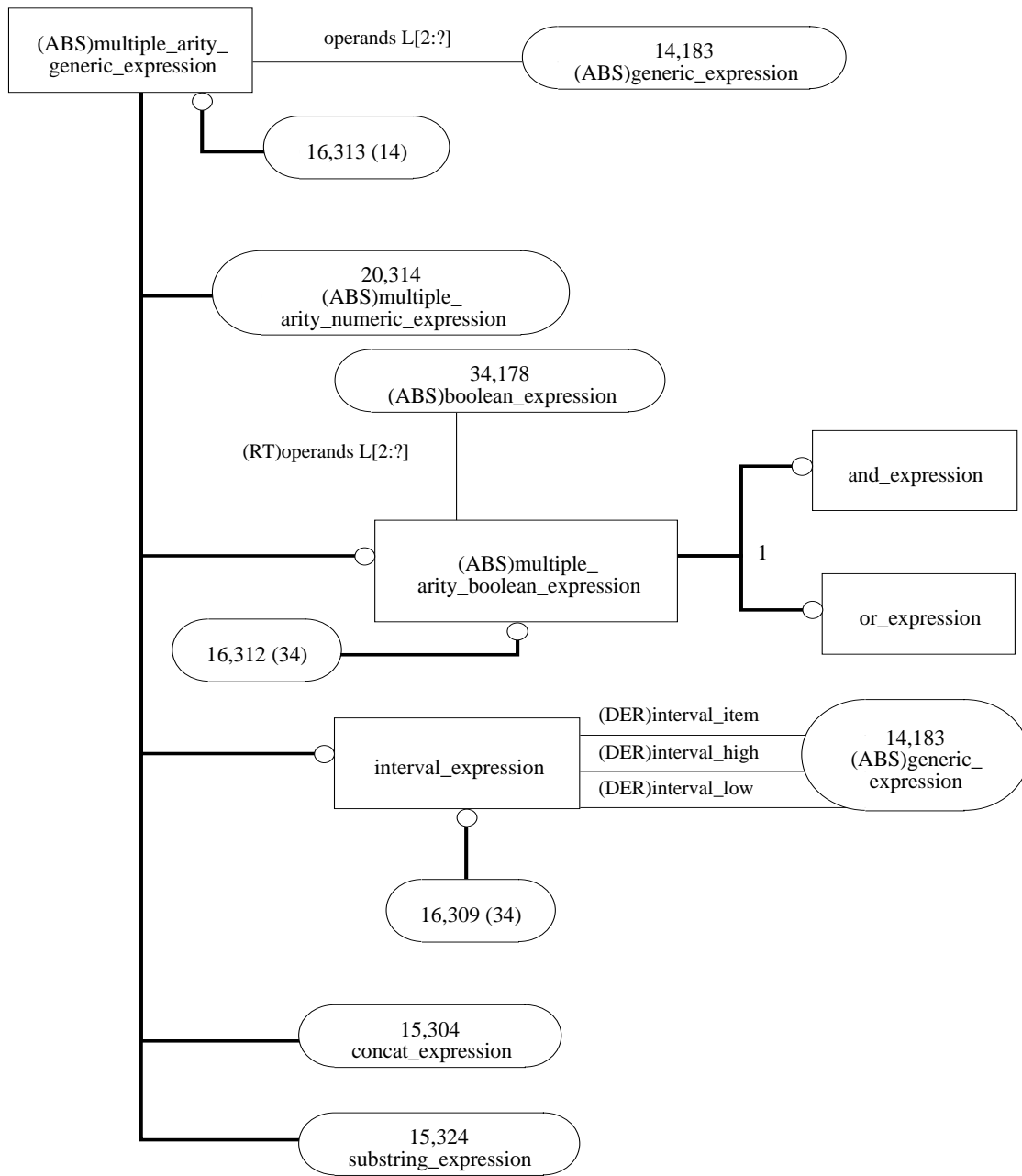


Figure H.16 - AIM diagram in EXPRESS-G: 16 of 96

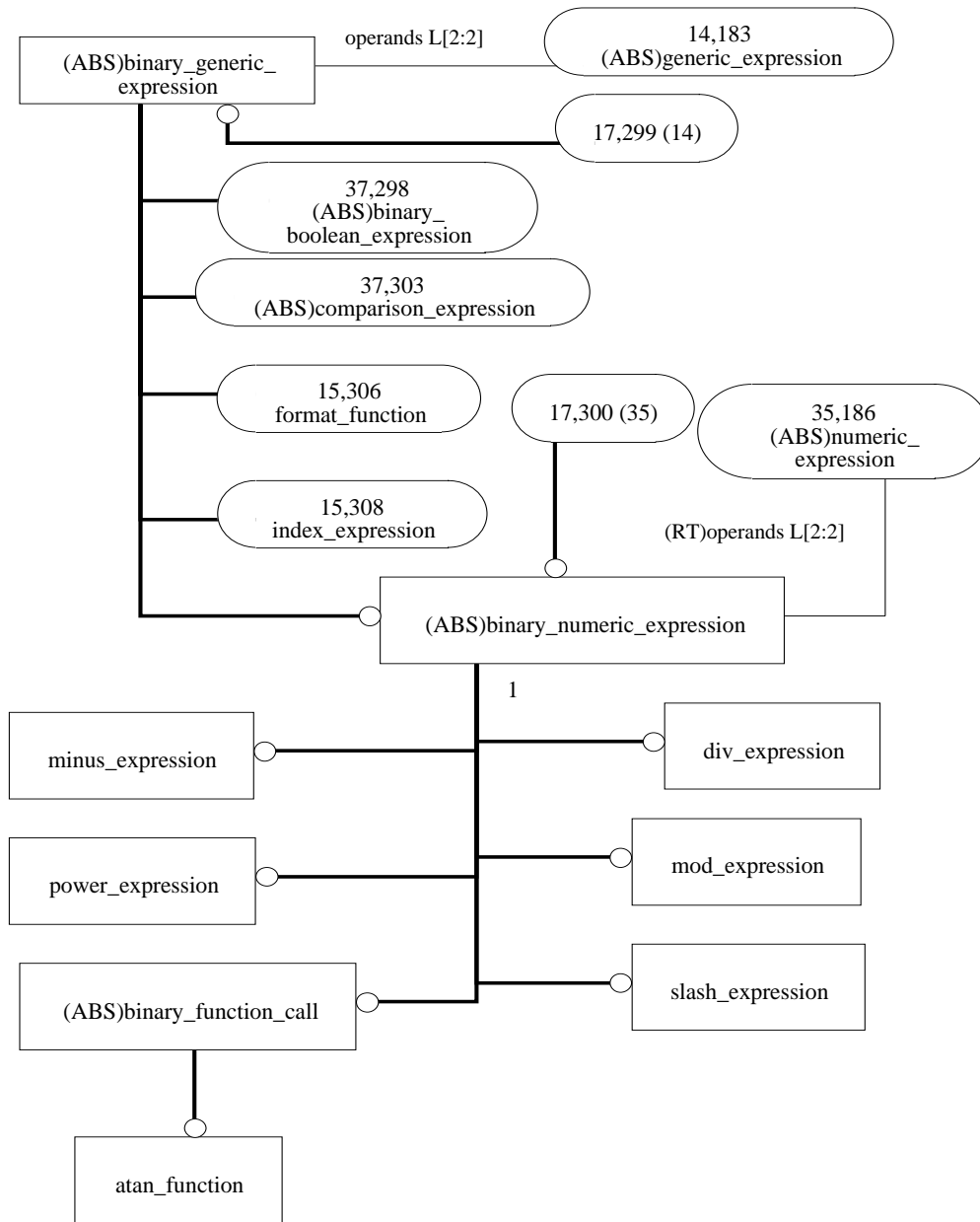


Figure H.17 - AIM diagram in EXPRESS-G: 17 of 96

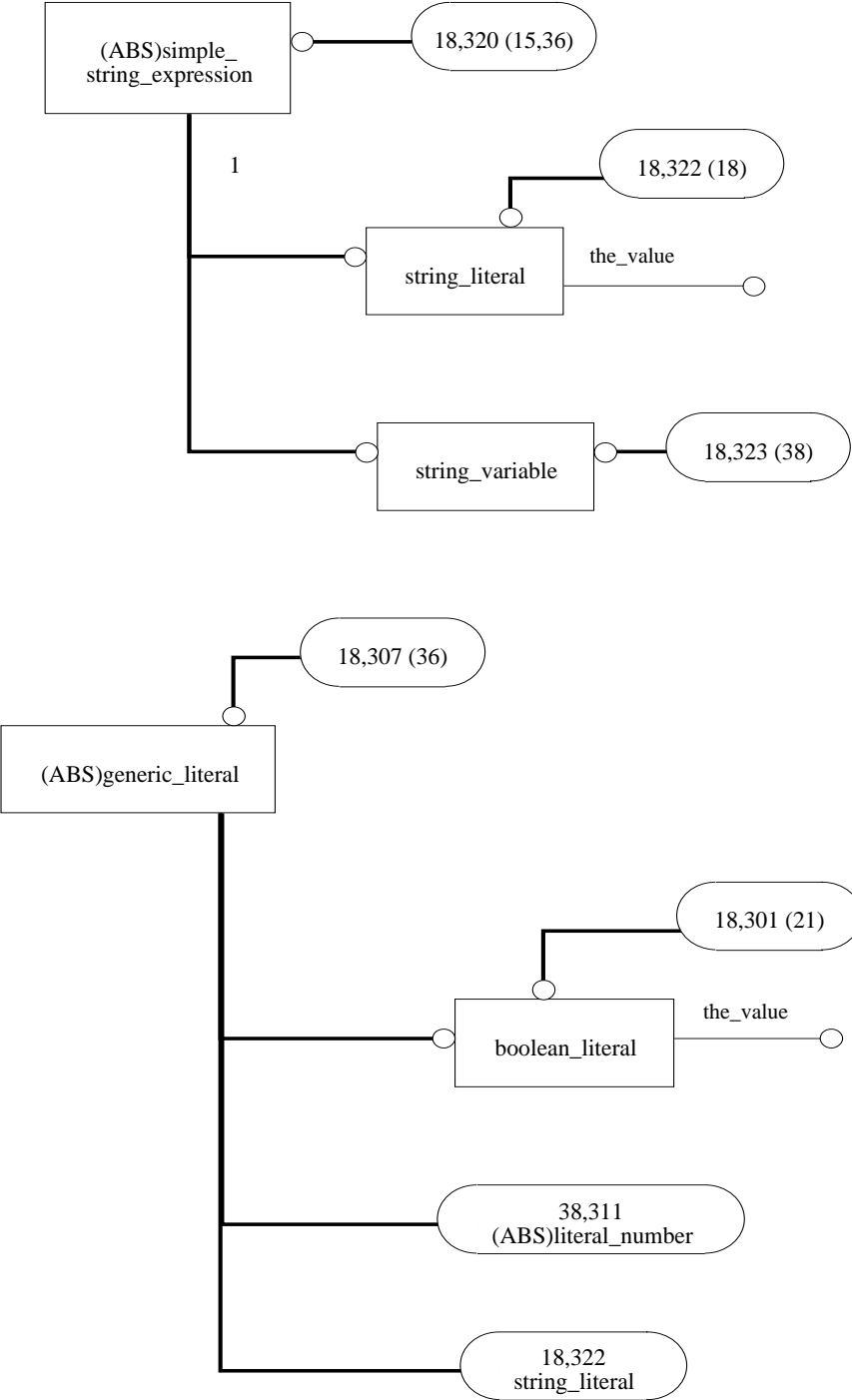


Figure H.18 - AIM diagram in EXPRESS-G: 18 of 96

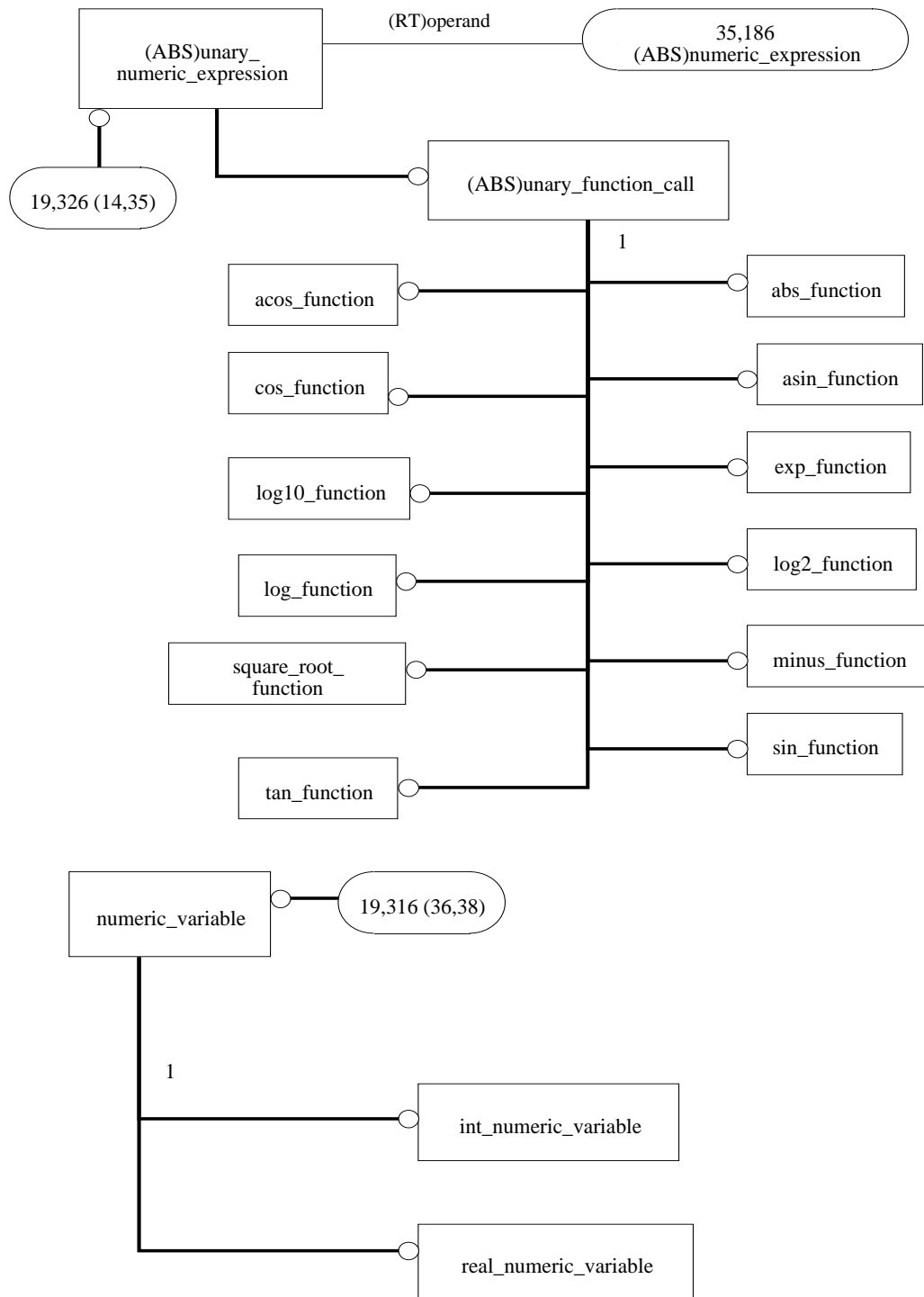


Figure H.19 - AIM diagram in EXPRESS-G: 19 of 96

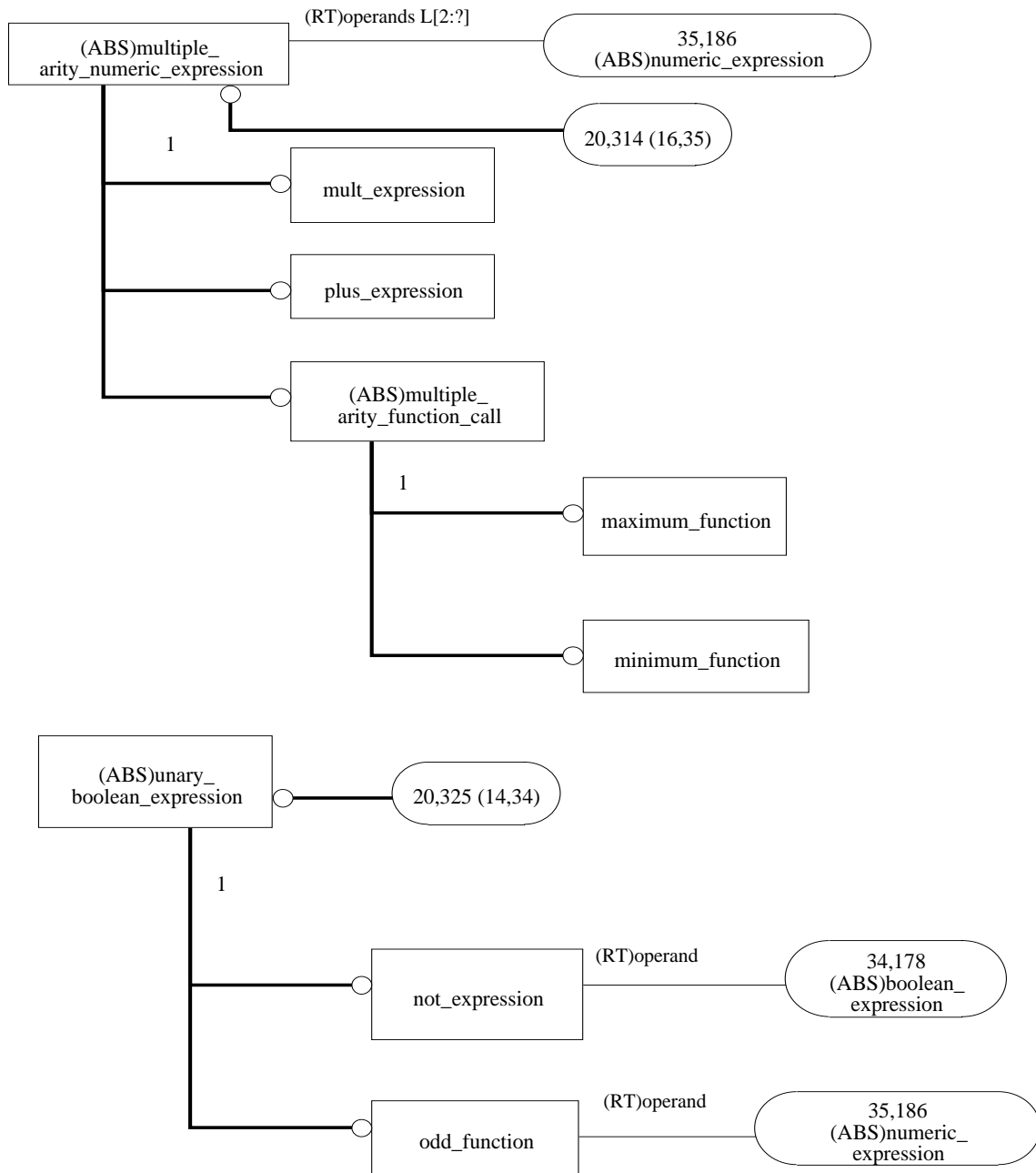


Figure H.20 - AIM diagram in EXPRESS-G: 20 of 96

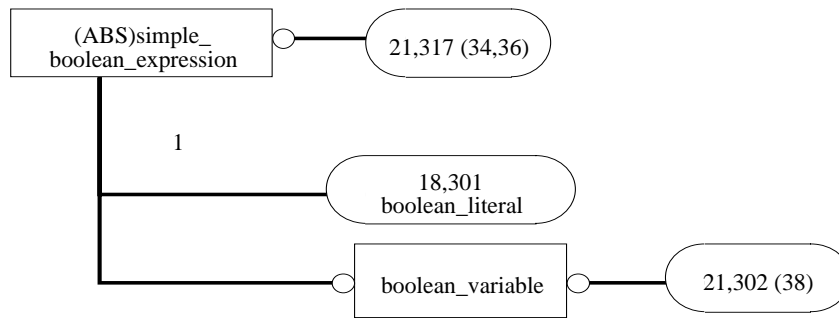
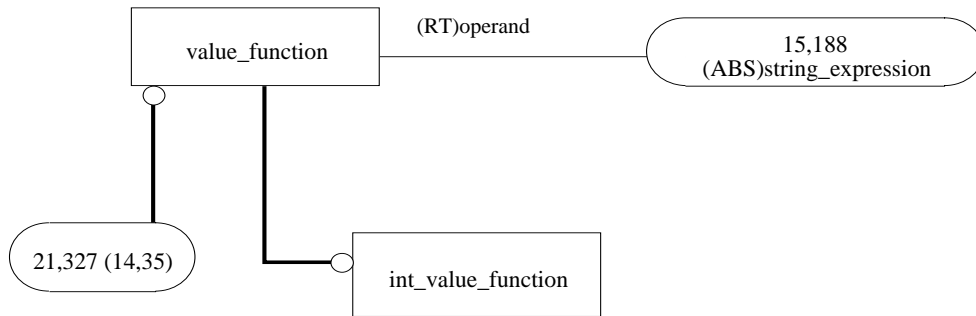


Figure H.21 - AIM diagram in EXPRESS-G: 21 of 96

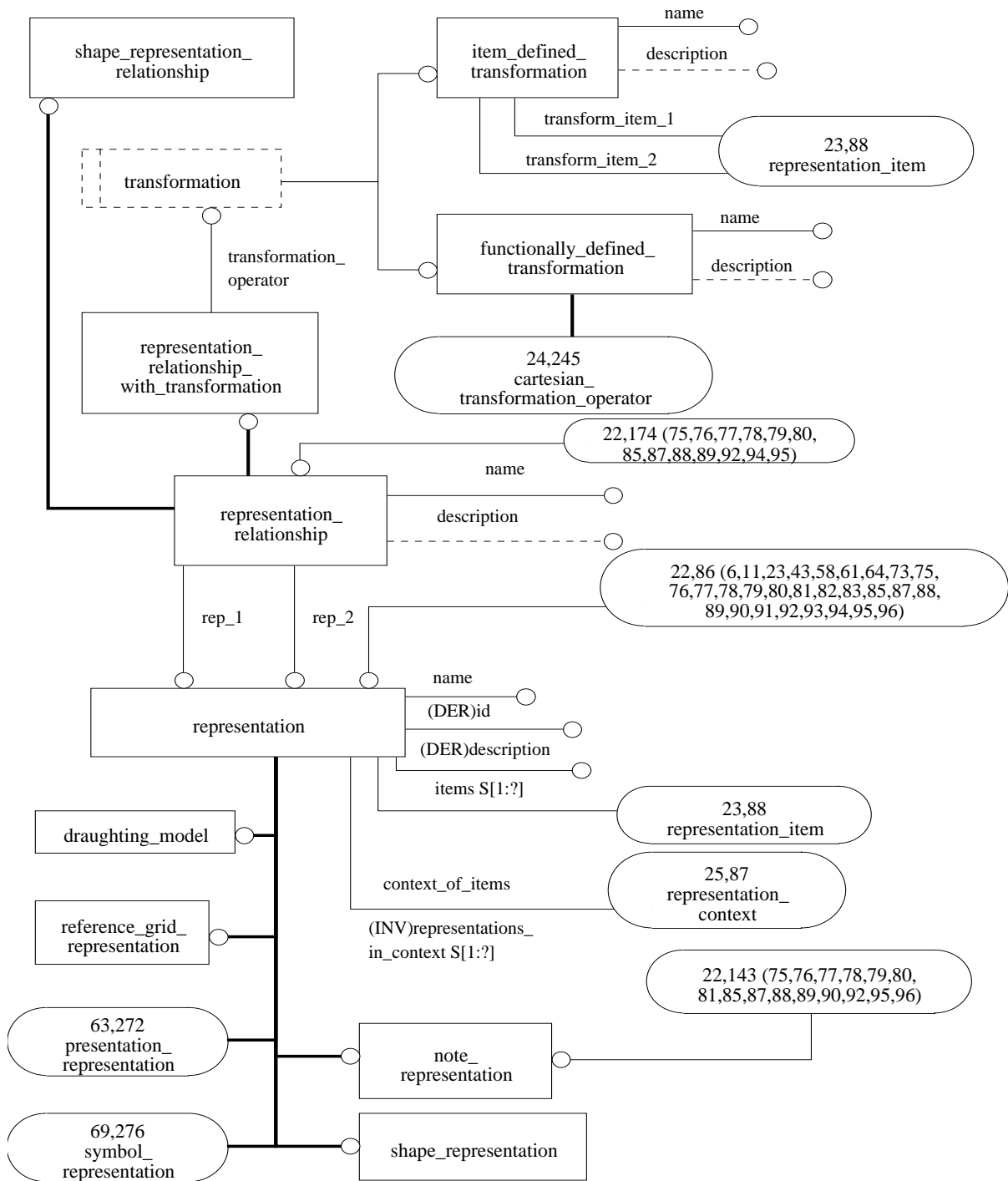


Figure H.22 - AIM diagram in EXPRESS-G: 22 of 96

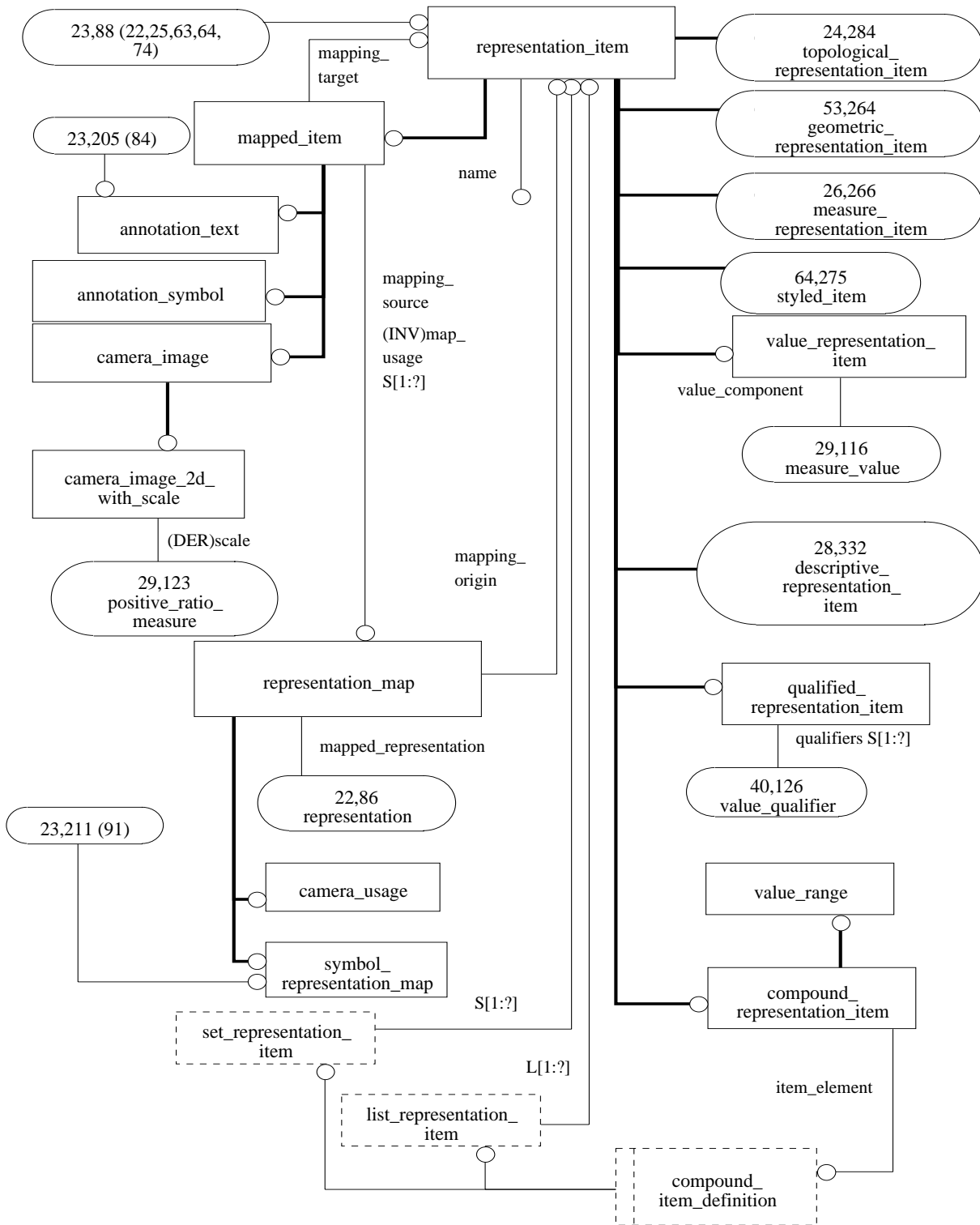


Figure H.23 - AIM diagram in EXPRESS-G: 23 of 96

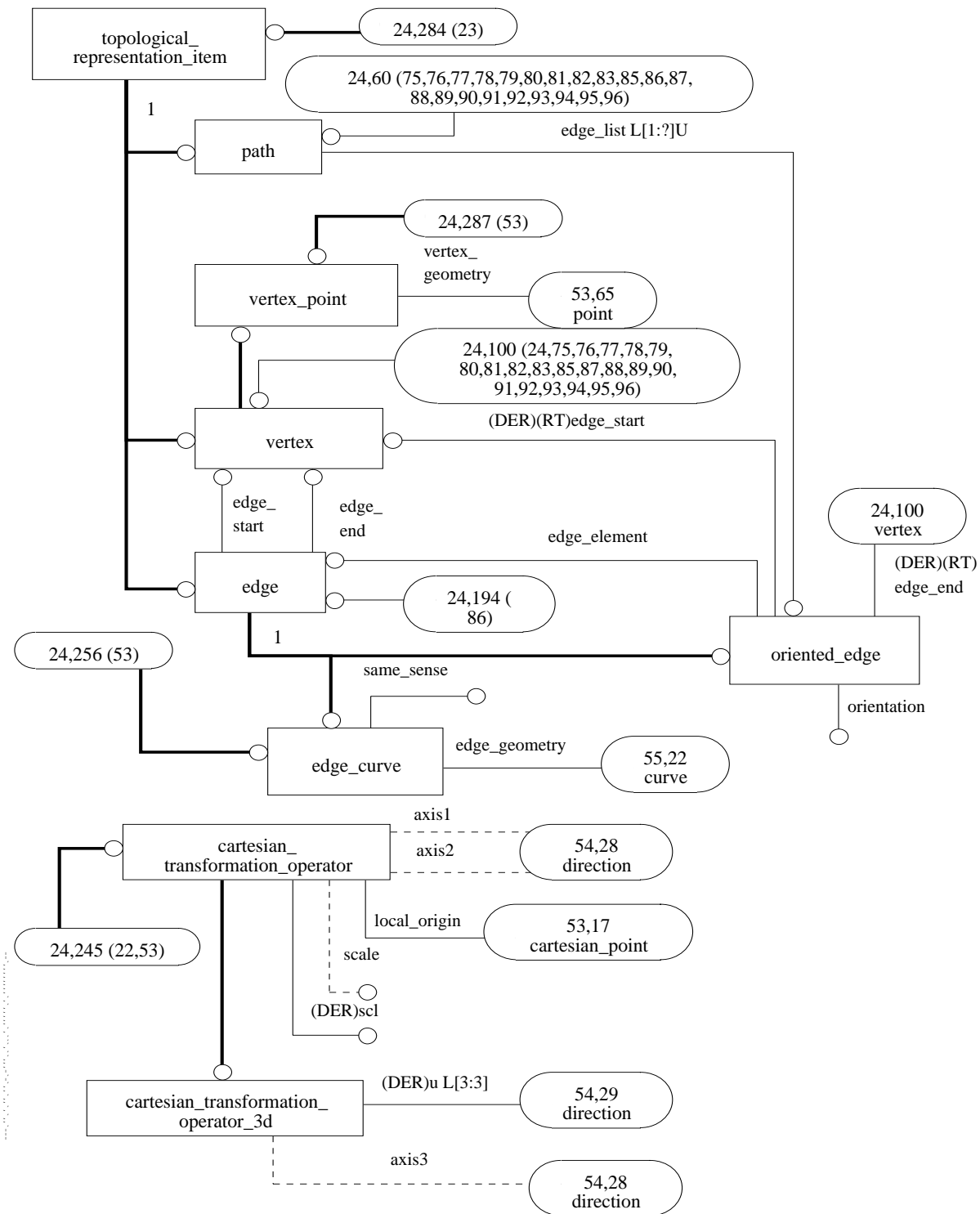


Figure H.24 - AIM diagram in EXPRESS-G: 24 of 96

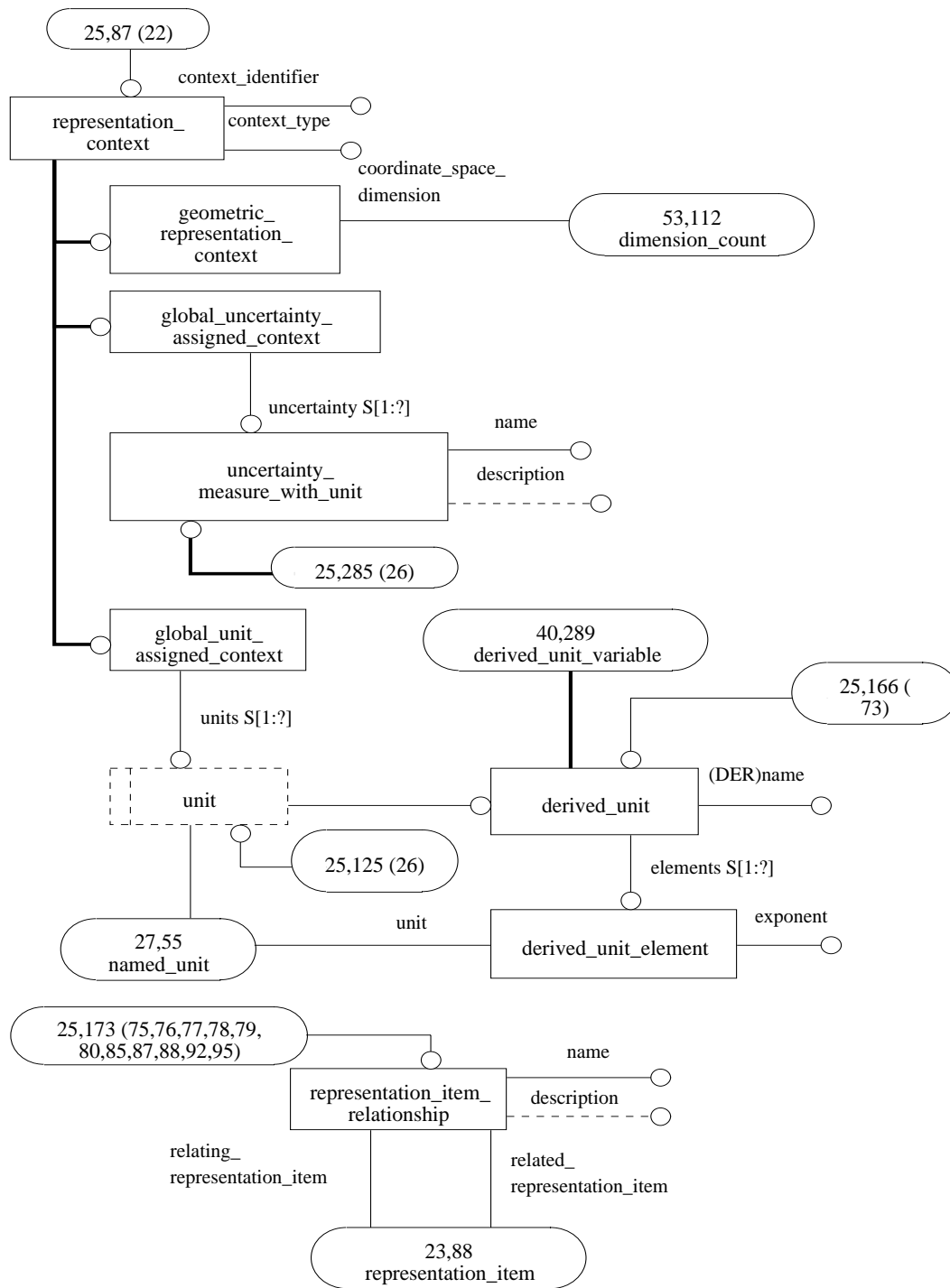


Figure H.25 - AIM diagram in EXPRESS-G: 25 of 96

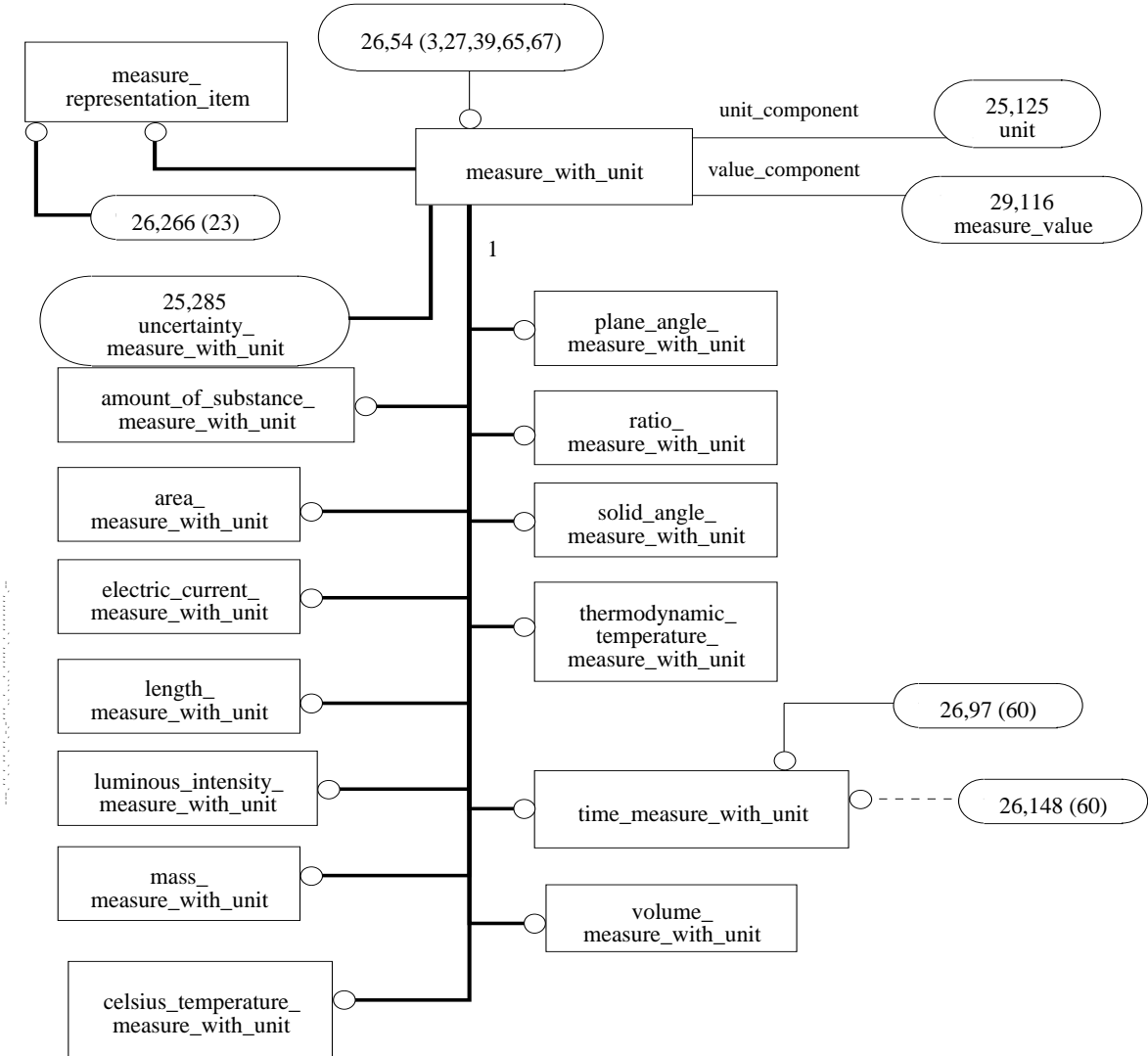


Figure H.26 - AIM diagram in EXPRESS-G: 26 of 96

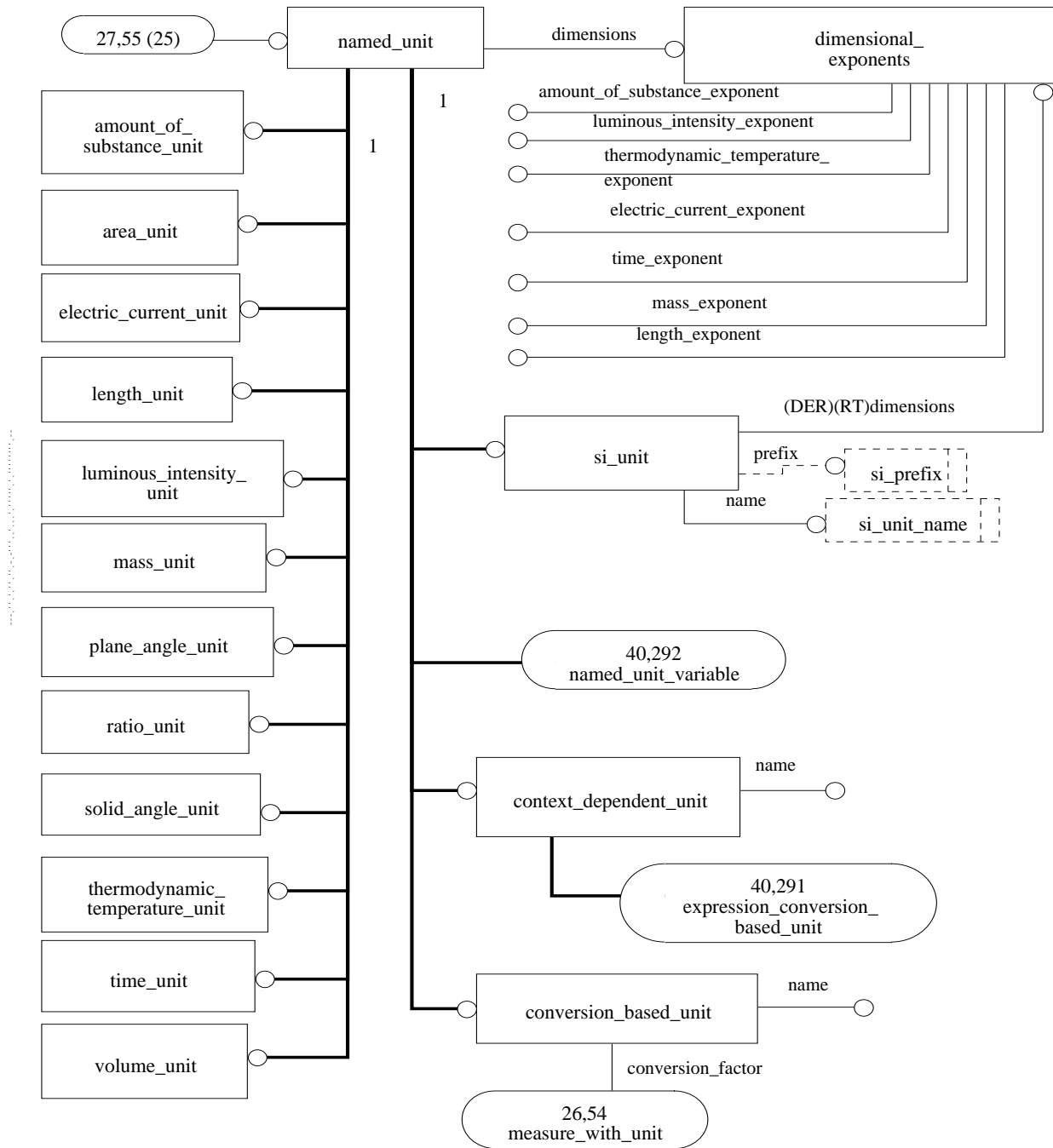


Figure H.27 - AIM diagram in EXPRESS-G: 27 of 96

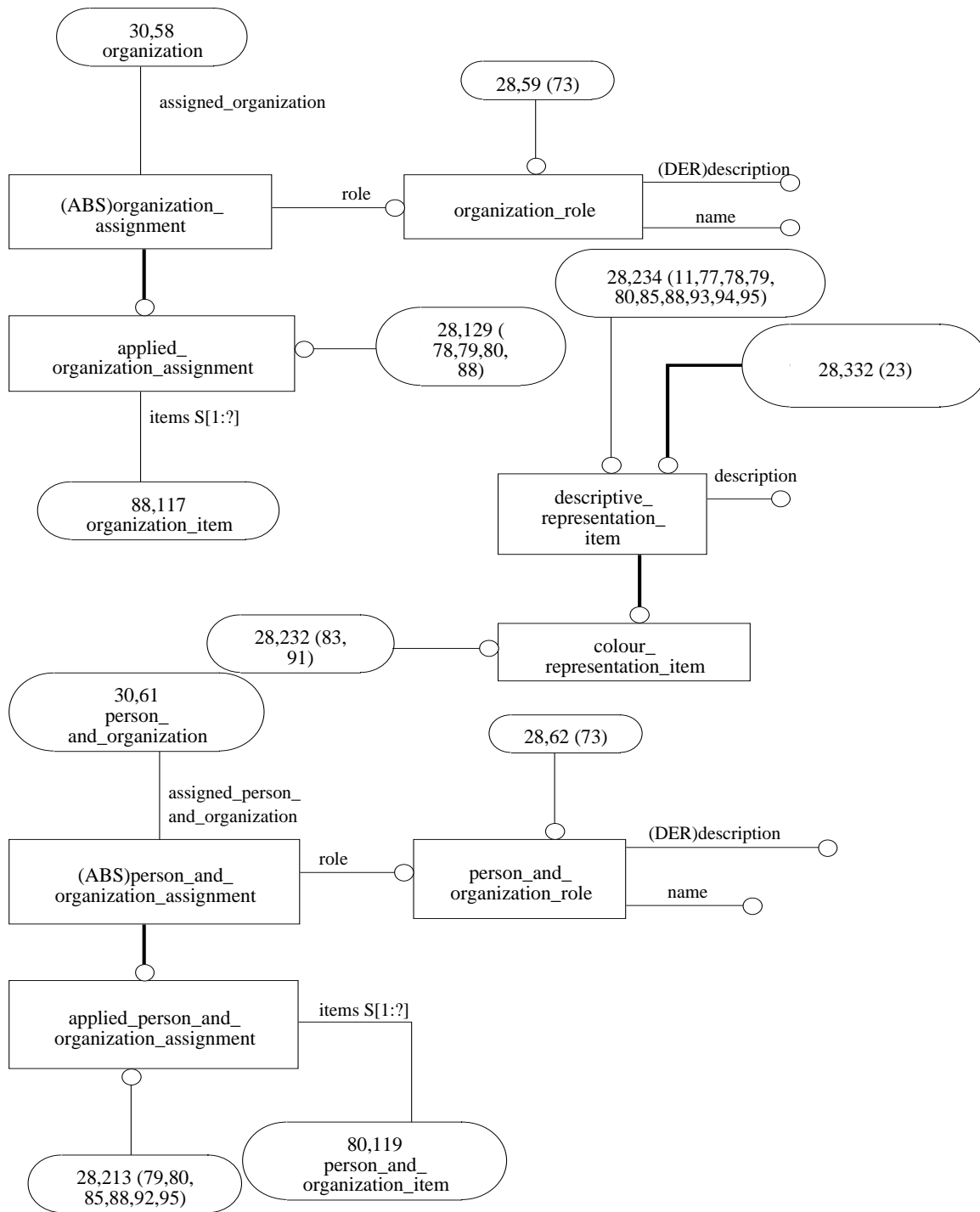


Figure H.28 - AIM diagram in EXPRESS-G: 28 of 96

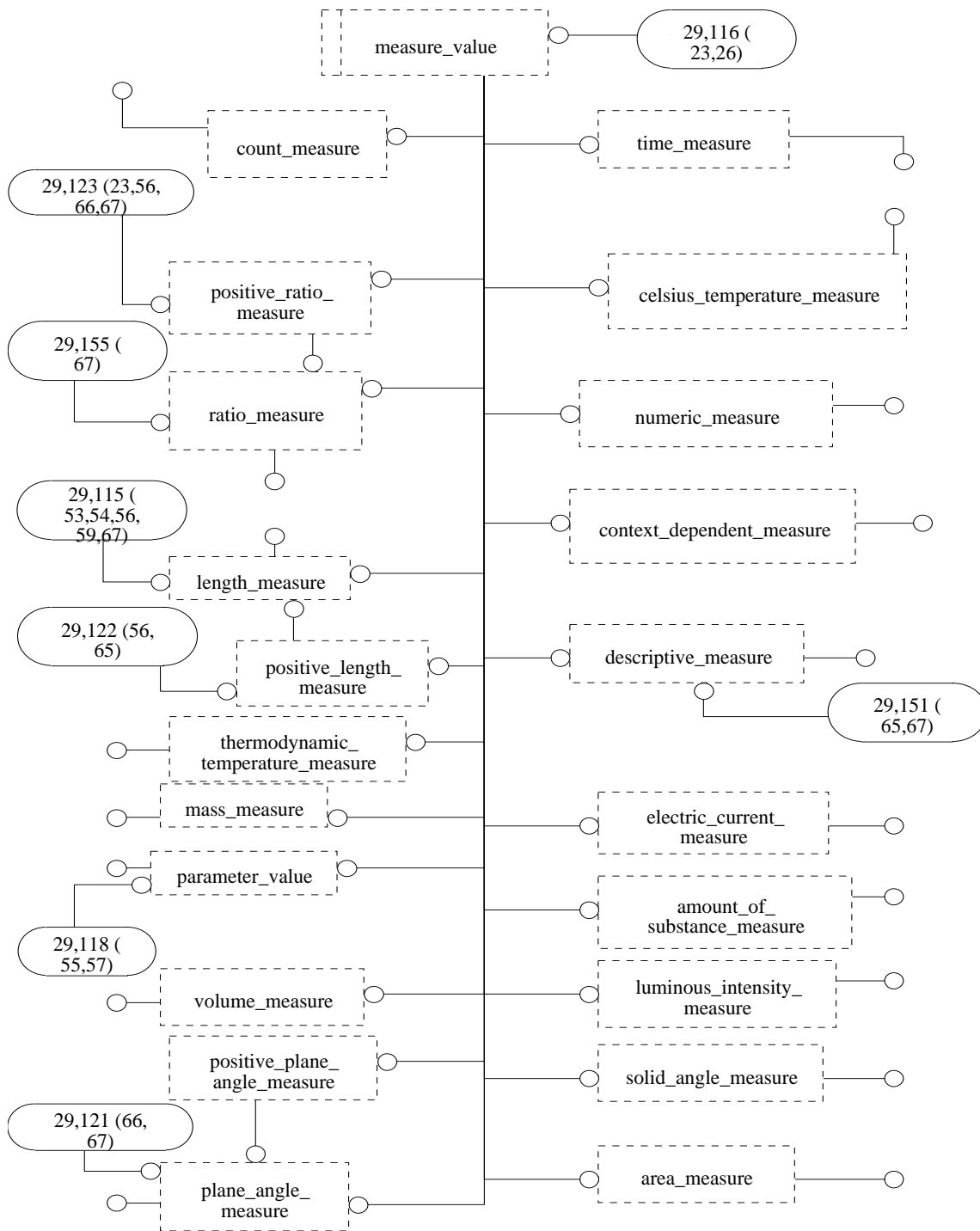


Figure H.29 - AIM diagram in EXPRESS-G: 29 of 96

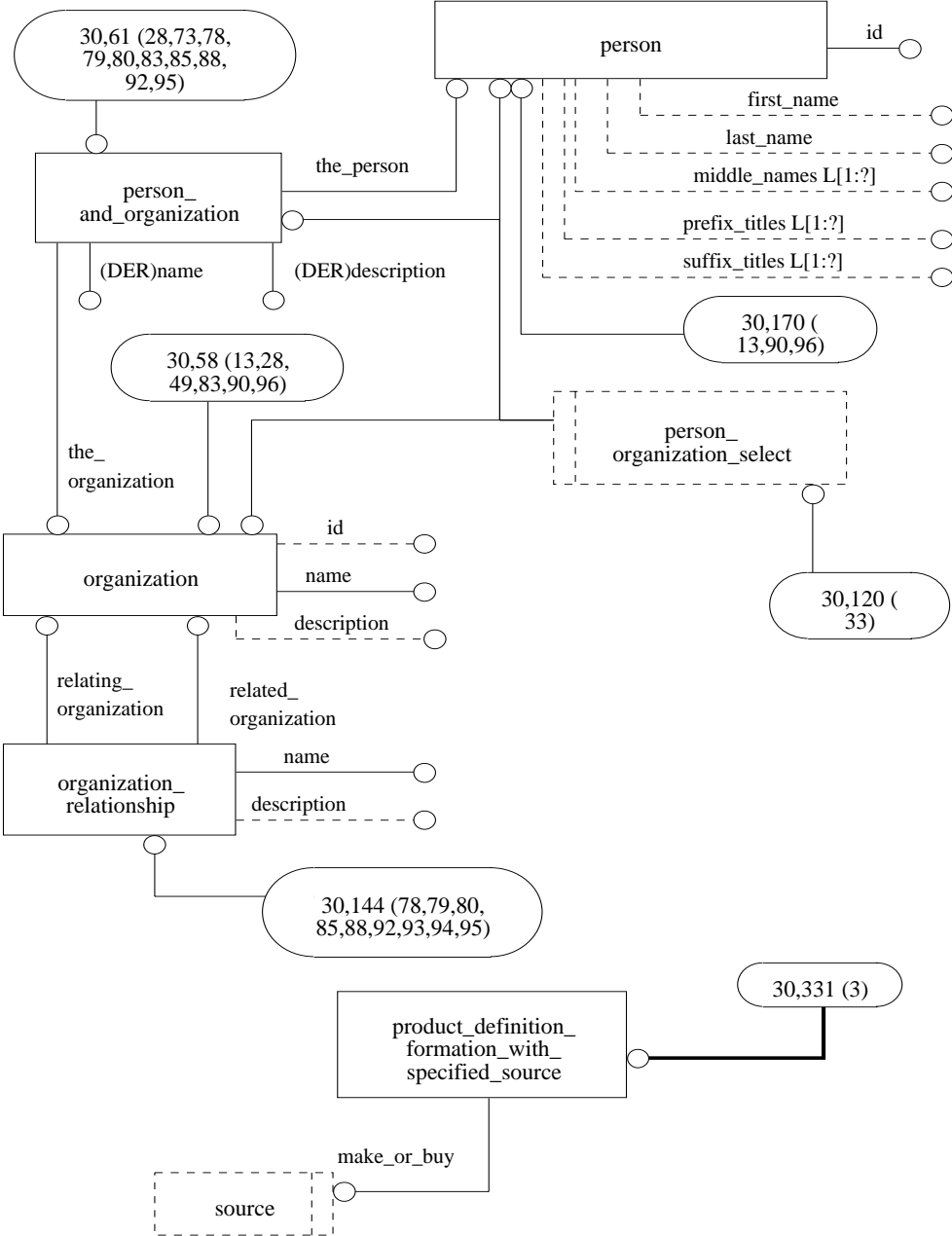


Figure H.30 - AIM diagram in EXPRESS-G: 30 of 96

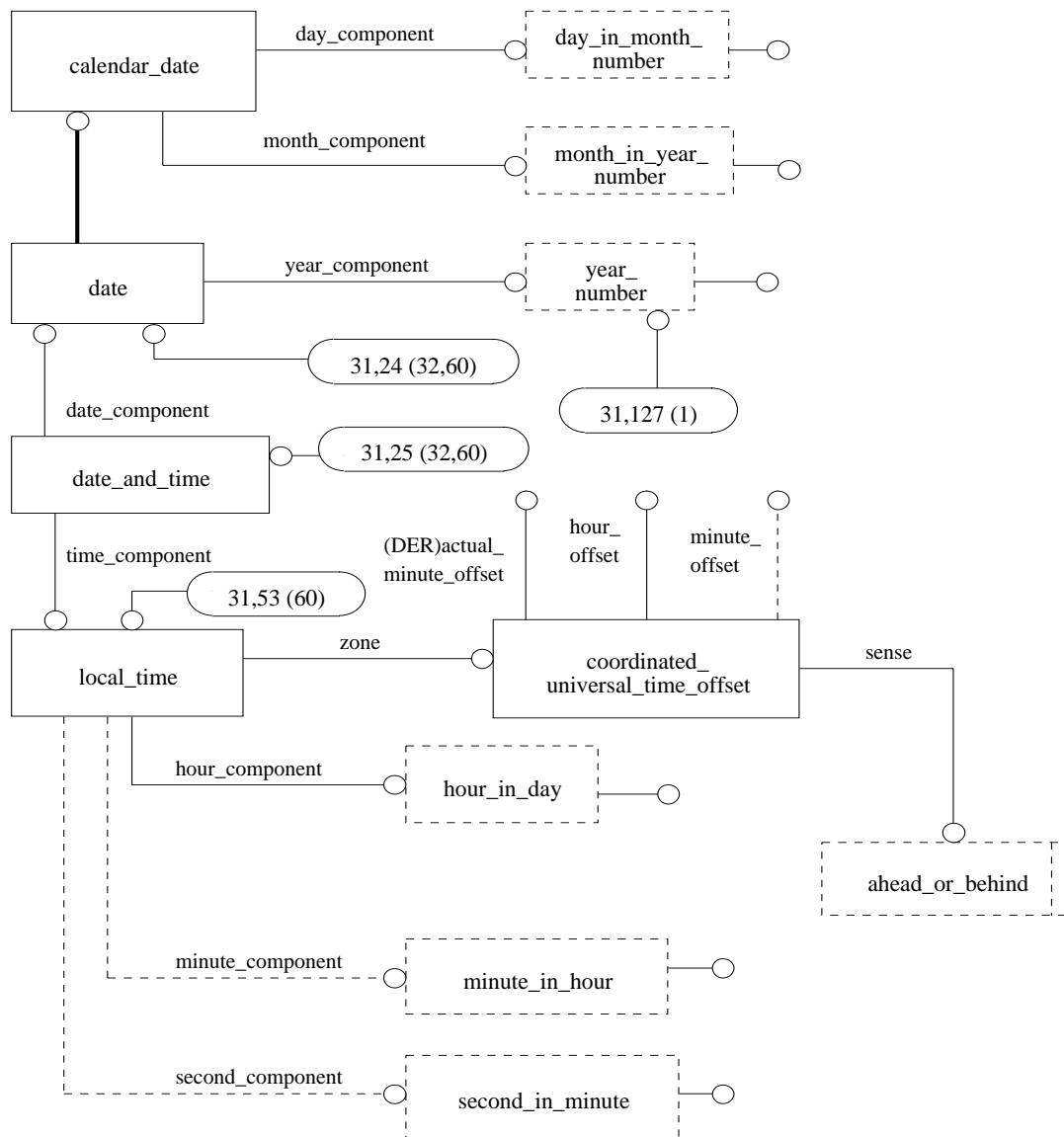


Figure H.31 - AIM diagram in EXPRESS-G: 31 of 96

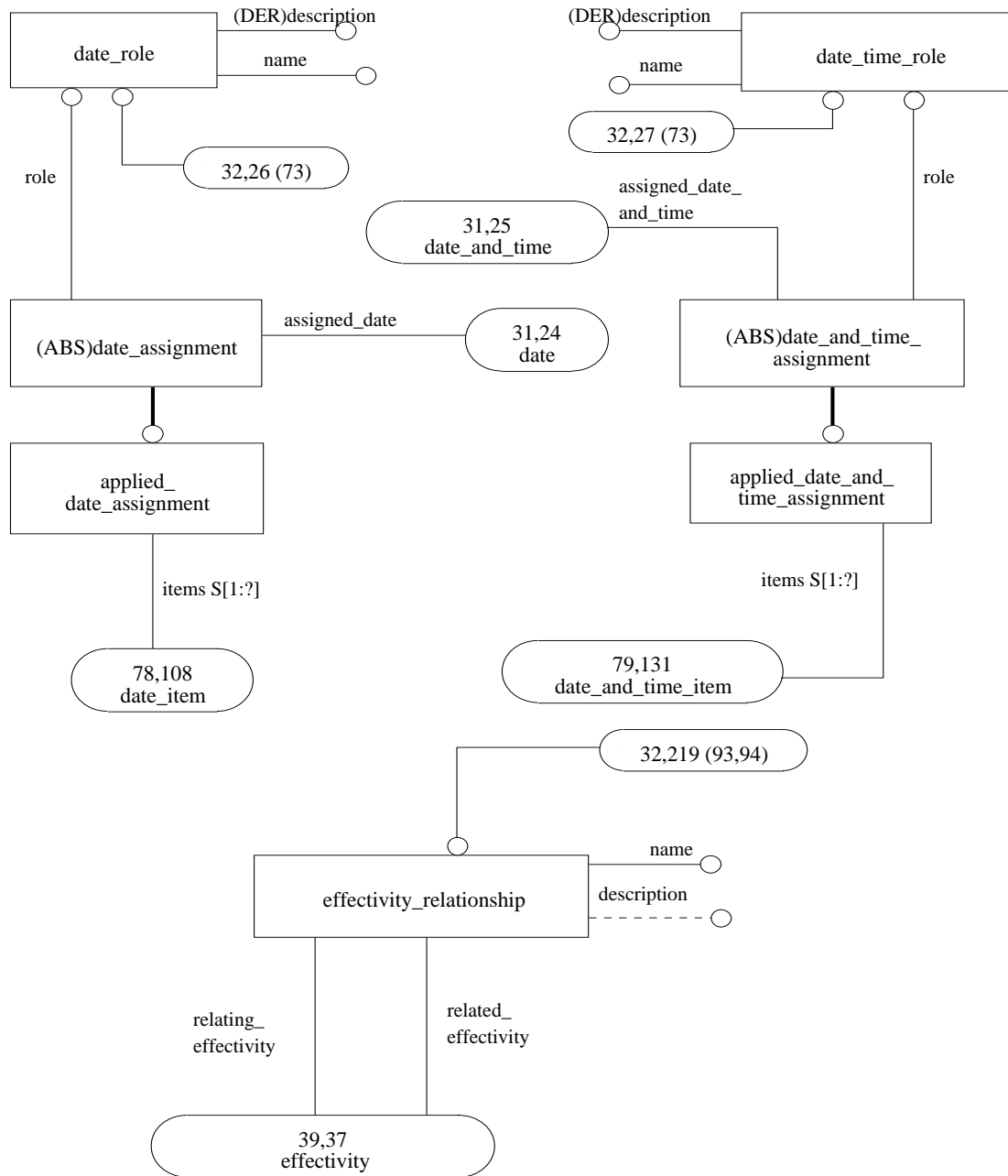


Figure H.32 - AIM diagram in EXPRESS-G: 32 of 96

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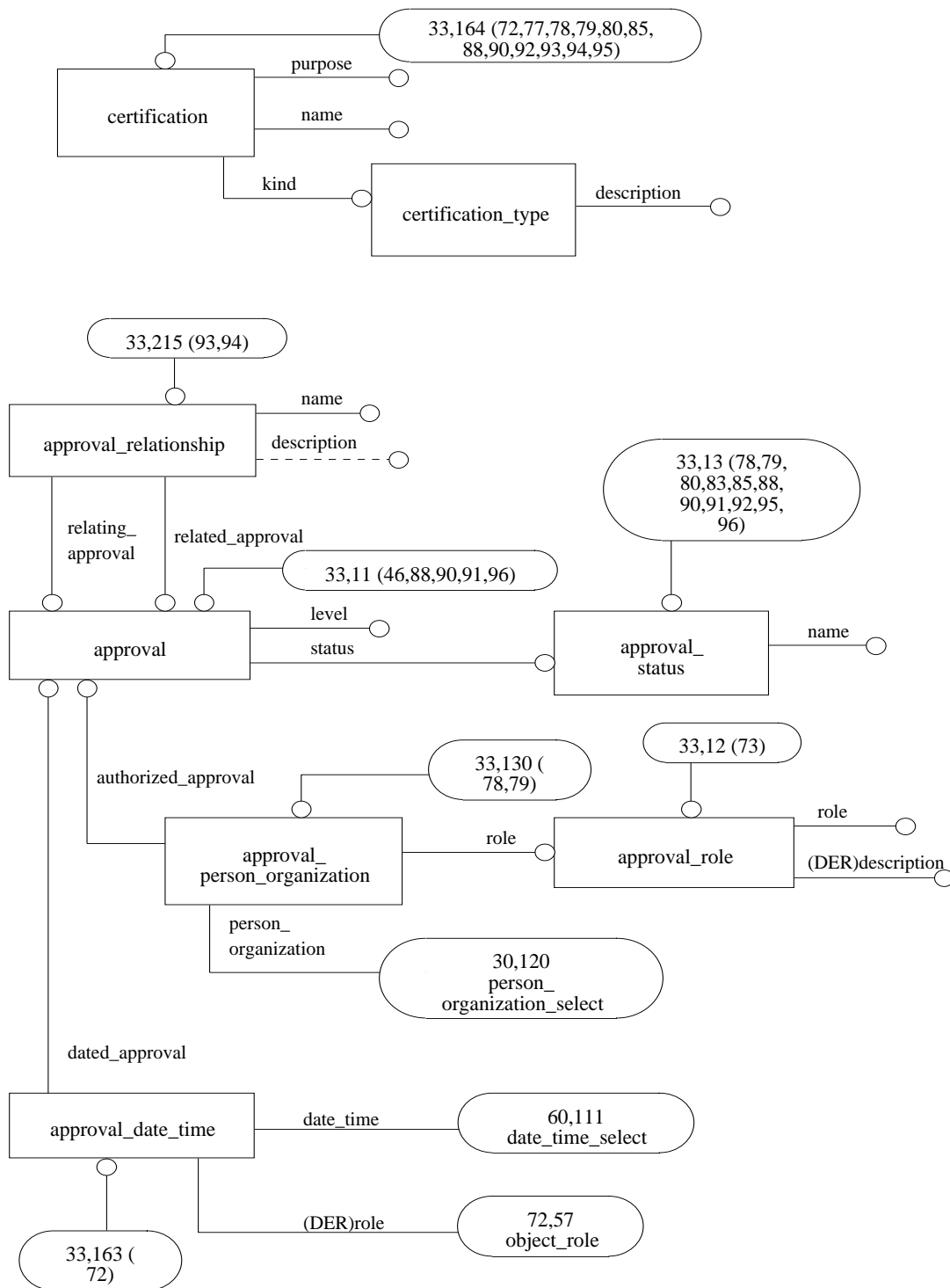


Figure H.33 - AIM diagram in EXPRESS-G: 33 of 96

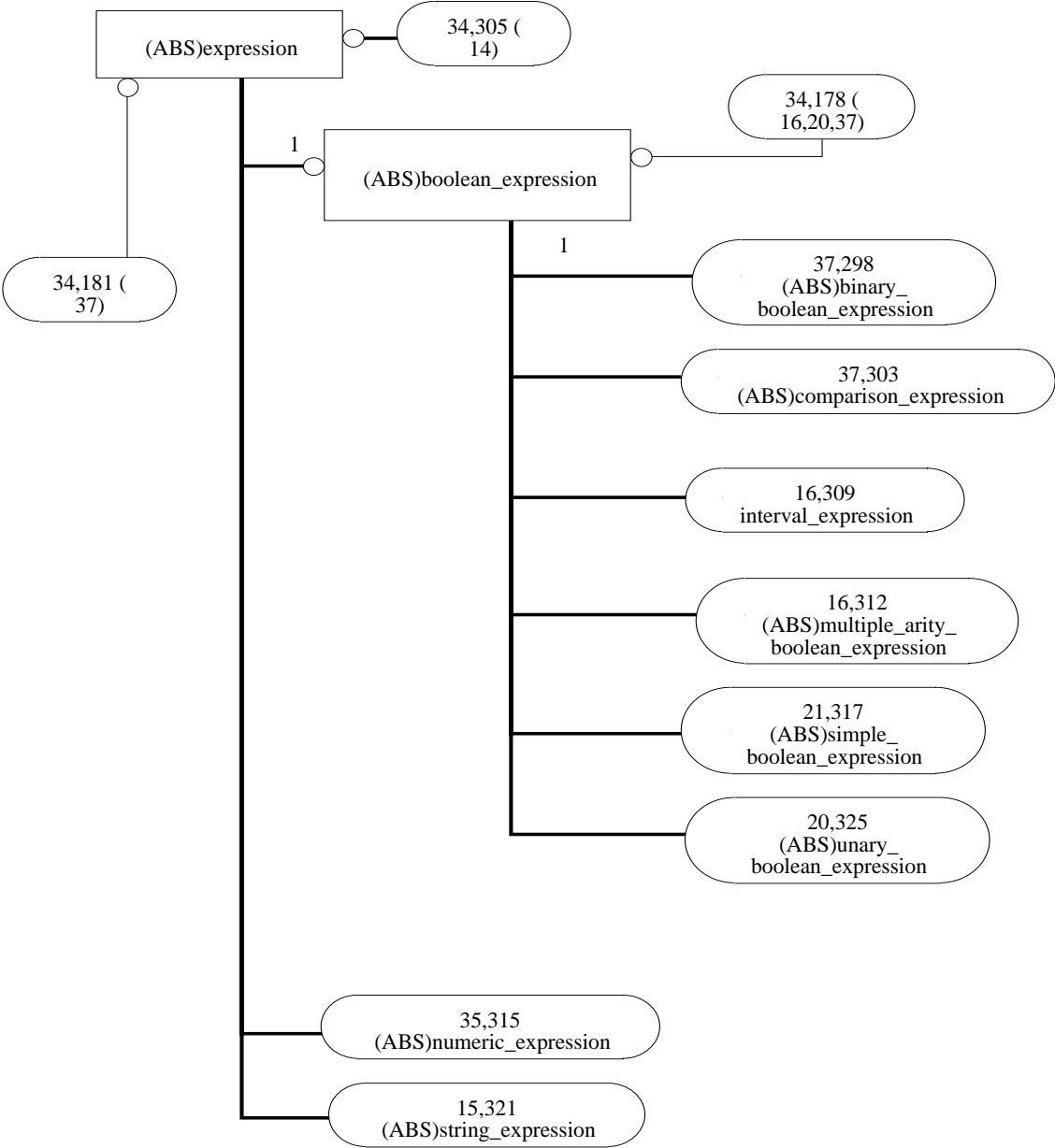


Figure H.34 - AIM diagram in EXPRESS-G: 34 of 96

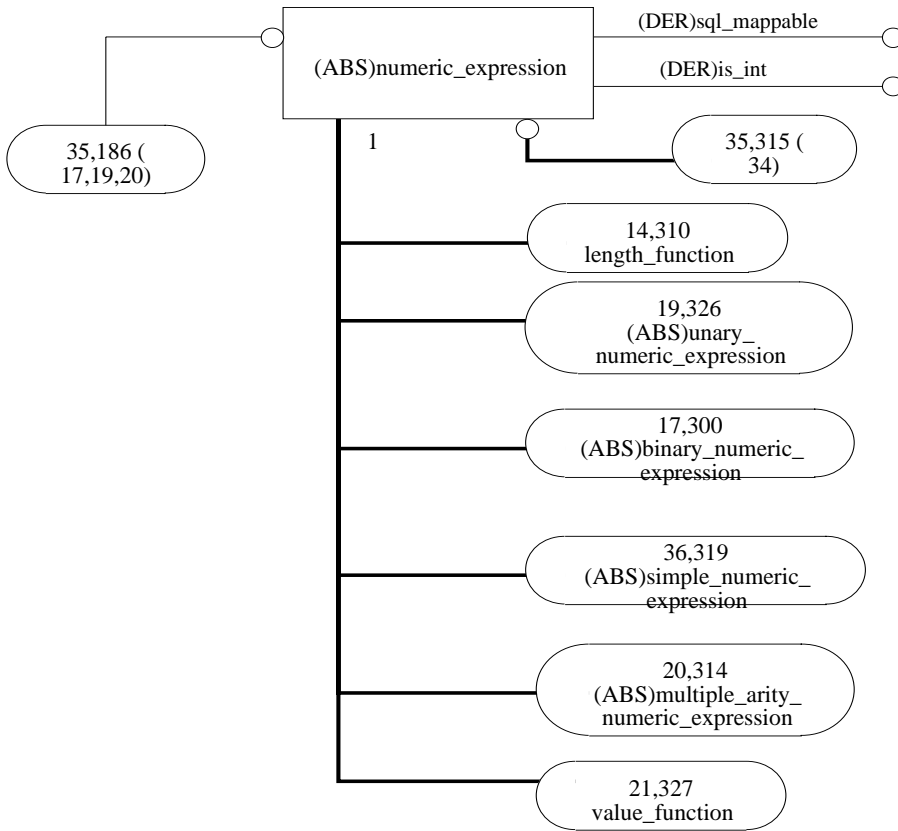


Figure H.35 - AIM diagram in EXPRESS-G: 35 of 96

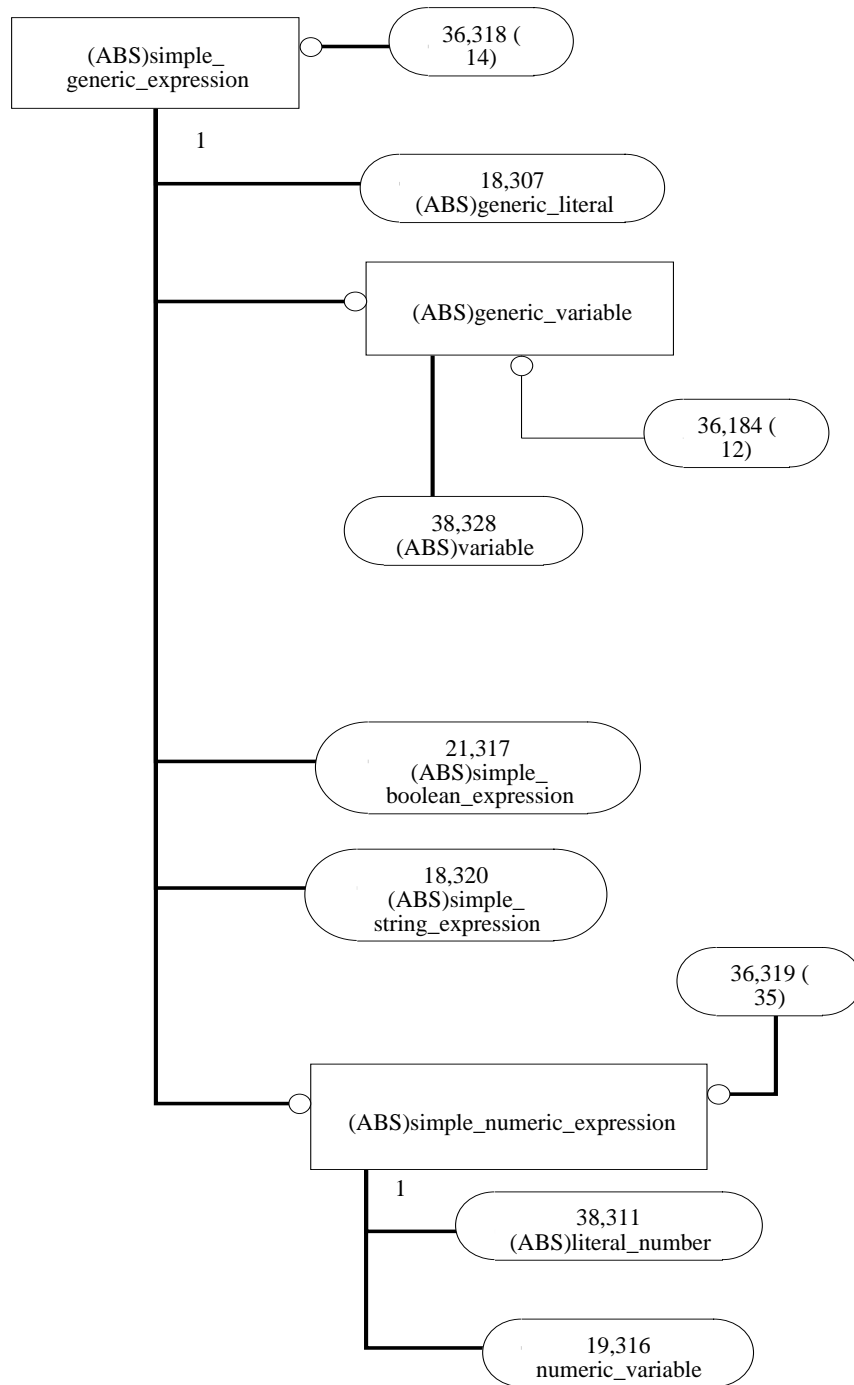


Figure H.36 - AIM diagram in EXPRESS-G: 36 of 96

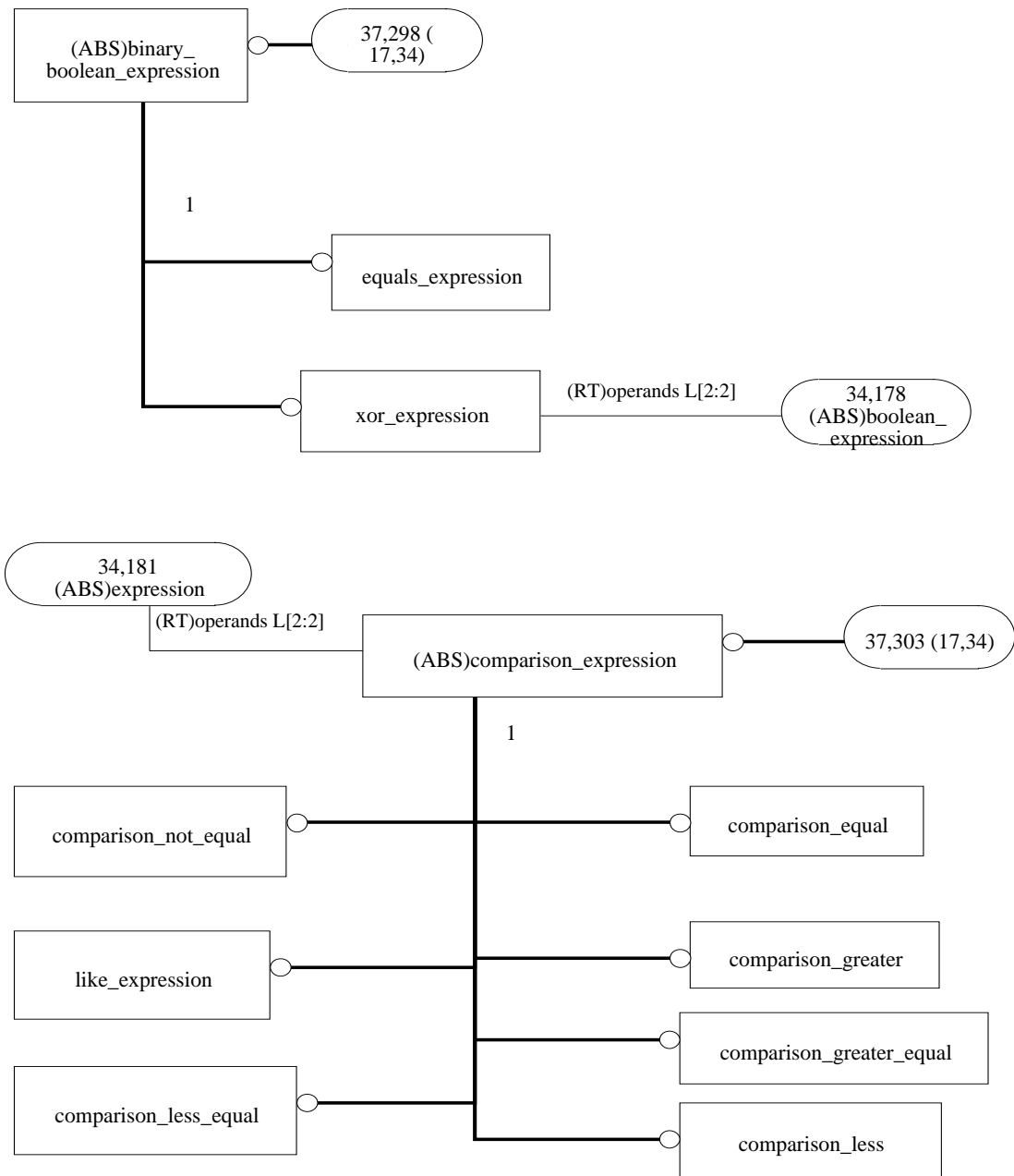


Figure H.37 - AIM diagram in EXPRESS-G: 37 of 96

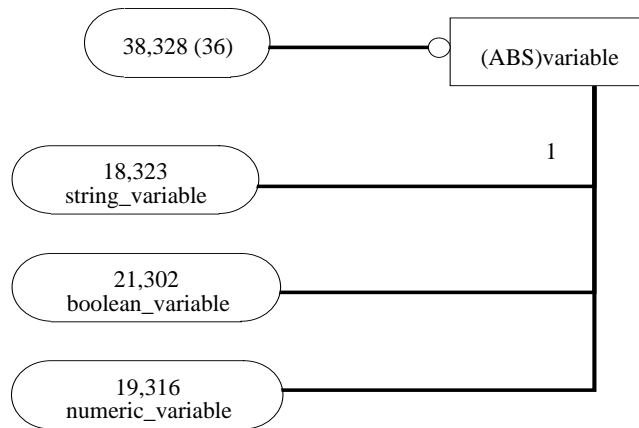
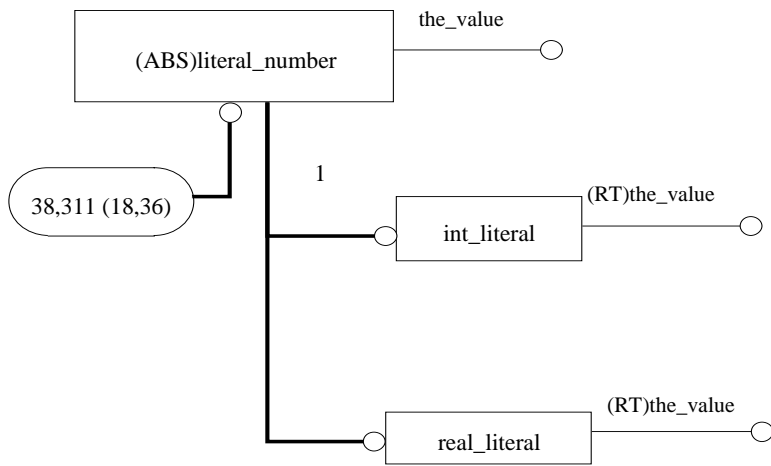


Figure H.38 - AIM diagram in EXPRESS-G: 38 of 96

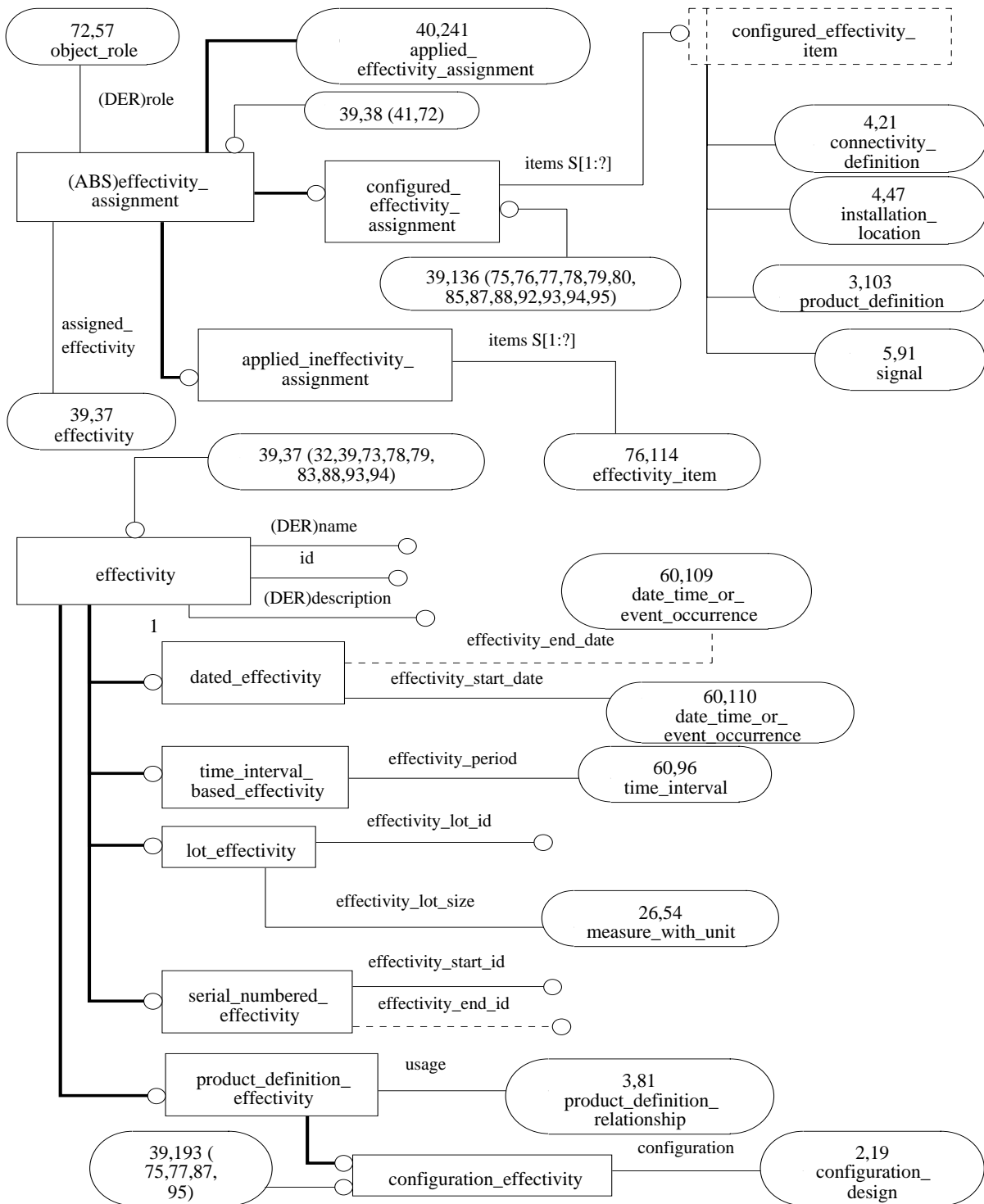


Figure H.39 - AIM diagram in EXPRESS-G: 39 of 96

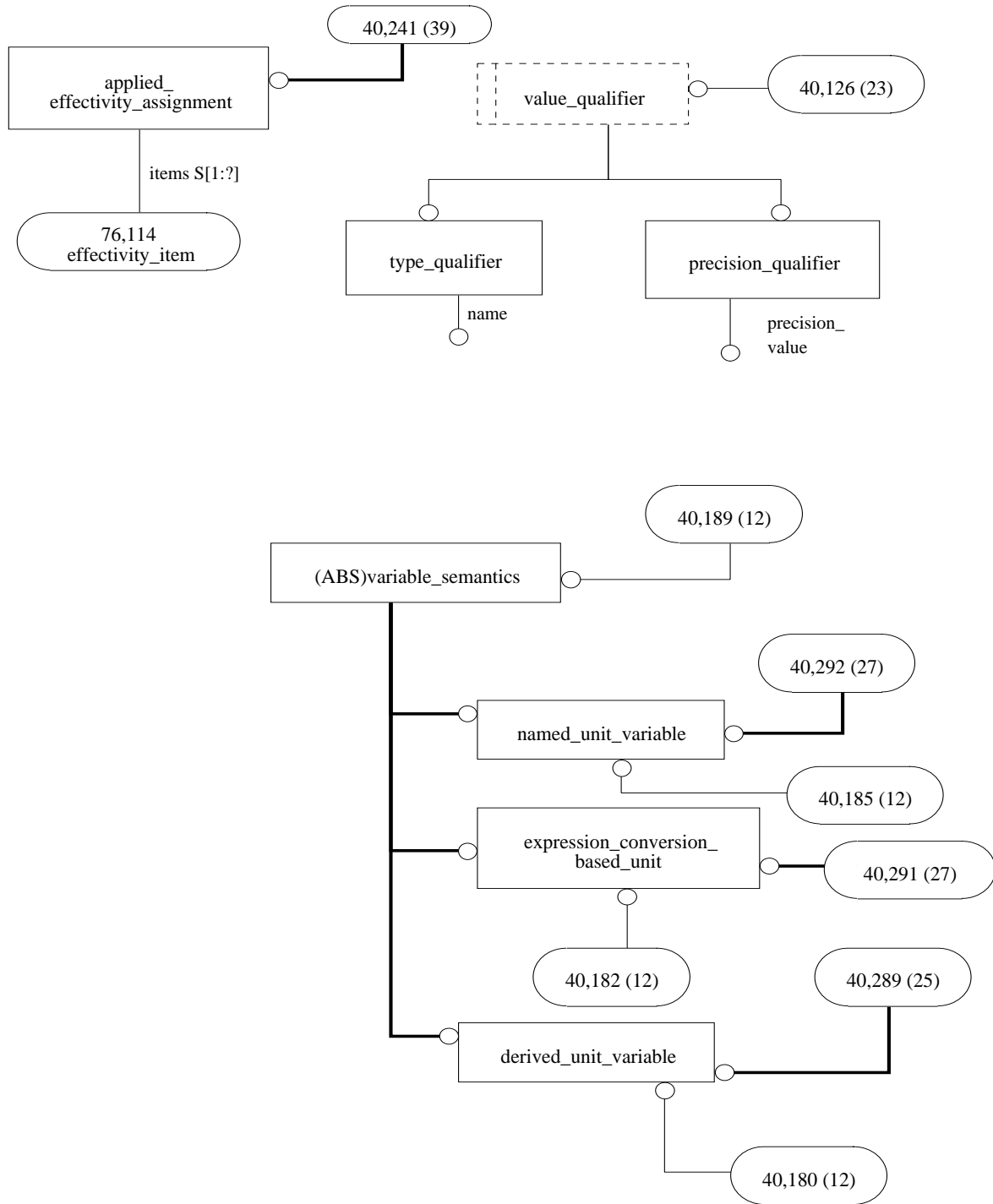


Figure H.40 - AIM diagram in EXPRESS-G: 40 of 96

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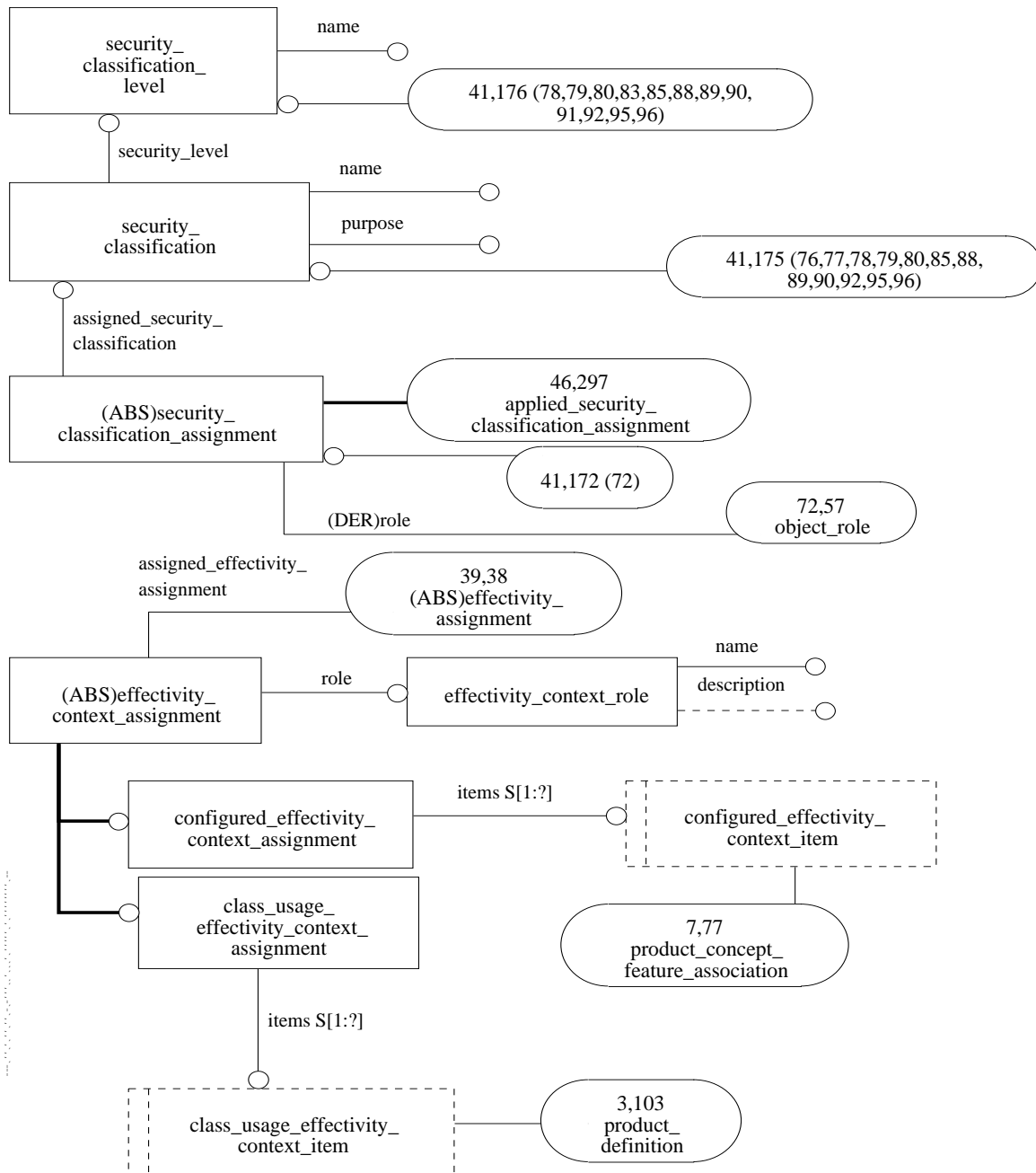


Figure H.41 - AIM diagram in EXPRESS-G: 41 of 96

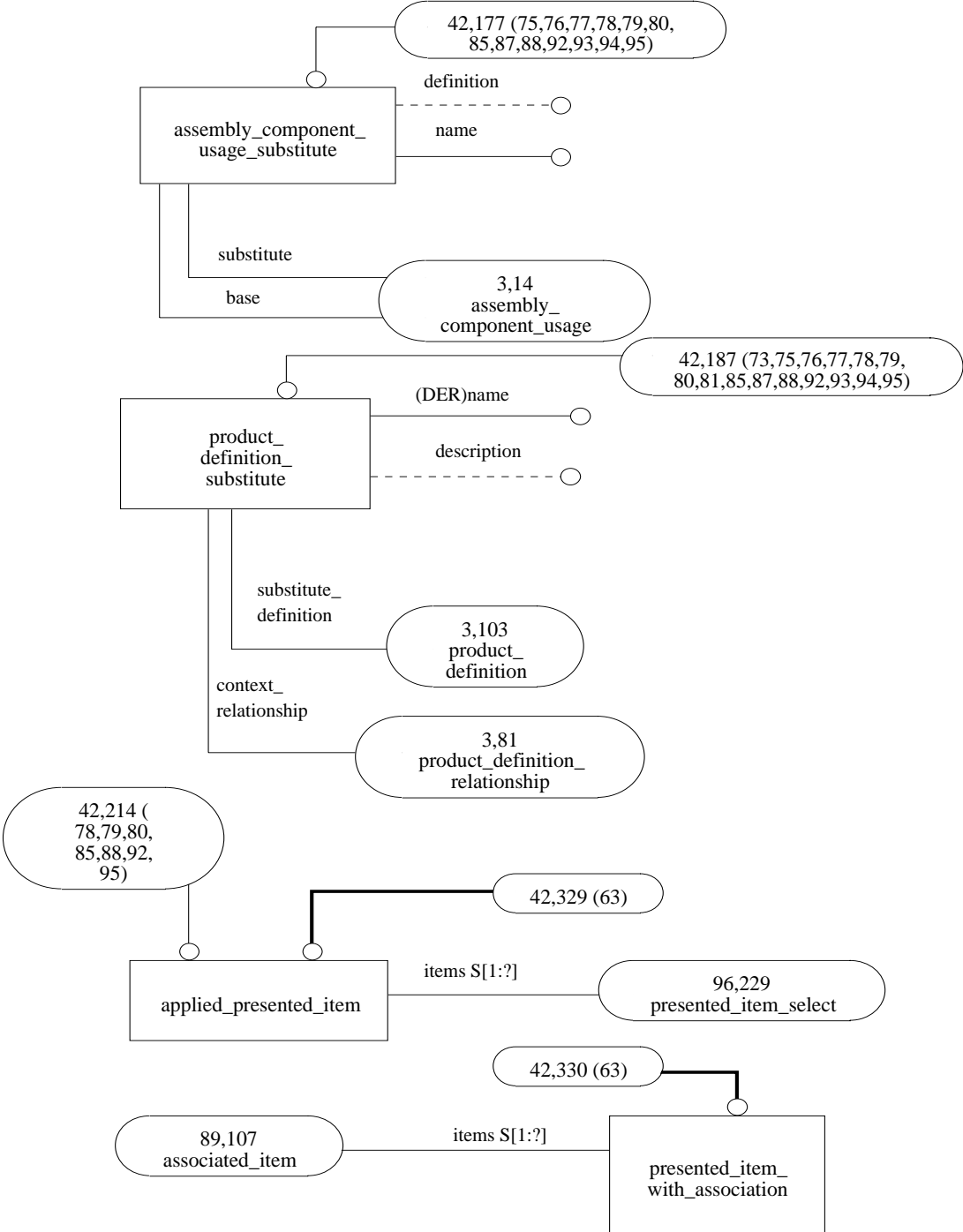


Figure H.42 - AIM diagram in EXPRESS-G: 42 of 96

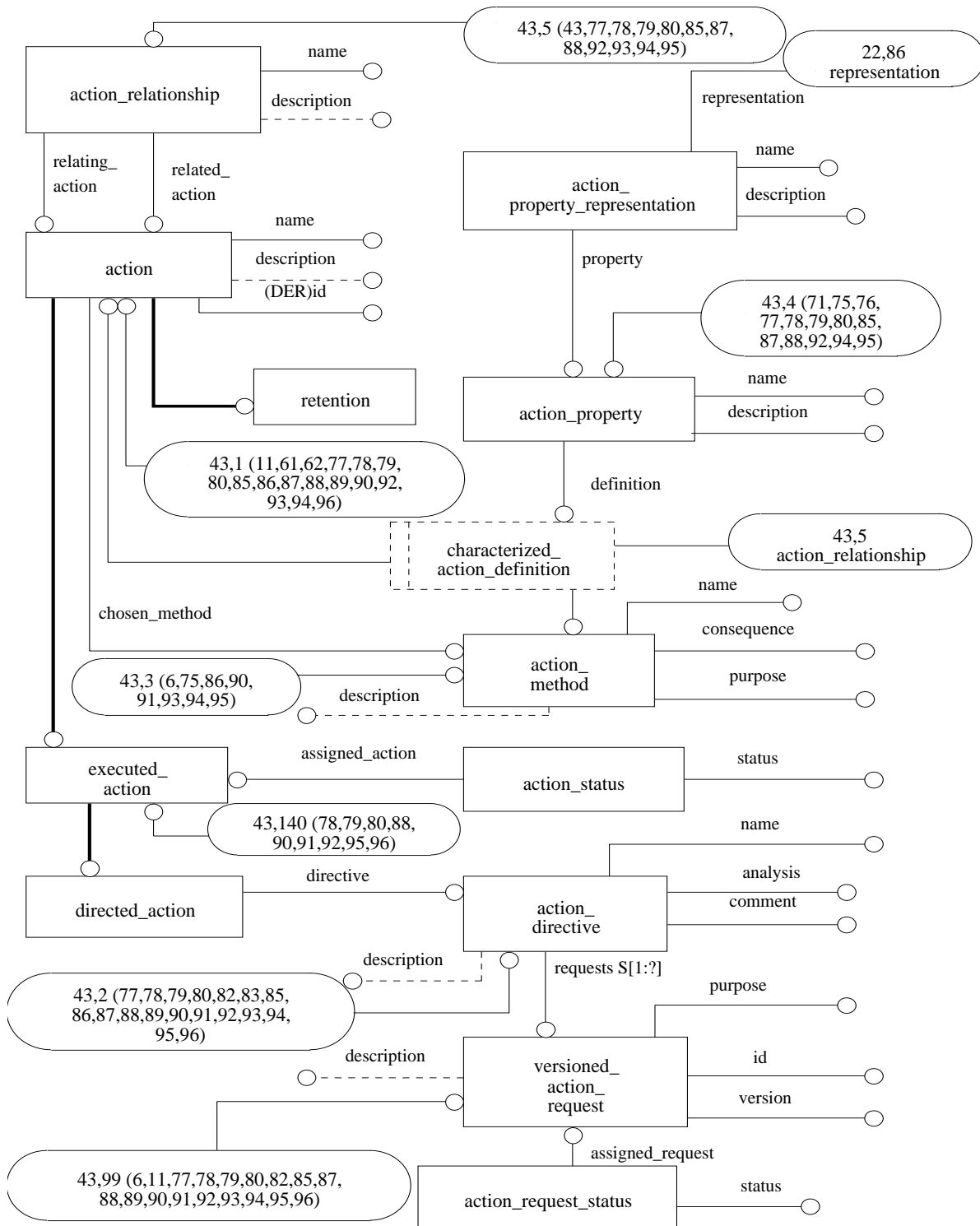


Figure H.43 - AIM diagram in EXPRESS-G: 43 of 96

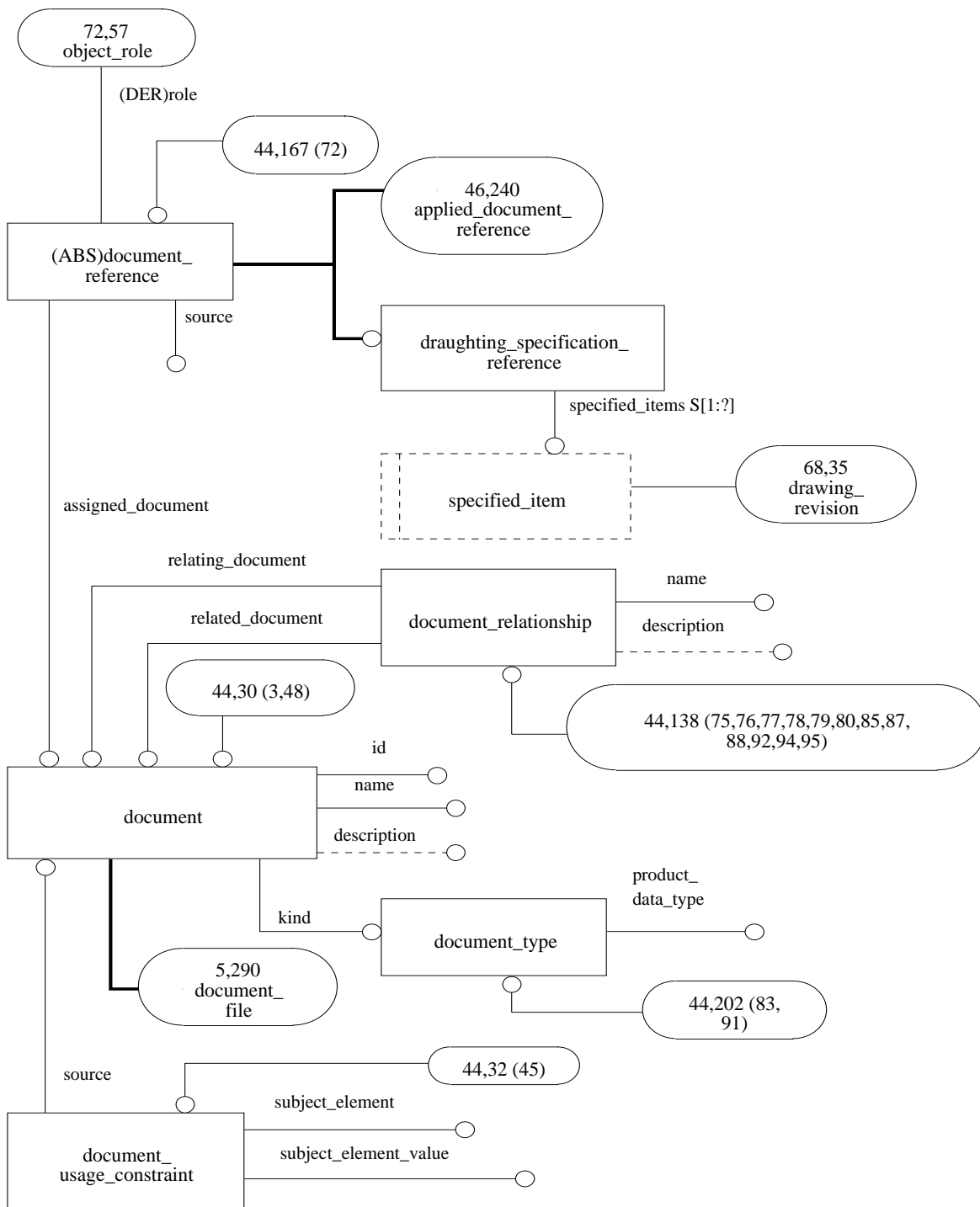


Figure H.44 - AIM diagram in EXPRESS-G: 44 of 96

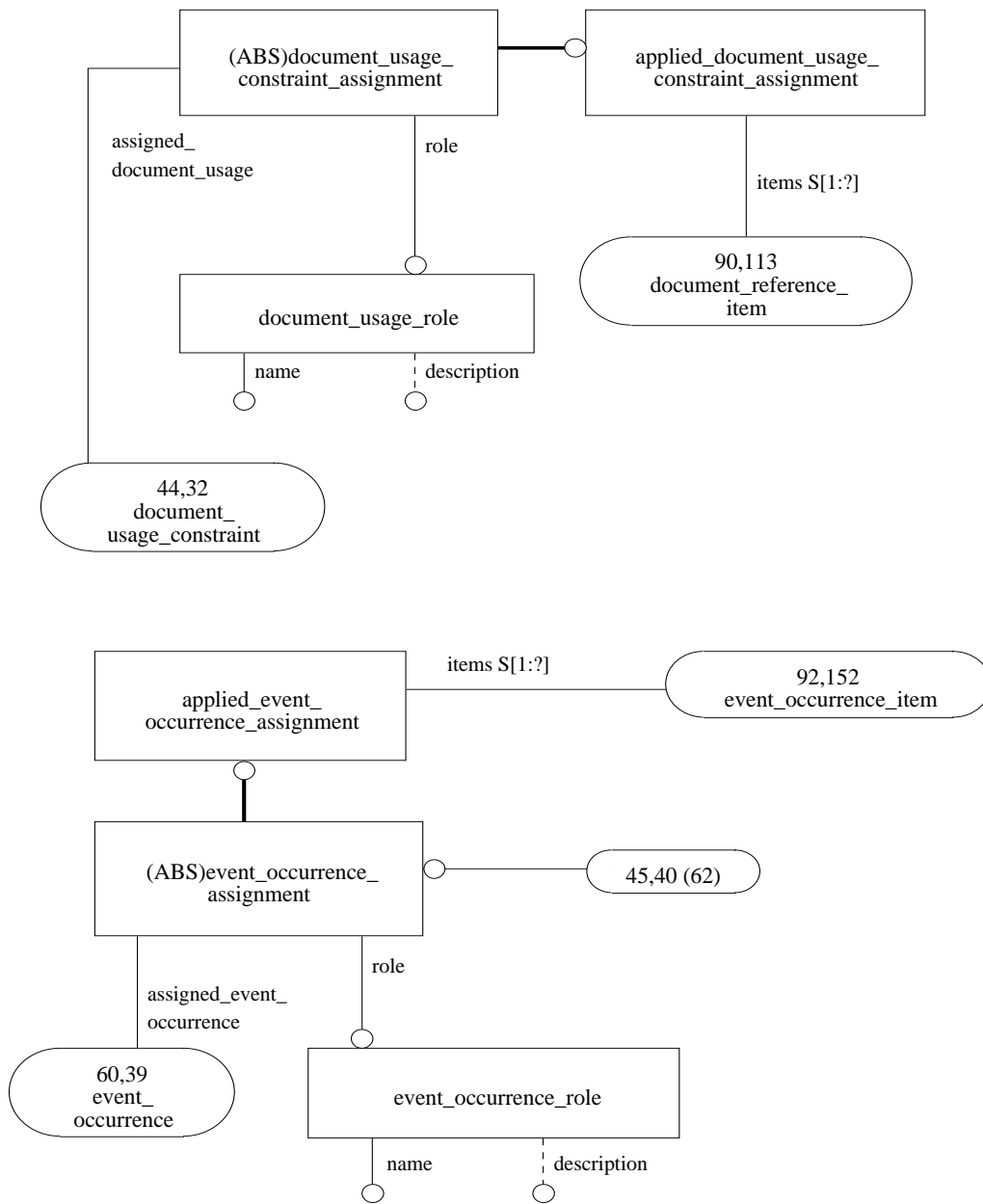


Figure H.45 - AIM diagram in EXPRESS-G: 45 of 96

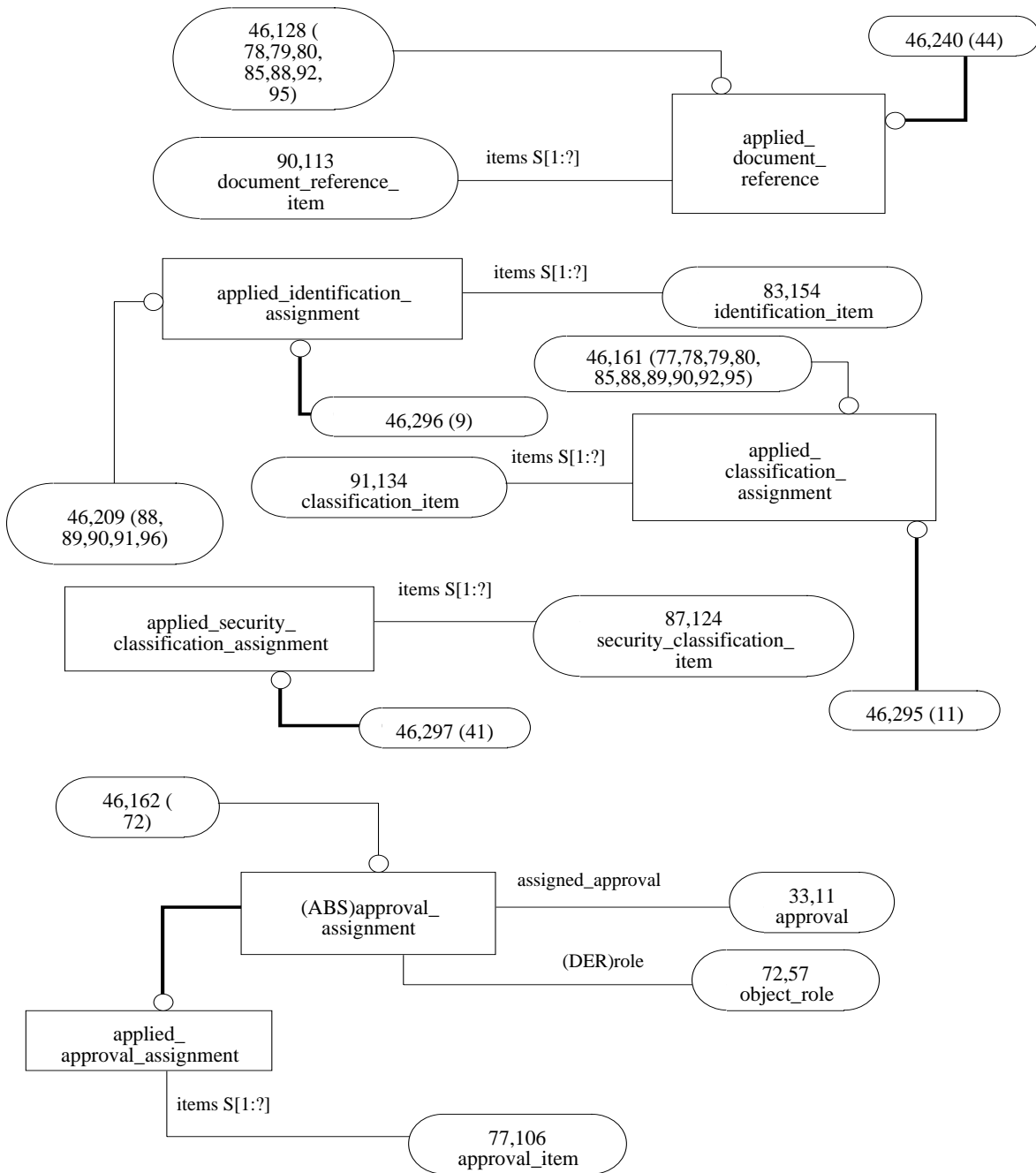


Figure H.46 - AIM diagram in EXPRESS-G: 46 of 96

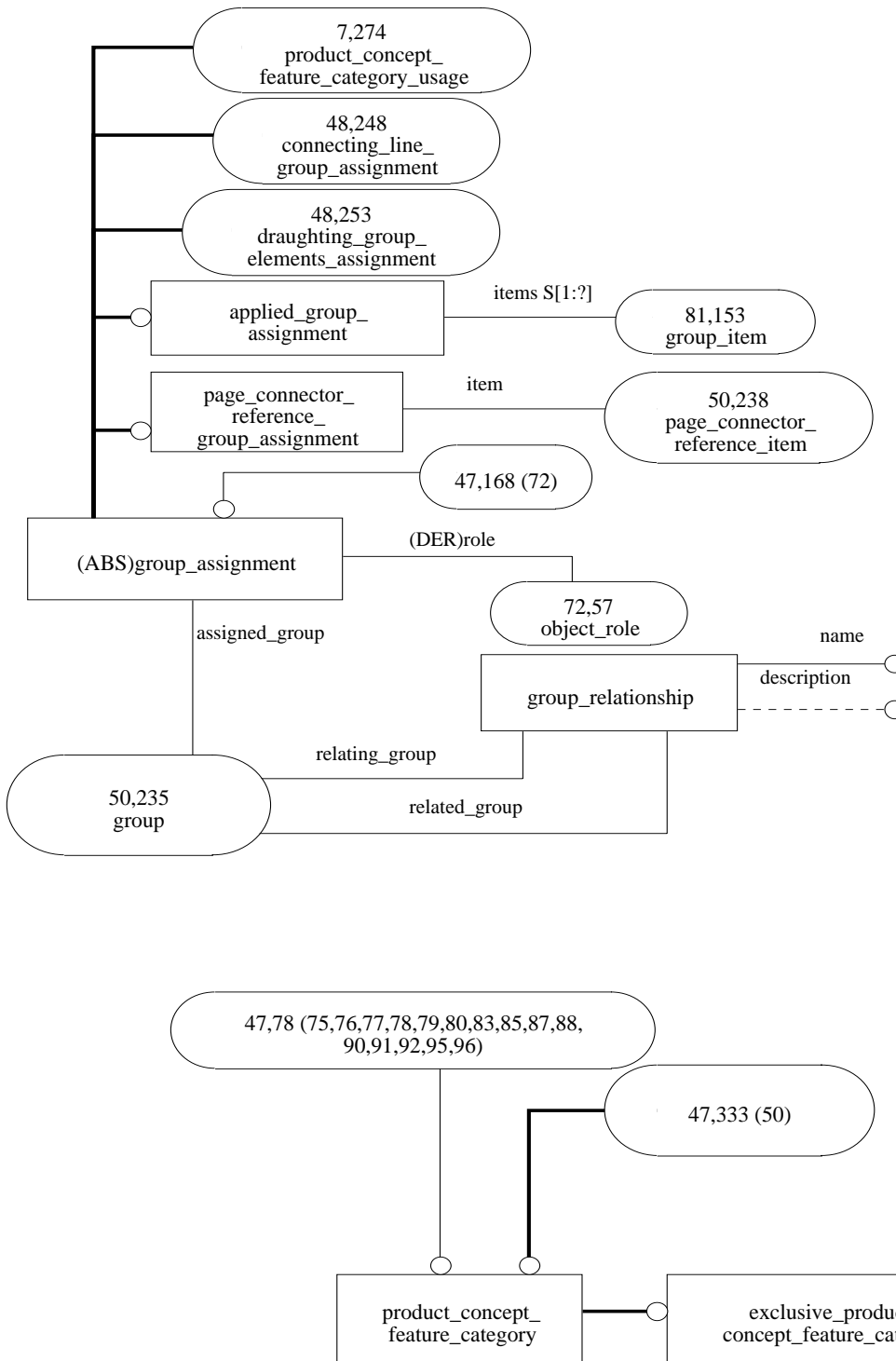


Figure H.47 - AIM diagram in EXPRESS-G: 47 of 96

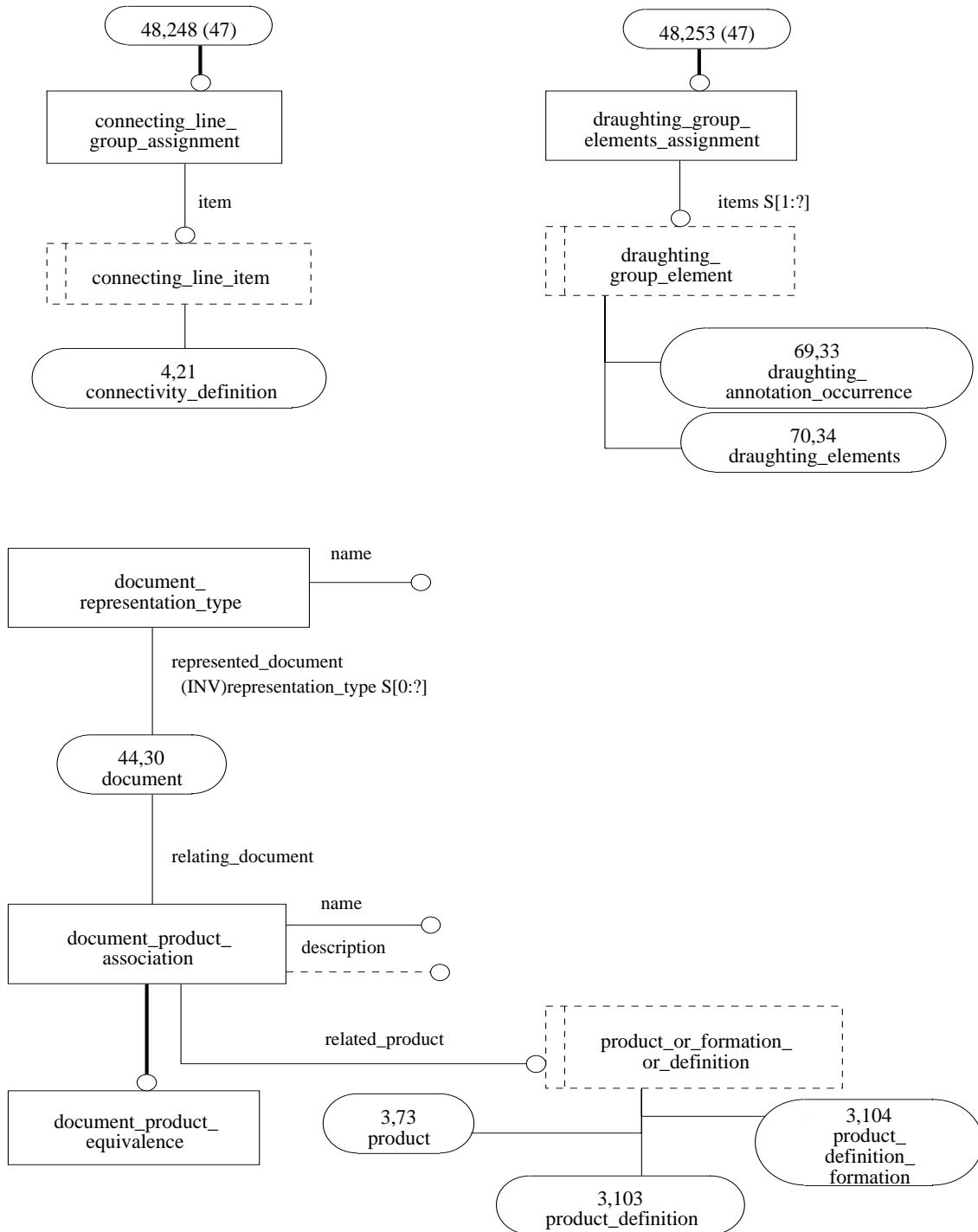


Figure H.48 - AIM diagram in EXPRESS-G: 48 of 96

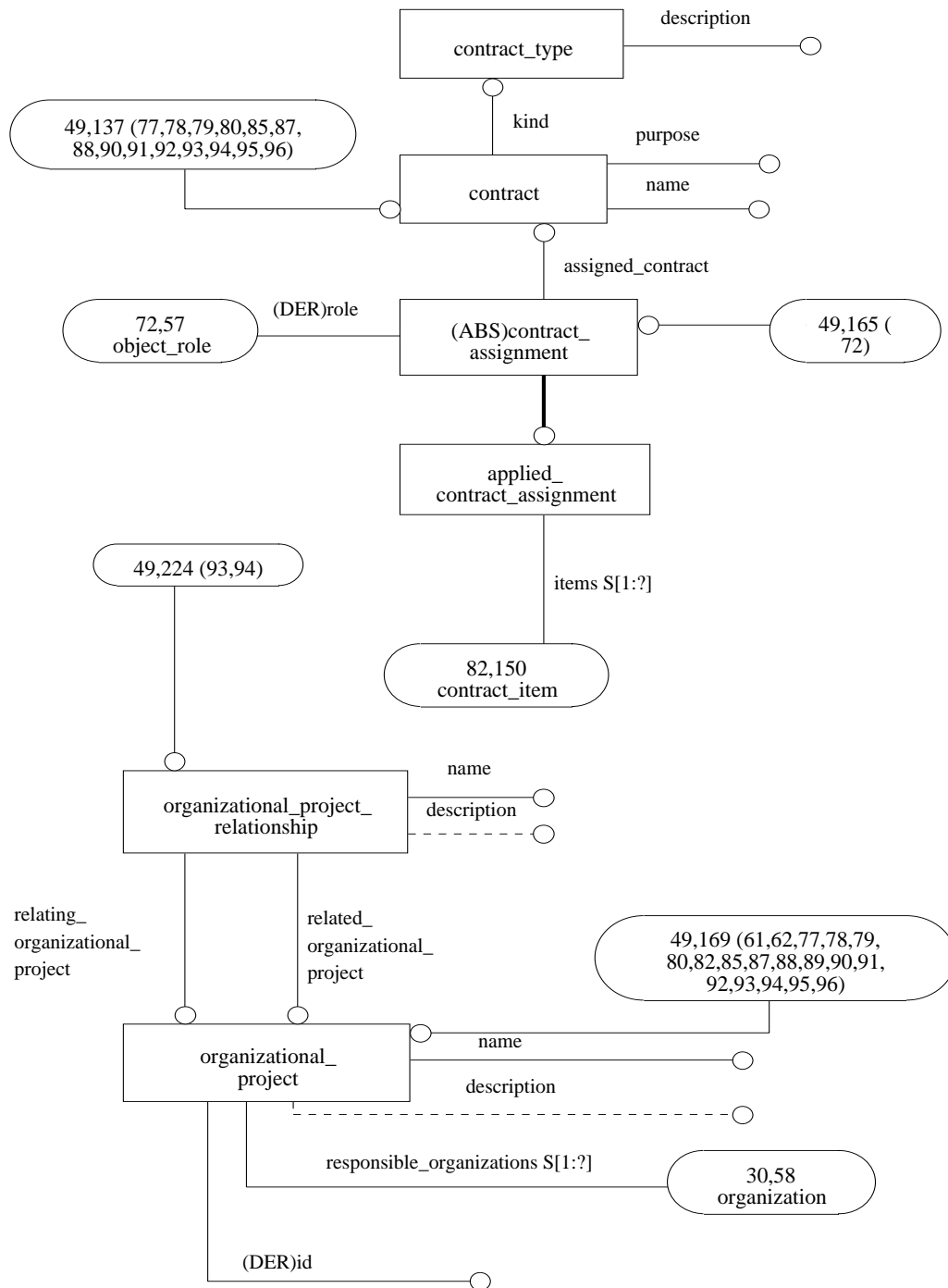


Figure H.49 - AIM diagram in EXPRESS-G: 49 of 96

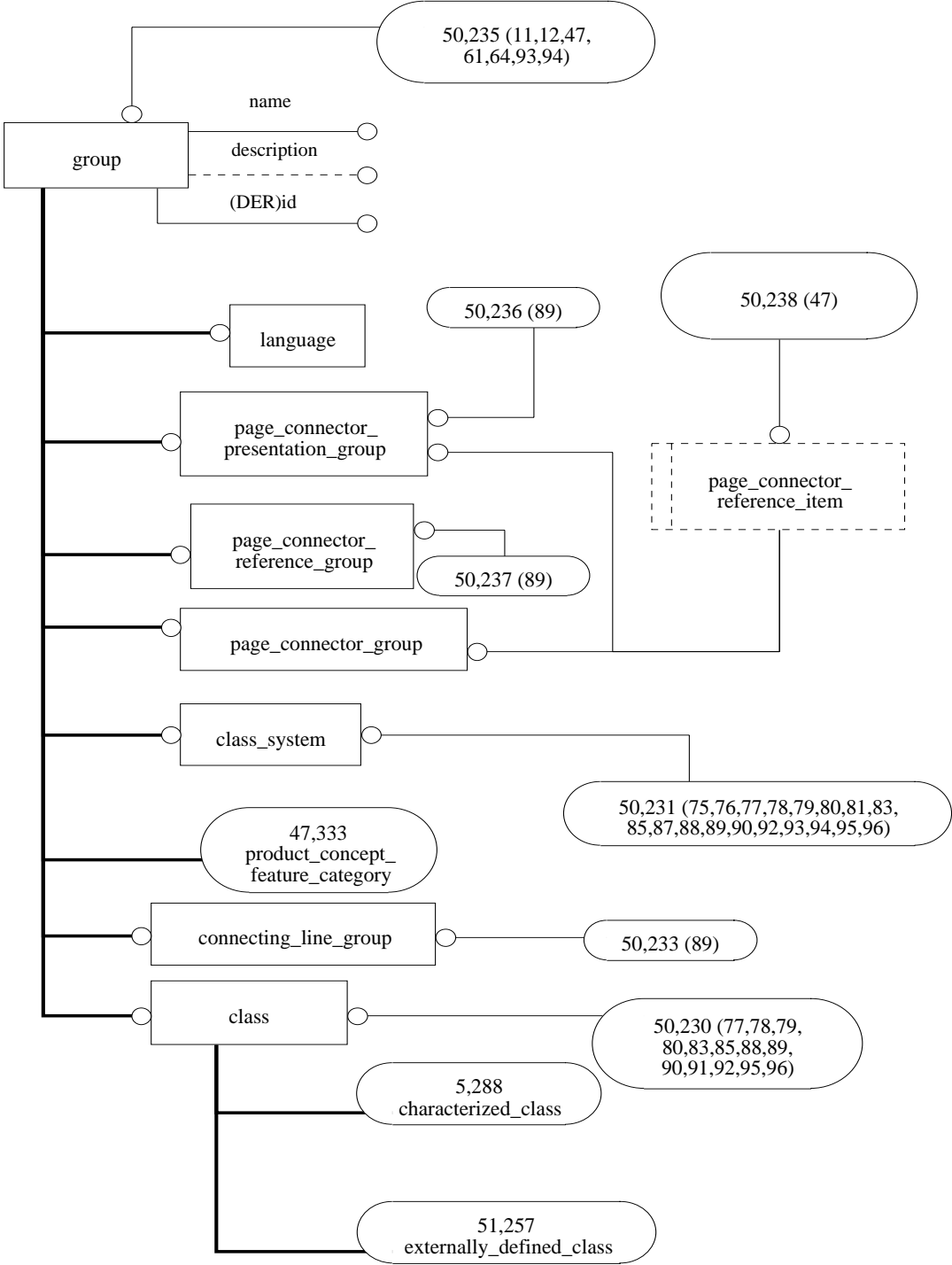


Figure H.50 - AIM diagram in EXPRESS-G: 50 of 96

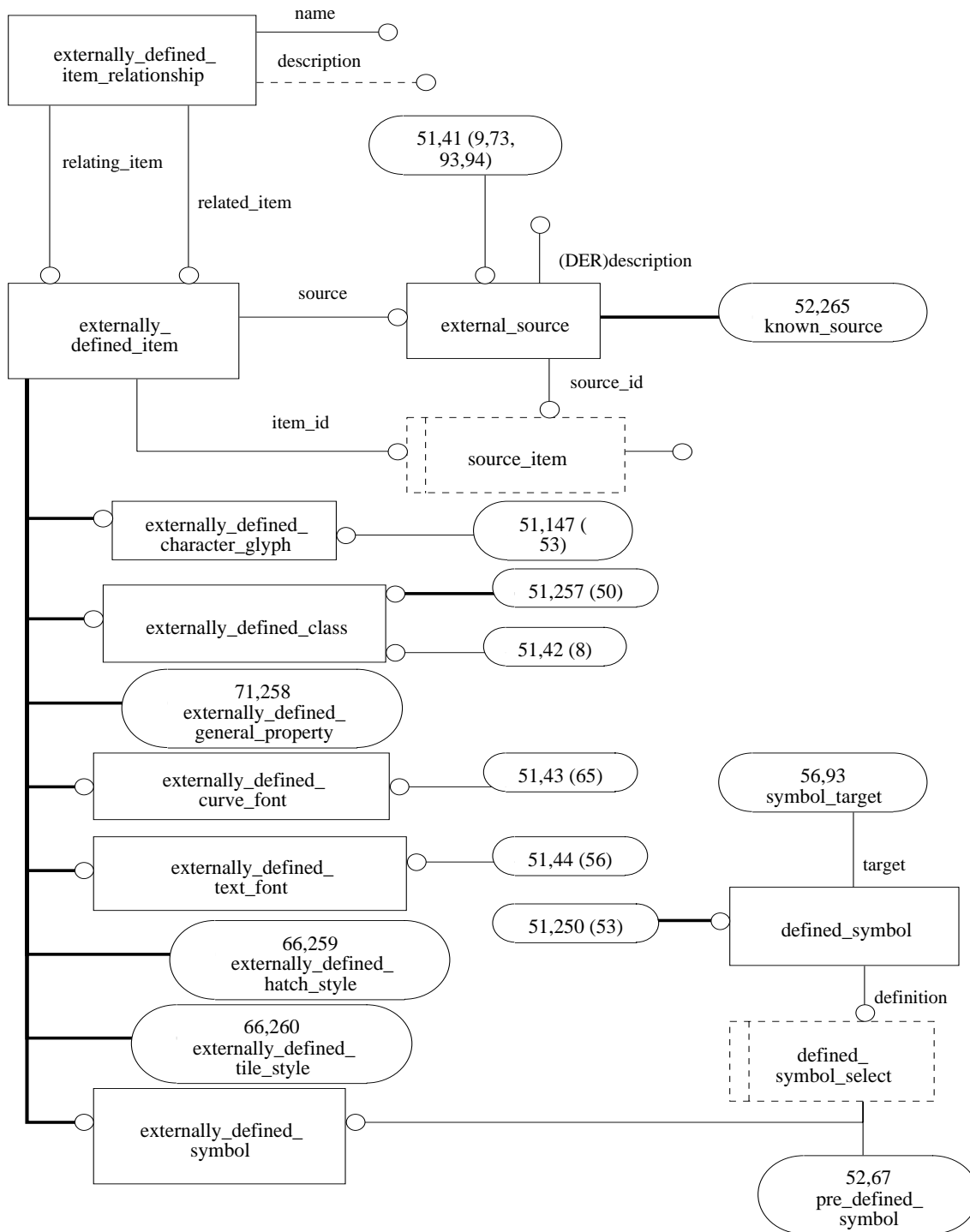


Figure H.51 - AIM diagram in EXPRESS-G: 51 of 96

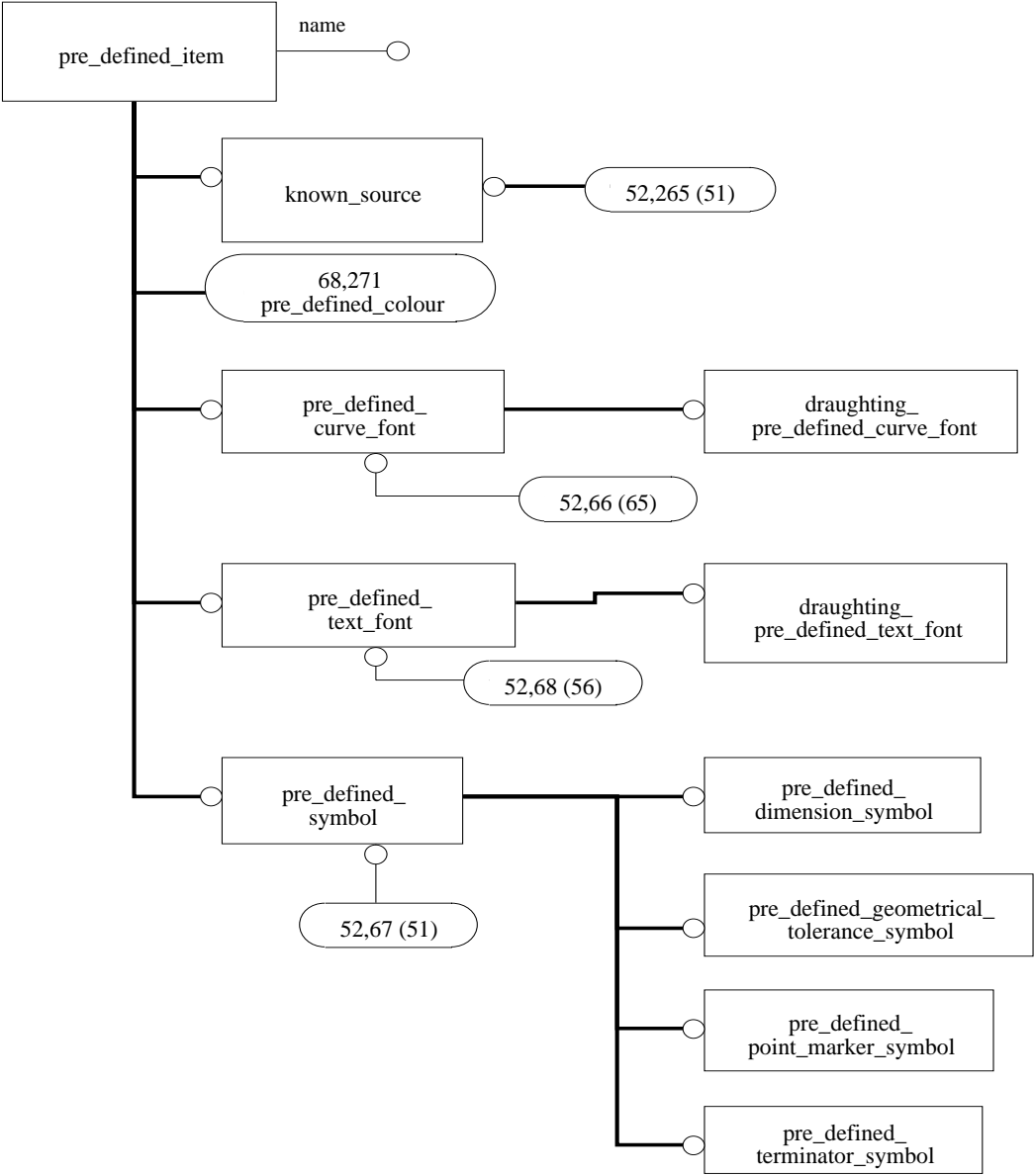


Figure H.52 - AIM diagram in EXPRESS-G: 52 of 96

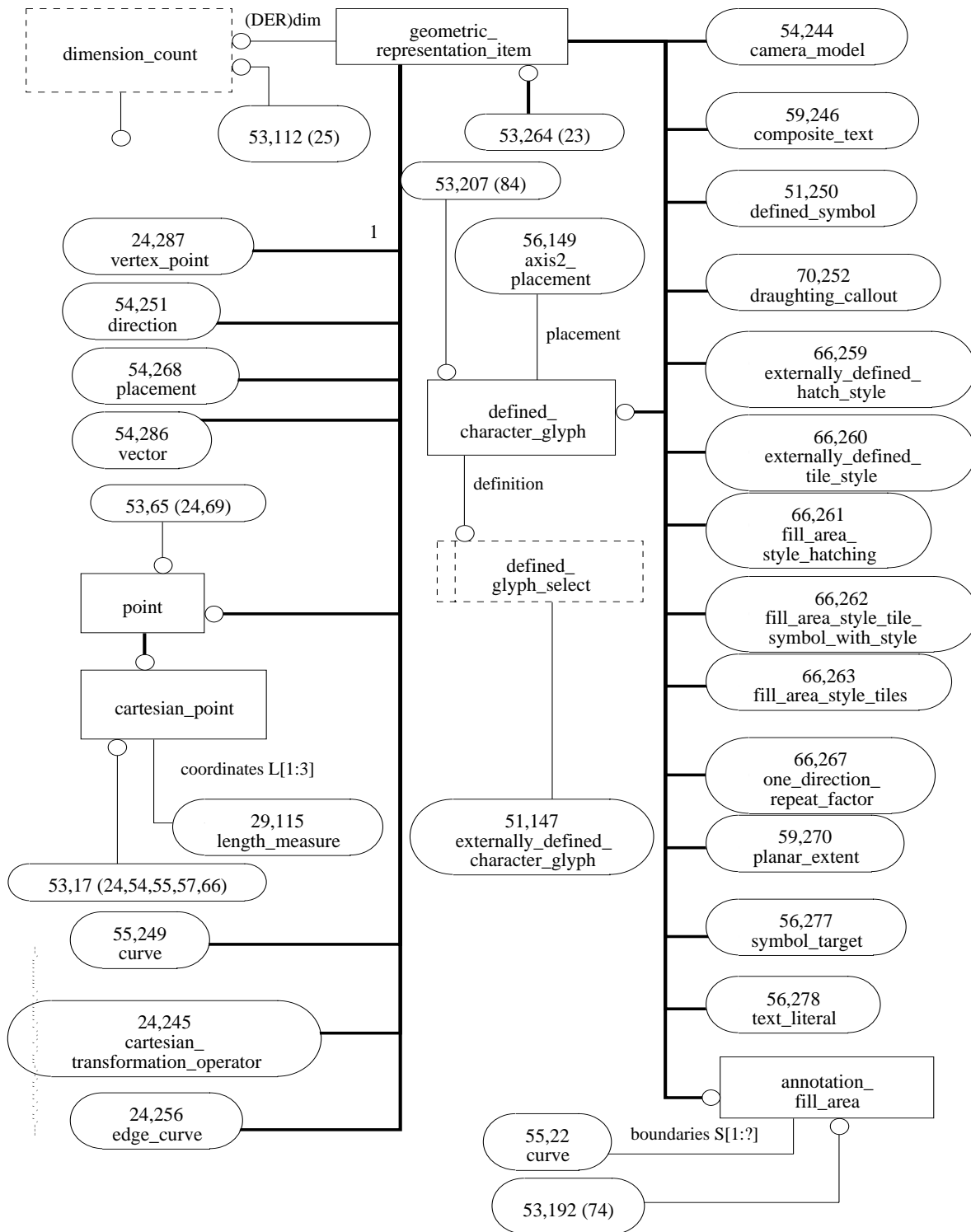


Figure H.53 - AIM diagram in EXPRESS-G: 53 of 96

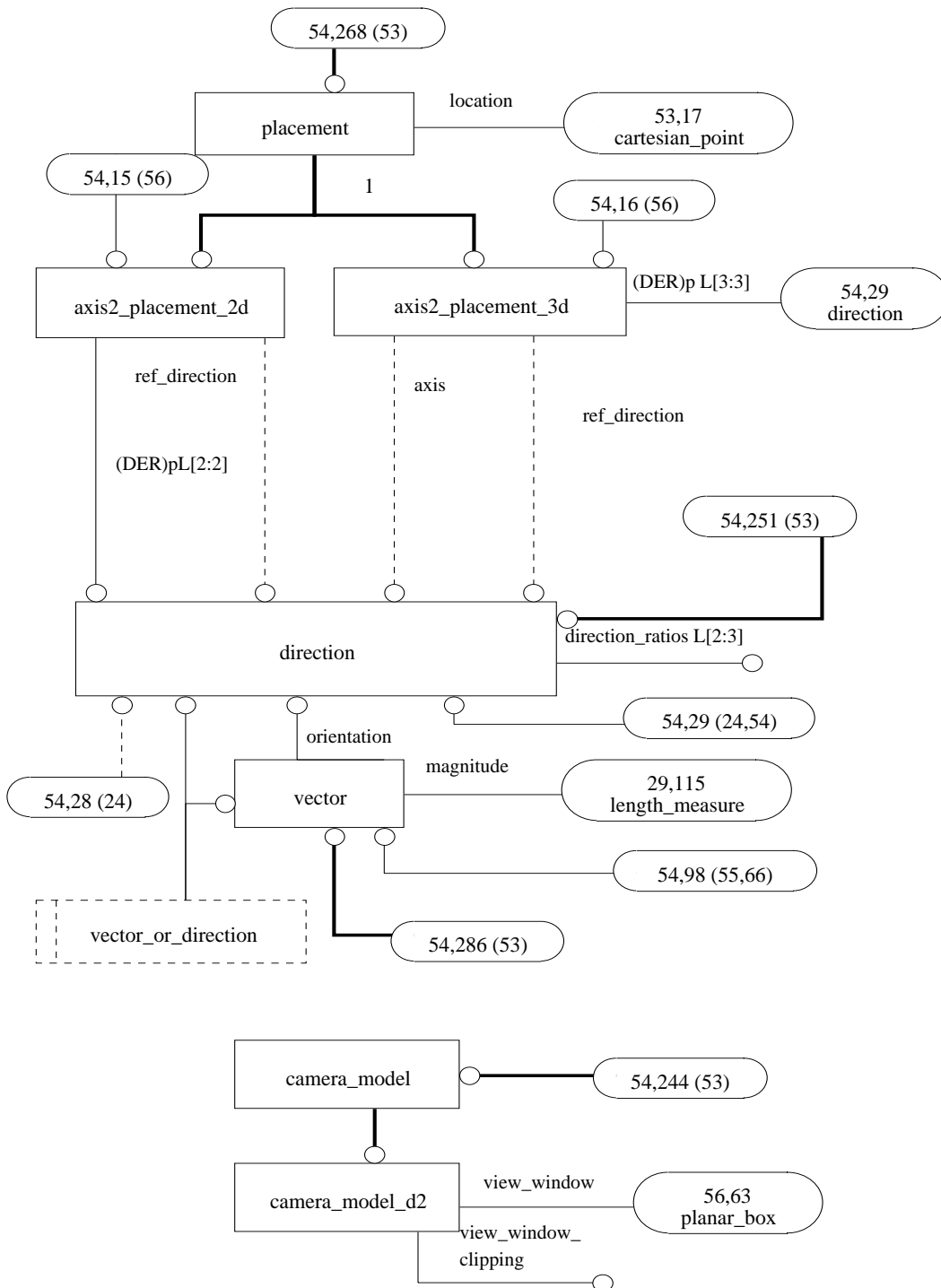


Figure H.54 - AIM diagram in EXPRESS-G: 54 of 96

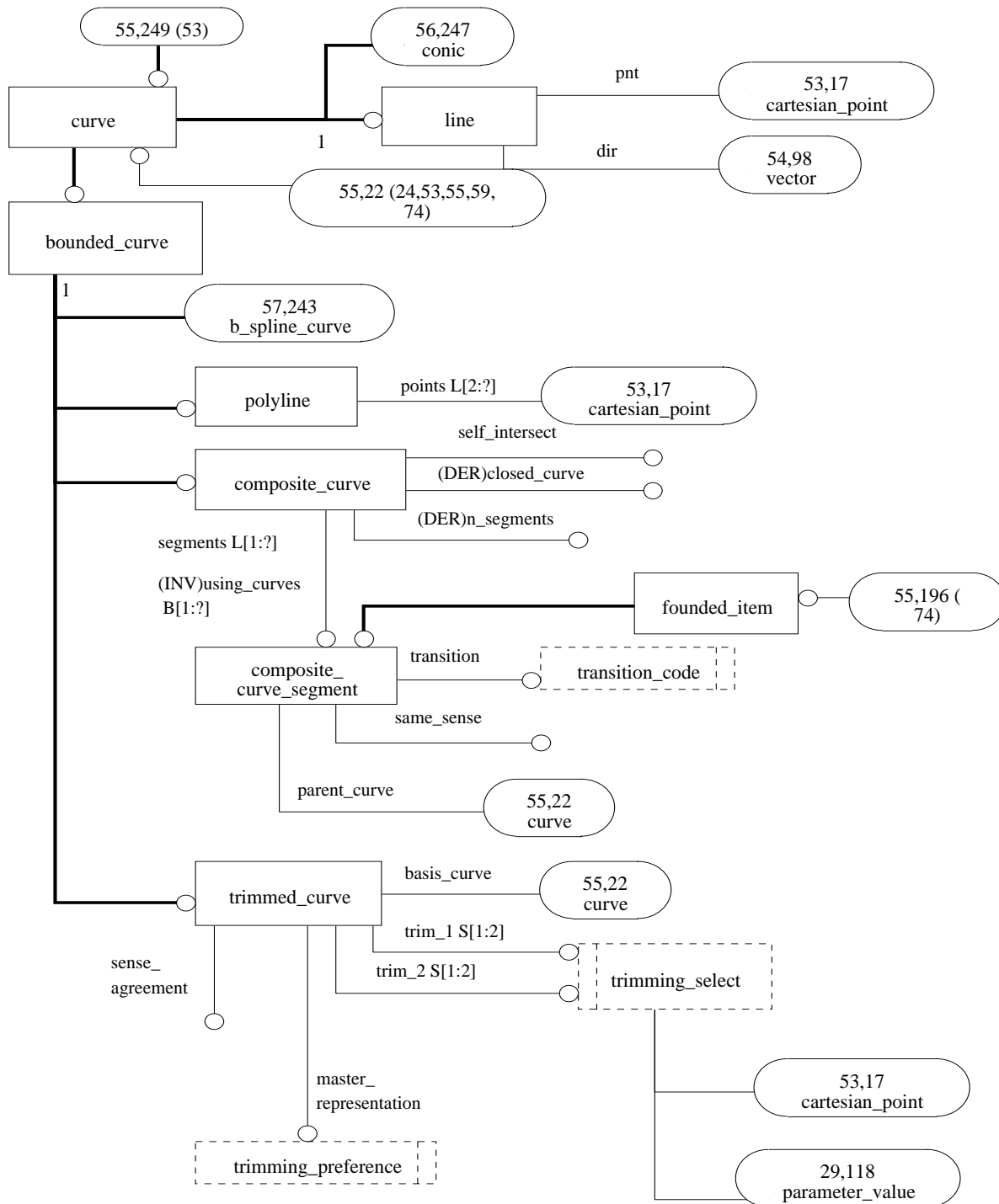


Figure H.55 - AIM diagram in EXPRESS-G: 55 of 96

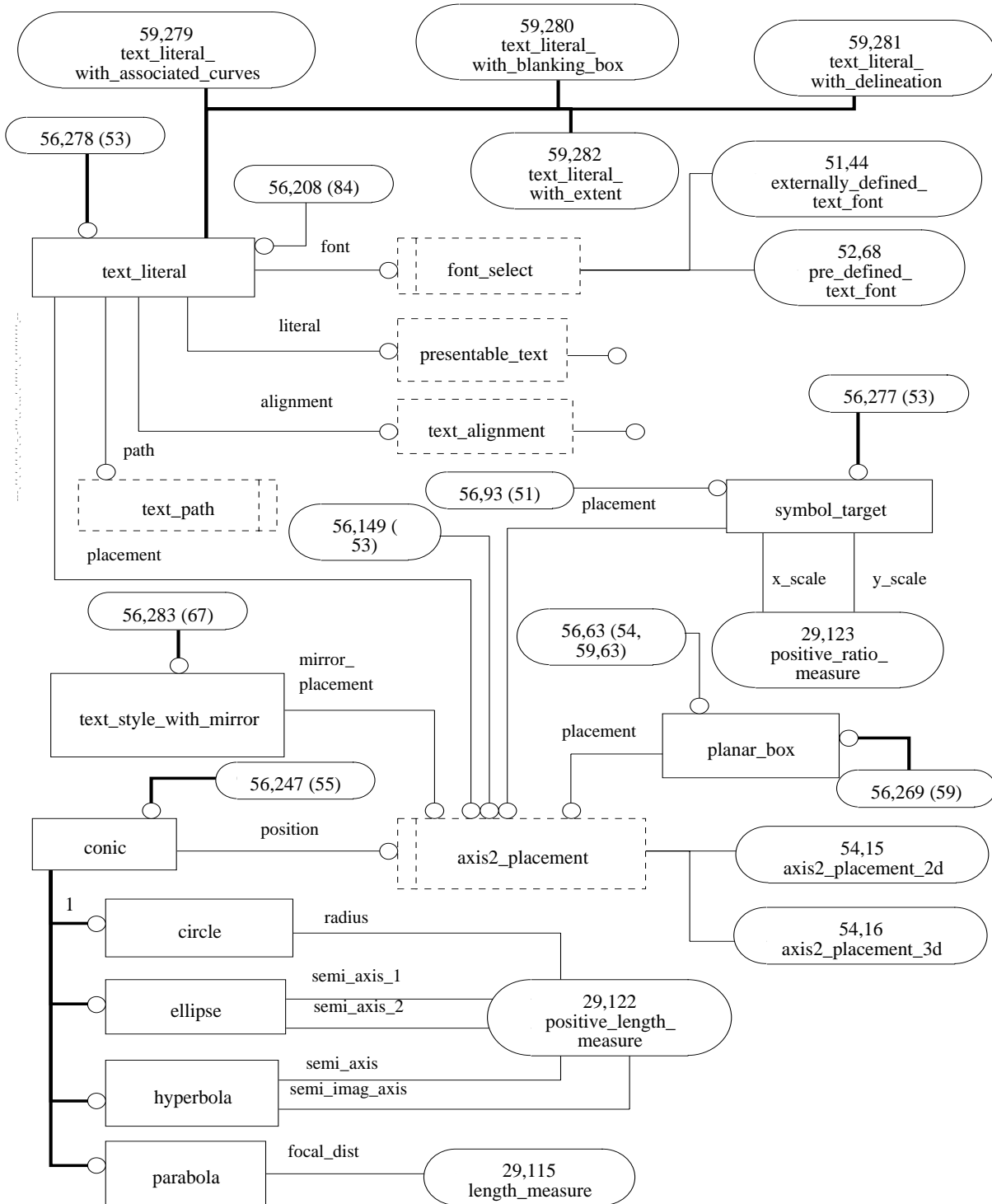


Figure H.56 - AIM diagram in EXPRESS-G: 56 of 96

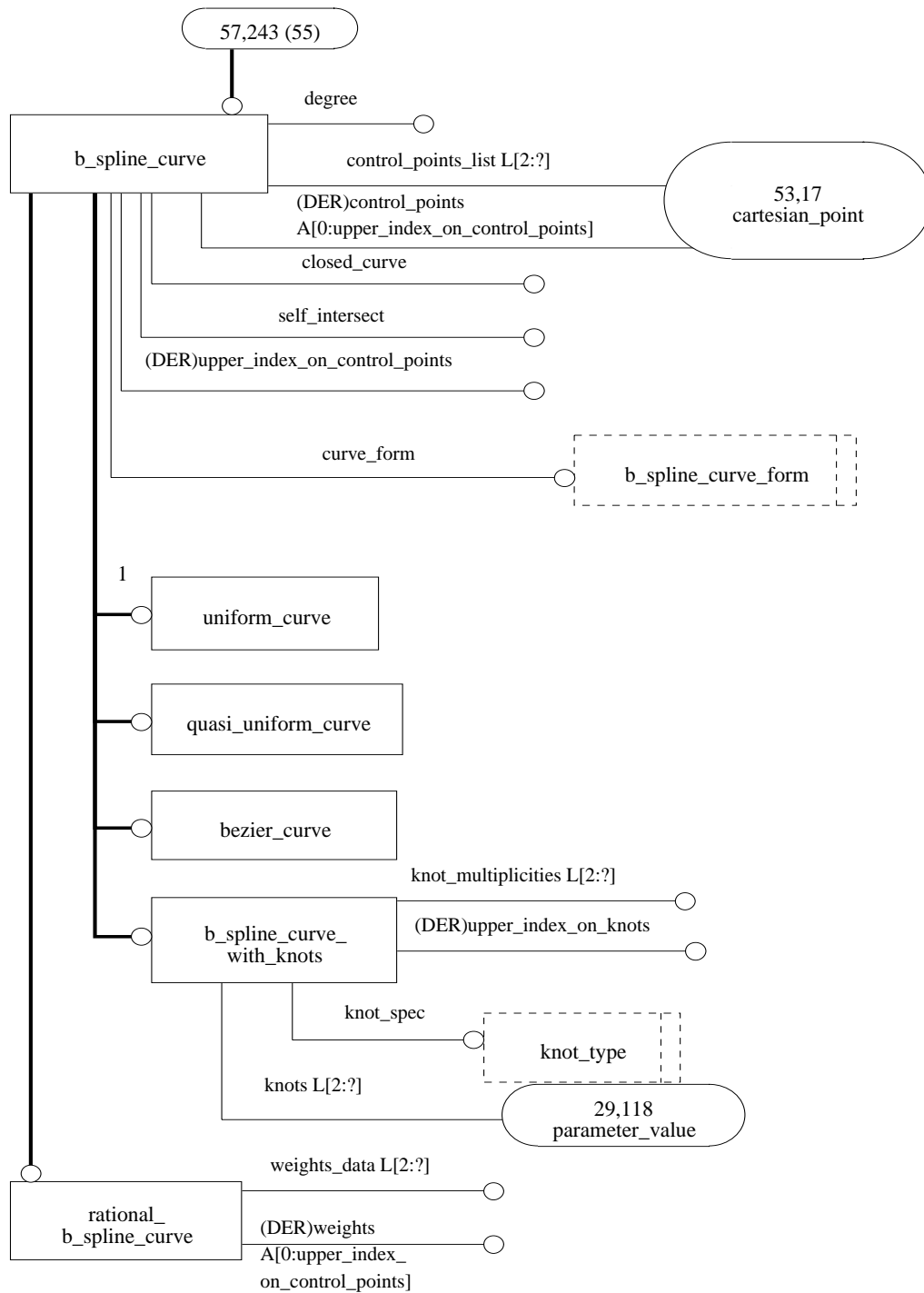


Figure H.57 - AIM diagram in EXPRESS-G: 57 of 96

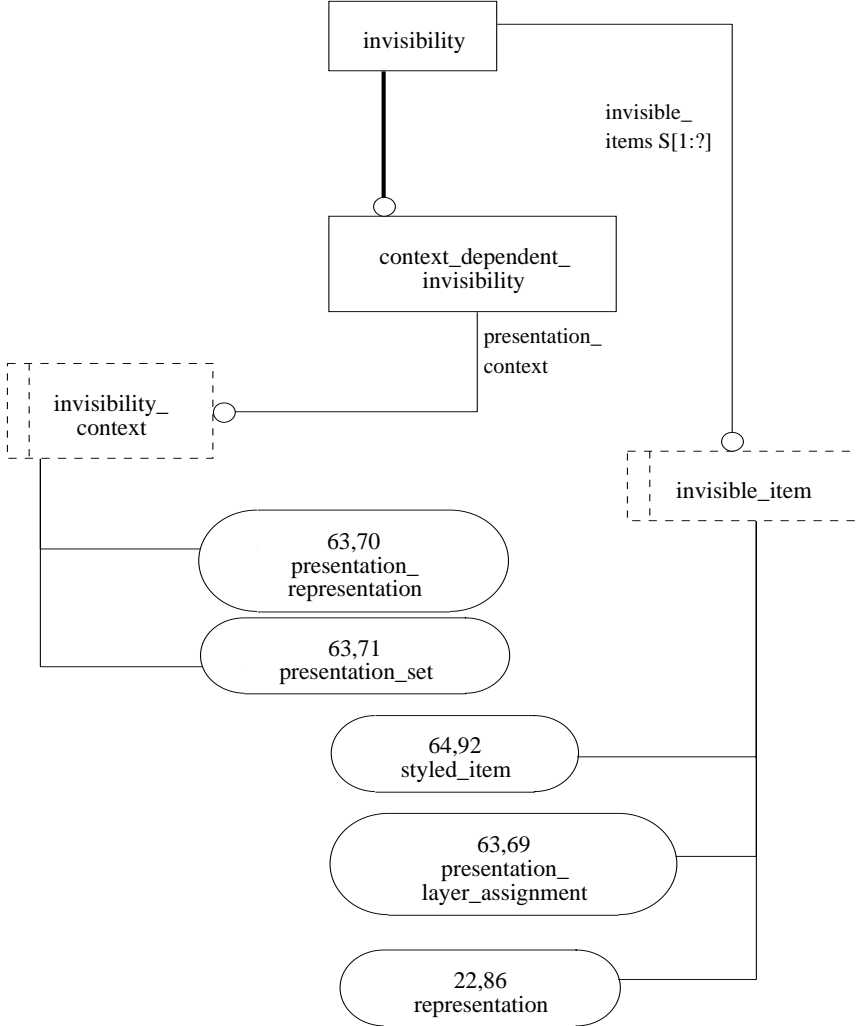


Figure H.58 - AIM diagram in EXPRESS-G: 58 of 96

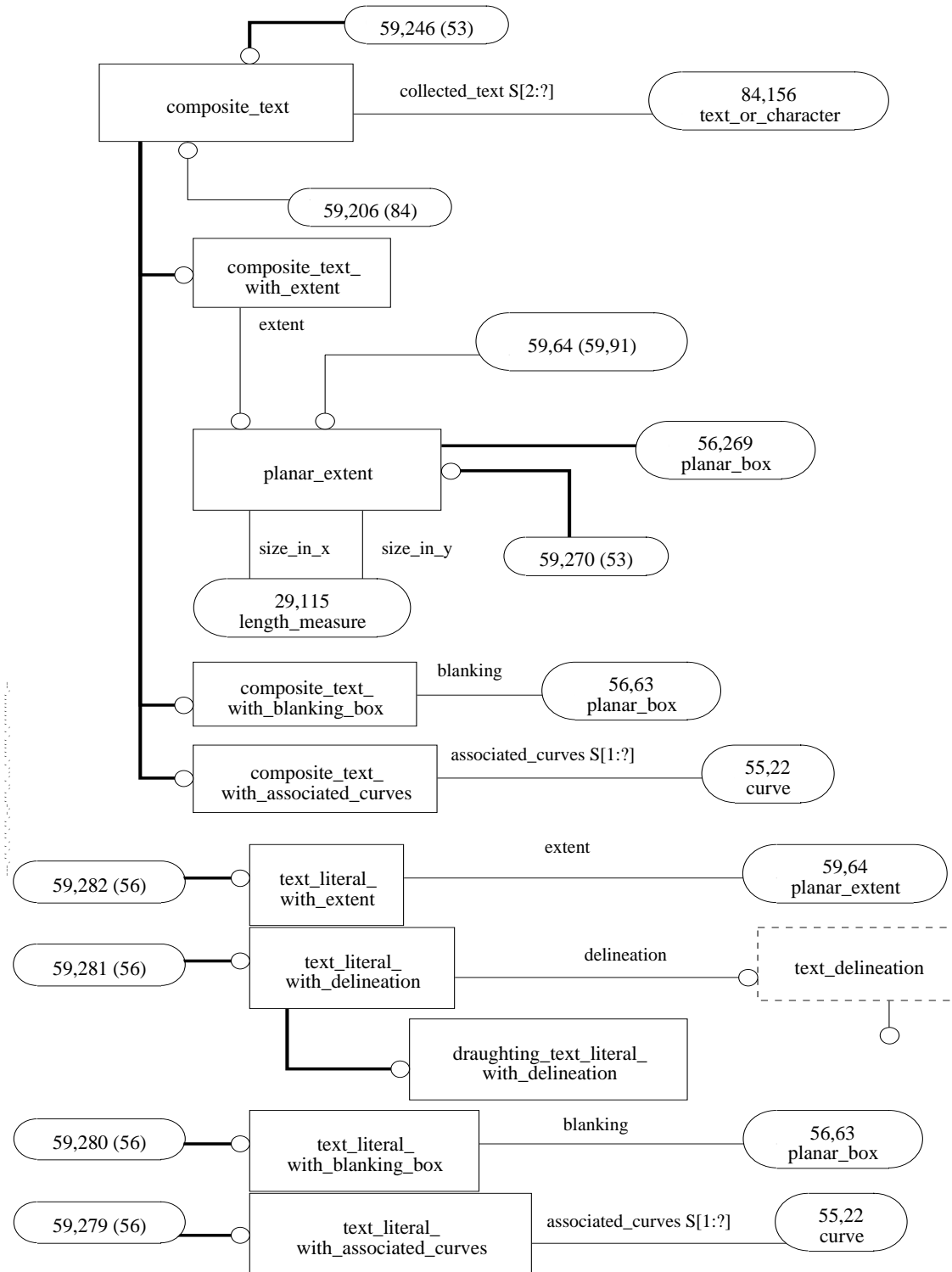


Figure H.59 - AIM diagram in EXPRESS-G: 59 of 96

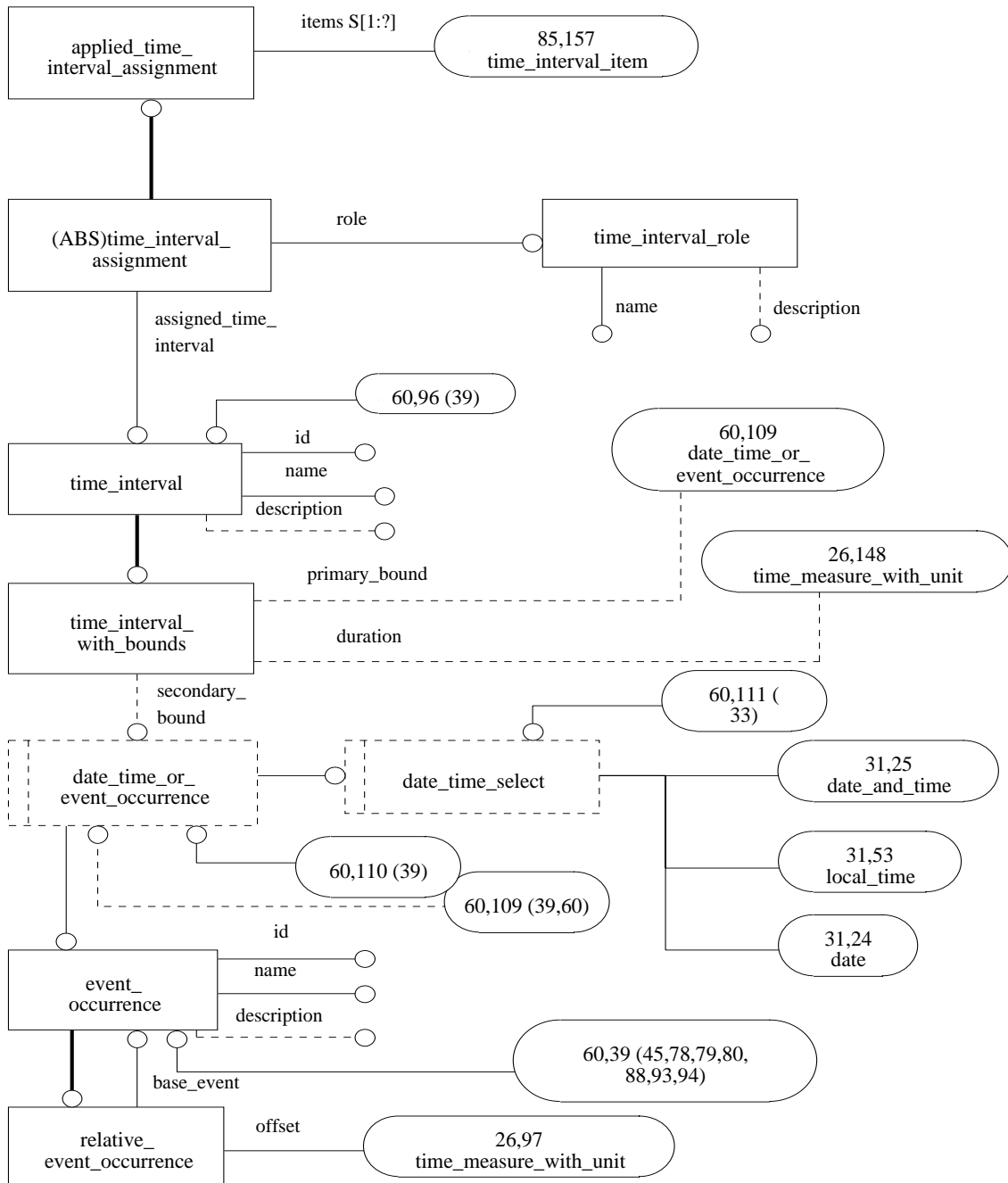


Figure H.60 - AIM diagram in EXPRESS-G: 60 of 96

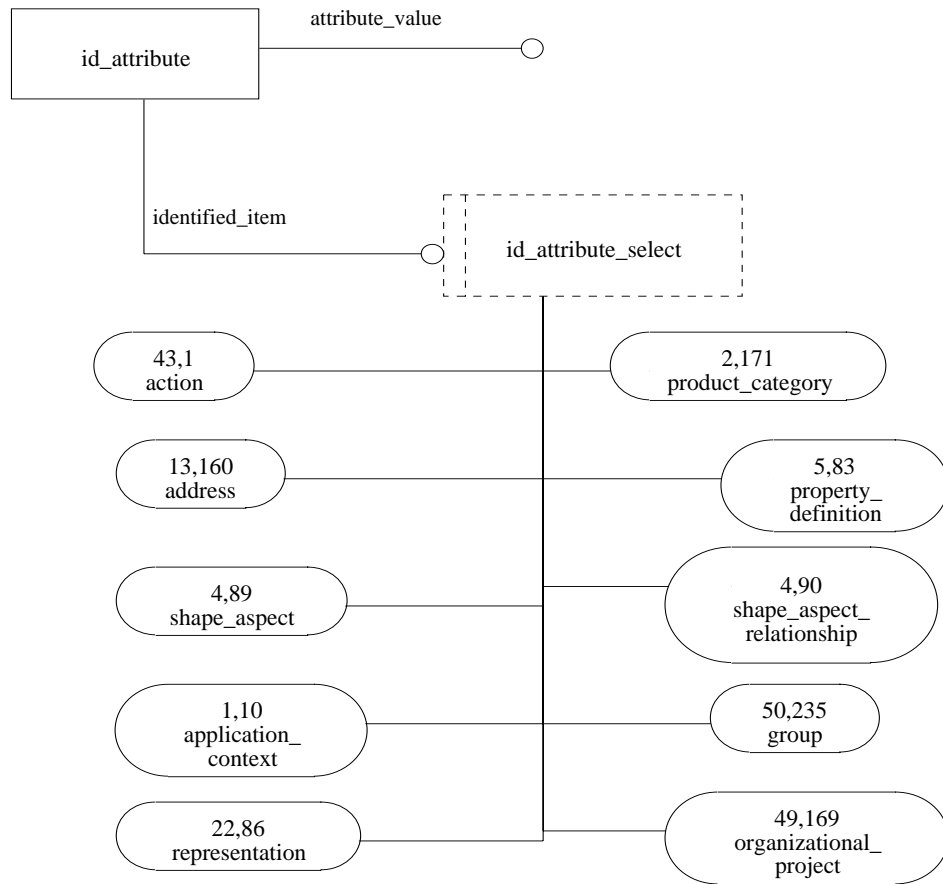


Figure H.61 - AIM diagram in EXPRESS-G: 61 of 96

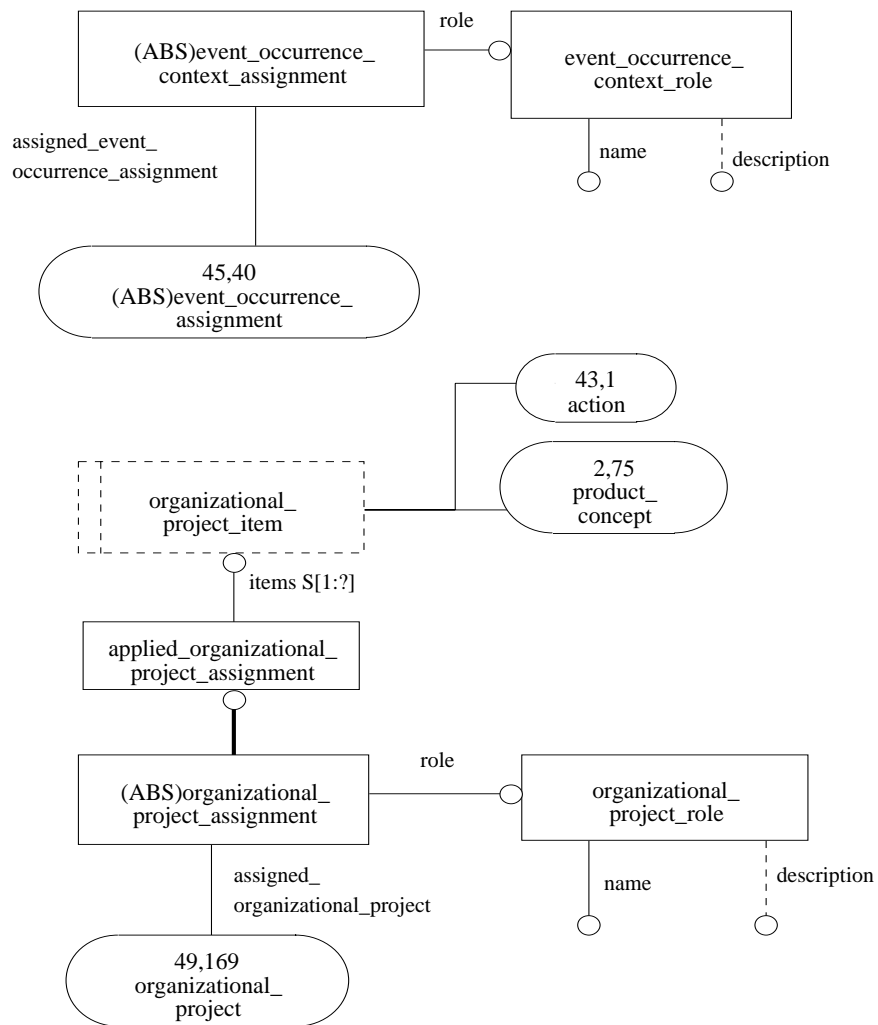


Figure H.62 - AIM diagram in EXPRESS-G: 62 of 96

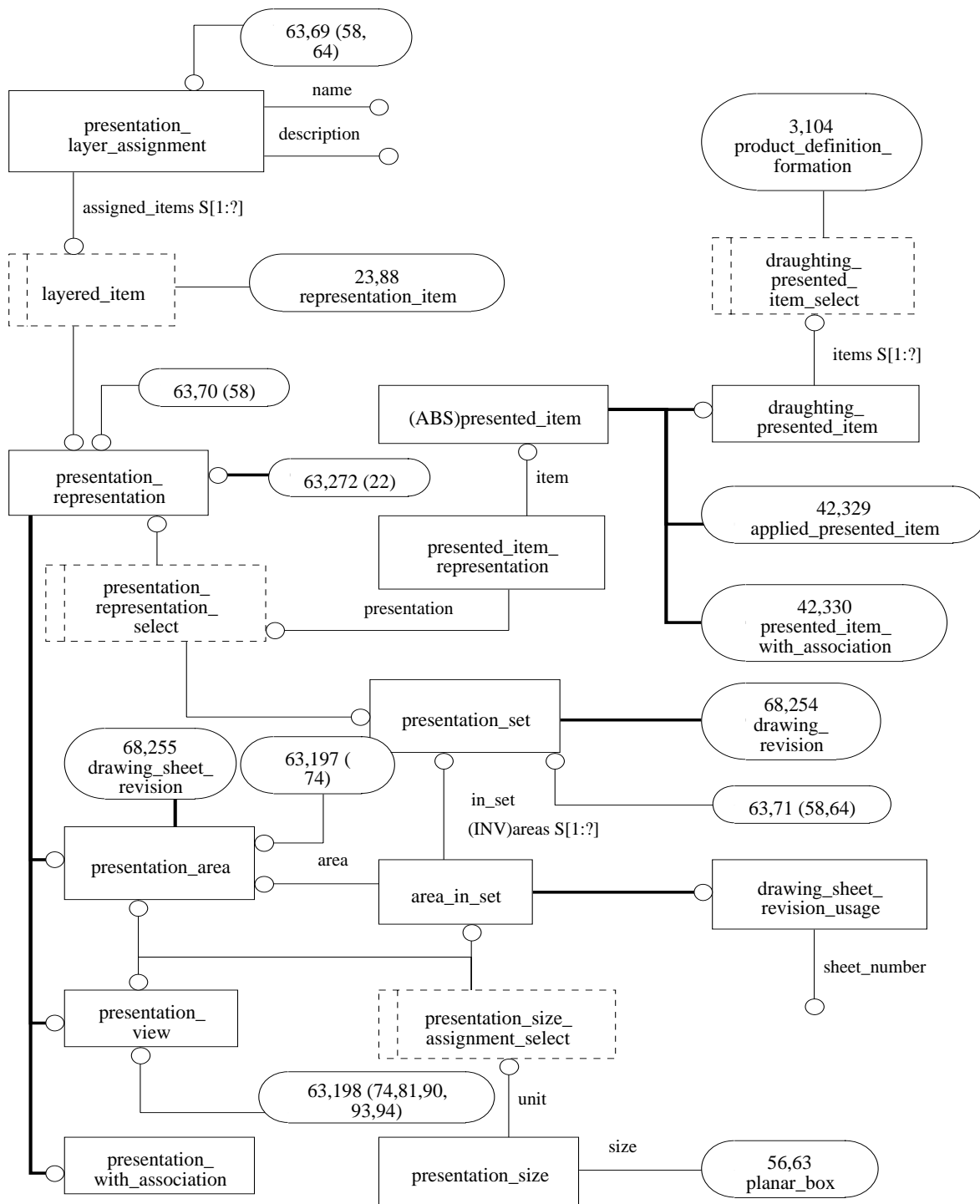


Figure H.63 - AIM diagram in EXPRESS-G: 63 of 96

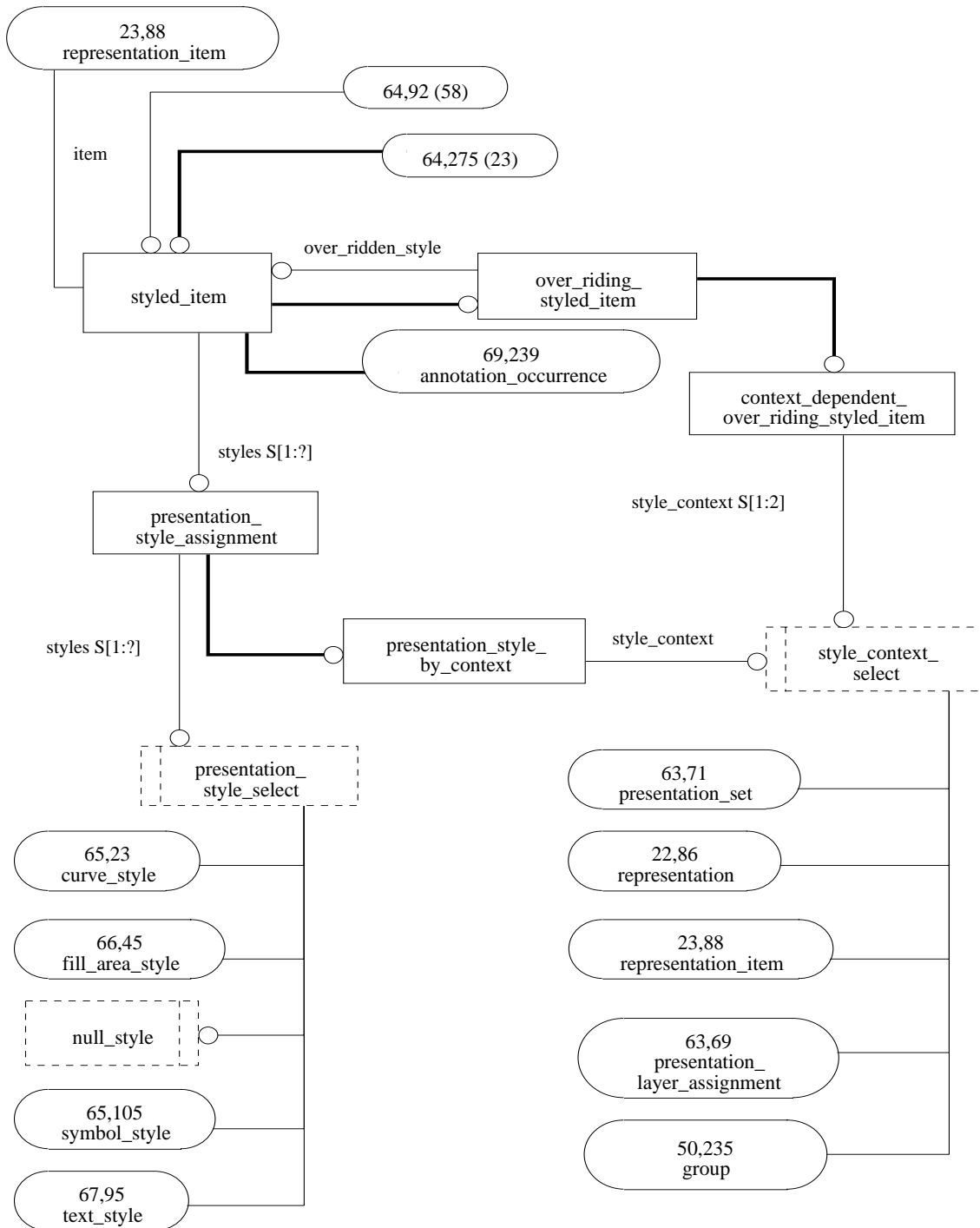


Figure H.64 - AIM diagram in EXPRESS-G: 64 of 96

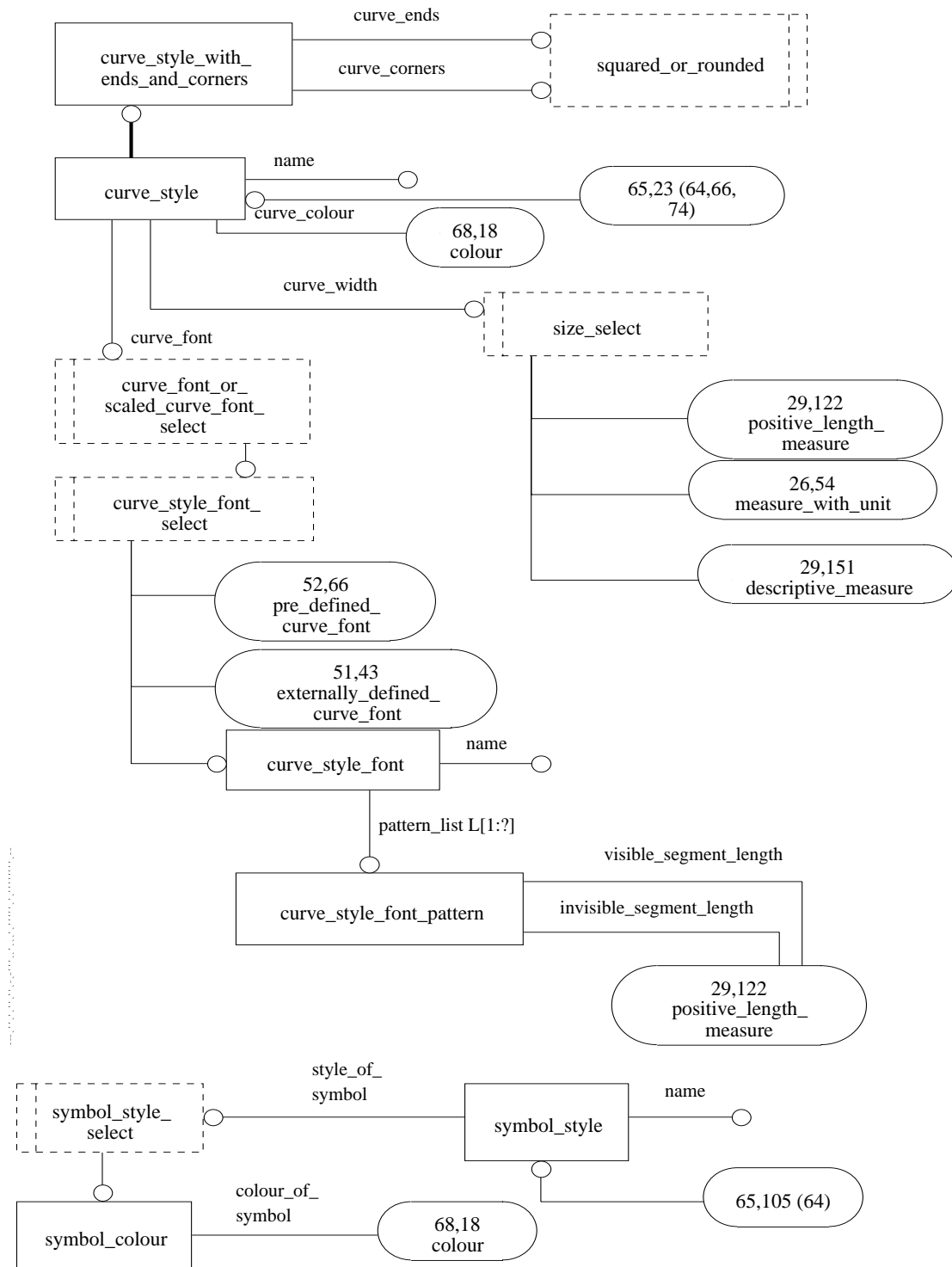


Figure H.65 - AIM diagram in EXPRESS-G: 65 of 96

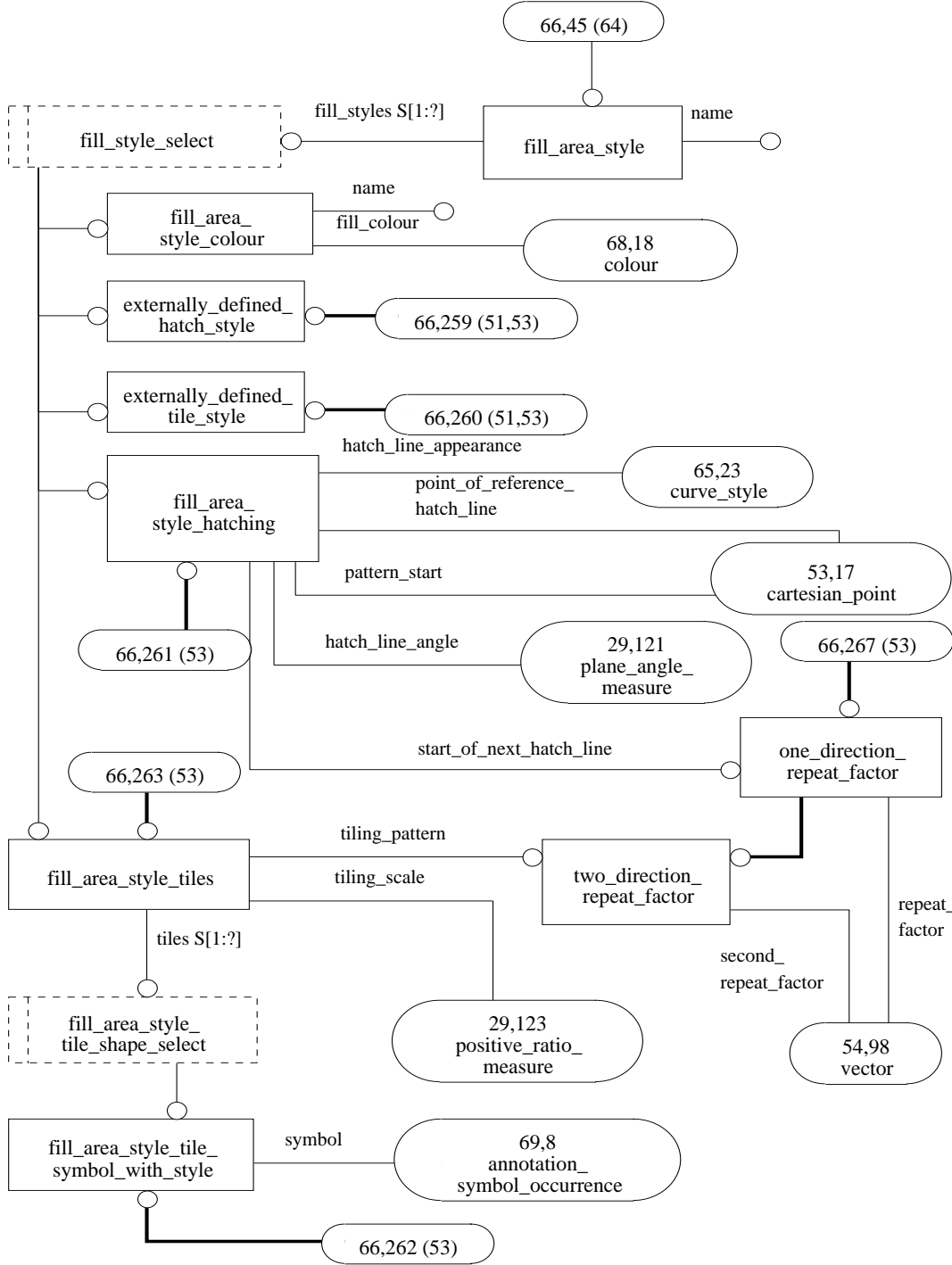


Figure H.66 - AIM diagram in EXPRESS-G: 66 of 96

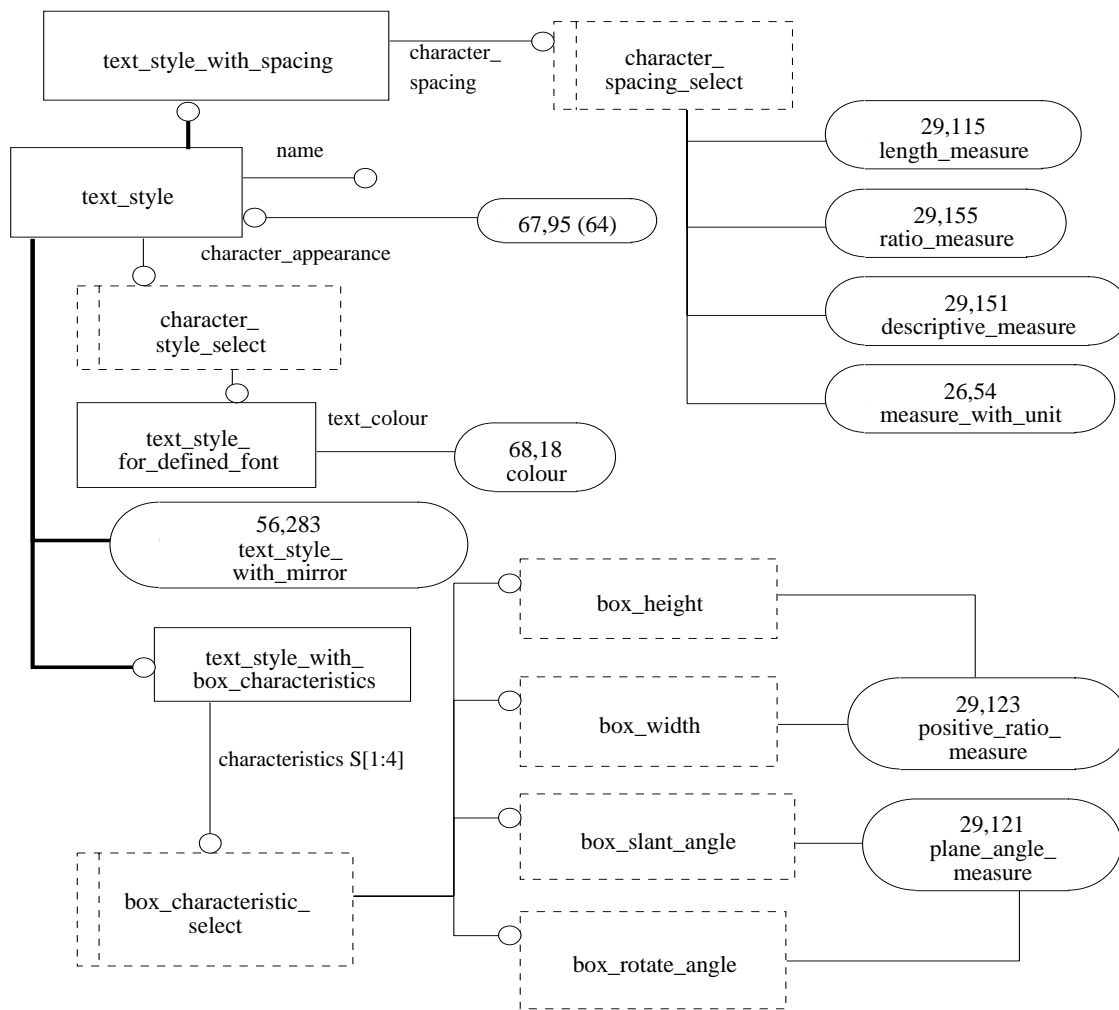


Figure H.67 - AIM diagram in EXPRESS-G: 67 of 96

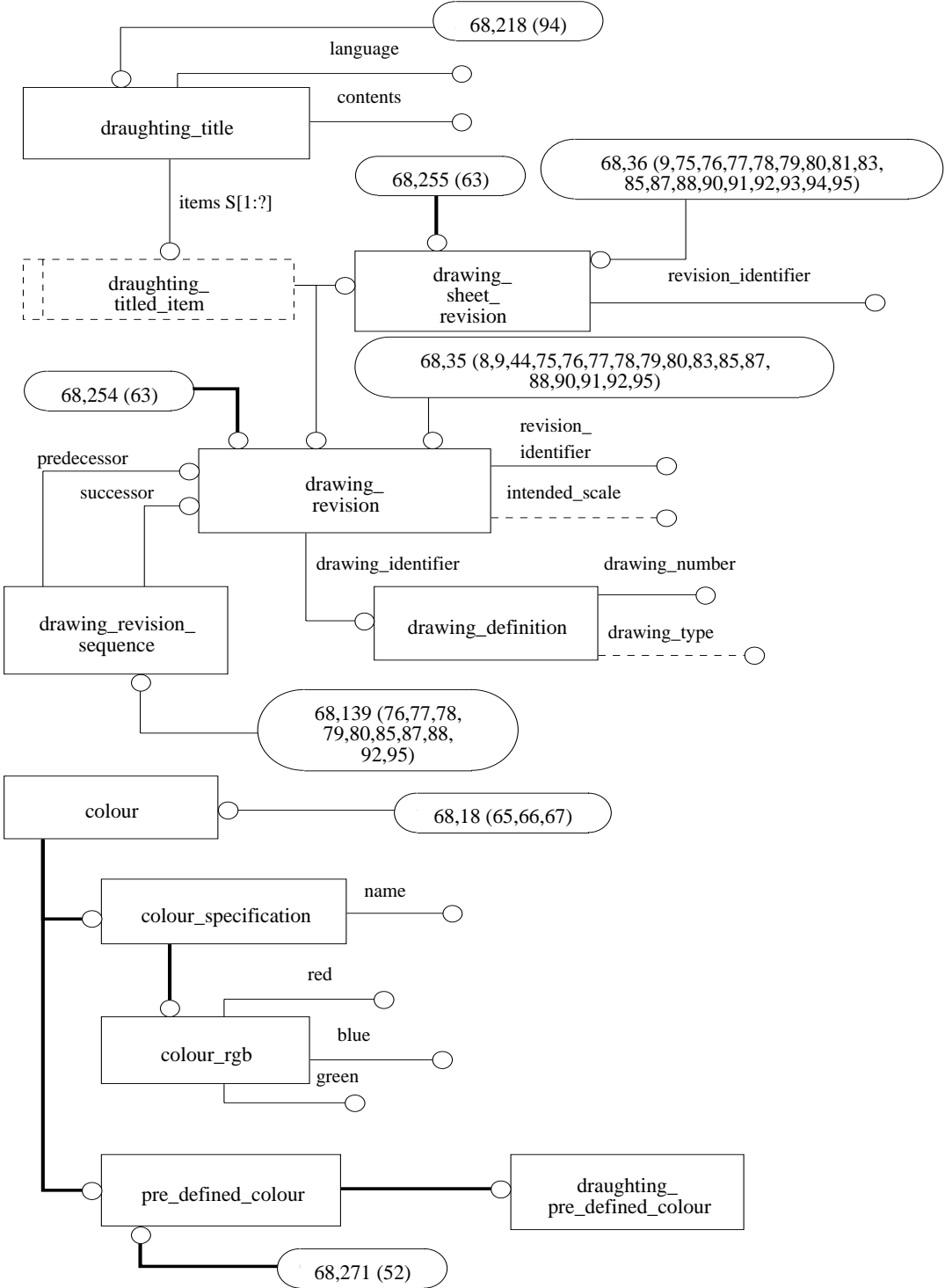


Figure H.68 - AIM diagram in EXPRESS-G: 68 of 96

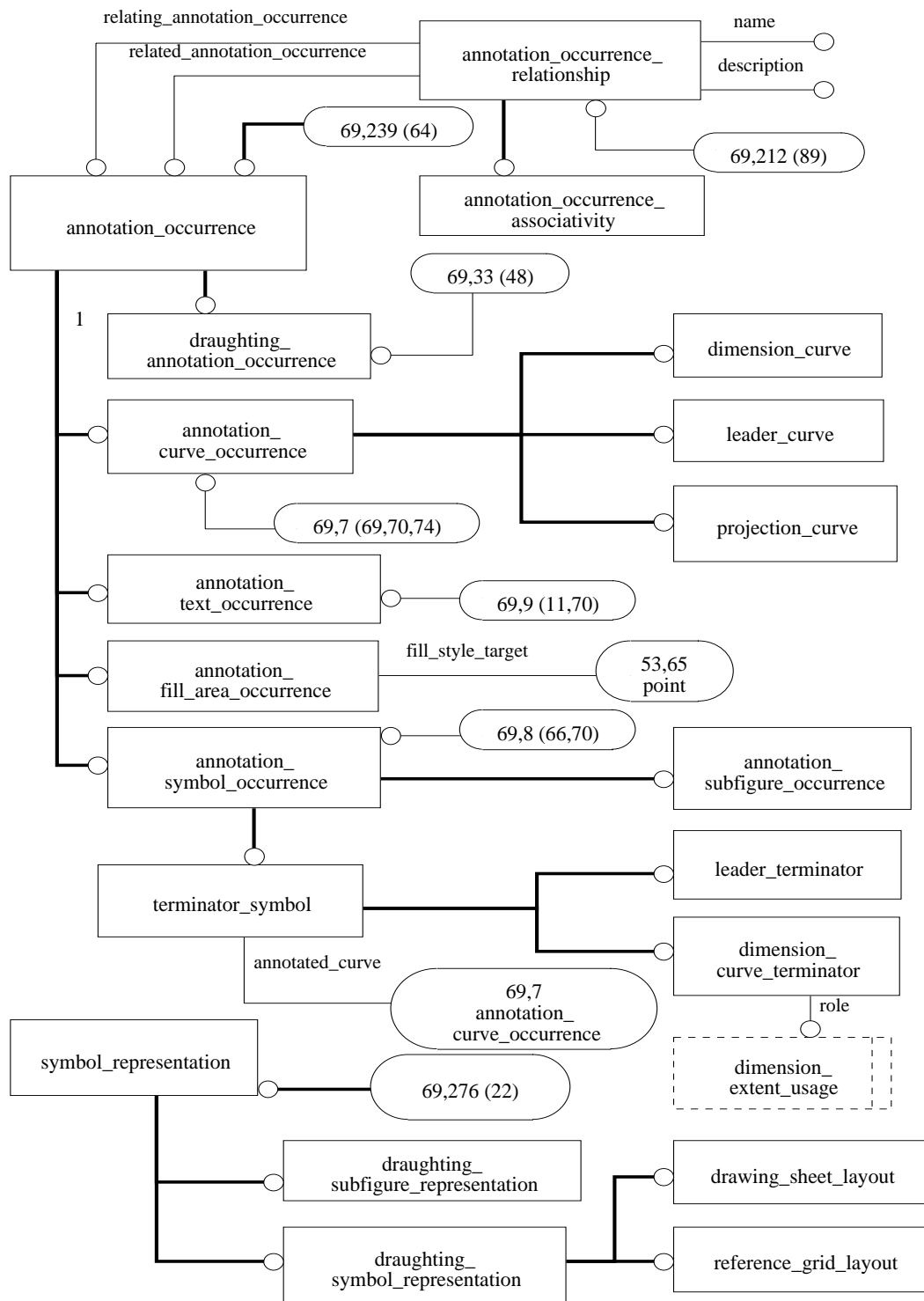


Figure H.69 - AIM diagram in EXPRESS-G: 69 of 96

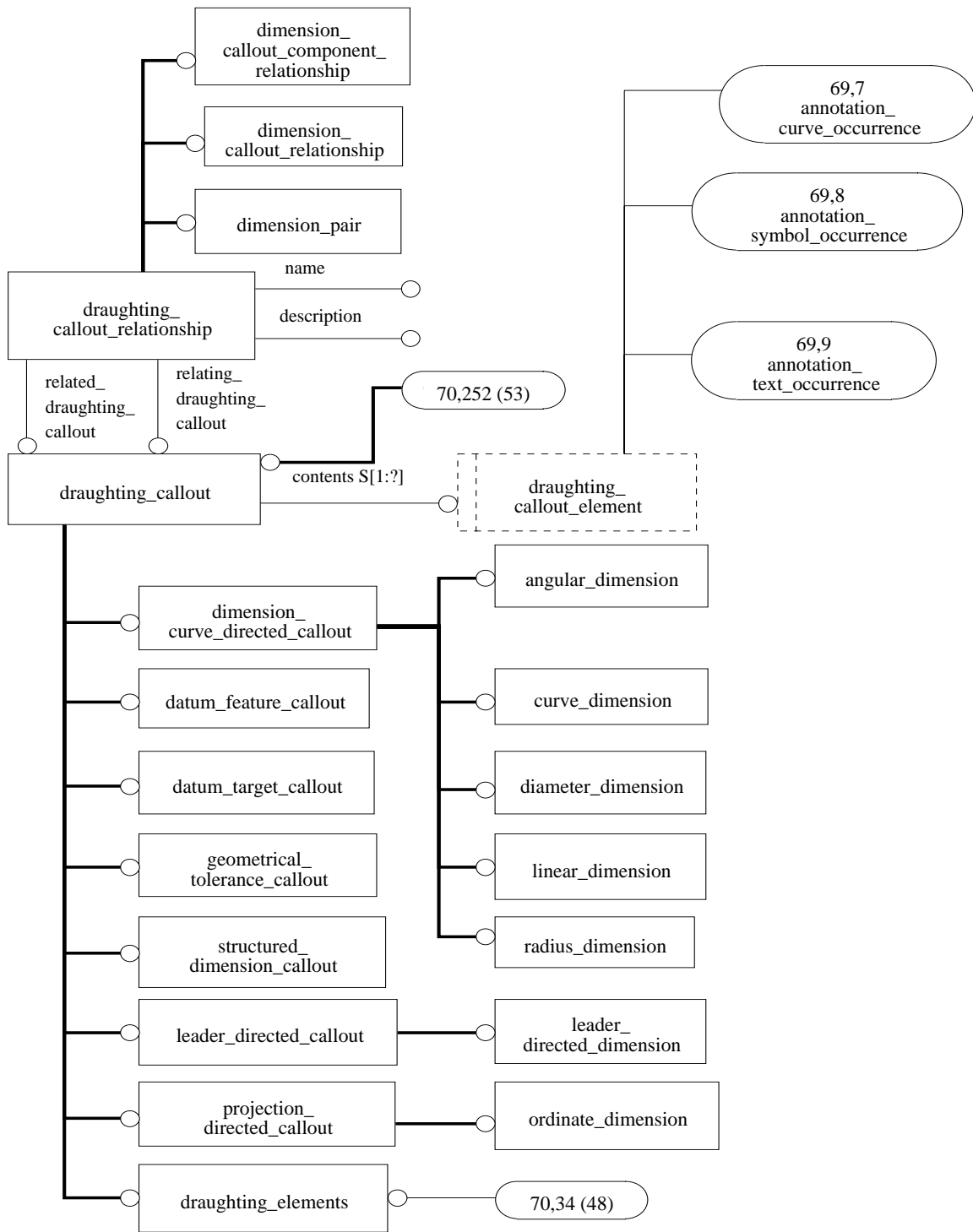


Figure H.70 - AIM diagram in EXPRESS-G: 70 of 96

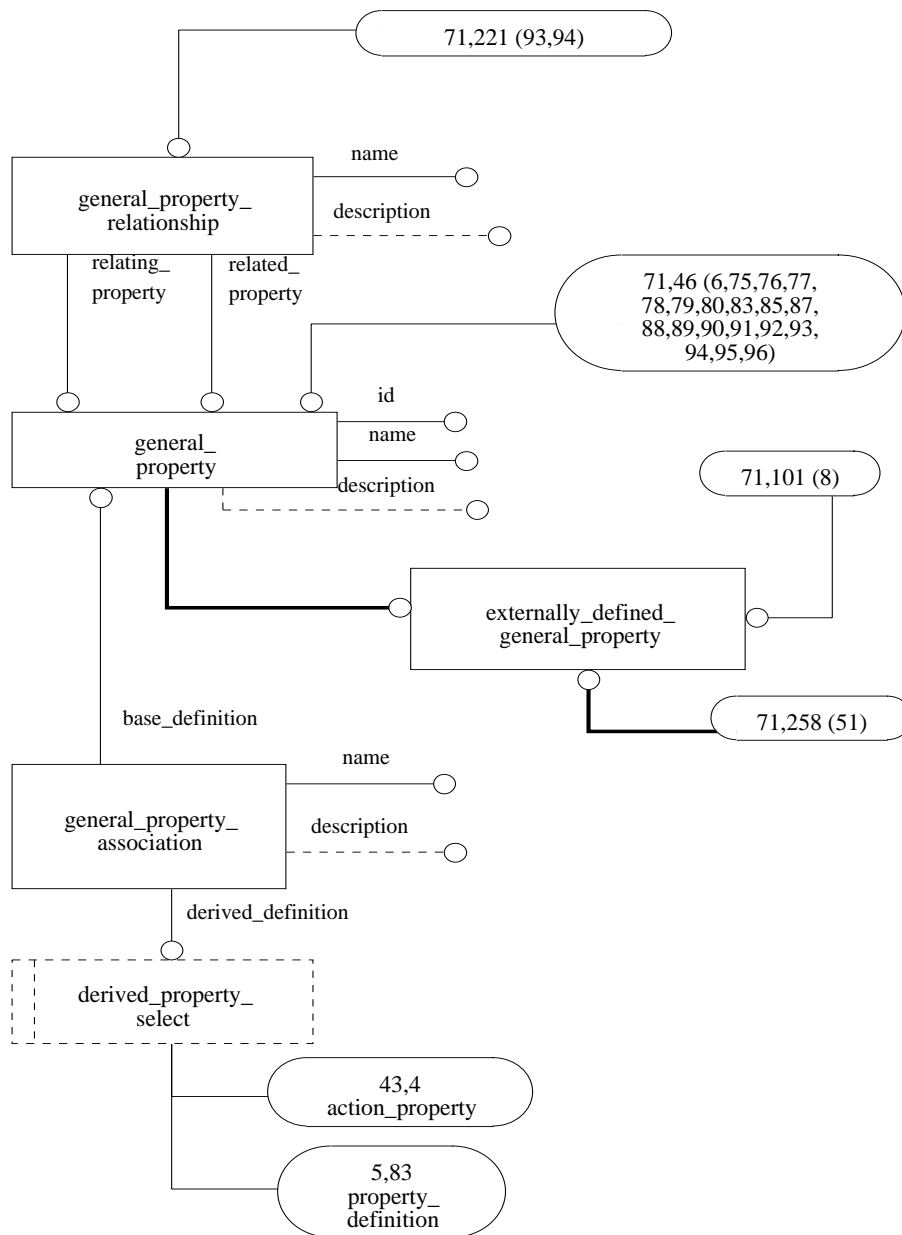


Figure H.71 - AIM diagram in EXPRESS-G: 71 of 96

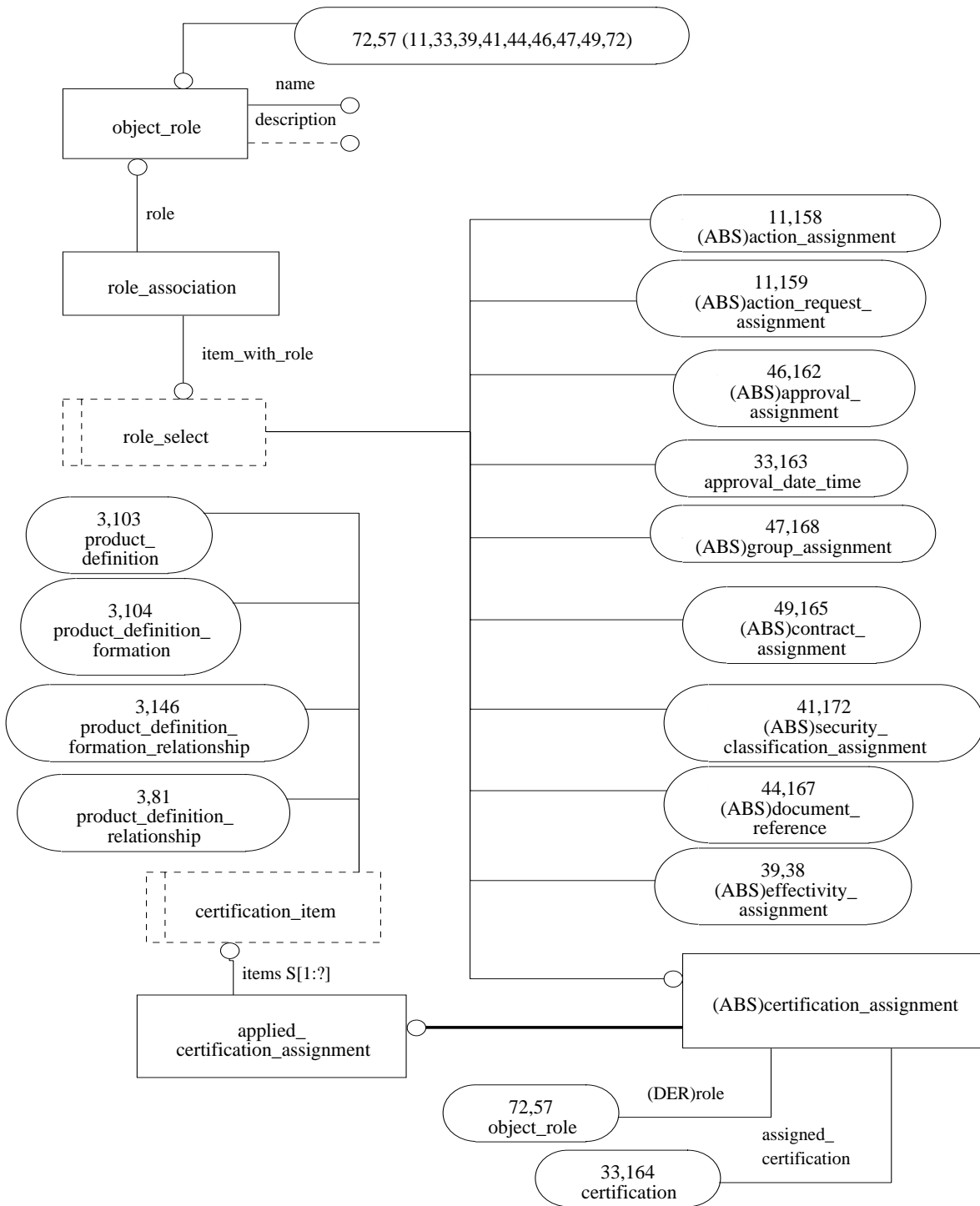


Figure H.72 - AIM diagram in EXPRESS-G: 72 of 96

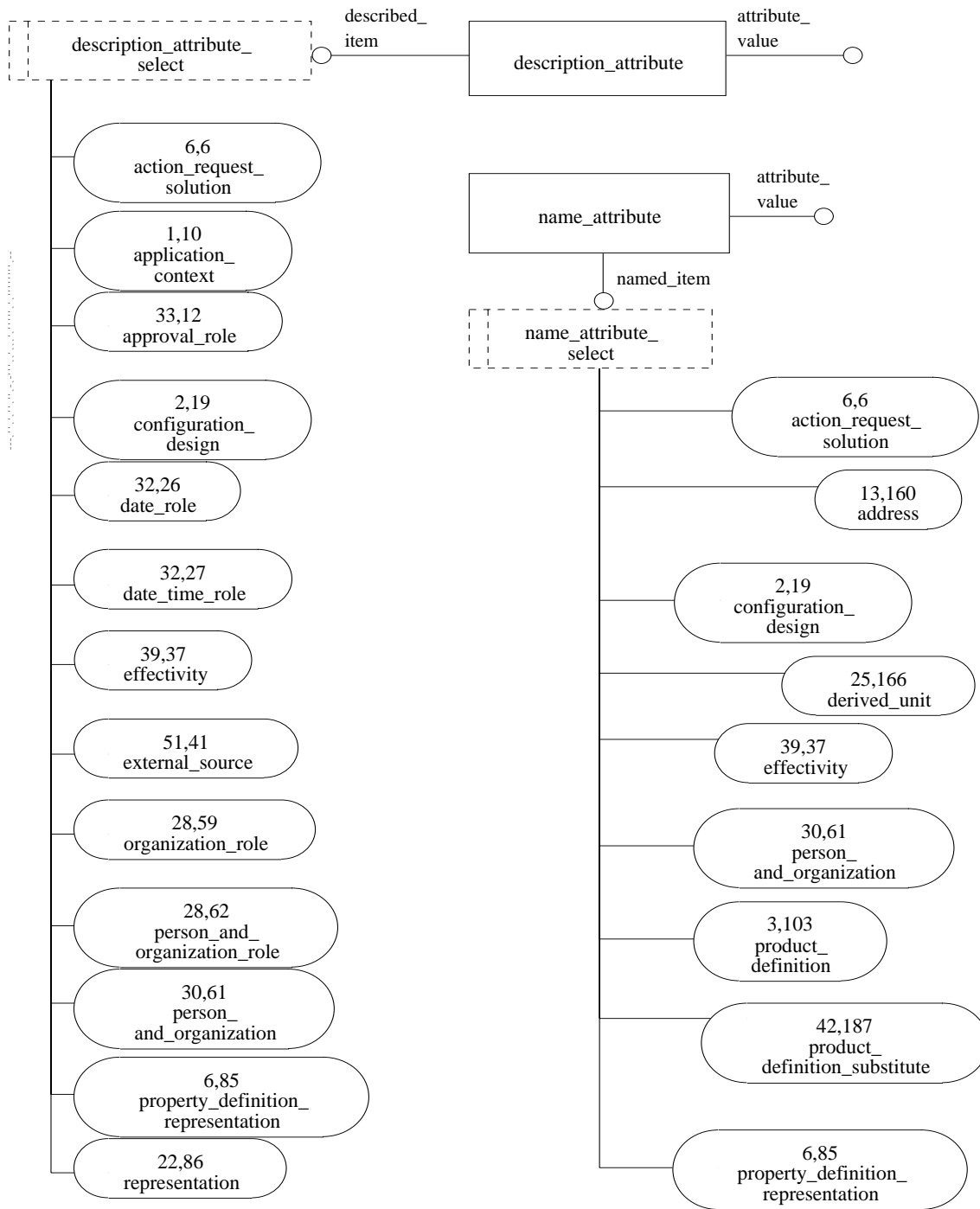


Figure H.73 - AIM diagram in EXPRESS-G: 73 of 96

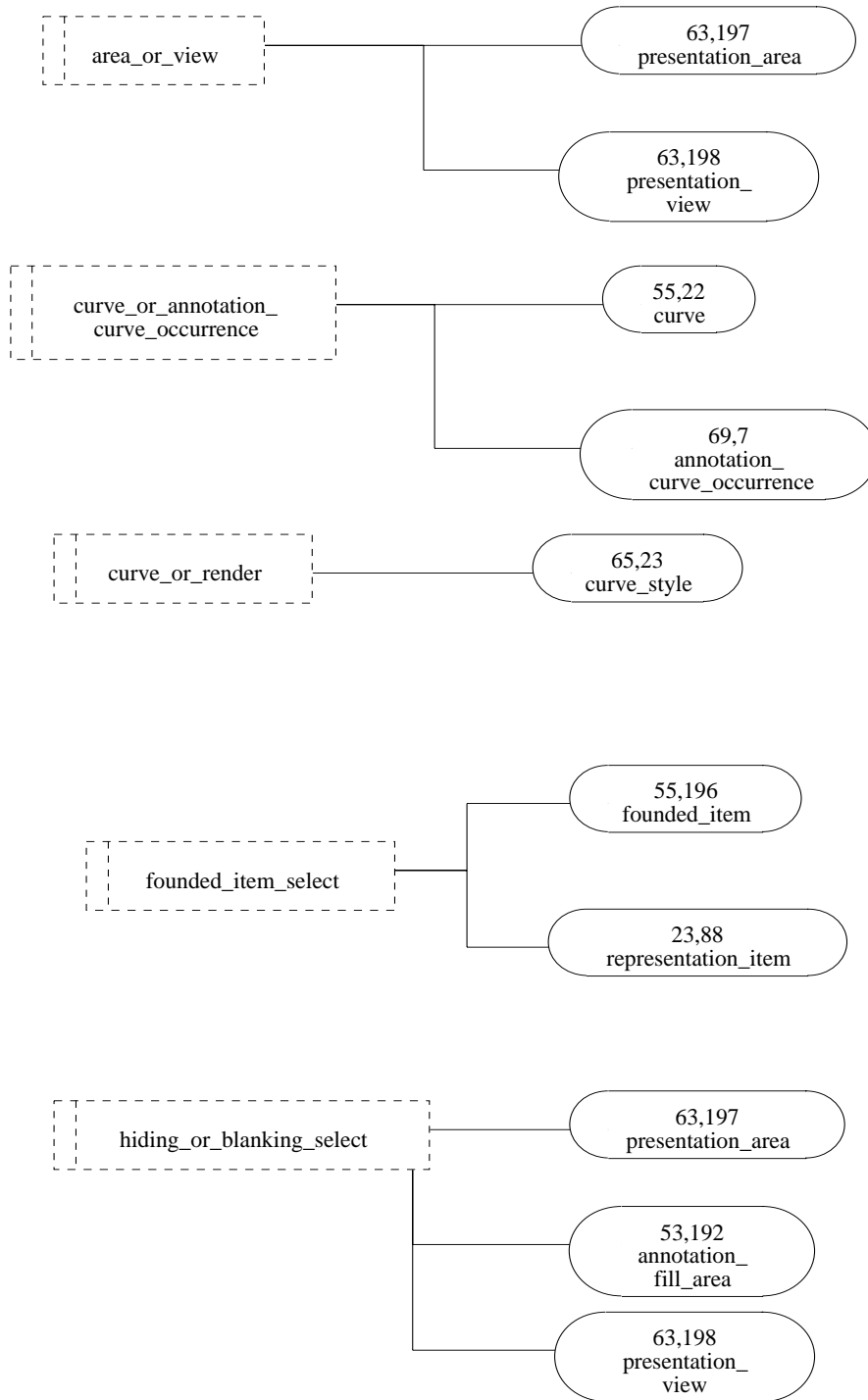


Figure H.74 - AIM diagram in EXPRESS-G: 74 of 96

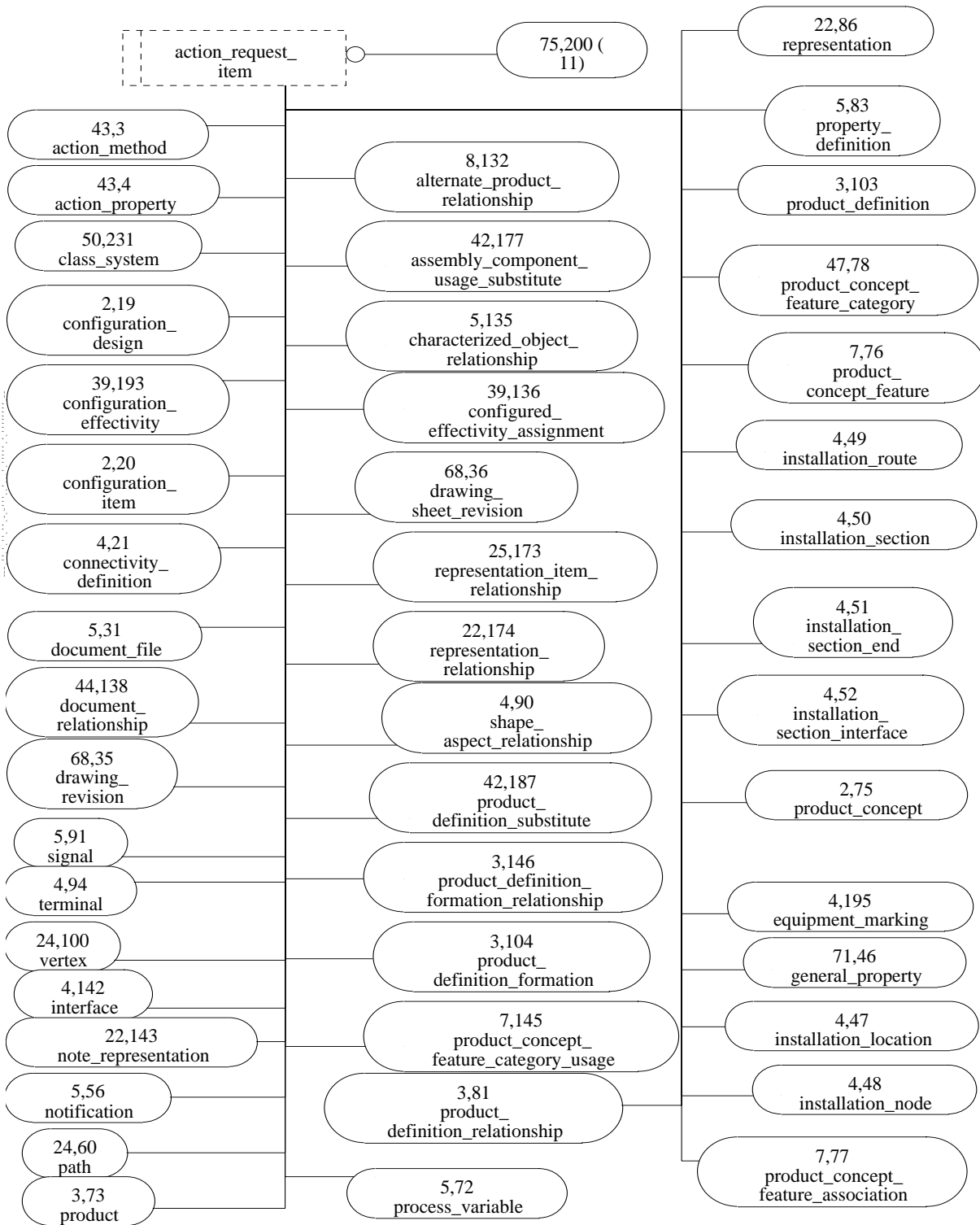


Figure H.75 - AIM diagram in EXPRESS-G: 75 of 96

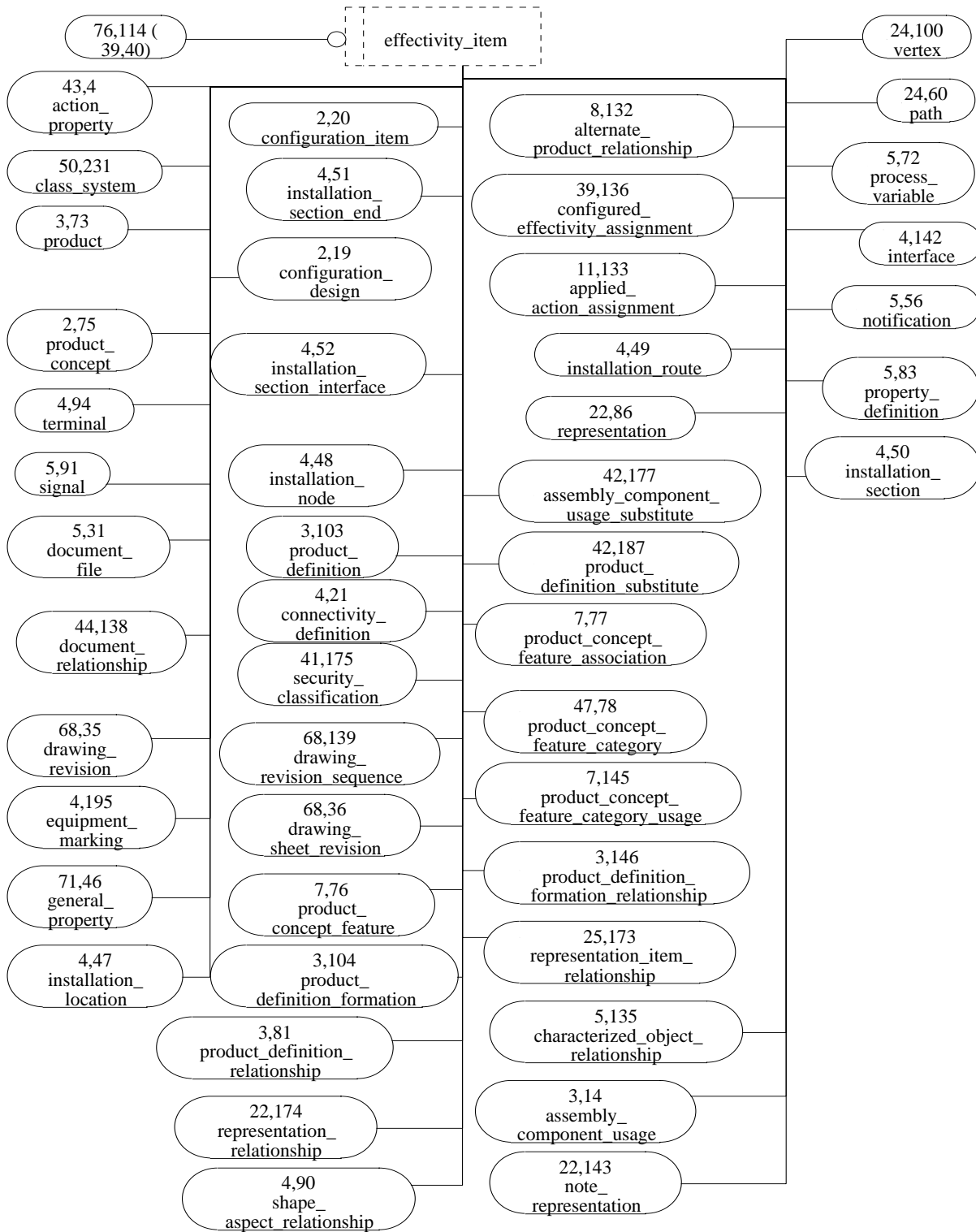


Figure H.76 - AIM diagram in EXPRESS-G: 76 of 96

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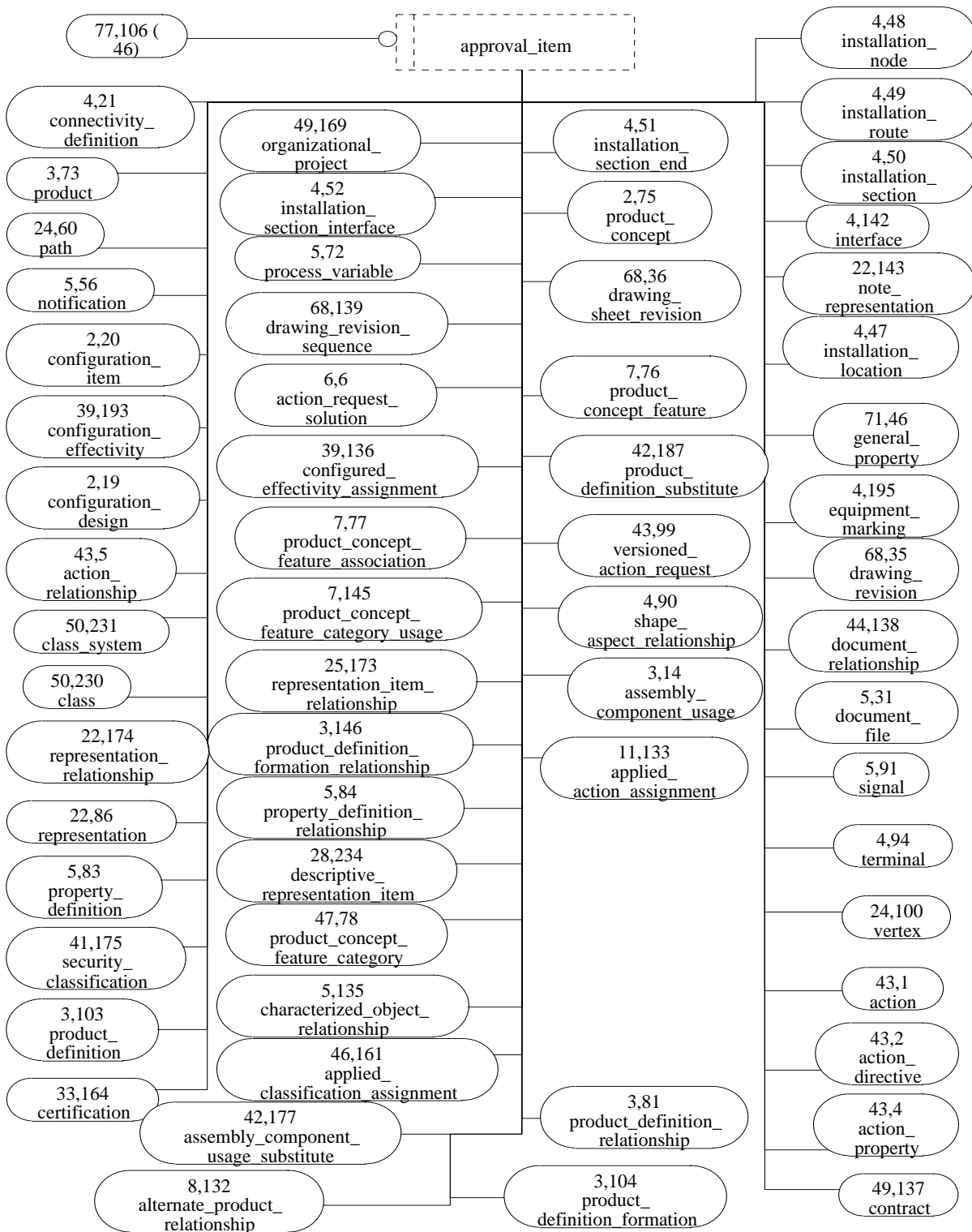


Figure H.77 - AIM diagram in EXPRESS-G: 77 of 96

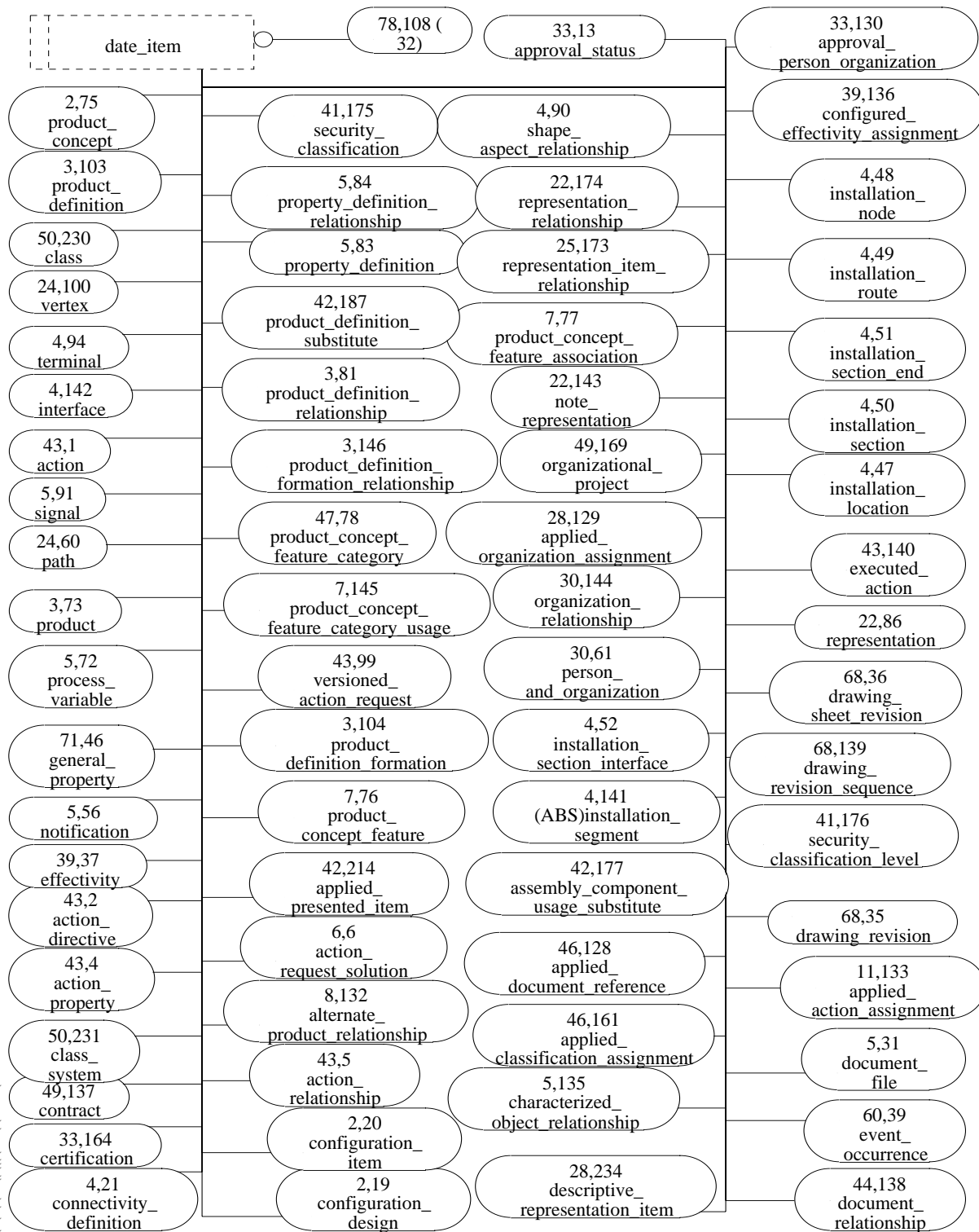


Figure H.78 - AIM diagram in EXPRESS-G: 78 of 96

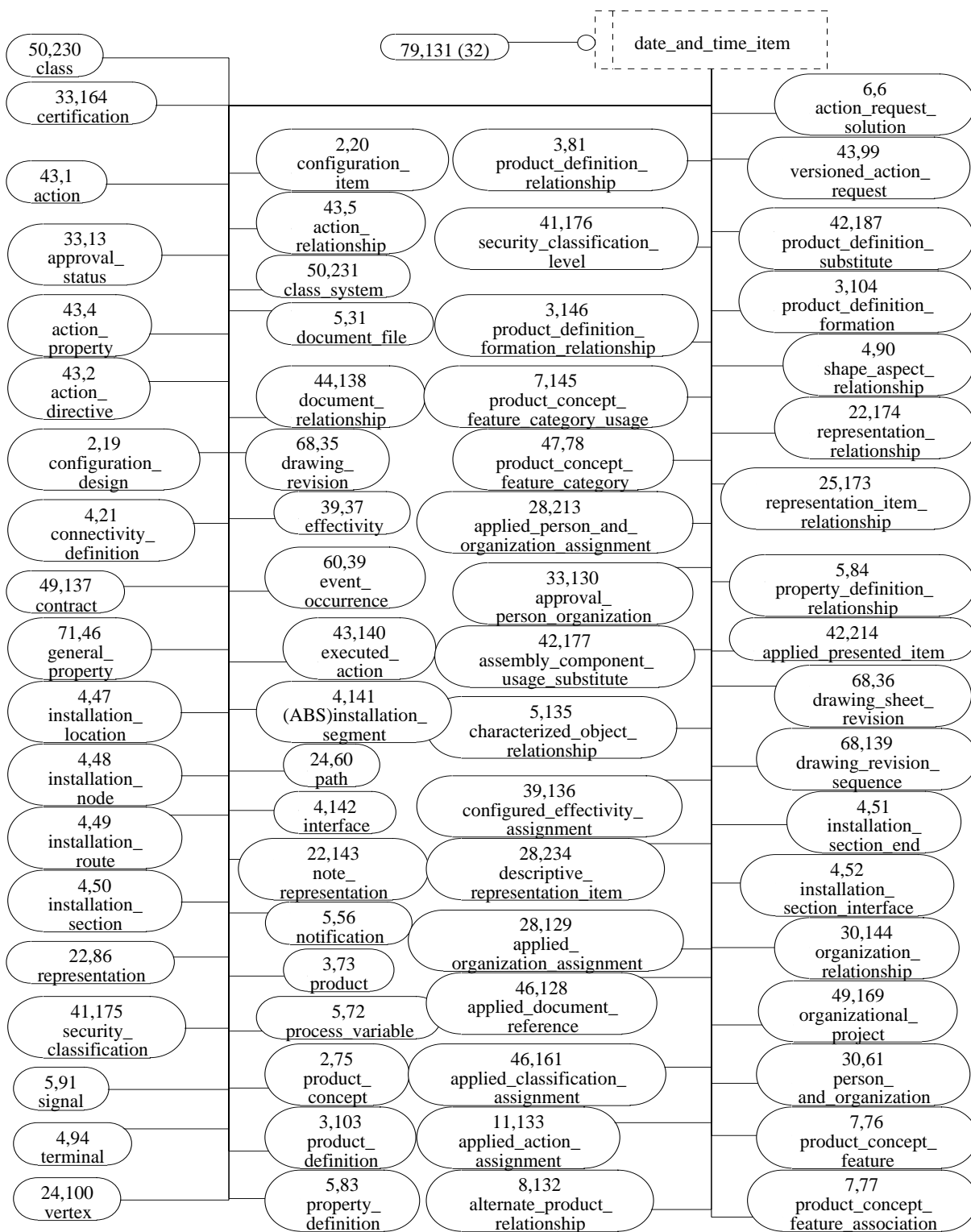


Figure H.79 - AIM diagram in EXPRESS-G: 79 of 96

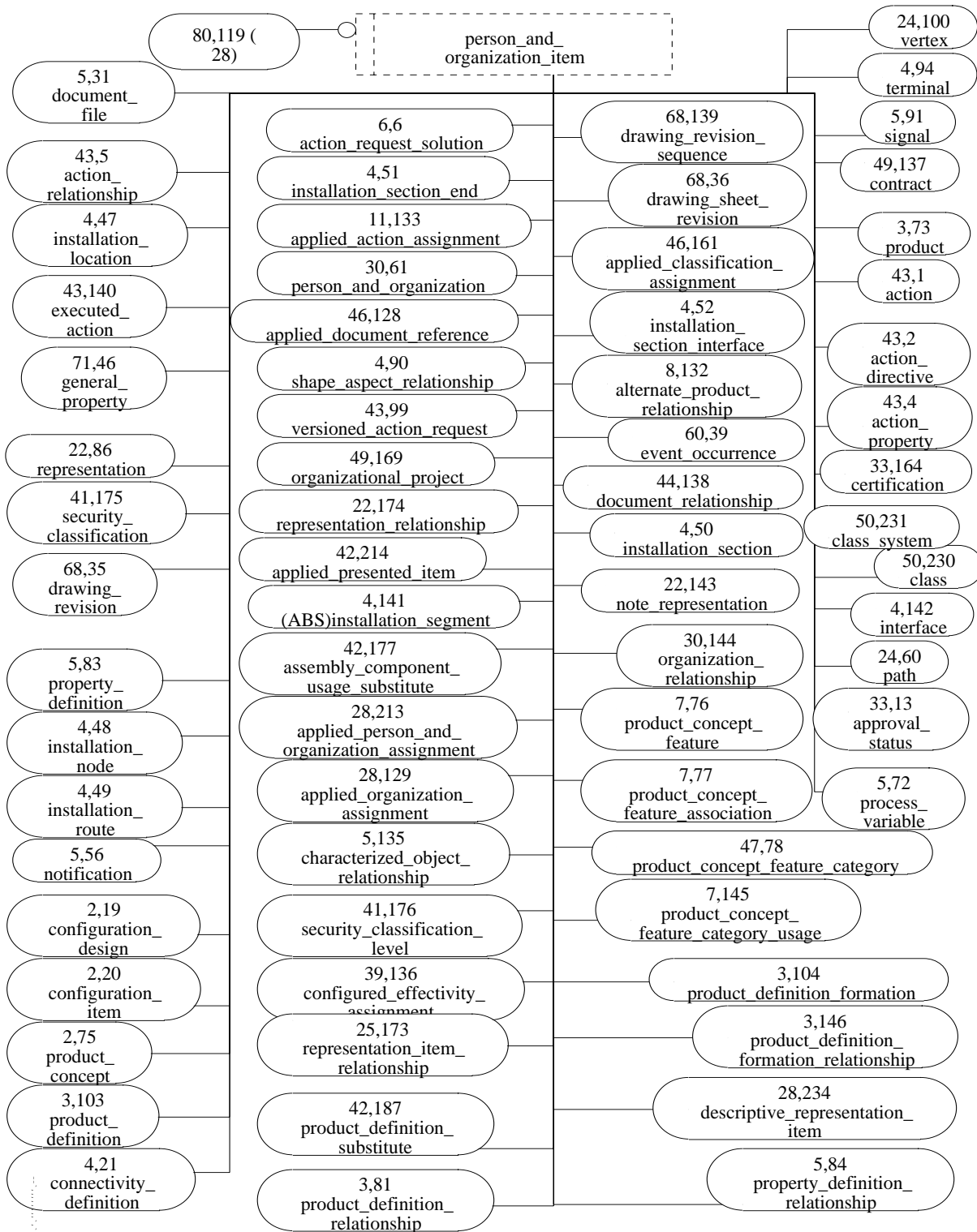


Figure H.80 - AIM diagram in EXPRESS-G: 80 of 96

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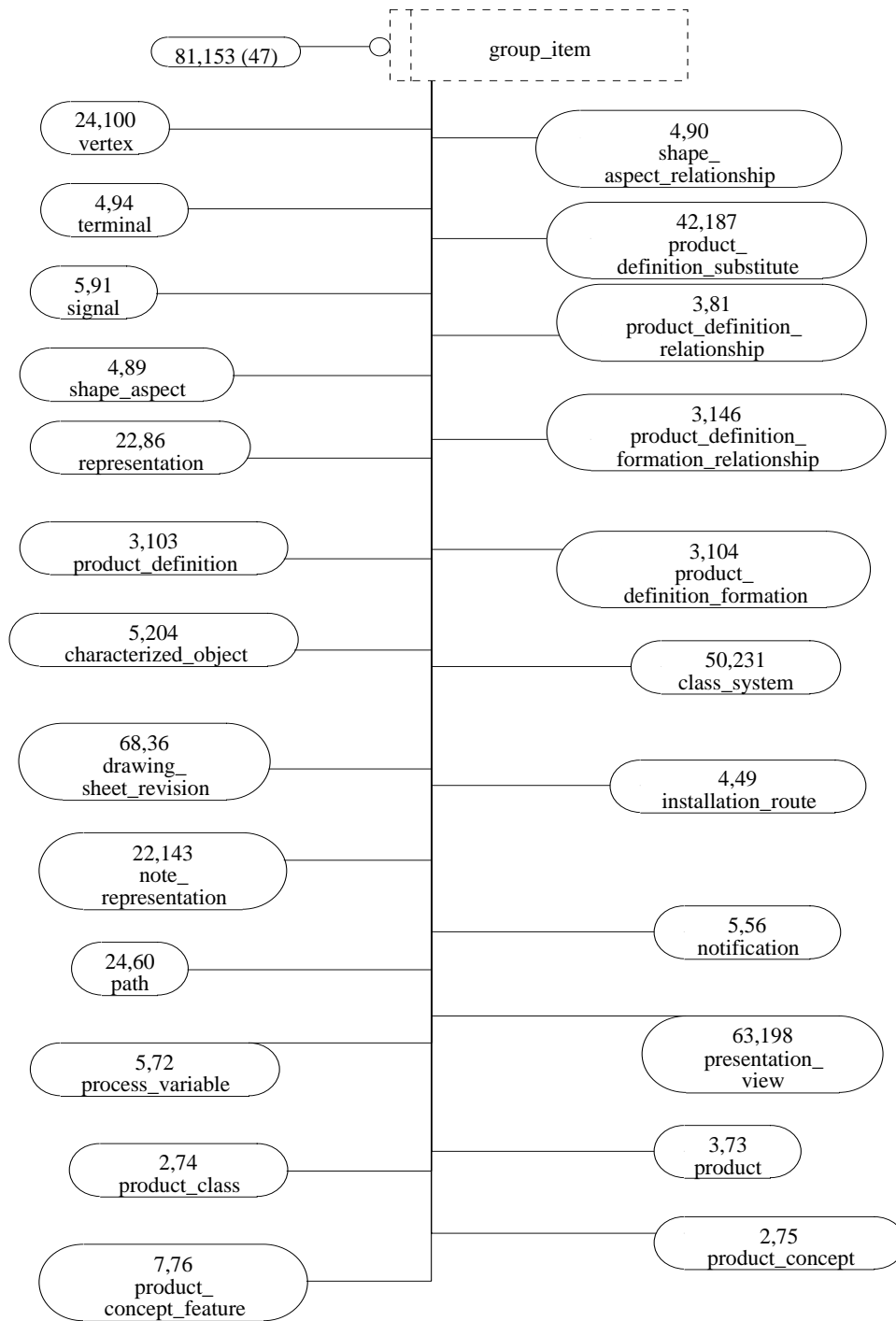


Figure H.81 - AIM diagram in EXPRESS-G: 81 of 96

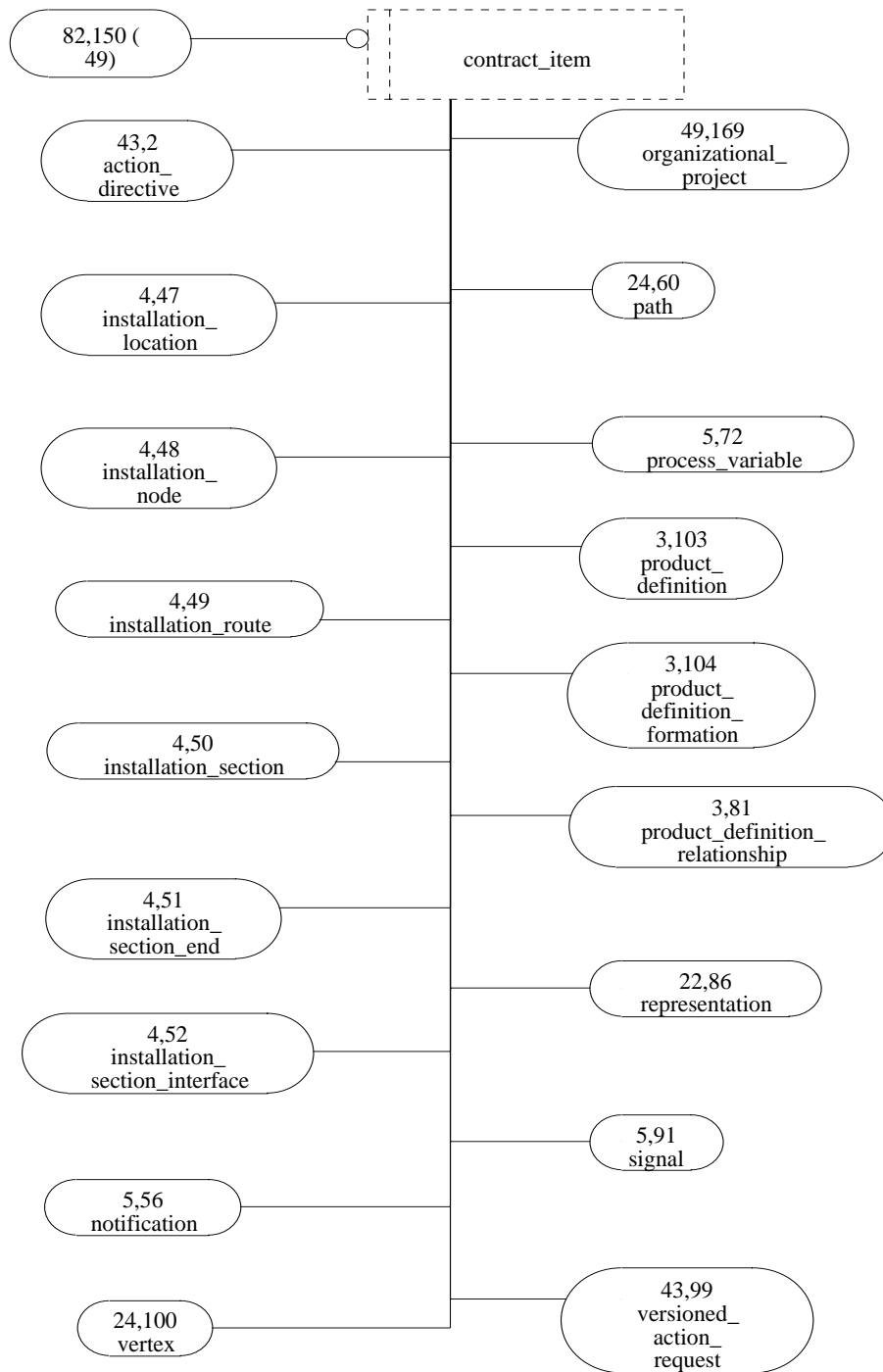


Figure H.82 - AIM diagram in EXPRESS-G: 82 of 96

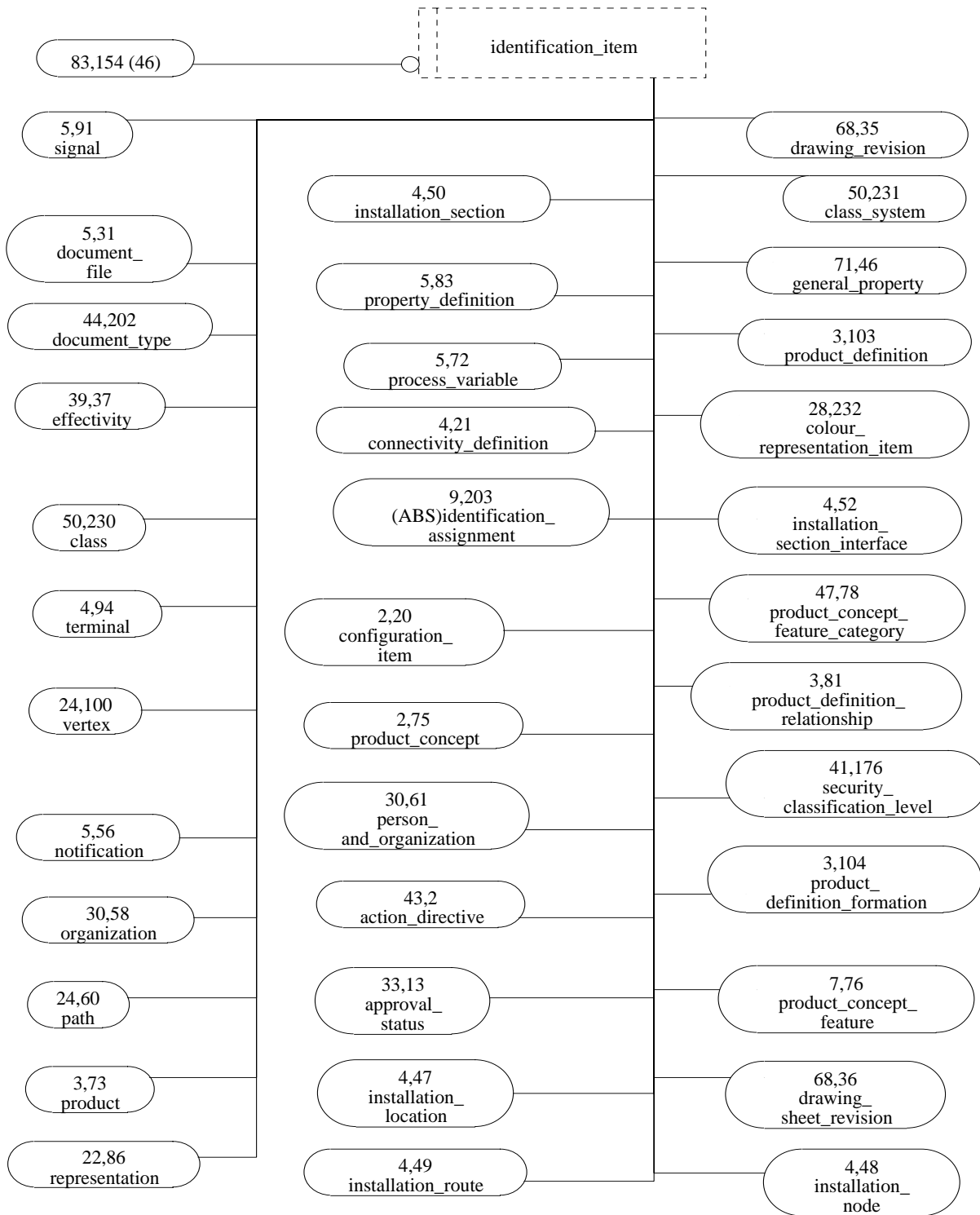


Figure H.83 - AIM diagram in EXPRESS-G: 83 of 96

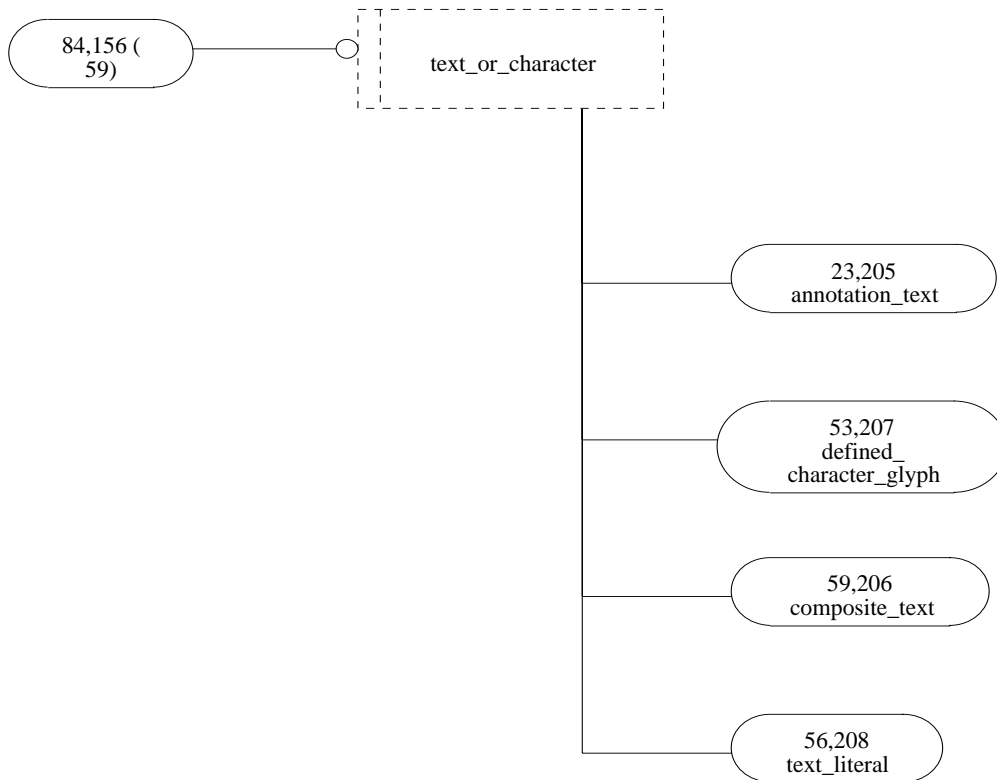


Figure H.84 - AIM diagram in EXPRESS-G: 84 of 96

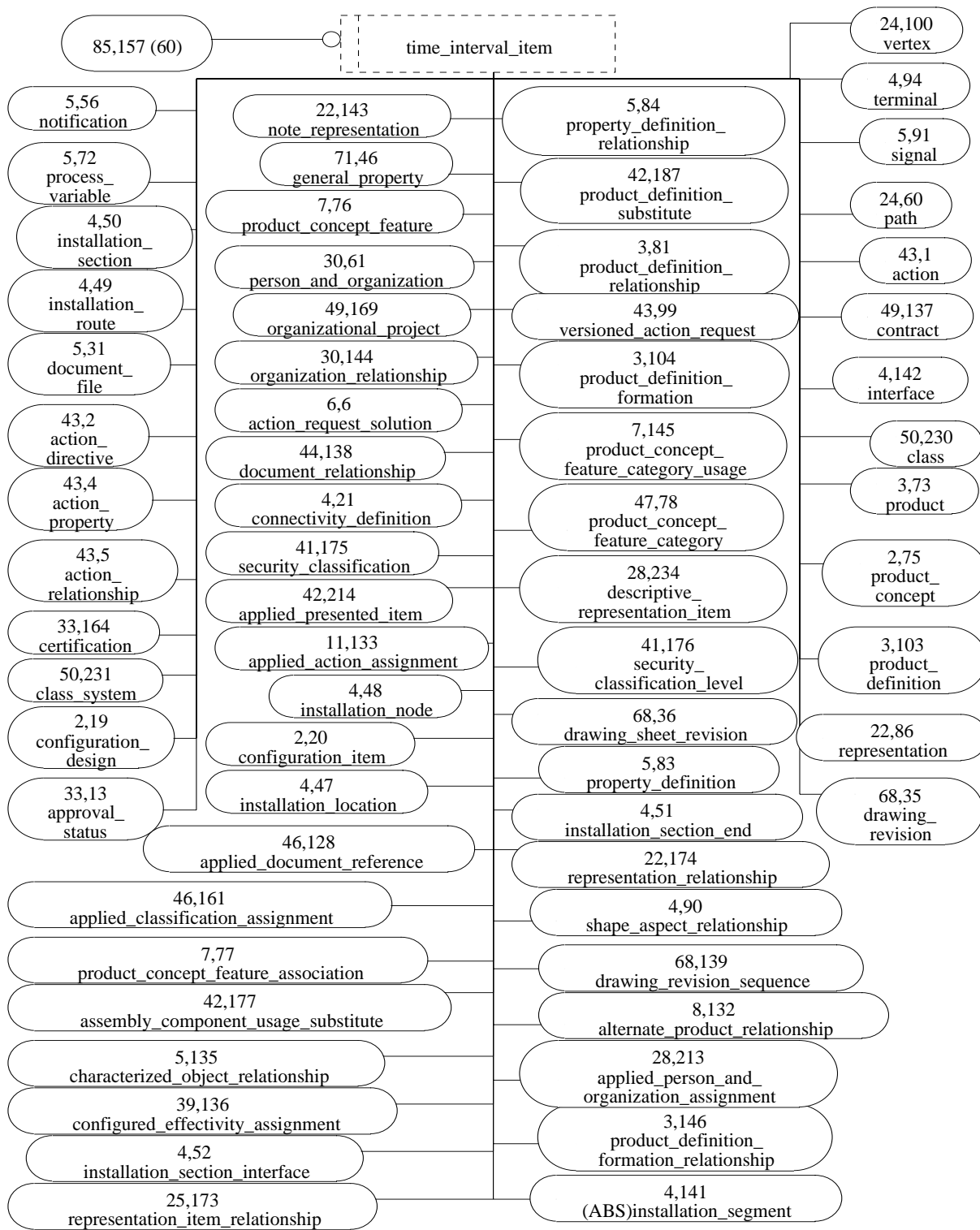


Figure H.85 - AIM diagram in EXPRESS-G: 85 of 96

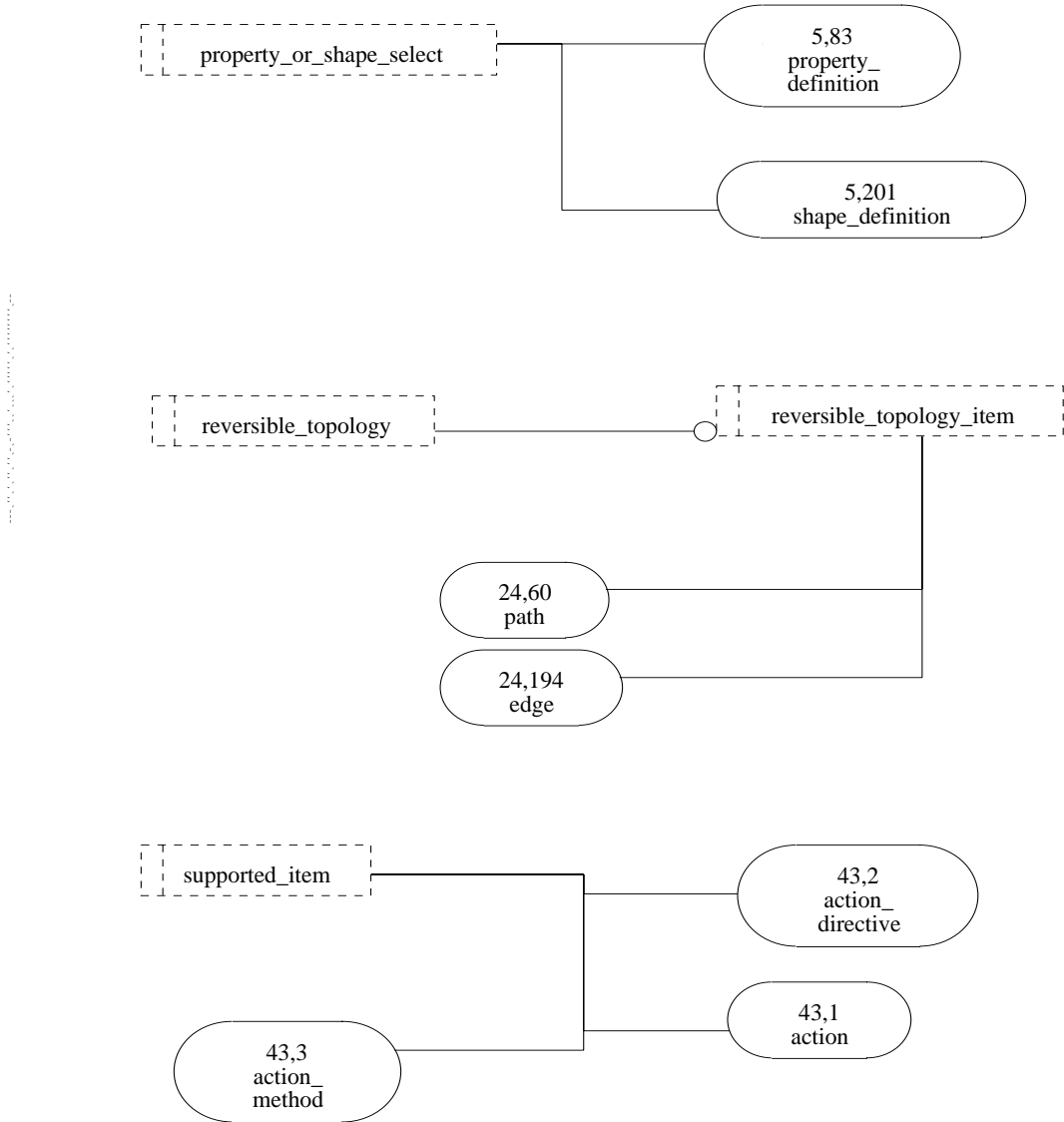


Figure H.86 - AIM diagram in EXPRESS-G: 86 of 96

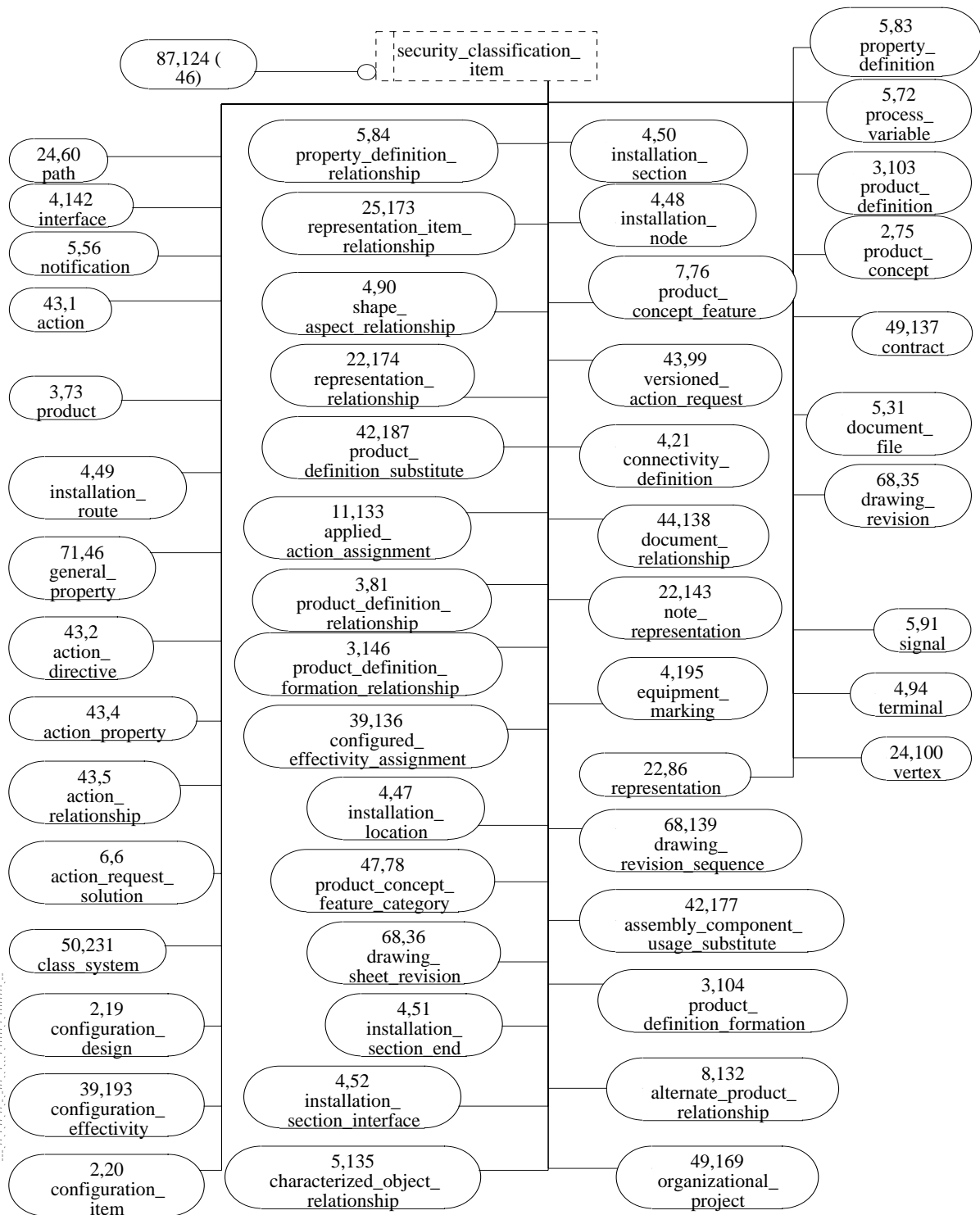


Figure H.87 - AIM diagram in EXPRESS-G: 87 of 96

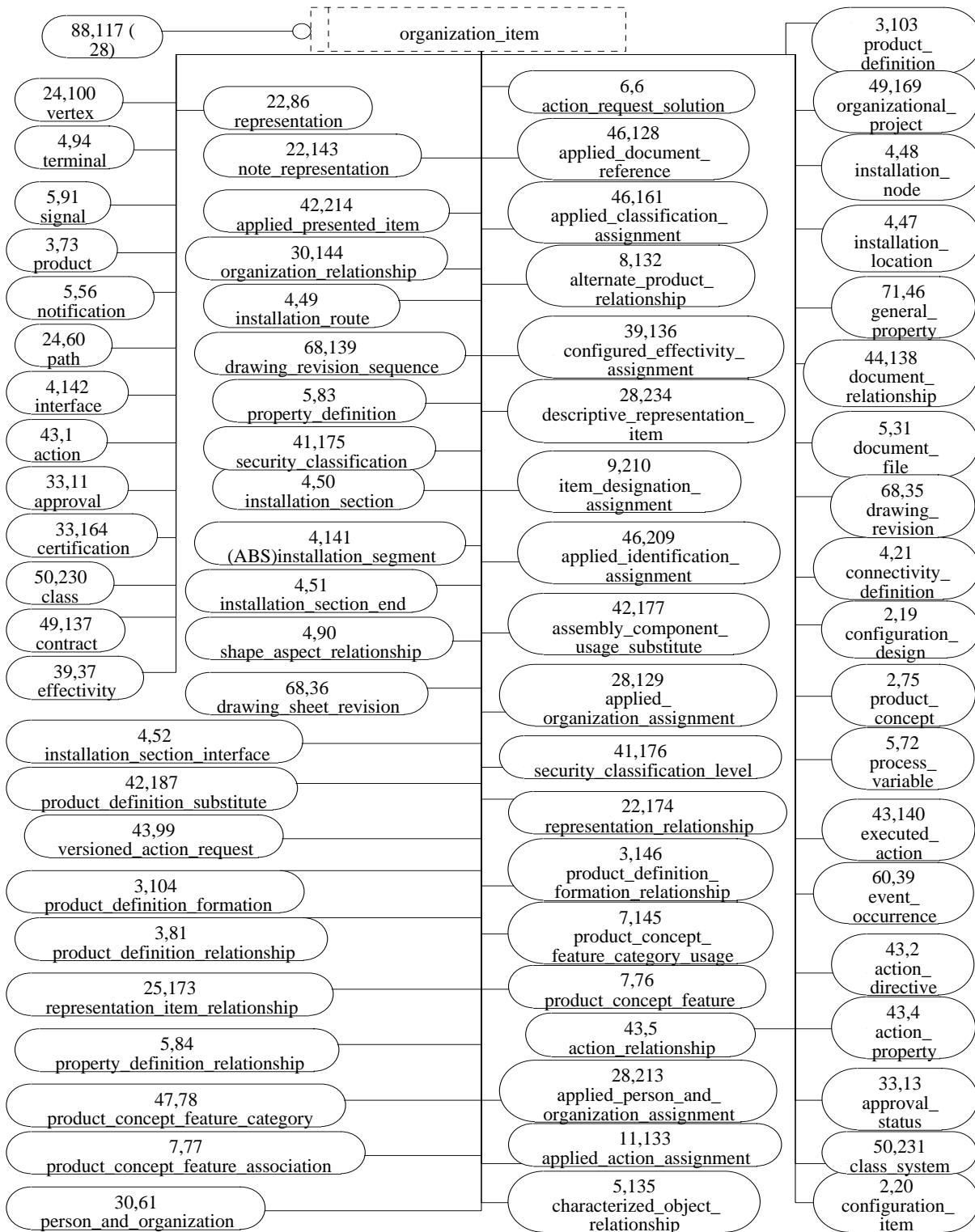


Figure H.88 - AIM diagram in EXPRESS-G: 88 of 96

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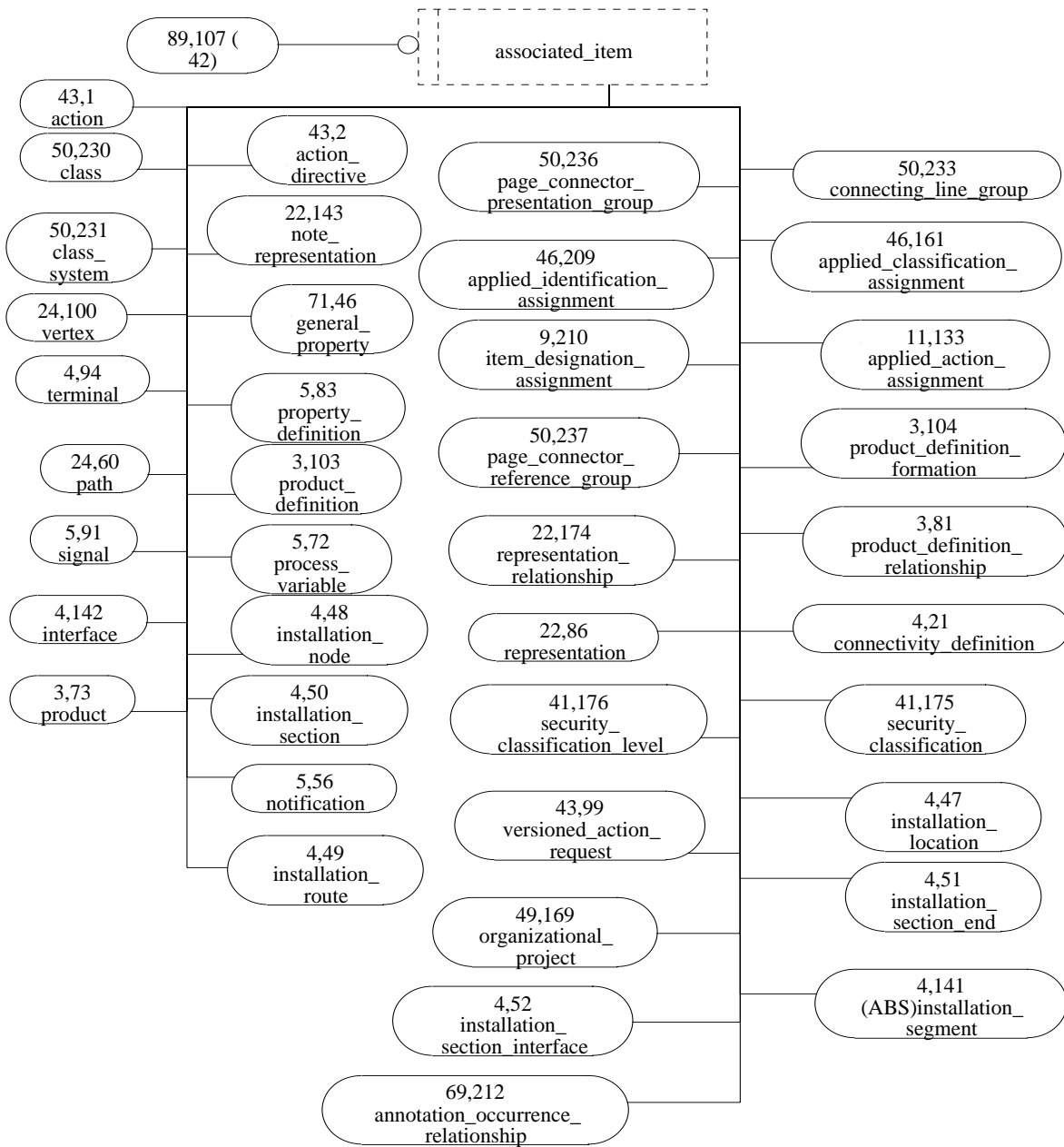


Figure H.89 - AIM diagram in EXPRESS-G: 89 of 96

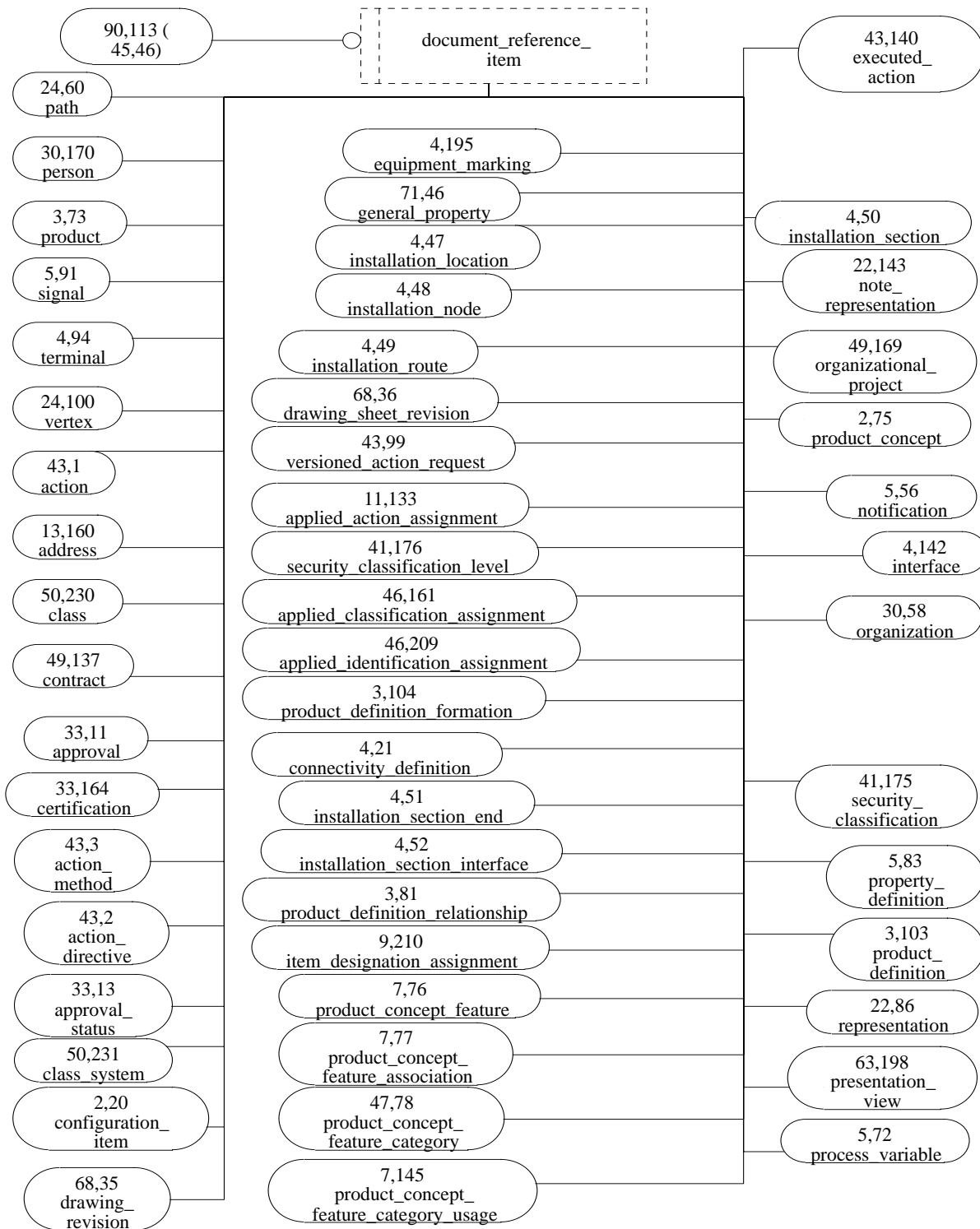


Figure H.90 - AIM diagram in EXPRESS-G: 90 of 96

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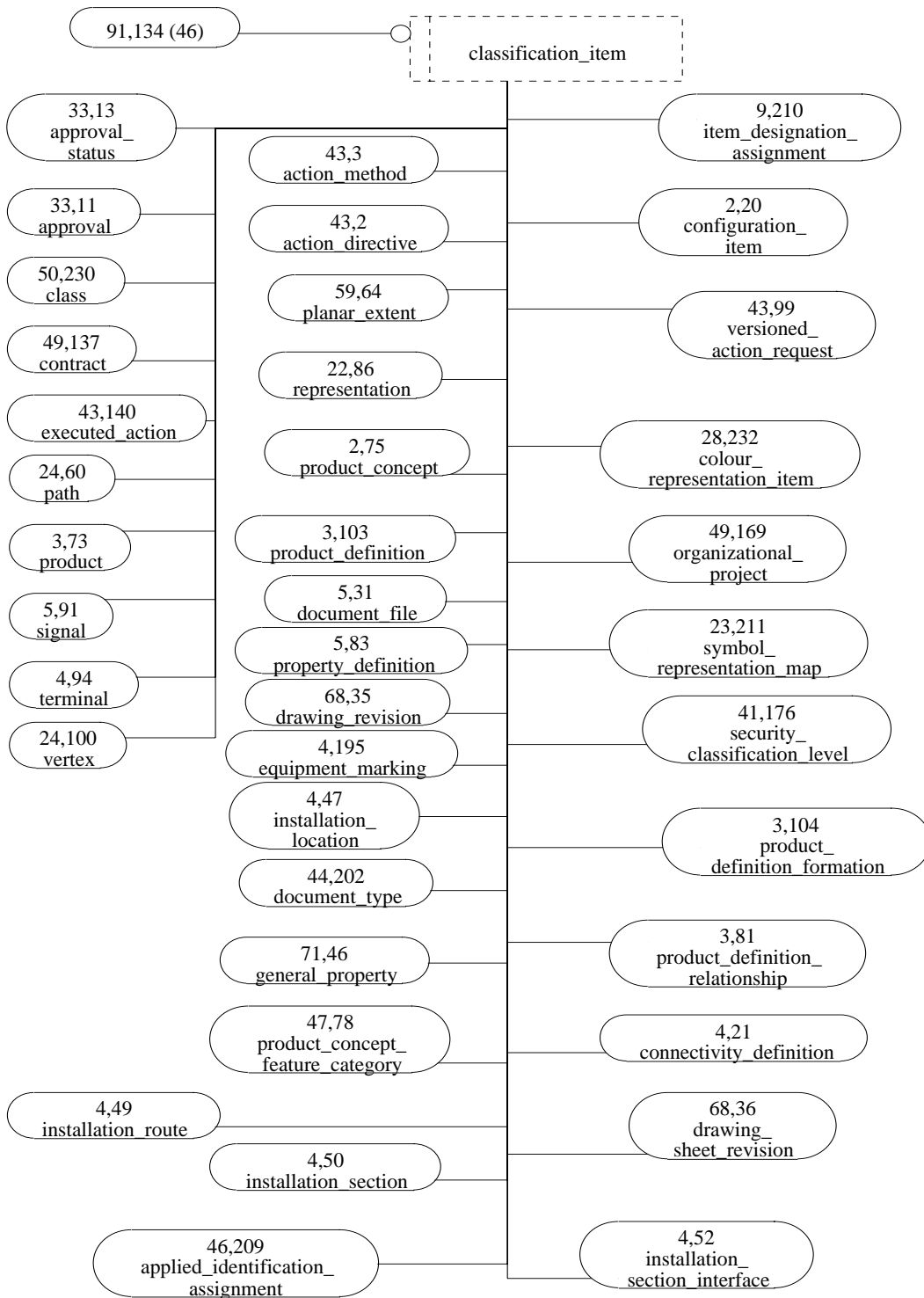


Figure H.91 - AIM diagram in EXPRESS-G: 91 of 96

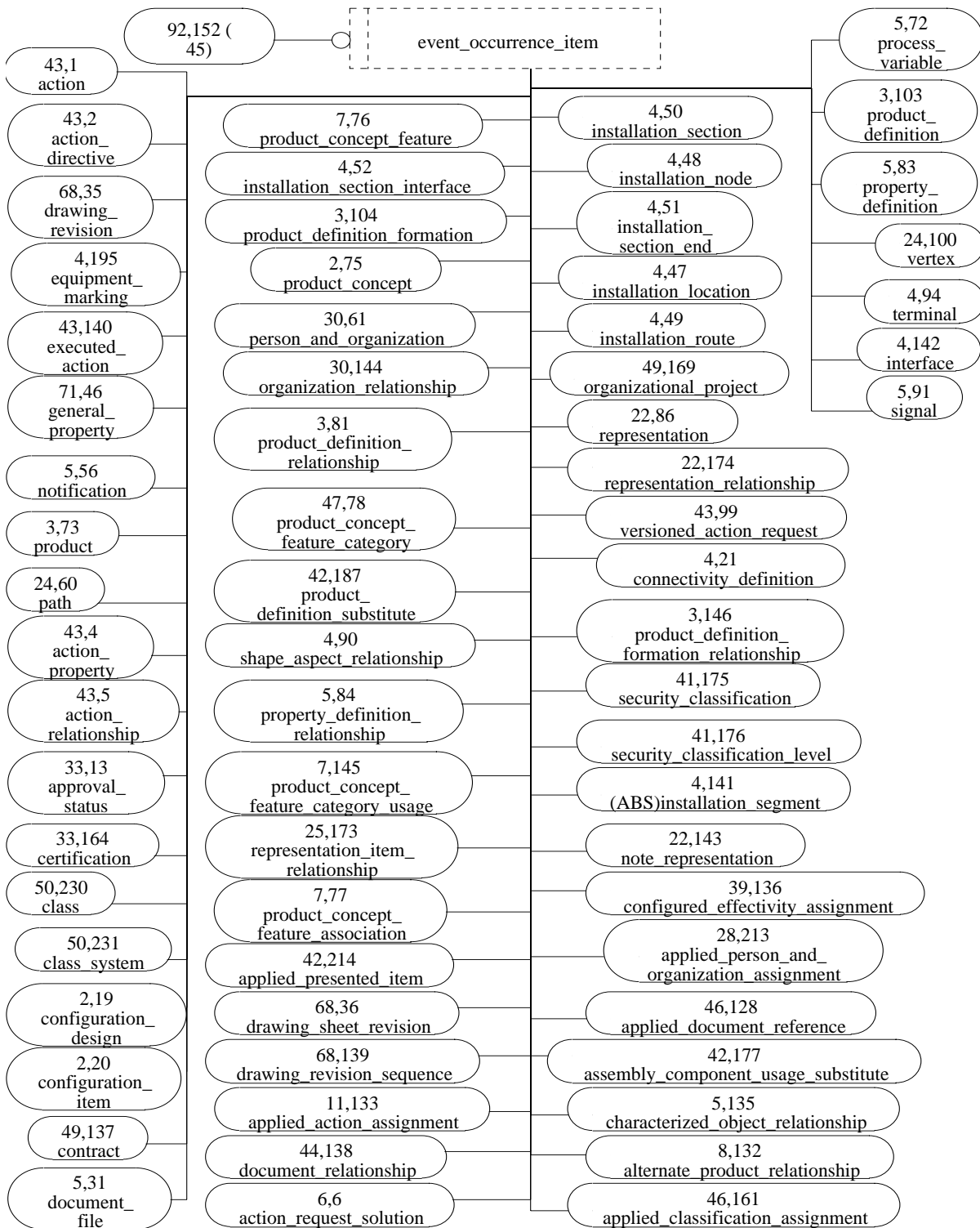


Figure H.92 - AIM diagram in EXPRESS-G: 92 of 96

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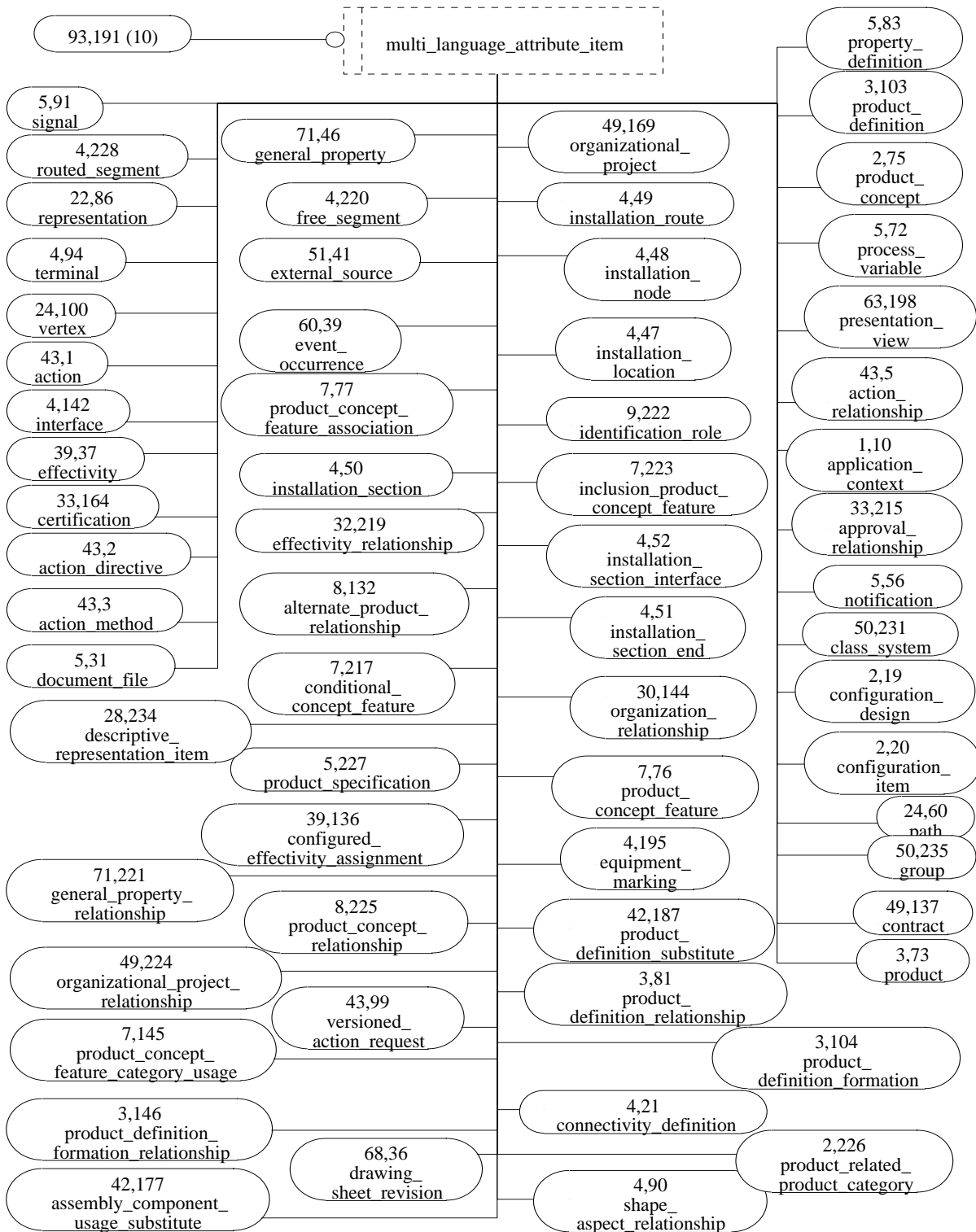


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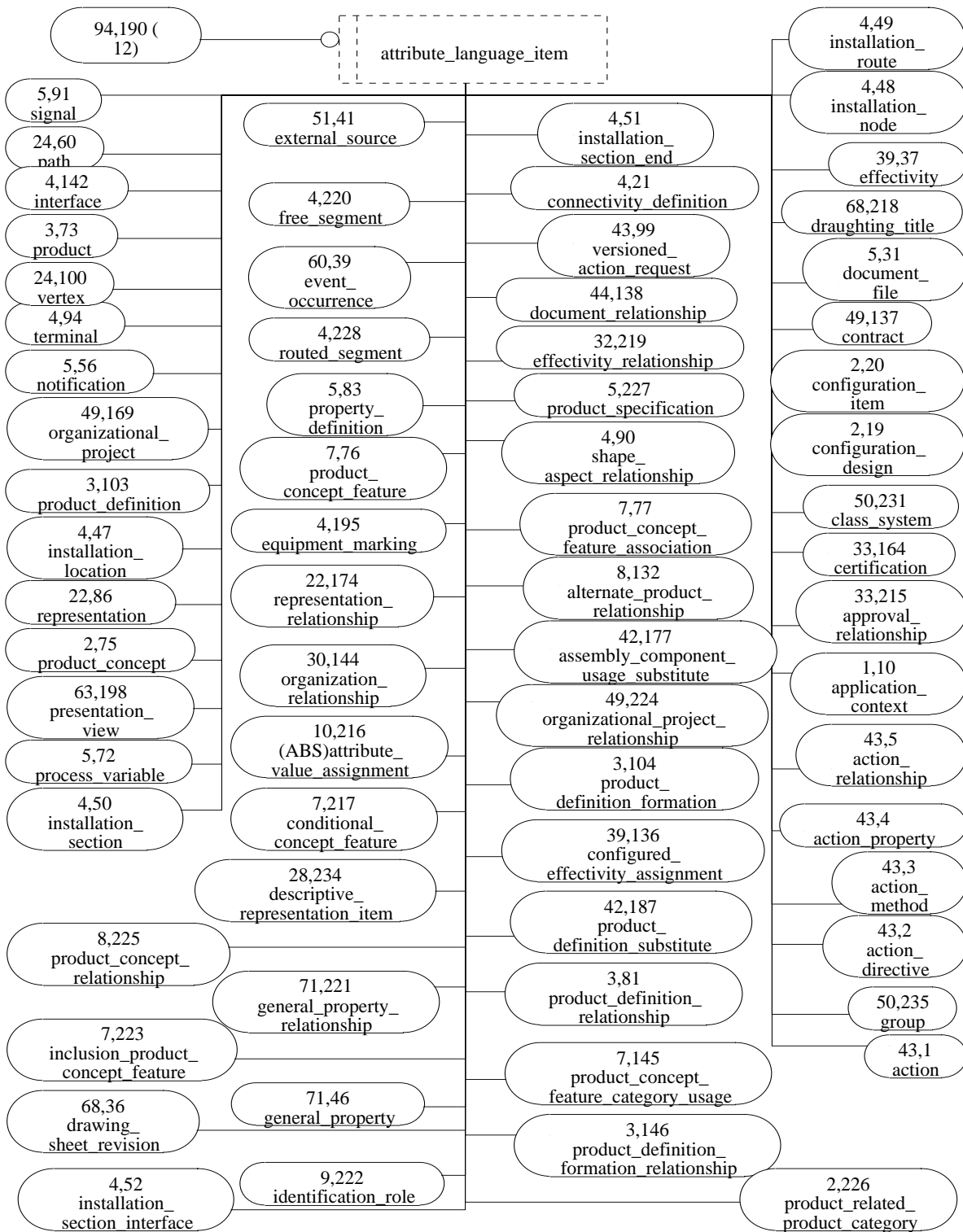


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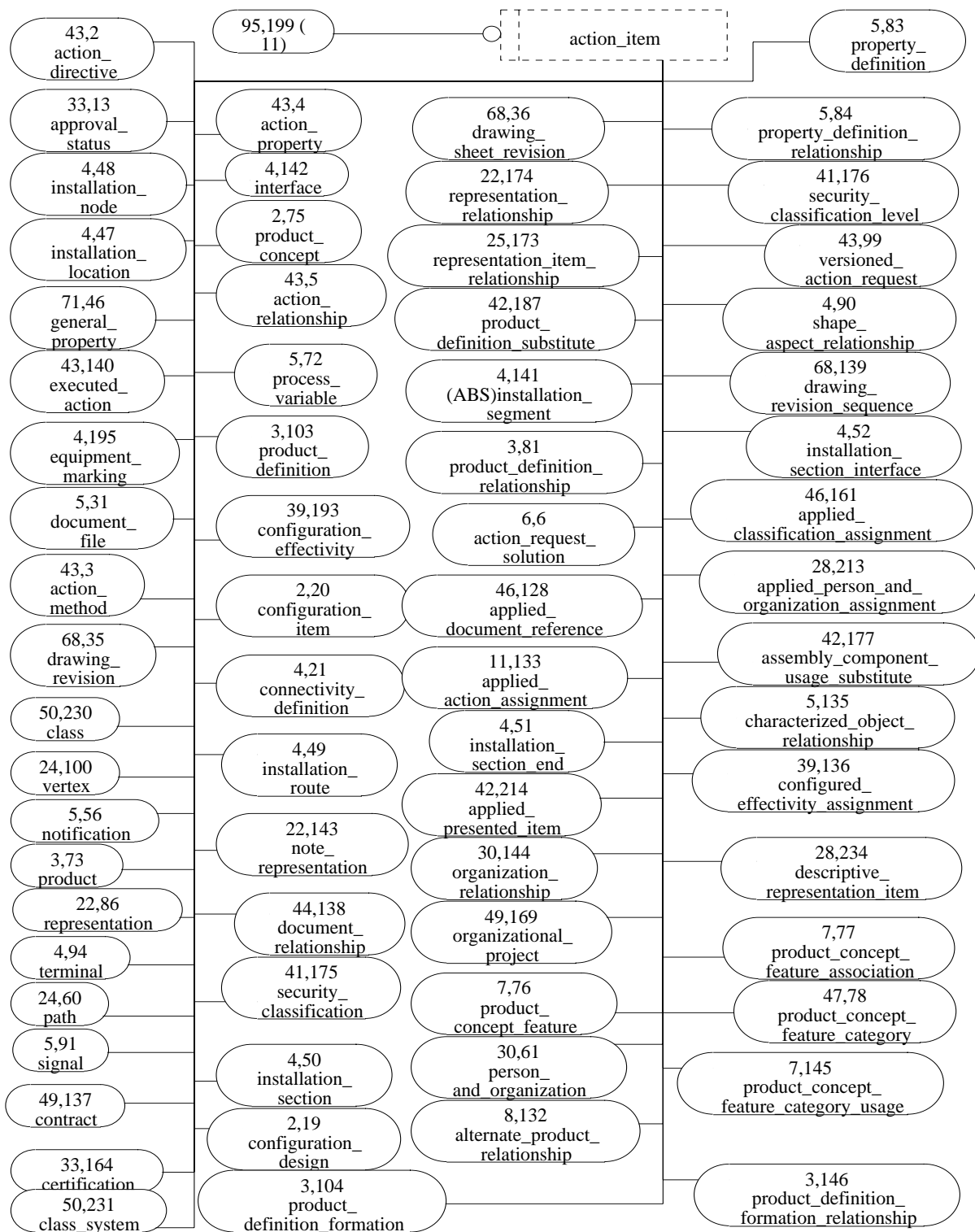


Figure H.95 - AIM diagram in EXPRESS-G: 95 of 96

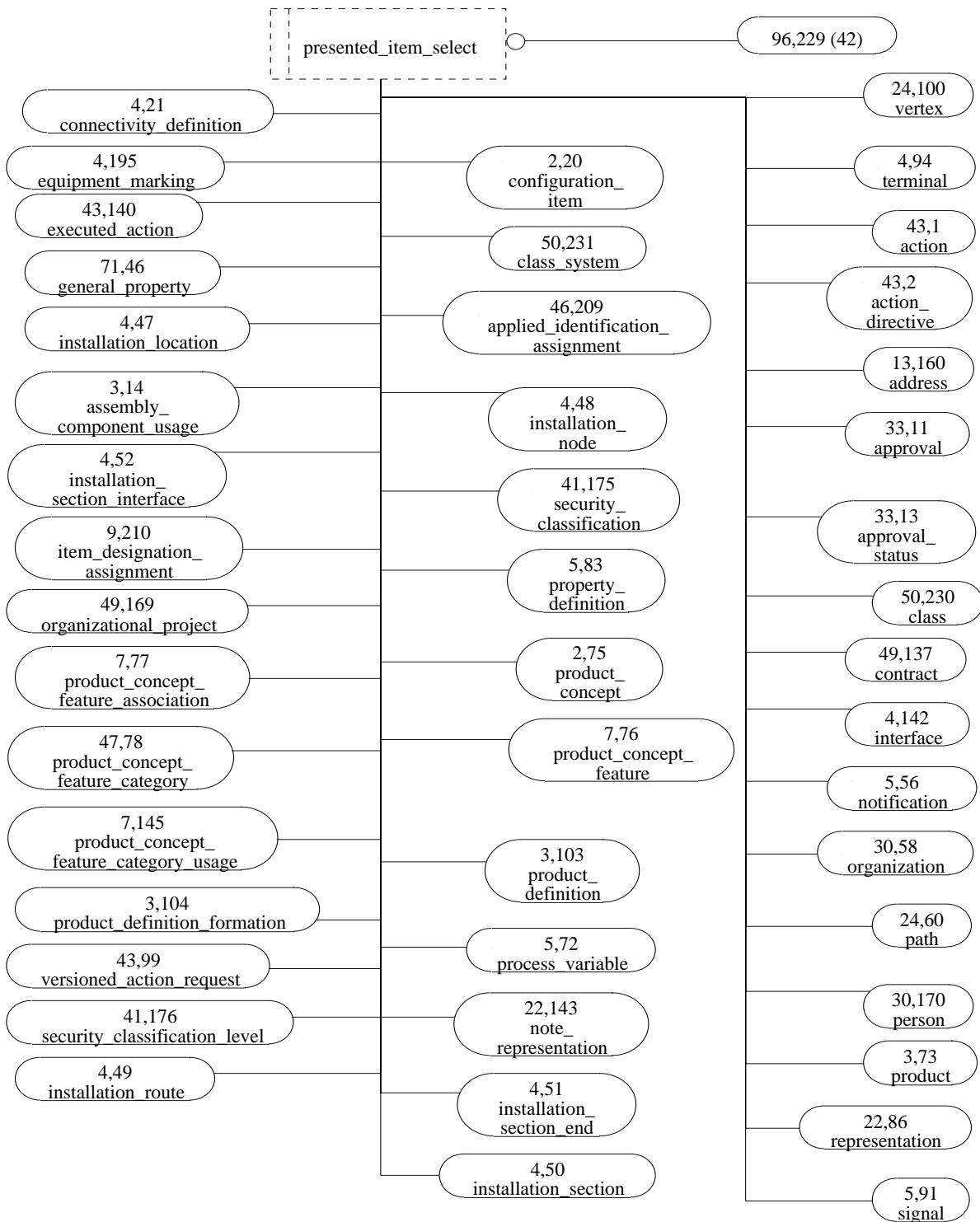


Figure H.96 - AIM diagram in EXPRESS-G: 96 of 96

Annex J

(informative)

Computer interpretable listings

This annex references a listing of the complete EXPRESS schema specified in annex A of this part of ISO 10303 without comments or other explanatory text. It also references a listing of the EXPRESS entity names and corresponding short names as specified in annex B of this part of ISO 10303. These listings are available in computer-interpretable form and can be found at the following URLs:

EXPRESS: <http://www.mel.nist.gov/step/parts/part212/is/>

Short names: <http://www.mel.nist.gov/div826/subject/apde/snr/>

If there is difficulty accessing these sites contact ISO Central Secretariat or contact the ISO TC 184/SC4 Secretariat directly at: sc4sec@cme.nist.gov.

NOTE The information provided in computer-interpretable form at the above URLs is informative. The information that is contained in the body of this part of ISO 10303 is normative.

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