BS EN 61360-6:2017

BSI Standards Publication

Standard data element types with associated classification scheme for electric components

Part 6: IEC Common Data Dictionary (IEC CDD) quality guidelines

bsi.

National foreword

This British Standard is the UK implementation of EN 61360-6:2017. It is identical to IEC 61360-6:2016.

The UK participation in its preparation was entrusted to Technical Committee GEL/3, Documentation and graphical symbols.

A list of organizations represented on this committee can be obtained on request to its secretary.

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English Version

Standard data element types with associated classification scheme for electric components - Part 6: IEC Common Data Dictionary (IEC CDD) quality guidelines (IEC 61360-6:2016)

Types normalisés d'élements de données avec plan de classification pour composants électriques - Partie 6: Dictionnaire de données communes de l'IEC (IEC CDD) - Lignes directrices pour la qualité (IEC 61360-6:2016)

Genormte Datenelementtypen mit Klassifikationsschema für elektrische Betriebsmittel - Teil 6: Gemeinsames IEC-Datenbeschreibungsverzeichnis (IEC CDD): Qualitätsleitfaden (IEC 61360-6:2016)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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European foreword

The text of document 3D/279/FDIS, future edition 1 of IEC 61360-6, prepared by SC 3D "Product properties and classes and their identification", of IEC/TC 3 " Information structures and elements, identification and marking principles, documentation and graphical symbols" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61360-6:2017.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2017-08-08
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2019-11-08

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The text of the International Standard IEC 61360-6:2016 was approved by CENELEC as a European Standard without any modification.

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

Publication	Year	Title	EN/HD	Year
IEC 61360-1	-	Standard data elements types with associated classification scheme for electric items - Part 1: Definitions - Principles and methods	EN 61360-1	-
IEC 61360-2	2012	Standard data element types with associated classification scheme for electric components - Part 2: EXPRESS dictionary schema	EN 61360-2	2013
IEC 62656-1	-	Standardized product ontology register and transfer by spreadsheets - Part 1: Logical structure for data parcels	EN 62656-1	-
IEC/TS 62656-2	2013	Standardized product ontology register and transfer by spreadsheets - Part 2: Application guide for use with the IEC common data dictionary (CDD)	-	-
ISO 704	2009	Terminology work - Principles and methods	-	-

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

STANDARD DATA ELEMENT TYPES WITH ASSOCIATED CLASSIFICATION SCHEME FOR ELECTRIC COMPONENTS –

Part 6: IEC Common Data Dictionary (IEC CDD) quality guidelines

FOREWORD

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International Standard IEC 61360-6 has been prepared by subcommittee 3D: Product properties and classes and their identification, of IEC technical committee 3: Information structures and elements, identification and marking principles, documentation and graphical symbols.

The text of this standard is based on the following documents:

FDIS	Report on voting
3D/279/FDIS	3D/283/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61360 series, published under the general title *Standard data element types with associated classification scheme for electric components*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

The use of product data is an essential part of electronic business. Product selection, business transactions, maintenance procedures, etc., rely on the availability of data about products and services. To ensure a common understanding and a general treatment of product data, classification and dictionary systems are used to define their essential technical parameters or to categorize products.

The standards of the series IEC 61360 specify rules for structure and content of collections of product properties and its classification structures. In most cases the classes and properties contained in such collections are intuitively understandable. But, unfortunately, creating the information objects and their textual content, such as definitions, has proved to be a demanding task with potential pitfalls and problems. For avoiding such difficulties explanatory material and sections of other standards are collected in this part of IEC 61360 providing the necessary knowledge for successfully creating classes and properties. Thus, IEC 61360-6 provides guidance for specifying the information content of IEC 61360 classes and properties.

This part of IEC 61360 is intended for domain specialists who are technical experts in their specific technical domain. The domain specialists do not necessarily have an in-depth knowledge of IEC 61360-1 or IEC 61360-2.

STANDARD DATA ELEMENT TYPES WITH ASSOCIATED CLASSIFICATION SCHEME FOR ELECTRIC COMPONENTS –

Part 6: IEC Common Data Dictionary (IEC CDD) quality guidelines

1 Scope

This part of IEC 61360 provides guidance for the definition of concepts that are used to describe classes and properties submitted for update of the content of IEC Common Data Dictionary (IEC CDD). This includes

– a basic understanding of key concepts and procedures used within IEC CDD;
– a binding reference for quality control of IEC 61360 compliant dictionary content;
– guidance on documents where necessary in-depth knowledge can be acquired (see Clause 2 and Annex D).

This part of IEC 61360 includes the following subjects:

– basic overview about fundamental concepts of IEC 61360;
– formulating definitions and other textual elements;
– overview of IEC maintenance procedure for IEC CDD;
– checklist for providing input to the IEC CDD content.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61360-1, *Standard data element types with associated classification scheme for electric components – Part 1: Definitions – Principles and methods*

IEC 61360-2:2012, *Standard data element types with associated classification scheme for electric components – Part 2: EXPRESS dictionary schema*

IEC 62656-1, *Standardized product ontology register and transfer by spreadsheets – Part 1: Logical structure for data parcels*

IEC TS 62656-2:2013, *Standardized product ontology register and transfer by spreadsheets – Part 2: Application guide for use with the IEC common data dictionary (CDD)*

ISO 704:2009, *Terminology work – Principles and methods*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
attribute
data element for the computer-sensible description of a property, a relation or a class

EXAMPLE Creation date of a product characterization class object in a computer system.

[SOURCE: ISO/IEC Guide 77-2:2008, 2.2, modified – The note has been deleted and the example replaced.]

3.1.2
characteristic
distinguishing feature

Note 1 to entry: A characteristic can be inherent or assigned.

Note 2 to entry: A characteristic can be qualitative or quantitative.

[SOURCE: ISO 22274:2013, 3.3, modified – The notes 3 and 4 and the example have been deleted.]

3.1.3
class
abstraction of a set of similar products

EXAMPLE The set of products used by a particular enterprise and the set of all ISO-standardized products are two examples of contexts. In these two contexts (the particular enterprise and ISO), the set of products that are considered as members of the *single ball bearing* class can be different, in particular because employees of each enterprise ignore a number of existing single ball bearing products.

Note 1 to entry: A product that complies with the abstraction defined by a class is called a class member.

Note 2 to entry: A class is an intentional concept that can take different extensional meanings in different contexts.

Note 3 to entry: Classes are structured by class inclusion relationships.

Note 4 to entry: A class of products is a general concept as defined in ISO 1087-1. Thus, it is advisable that the rules defined in ISO 704 be used for defining the designation and definition attributes of classes of products.

Note 5 to entry: In the context of the ISO 13584 series, a class is either a characterization class, associated with properties and usable for characterizing products, or a categorization class, not associated with properties and not usable for characterizing products.

[SOURCE: IEC 61360-2:2012, 3.6]

3.1.4
concept
unit of knowledge created by a unique combination of characteristics

[SOURCE: ISO 22274:2013, 3.7]

3.1.5
definition
representation of a concept by a descriptive statement which serves to differentiate it from other concepts

3.1.6
designation
representation of a concept by a sign which denotes it

3.1.7
extension
totality of objects to which a concept corresponds

[SOURCE: ISO 1087-1:2000, 3.2.8]

3.1.8
intension
set of characteristics which makes up the concept

[SOURCE: ISO 1087-1:2000, 3.2.9]

3.1.9
object
anything perceivable or conceivable

Note 1 to entry: Objects may be material (e.g., an engine, a sheet of paper, a diamond), immaterial (e.g., conversion ratio, a project plan) or imagined (e.g., a unicorn).

[SOURCE: ISO 1087-1:2000, 3.1.1]

3.1.10
property
defined characteristic suitable for the description and differentiation of the objects in a product characterization class

EXAMPLE Ambient temperature can be a property of a product characterization class comprising geographical locations.

[SOURCE: ISO 22274:2013, 3.25]

3.2 Abbreviated terms

IEC CDD IEC Common Data Dictionary

4 Data structure fundamentals

4.1 General

For the convenience of the reader, Clause 4 describes key concepts used in the IEC 61360 series and in related standards in a generic form for creating a basic understanding of the information objects that make up IEC 61360 compliant dictionaries. For the detailed, normative information, please refer to Part 1 and Part 2 of IEC 61360. Additional information can be found in [7][1] and [8].

An IEC 61360 compliant dictionary provides an ordered collection of concepts and characteristics that can be used for describing products or services in data sheets, engineering tools, or electronic business applications, etc. These items may be any material or non-material products, services, functions, locations, documentations, etc. All concepts and characteristics shall be valid within a well defined domain and shall always have a definition.

For this the understanding of the following fundamental concepts is essential:

---

1 Numbers in square brackets refer to the Bibliography.

– class;
– property;
– attribute.

4.2 Class

A class is an abstraction of a set of products.

NOTE 1 IEC 61360-2 differentiates between various kinds of classes. For the purpose of this part "class" is understood as "categorization class" (see 3.1.3, NOTE 5).

These products all serve the same purpose or fulfil the same function and share a number of common peculiarities.

Thus, classes serve multiple purposes

– establishing a classification system that allows easy sorting of an item into this system of concepts and thus specifying the nature of the item in question;

  EXAMPLE The taxonomy of species, introduced by Carl von Linné at 1735, is an early representative of a classification system. His groupings for animals remain to this day even though the groupings themselves have been significantly changed since their conception.

– providing scoping information for the assigned characteristics and thus providing information about their intended domains of uses;
– grouping of characteristics into easily manageable sets.

A class may be seen as a placeholder for all products of the same kind, such as the class of amplifiers. A product is any material or non-material object being defined for some purpose. Material products include concepts such as articles, goods, material commodities, etc., whereas non-material products include concepts such as services or consulting activities.

The creation of a consistent classification system that properly reflects a business domain can be quite difficult. Such classification systems should be consistent, comprehensive, and concise.

NOTE 2 An object that complies with the abstraction defined by a class is called a class member.

EXAMPLE Figure 1 shows a classification tree for amplifiers.

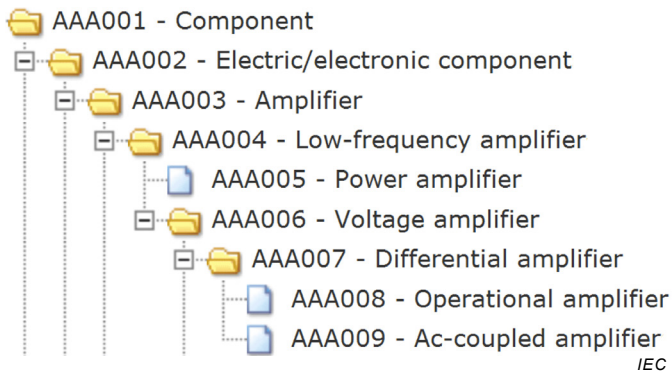

Figure 1 – Characterization tree for amplifiers

The class "Differential amplifiers" groups all characteristics that are specific for amplifiers whose output signal is proportional to the algebraic difference between the voltages applied to their two inputs. Such a class can be split further down into subclasses like operational amplifiers and ac-coupled amplifiers as shown in Figure 1.

4.3 Property

Properties specify the characteristics of the members of classes. Each property specifies one characteristic and the set of associated properties fully specifies all characteristics of the members of that class. All members of a class share the same set of properties.

In many cases properties have a unit of measure, and in some cases they have an assigned value list or are constrained by conditions.

NOTE Properties express characteristics such as length, diameter, or rated voltage.

Additionally, each property shall be defined in a class. This class specifies the domain of application of the property and the property shall be meaningful for the domain specified by this class and its subclasses.

EXAMPLE Figure 2 shows properties assigned to a class.

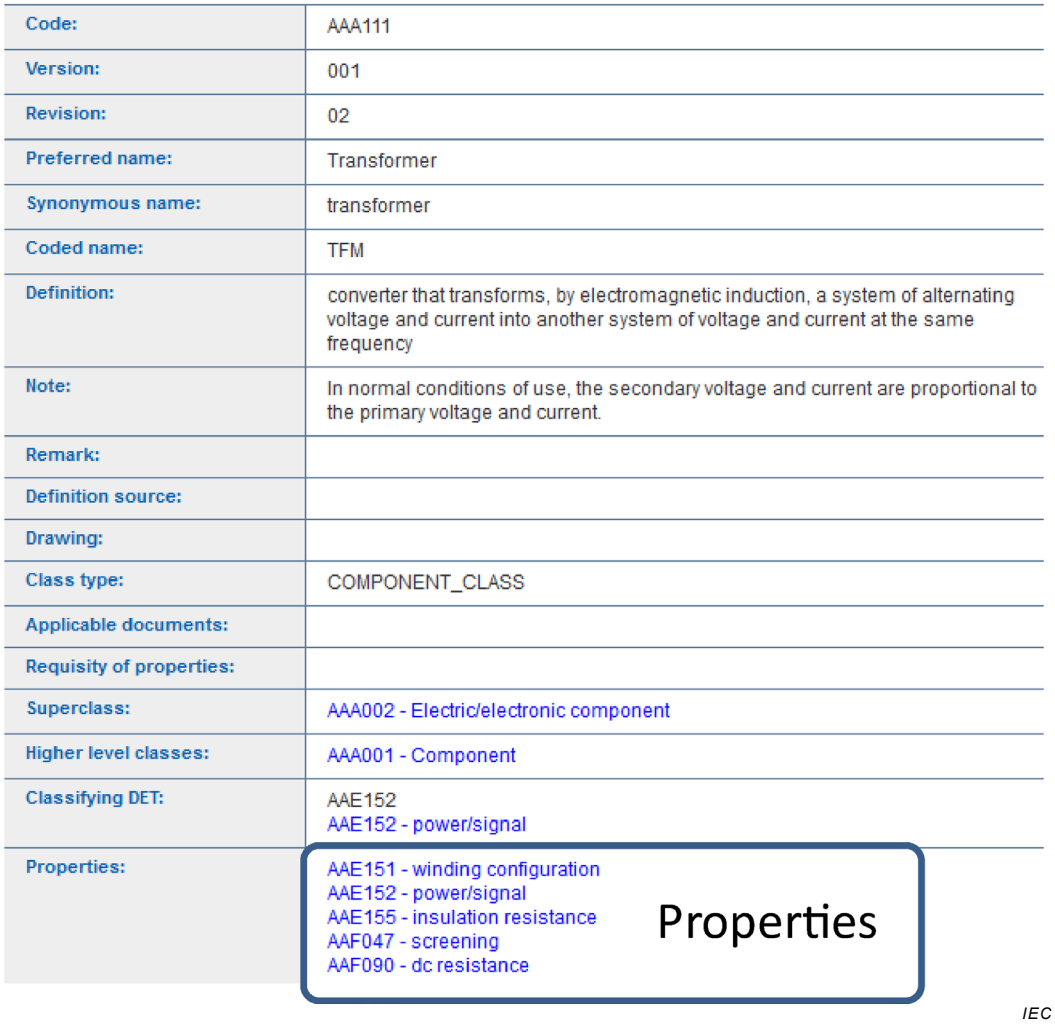

Figure 2 – Properties of a class

4.4 Attribute

In the context of IEC 61360-1 compliant dictionaries an attribute specifies a single detail of the dictionary item it belongs to.

EXAMPLE 1 Name of a property, identifier of a class, or version number are examples of attributes. Figure 3 shows typical attributes of a class record.

NOTE All information elements such as classes or properties receive their information content from their attributes.

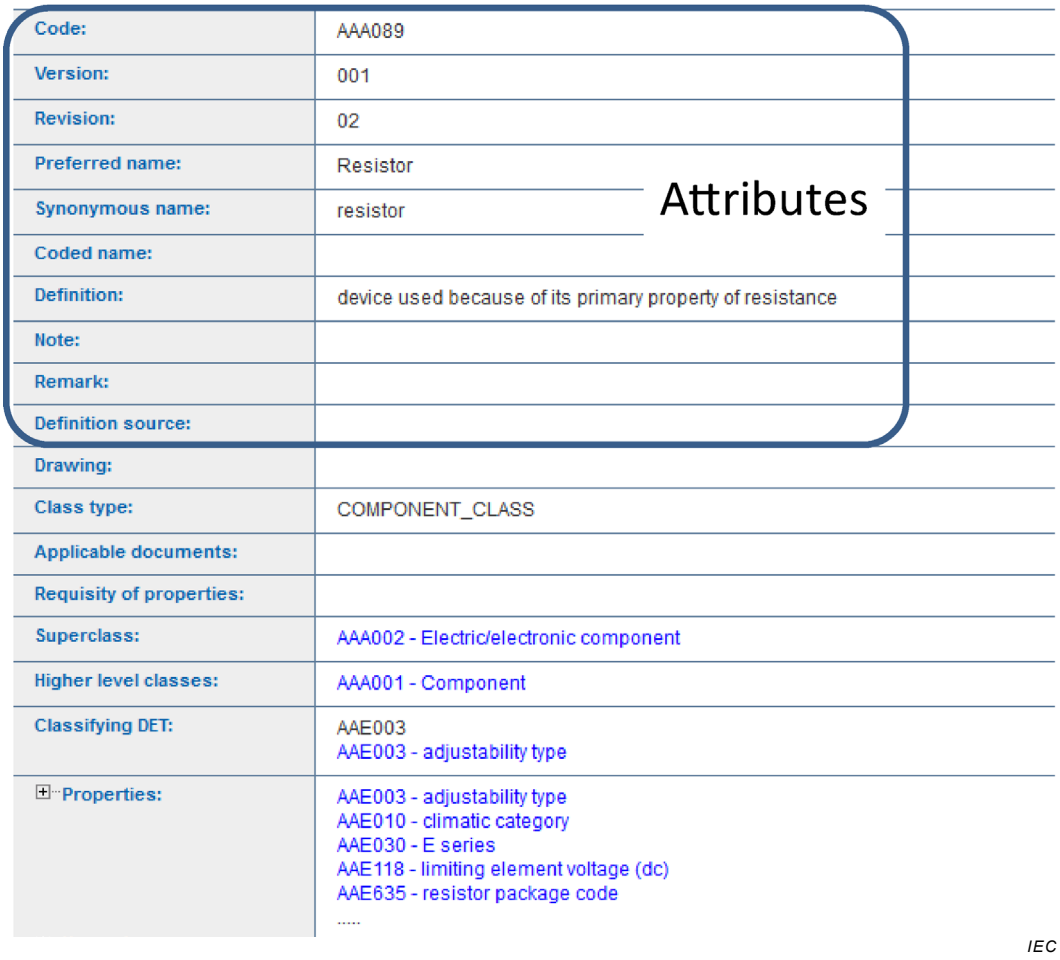

Figure 3 – Attributes of a class

EXAMPLE 2 Figure 4 shows typical attributes of a property record.

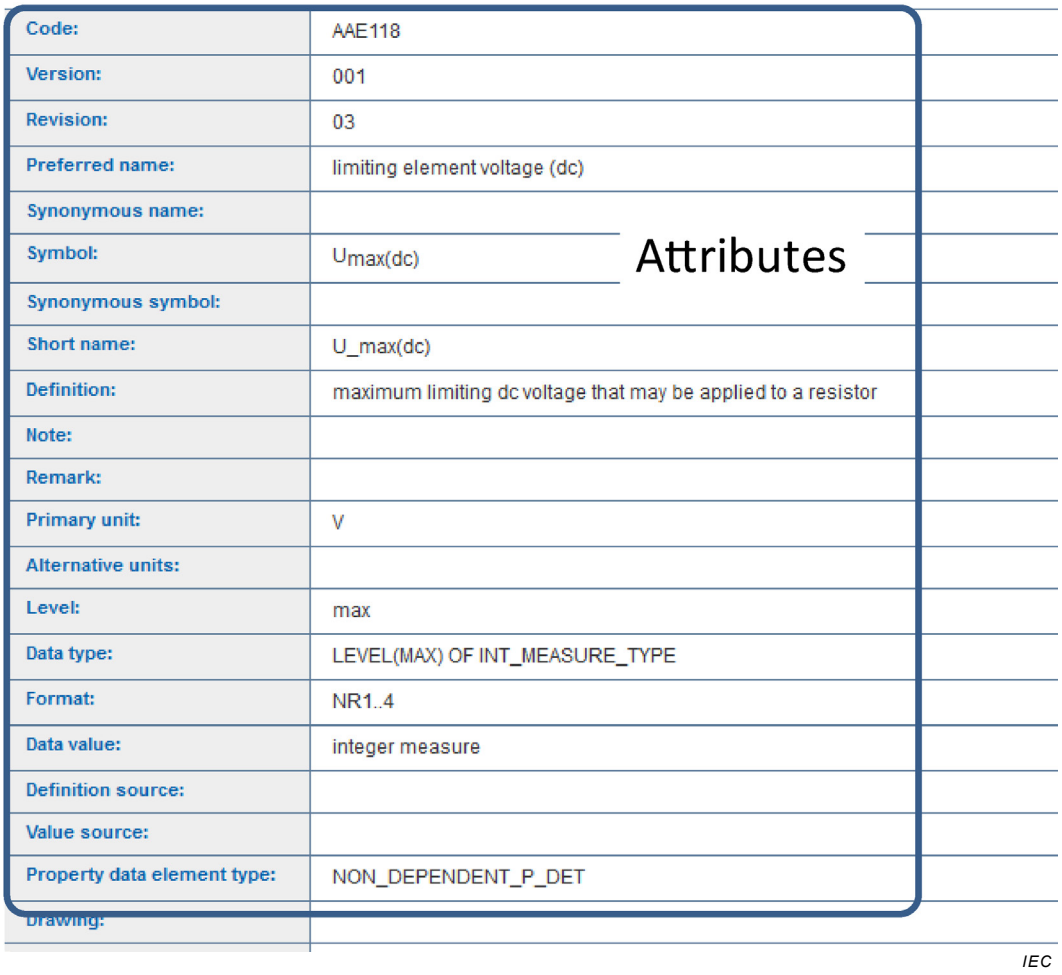

Figure 4 – Attributes of a property

4.5 Key attributes of IEC CDD entries

4.5.1 Overview

Key elements of IEC CDD entries are the attributes that assign meaning to properties and classes. The most important attributes are:

– definition;
– note;
– remark.

Textual information kept in the attributes of the objects such as preferred name, definition, or note, are the backbone of the information content of the dictionary. Thus, great care shall be applied to create syntactically and semantically error-free texts.

The quality of an IEC CDD entry mainly depends on the information given within these attributes. Thus, it is important to draft their content carefully.

4.5.2 Definition

Attribute name: definition

Attribute definition:

statement that describes the meaning of a property in an unambiguous and unique manner to permit its differentiation from all other properties

EXAMPLE 1 Definition of "arcing distance":

arcing distance
value of the shortest distance in air external to the insulator between metallic parts normally having the operating voltage between them.

Comments:

Conventions and requirements:

a) Any definition shall be derived from the original definition as appearing in the latest corresponding IEC or ISO standards, if available.

b) Where possible, definitions of properties shall be independent from specific classes. Thus, reuse of the properties in other classes is supported.

c) ISO 704 should be used as a basis for the writing of the definition.

d) The unit of measure shall not be included in the definition.

e) The level information should not be included in the definition.

NOTE Level information can be specified in attribute Level type.

f) The semantic context(s) should be included in the definition, if this is essential for the understanding of its meaning.

g) If the concept requires a limitation of its applicability this shall be explicitly expressed in the definition.

EXAMPLE 2 There exist different semantics of the term "rated voltage"; within products ≥ 1 kV, the terms rated voltage express the maximum voltage for which a product is being designed and can be operated. This is currently not applicable to products less than 1kV.

h) If dependency relations are an inherent part of the concept, these shall be included in the definition.

EXAMPLE 3 Definition of the quantitative property "reverse recovery time":

reverse recovery time
value of the time required for the reverse current of a diode to recover to a specified value, when switched from a specified forward current to a specified reverse voltage, at specified conditions

i) In the case conditions are specified, the definition should end with the wording "at specified condition(s)".

j) If the concept represents a kind of average value, the method of calculating the average shall be designated, by using a term that designates the method, such as “arithmetic mean”, ”geometric mean”, “median”, or “mode”, either in the preferred name or in the definition.

Obligation: mandatory

4.5.3 Note

Attribute name: note

Attribute definition: statement which provides further information on the definition, which is essential to the understanding of that definition

Comments: EXAMPLE The property "reverse recovery time" is further clarified by a note: "The reverse recovery time is measured as the time interval between t_0, the point where the forward current crosses the zero current axis, and the instant when for decreasing values of i_R a line through the points for 0,9 I_{RM} and 0,25 I_{RM} crosses the zero current axis."

Obligation: optional

4.5.4 Remark

Attribute name: remark

Attribute definition: additional information in text for understanding the meaning of the definition

Comments: the remark shall not change the meaning of the definition

Obligation: optional

4.5.5 Overview on mandatory attributes

Table 1 lists mandatory attributes of selected information objects of IEC 61360-1 and the sources of their information content. For the description of the attributes see IEC 61360-1.

Table 1 – Mandatory attributes of selected IEC CDD objects and their sources

Name of attribute	Source of content	Remark
Identifying attributes		
Code	proposer	See IEC 61360-1 for additional information about possible values of "code". IEC maintains a list of reserved code spaces.
Preferred name	proposer	
Semantic attributes		
Definition	proposer	
Administrative attributes		
Status level	IEC CDD	
Date of current version	IEC CDD	
Date of current revision	IEC CDD	
Responsible committee	proposer	Committee responsible for maintaining the information object.
Property		
Identifying attributes		See above
Semantic attributes		See above
Administrative attributes		See above
Definition class	proposer	
Data element type class	proposer	
Data type	proposer	
Value format	proposer	

Name of attribute	Source of content	Remark
Property data element type	proposer	Allowed codes: NON_DEPENDENT_P_DET DEPENDENT_P_DET CONDITION_DET DEPENDENT_C_DET
Depends on	proposer	Only for dependent properties: Pointer to condition
Class		
Identifying attributes		See above
Semantic attributes		See above
Administrative attributes		See above
Superclass	proposer	Pointer to the next higher class in the class hierarchy
Class type	proposer	Fixed value: ITEM_CLASS
Coded name	proposer	

NOTE "Property data element type" refers to a construct specified in IEC 61360-2:2012 having the same name.

5 Writing of definitional content

5.1 Basic requirements

A definition shall define a concept as a unit with a unique intension or extension. For additional detail on terminological principles see Annex E, ISO 704:2009, or ISO/IEC Directives, Part 2:2016, Clause 16.

The following basic requirements apply for definitions:

– Definitions shall be provided in the singular form;

EXAMPLE

Lead pencil
pencil whose graphite core is fixed in a wooden casing that is removed for usage by sharpening

– The content of the IEC 61360-1 attribute "preferred name" shall consequently be singular, too;
– Definitions should consist ideally of a single string of words ("sentence") that may be used to substitute the term in its original environment;
– Definitions shall start with a lowercase letter and end without a full stop.

NOTE The quality of a dictionary is decisively influenced by the quality of its definitions.

5.2 Principles for definition writing

Each definition shall comprise a statement explaining what the concept or characteristic is. The statement is made up of a subject, copula and predicate. The subject is the designation, the copula is understood to be the verb “is“ and the predicate constitutes the definition.

EXAMPLE 1

lead pencil
pencil whose graphite core is fixed in a wooden casing that is removed for usage by sharpening

Note 1 to entry To be used for writing or making marks, a lead pencil must be sharpened at least at one end.

The entry should read as follows: “[A] lead pencil [is a] pencil whose graphite core is fixed in a wooden casing that is removed for usage by sharpening”.

The words making up the definition should be common language as specified by the reference works for English language recommended by the IEC Directives (see ISO/IEC Directives, Part 2:2016, 8.5) and should not need further explanation.

NOTE A concept or characteristic has always a definition regardless if its designation, i.e. preferred name (see IEC 61360-1), is taken from commonly used dictionaries or other common sources.

EXAMPLE 2 The word "computer" used in the body of a definition does not need further explanation if its intended meaning is in accordance to common language as specified, e.g., in *The Concise Oxford Dictionary* (see ISO/IEC Directives, Part 2:2016, 8.2) whereas a concept or characteristic designated as "computer" always requires a definition.

If expert language is unavoidable or misunderstandings are likely the definition should be complemented by a reference to acknowledged sources such as International Standards or expert literature where further explanation can be found.

5.3 Conciseness

Ideally, definitions shall be as simple and concise as possible. Complex definitions can contain several dependent clauses, but carefully written definitions contain only that information which makes the concept unique. On the other hand, no information required for achieving the uniqueness of the concept or characteristic shall be hidden. All information essential for defining the concept shall be disclosed.

EXAMPLE 1 The phrase “… and considering other conditions” in a definition states the necessity of additional information for the definition without providing this information and, thus, violates the above requirement.

Any additional descriptive information deemed necessary should be included in a note.

EXAMPLE 2
lead pencil
pencil whose graphite core is fixed in a wooden casing that is removed for usage by sharpening

Note 1 to entry To be used for writing or making marks, a lead pencil must be sharpened at least at one end.

A definition shall describe only one concept or characteristic. It shall not include hidden definitions for any concepts used to identify qualities. Any quality that requires an explanation shall be defined separately as a concept or given in a note.

EXAMPLE 3
lead pencil
pencil whose wooden casing is fixed around graphite, a soft, black form of carbon

This definition of "lead pencil" includes a hidden definition for the concept "graphite". The quality "a soft, black form of carbon" should be removed and used in a separate definition for the concept "graphite".

5.4 Principle of substitution

The substitution principle shall be used to test the validity of a definition. A definition is valid if it can replace a designation in a text without loss of or change in meaning.

5.5 Deficient definitions

5.5.1 General

Common types of deficient definitions are: circular, incomplete or negative definitions.

5.5.2 Circular definitions

If one concept is defined using a second concept, and that second concept is defined using the term or elements of the term designating the first concept, the resulting definitions are said to be circular. Circular definitions do not add understanding of the concept and shall be avoided.

Definitions can be circular:

– within a single definition;

– within a system of definitions.

Circularity within a definition occurs when the designation is repeated to introduce the definition or an element of the designation is used as a characteristic. When formulating a definition, it is not permissible to repeat the designation to introduce the definition (see EXAMPLE 1).

EXAMPLE 1
tree height:
circular definition: tree height measured from the ground surface to the top of a tree
corrected definition: distance between the ground surface and the top of a tree

The use of an element of the designation, other than the head word, as a characteristic in the definition should be avoided as much as possible (see EXAMPLE 2). However, cases exist where the name of the superordinate concept is part of the designation of the term. This part of the designation may be reused in the definition of the term.

EXAMPLE 2
evergreen tree:
circular definition: tree with *evergreen* foliage
corrected definition: tree that retains its foliage throughout its lifetime

Note, that in this example "tree" is the superordinate concept for "evergreen tree" and thus is reused in the definition of "evergreen tree".

In cases when the designation of the concept is very close to the name of the superordinate concept effort should be invested in finding another name for the concept to avoid misunderstandings. Even though formally correct, the definition below may easily create misunderstandings (EXAMPLE 3).

EXAMPLE 3
International Standard
international standard published by IEC, ISO, ISO/IEC, or by ITU

Note, that "International Standard" and "international standard" are very close and can easily be confused.

A definition is circular within a system of definitions when two or more concepts are defined by means of each other.

5.5.3 Incomplete definitions

A definition shall describe the content of the concept precisely. It shall be neither too narrow nor too broad.

Otherwise, the definition is considered incomplete. Non-essential or irrelevant characteristics in the definition can unintentionally include or exclude objects from the extension of the concept.

A definition is considered too broad if the characteristics selected to describe the concept do not allow for objects that are implied by the definition, as part of its extension. A definition is considered too narrow if the characteristics (selected to describe the concept) allow for objects that are not implied by the definition, as part of its extension.

EXAMPLE 1
mechanical pencil
too broad: writing instrument composed of a barrel and a refill

By not specifying precisely the type of refills, this definition broadens the extension to include ball-point, roller-ball and felt-tip pens as well as mechanical pencils.

mechanical pencil
too narrow: writing instrument composed of a barrel, a lead refill and push-button advance mechanism

By specifying a push-button advance mechanism, this definition narrows the extension to exclude those mechanical pencils using other types of advance mechanisms.

mechanical pencil
corrected definition: writing instrument composed of a barrel, a lead refill and a lead-advance mechanism

In adapting an existing definition to a specific subject field or context, care should be taken not to change the extension of the concept. A change to the extension leads to a new unit and a different concept. Similarly, changes to any of the essential characteristics in a definition result in a new concept.

A particular context rarely refers to all the objects making up the extension of a concept. Definitions in laws and regulations tend to be interpretive rather than defining. Definitions in International Standards should be defining rather than interpretive. If a concept is restricted to a particular interpretation for a given text, it shall be explained in the body of the International Standard rather than by creating a new concept with a narrower extension. If specification information is associated with the concept, then this should be given in an appropriate specification clause rather than in a definition.

EXAMPLE 2
too narrow: organization
for the purposes of this regulation, bodies not operating for profit

This definition of "organization" does not define the *concept* "organization" but merely signals how to interpret the *concept* in a given context. From all the *objects* that make up extension of the concept "organization", this context considers only those not operating for profit.

5.5.4 Negative definitions

A definition shall describe what a concept is, not what it is not.

EXAMPLE 1
deciduous tree
inappropriate negative definition: tree other than an evergreen tree

deciduous tree
corrected definition: tree that loses its foliage seasonally

However, when the absence or non-existence of a *characteristic* is essential to the understanding of a concept, a negative definition may be required.

EXAMPLE 2 nonconformity: non-fulfilment of a specified requirement

5.6 Notes and examples

Definitions may be complemented by one or more notes or examples. Notes and examples shall only be used for giving additional information intended to assist the understanding or use of the definition.

They shall not contain requirements or any information considered indispensable for the use of the definition.

When several notes occur within the same definition, they shall be designated “NOTE 1”, “NOTE 2”, “NOTE 3”, etc. When several examples occur within the same definition, they shall be designated “EXAMPLE 1”, “EXAMPLE 2”, “EXAMPLE 3”, etc.

6 Recommendations for textual information in dictionaries according to IEC 61360 series

6.1 General

The requirements of the ISO/IEC Directives, Part 2 [3] apply for the textual parts of IEC CDD. For the convenience of the readers, 6.2 to 6.10 below focus on the most commonly encountered problems and summarize requirements set forth in [3] or explain problems specific to dictionary entries.

6.2 Recommendations that emerge from the implementation of IEC CDD

Due to the import capabilities of the implementation of IEC CDD, certain recommendations apply.

NOTE See also IEC 62656-1 for a detailed specification of the IEC CDD data interface.

a) Blank fields (fields containing no data) shall be entirely empty, containing no null characters or spaces.

b) Fields shall not contain any leading or trailing null characters or spaces.

c) Dates shall be given in the form "yyyy-mm-dd".

d) Field values that extend over more than one line (notably definition, note and remark) should be typed as continuous text with no line breaks. To indicate a line break in the text, the vertical bar character (“|”) shall be used.

e) Special characters and formats such as superscript, subscript or italics, are usually lost when being transferred from one application to another. Because there is no guarantee that a target system will read them correctly, an ASCII representation is used for symbols and units in the database. For Greek letters, the SGML form is used, e.g. “α”, whilst for subscripts and superscripts the control characters “_” or “**”should be used to start the subscript or superscript, followed by a closing curly bracket “}” after the subscript or superscript. Thus, a symbol name can appear as “α_1}”, to be presented as “α_1” and a unit as “A/m**2}”, to be presented as “A/m^2”.

6.3 Languages

The language for the reference version of all textual parts of IEC CDD shall be British English. All other languages, including the French language version, shall be derived from this reference version.

6.4 Acceptable wording

6.4.1 General

This 6.4 gives details on the wording to be used explaining requirements or recommendations.

6.4.2 Using “shall” and “shall not”

The verbal forms “shall” and “shall not” indicate requirements to be followed to conform to the standard and from which no deviation is permitted. The words “shall” and “shall not” shall be used in normative text and shall not be used in the introduction, foreword, notes, or examples, which are informative text.

“Shall” shall be used to denote the following:

– is to…;

– is required to …;

– it is required that …;

– has to…;
– only… is permitted;
– it is necessary ….

“Shall not” shall be used to denote the following:

– it is not allowed (permitted, acceptable, permissible)...;
– is required to be not …;
– is required that… be not...;
– is not to be ….

Do not use “must” except to describe “unavoidable” situations. Do not use “may not” instead of “shall not” to express a prohibition.

6.4.3 Using “must” and “must not”

The words “must” and “must not” shall be used only to convey constraints or obligations defined outside of the document.

6.4.4 Using “should” and “should not”

The words “should” and “should not” shall be used to recommend a particularly suitable possibility or course of action without excluding others. “Should” shall be used to denote the following:

– it is recommended that …;
– ought to …;
– “Should not” shall be used to denote the following:
– it is recommended that… not;
– ought not to ….

6.4.5 Use of “may” and “need not”

The words “may” and “need not” indicate a course of action that is permissible within the limits of the standard. “May” shall be used to denote the following:

– … is permitted;
– … is allowed;
– … is permissible.

“Need not” shall be used to denote the following:

– it is not required that …;
– no …is required.

Do not use “can” instead of “may” in this context. Do not use “possible” or “impossible” in this context.

NOTE “May” refers to something that is permitted whereas “can” refers to something that is possible.

6.4.6 Use of “can” and “cannot”

The words “can” and “cannot” indicate possibility and capability.

“Can” shall be used to denote the following:

– to be able to …;

– to be in a position to …;
– there is a possibility of …;
– it is possible to ….

“Cannot” shall be used to denote the following:

– to be unable to …;
– to be not in a position to …;
– there is no possibility of …;
– it is impossible to ….

NOTE “Can” refers to something that is possible whereas “may” refers to something that is permitted.

6.4.7 Use of “i.e.”, “e.g.”, and “etc.”

Do not use “i.e.” and “e.g.”. Instead, use “that is” and “for example”. If using “that is,” the list that follows shall be all inclusive whereas “for example,” shall only list some of the possibilities and shall only appear in a note or example. Likewise, do not use “etc.”. End the series prior to the “etc.” being certain to use a serial comma before the “and” (added if not already there). To state that the series is incomplete, use “such as” at the start of the series.

6.4.8 Use of abbreviations

Use of abbreviations should be avoided. A list of abbreviations is not mandatory for IEC 61360 dictionaries. Thus, no unambiguous interpretation of an abbreviation can be ensured. If an abbreviation has to be used the unabridged form shall be included in brackets when the abbreviation is used.

EXAMPLE The abbreviation “AC” can stand for several meanings such as “alternating current”, “air condition”, “Acetyl”, and “Actinium”.

6.5 Quotations from standards or documented sources

In many cases it is desirable to introduce concepts from other sources such as standards or acknowledged expert literature into the dictionary. International, national or industry standards may be referenced; however, if there is also an ISO or IEC standard, the ISO or IEC standard shall be used.

Before a term and a definition are established for a concept, it should be ascertained that no other term and definition for that concept exist in another document. In ISO, refer to the concept database: <http://cdb.iso.org>. In the case of electrotechnical terms, refer to the International Electrotechnical Vocabulary (IEC 60050): <http://www.electropedia.org>.

Information objects such as classes or properties shall be referenced by giving their International Registration Data Identifier (IRDI).

NOTE See IEC 61360-1 and ISO/IEC 11179-6 for additional information on identification of information objects using IRDI.

EXAMPLE 1 Example of a reference using the International Registration Data Identifier: "[SOURCE: 0112/2///61360_4#AAF307]"

References to a particular element of another standard shall include the clause referred to as well as the reference number of the standard and the year of publication. ISO or IEC Technical Specifications, Publicly Available Specifications, and Technical Reports may be referenced in the same way.

EXAMPLE 2 [SOURCE: ISO/IEC Directives, Part 2:2016, 16.5.9]

EXAMPLE 3 [SOURCE: ISO 80000-1:2009, 3.3, modified – Note 3 has been deleted.]

In addition, any publicly available document, such as expert literature, having wide acceptance and authoritative status as well as being publicly available may be referenced.

Any reference to literature containing explanatory information about the definition should go into a note. Especially if referring to documents other than standards the wording of the text may be not in line with the ISO/ IEC rules for definitions. Minor formal adaptations of the text such as omitting the definite article at the beginning of a definition and leaving out the punctuation at the end need not be indicated as modification.

More extensive modifications shall be indicated as paraphrase. When paraphrasing of the original definition cannot be avoided, great care shall be taken not to modify the original meaning.

References to a particular element of a document other than a standard shall include the name of the author, the year of publication and the number of the page where the source text occurs (see EXAMPLE 4). The full reference shall be contained in the attribute "Source document of definition" (see EXAMPLE 5).

EXAMPLE 4 [SOURCE: IUPAC (1997, p.347), modified – paraphrased content]

EXAMPLE 5 IUPAC: *Compendium of Chemical Terminology*, 2nd ed. compiled by A. D. McNaught and A. Wilkinson. Oxford: Blackwell Scientific Publications, 1997

Summaries are not a valid citation of a source document.

6.6 Use of quotation marks

Quotation marks shall be used to set off words or phrases that may confuse the reader if not marked. Double quotation marks “…” denote quoted text or particular text string values.

6.7 Spelling

The spelling of the names of organizations, and their abbreviations, shall be as used by those organizations, in English or French.

To facilitate understanding by all readers, the style shall be as simple and concise as possible. This is particularly important for those readers whose mother tongue is not one of the official languages of ISO and IEC.

The following reference works for language are recommended (see ISO/IEC Directives, Part 2:2016, 8.2):

– for English: *The Shorter Oxford English Dictionary*, *The Concise Oxford Dictionary*, *The Collins Concise English Dictionary*, *Webster’s New World College Dictionary* or *Chambers Concise Dictionary*;
– for French: *Dictionnaire Le Robert*, *Dictionnaire Larousse and Dictionnaire des difficultés de la langue française*, V. Thomas, Larousse.

Abbreviated terms shall be used with care, and their use shall be limited to those cases where it is not likely to cause confusion (see ISO/IEC Directives, Part 2:2016, 8.3).

NOTE Spelling checkers associated with word processor programs rarely, even in the “British spelling” mode, conform to the required dictionary.

Note the correct spelling of the following:

– numbers from one to nine shall be spelled out in words;
– modelling, modelled, centre, colour, coordinate, faceted, litre, metre, millimetre, neighbour, organization;

and the preferred spelling of the following:

– instantiation.

If American English is unavoidable, e.g. for specialist terms, the postfix “–en US–“ shall be added after the passage in question.

Other languages such as French, German, Japanese, etc. may be created under the responsibility of the respective National Committee.

Localized versions of dictionary objects should carry their own version and/or revision identifiers due to possible latencies or error corrections during the translation process.

6.8 Hyphenation

In general, hyphenation should be used to improve readability and appearance. Hyphenation shall follow the rules given in the reference works for language as specified in 6.7. These special terms shall be hyphenated as follows:

– non-zero;
– two-dimensional, three-dimensional (may be abbreviated as “2D” or “3D”);
– X-axis, Y-axis, and Z-axis.

Abbreviations shall not be divided by a line break.

6.9 Words to avoid

Avoid the use of words that are corporate trademarks. If the use of trademarks is necessary, accompany the word by the trademark symbol “™” or the registered trademark symbol "®" as appropriate.

EXAMPLE The title of ISO TS 10303-27 is “Implementation methods: Java™ programming language binding to the standard data access interface with Internet/Intranet extensions”. Since the word “Java” in this context is a trademark, it is accompanied by the symbol “™”.

Avoid the following words to provide editorial consistency:

– "and/or": rather than use this form, expand the explanation and present both cases;
– "datums": the plural of “datum” is “data”. If one is tempted to use “datums”, change it to “datum points” or “datum lines” or “datum planes” as the case may be;
– "utilise": use “use” instead;
– “in other words”: this phrase is often used to join two alternative definitions of a term or concept: the alternative definitions should be reviewed and reconciled.

However, if a project cites another ISO or IEC standard, or broadly accepted terminology for a given domain for a specific meaning of a prohibited term, the editor should follow the cited spelling.

6.10 Frequently used words

The following terms are used frequently in standards. To ensure editorial consistency, they should be used only in precisely defined contexts.

– between/among: use “between” to mean “exactly two”; use “among” to mean “two or more than two”;
– data: “data” is a plural noun and requires a plural verb, that is, “data are” not “data is”. In cases where the number of items is important a wording such as "a piece of data", "a set of data", "two sets of data" may be used;
– if: if an “if” clause ends in a comma, do not follow it with the word “then”;

– presentation: do not use “presentation” for “representation”. “Presentation” should be restricted to situations with visual aspects;
– which: do not use “which” in place of “that”. “That” introduces a defining phrase; “which” introduces an informational phrase.

7 Names

7.1 General

Names are used to designate objects, such as classes or properties. They play an important role as enablers of human communication about the objects and their meaning. Even though names should be unique, it is not guaranteed that names are unambiguous whereas identifiers shall be always unique.

7.2 Preferred name

When a new entry is added, a preferred name has to be selected. This name should match the most commonly used English name within the industry for which the represented concept is used.

The use of the same preferred name should be avoided as much as possible within a close family of classes. In particular the same preferred name for different properties that may be potentially applied to the same class should be avoided.

If such is inevitable, care must be taken to clearly differentiate the definitions of such properties.

NOTE Within IEC, British English is requested.

7.3 Synonymous name

Alternatives to a preferred name may be used to accomplish global understanding. Within a given language, for example British English, other English terms deviating from the British-English may be used.

7.4 Names shall not infer range values

Entries shall not be named or defined in a way so as to infer multiple values.

Entries whose preferred names or synonymous names containing the word “range” should be examined closely for violation of this constraint.

Instances of a property definition, such as “Supply Voltage”, can be reported in an interchange with a “min” and “max” data type qualifier. In this case, there should not be two different property definitions with names like “Supply Voltage Minimum” and “Supply Voltage Maximum”.

However, the property definition “OFF-state Leakage Current” is normally reported in a datasheet only in the context of a maximum leakage, which may be positive or negative, depending on some other voltage characteristic. So the definition semantics should state something like, “…the absolute value of the maximum current leakage…”, so that an interchange reports a single, positive number with clear semantics.

7.5 Names shall not imply product packaging

Names should be associated with unit items and not be dependent on packaging or any other aspect of the supply chain. Exceptions to this rule may be made where a unique need, an unambiguous definition, and availability of information (sourceabilty) support the rigour required to maintain a single class set.

EXAMPLE Weight is a valid characteristic. Weight (per gross) is not valid.

8 Units of measure

A property of measurement type shall belong to one quantity at most. If a property can be defined with multiple units in different quantities, the property should be divided into an appropriate number of properties so that all the units of each property shall belong to the same quantity.

EXAMPLE Load regulation of logic ICs for power supply can be conceptually expressed with a unit either of μV/mA, %/mA, %, mV, or Ω. Those units belong to different quantities, therefore, properties for those units are defined by each quantity.

If a unit is specified for a measurement type property, it is recommended to specify it by its code defined in IEC TS 62720 which is also available online from the IEC CDD, for assured computer sensible identification of the unit.

NOTE Maintenance work and possible extensions of the IEC TS 62720 units will take place in an IEC database. Thus, IEC TS 62720:2013 can become outdated.

Preference shall be given to SI units. If there are alternative units to be selected for a property, they should be specified. All alternative units shall belong to the same quantity.

9 Import of data into IEC CDD

IEC 62656-1 specifies the logical structure and layout of the spreadsheet interface of IEC CDD. This structure allows definition, import, export or transfer of content. To maintain consistency and avoid loss of data always complete rows of an IEC 62656-1 compliant data set should be uploaded to IEC CDD during import. All fields of a row will be used to update the related fields in IEC CDD.

IEC 61360-1 and IEC 62656-2 provide essential guidance about use and structure of IEC CDD data and are highly recommended as background material for deeper understanding.

10 Quality of content

The originator of new or updated content for IEC CDD shall ensure that

– updates or corrections are always based on the latest version of IEC CDD content;
– effort has been taken to prepare correct and consistent upload data.

As Annex C a checklist is provided that shall serve as guide for those who plan to supply input to the dictionary. The checklist addresses common problems that were identified in the past.

The application of the checklist before submission of data for IEC CDD is imperative. Additionally, the IEC CDD database interface performs checks of the data files during import.

It is recommended that involved persons acquire knowledge on IEC 61360-1.

11 Contributing content and copyright issues

Proposing and standardizing classes and properties is a process in which various parties are involved.

The following cases occur:

– Input by an authorized person or body also referred to as “proposer” (see Figure 5);
– Content already contained in published standards (see Figure 6);
– Database maintenance (see Figure 7).

NOTE 1 The overlapping areas in Figure 5 to Figure 7 indicate close cooperation between the involved groups.

By submitting content for storage, discussion, or publication in IEC CDD the proposer implicitly declares that the submitted content may be exploited freely according to the rules stated in the license statement of IEC CDD. No economic rights (such as copyright or intellectual property rights) shall apply that restrict the above use of the submitted matter (see [1]).

NOTE 2 All items contained in IEC CDD are subject to the IEC/ISO copyright rules unless otherwise explicitly stated (see ISO/IEC Directives, Part 1:2016, 2.13).

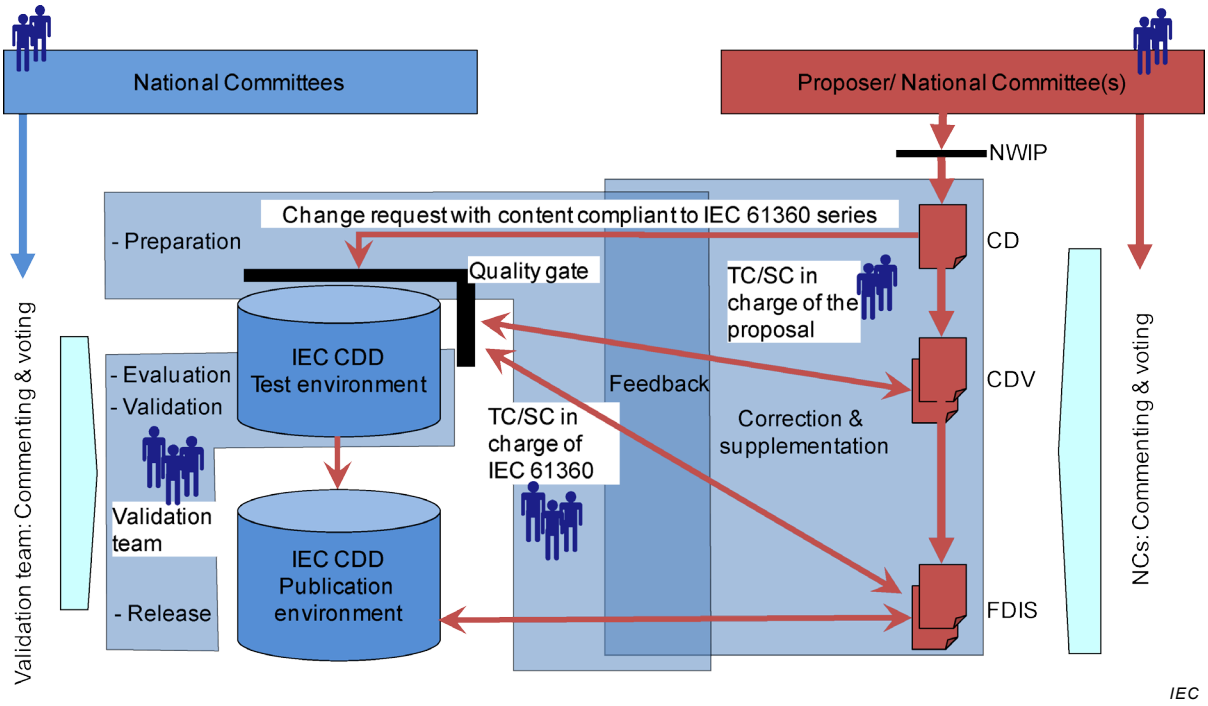

Figure 5 – Input by an authorized person or body

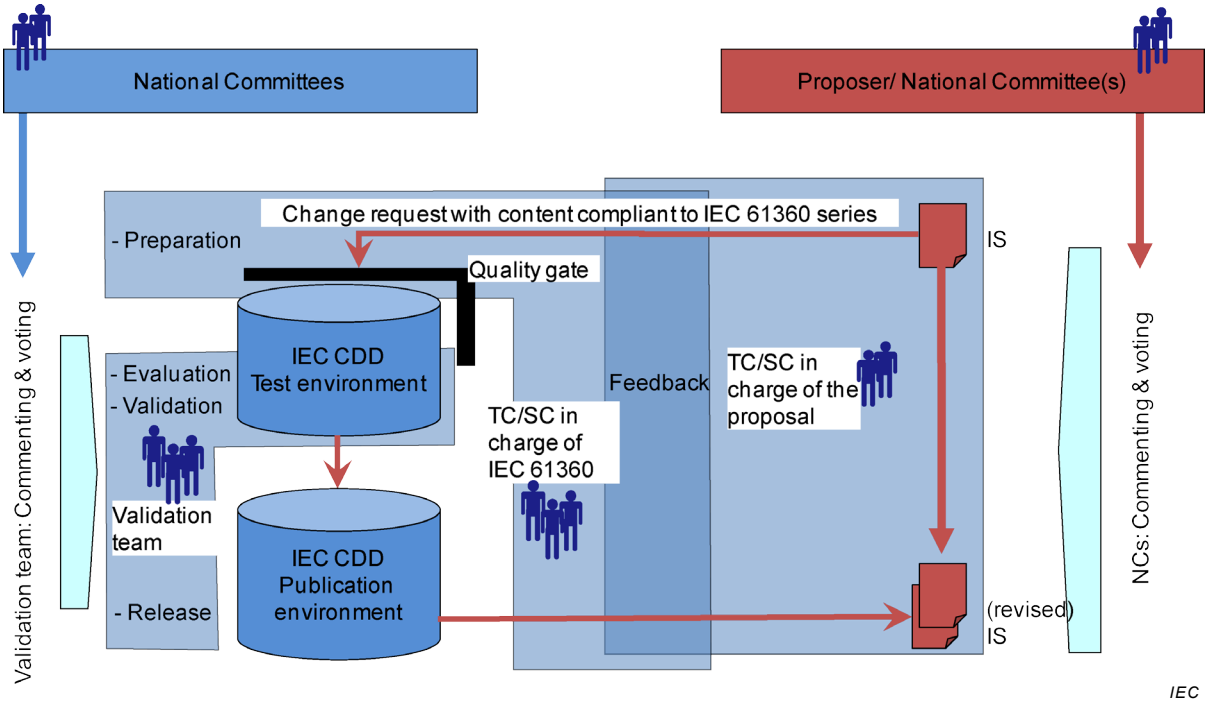

Figure 6 – Contributing content already contained in published standards

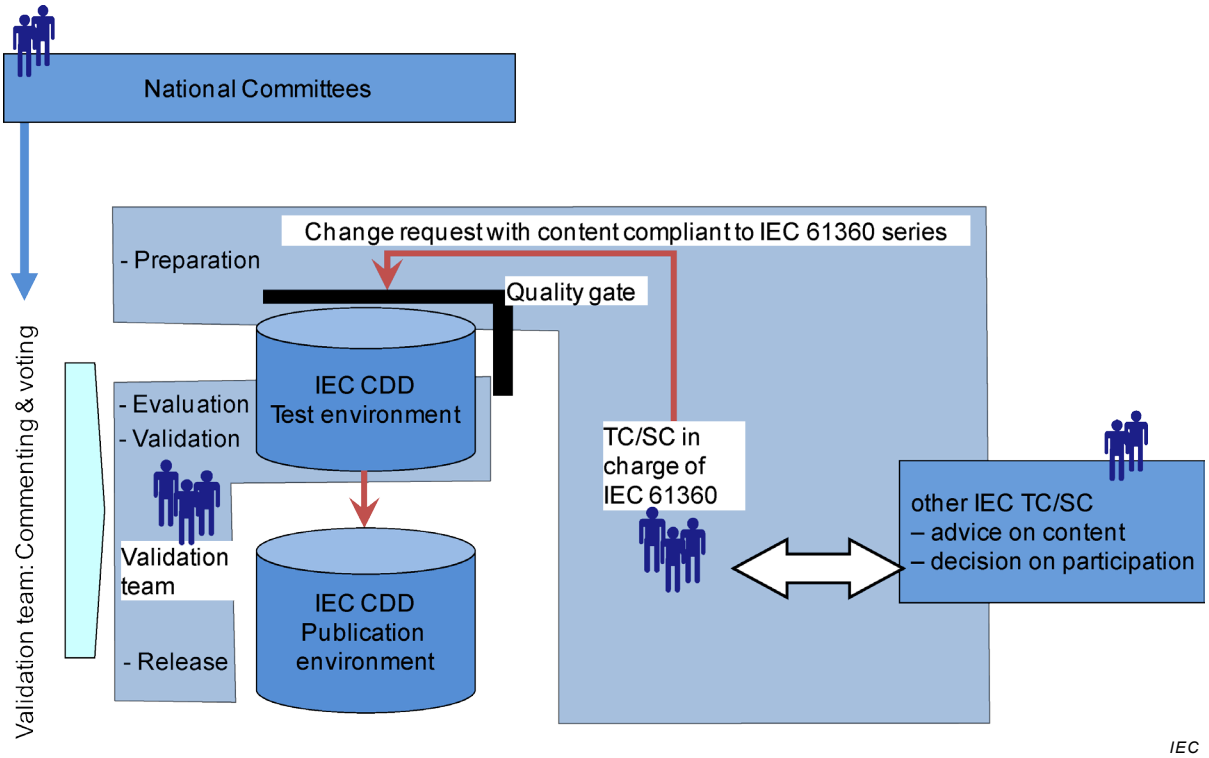

Figure 7 – Database maintenance

Annex A
(informative)

Use of tools to check consistency of data

Creating consistent and error-free data for upload to a dictionary can be difficult. The necessary versatility of the underlying data models and broad range of requirements that have to be met call for data structures having some complexity. Thus, software tools supporting the creation and checking of the relevant information objects should be used.

Parcelmaker®[2], a tool based on Microsoft® Office Excel®[3], supports creating and interpreting IEC 61360-1 and IEC 61360-2 as well as ISO 13584-42 compliant data in IEC 62656-1 format. Error checking functions and functions providing an improved overview on the data greatly help to avoid inconsistencies and other imperfections of the data.

IEC 62656-1 is a spreadsheet representation for data based on IEC 61360-1 and IEC 61360-2/ ISO 13584-42 data models. This representation was specifically designed to support users working in office environments without access to special purpose software. In addition, IEC 62656-1 is used by IEC CDD as data format for import and export.

From IEC Collaboration space an IEC 62656-1 compliant Microsoft® Office Excel® template for use with Parcelmaker® may be downloaded. The minimum information content of IEC 61360-1 data sets is marked with "MAND" within the spreadsheets. Registered IEC experts may find the latest version of the template at (password required):

http://collaboration.iec.ch/LotusQuickr/other_sc3dworkingmaterial/Main.nsf/h_Toc/0798B0A3EE8F4DF0C1257C200057721F/?OpenDocument

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2 Parcelmaker® is the trademark of a product supplied by TOSHIBA Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

3 Microsoft® Office Excel® is the trademark of a product supplied by Microsoft Corporation. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

Annex B
(normative)

Scope and field of application of proposed data

When providing technically new content to IEC CDD adequate explanatory information about the planned content shall be provided.

This information shall consist of several slides explaining

– scope or field of application of the proposed data;
– applicable standard documents or expert literature;
– stakeholders and
– point(s) of contact for the proposed change request including address and email.

The information should enable the members of the involved committees such as the Validation Team for IEC CDD, its participating National Committees or other involved Technical Committees to understand scope and use of the proposed data set.

The material shall be sufficient to allow the National Committees to identify experts for the participation in the evaluation and validation process of the proposed data.

Annex C
(normative)

Checklist

C.1 General

IEC CDD is a dictionary where classes and associated properties are being collected, serving as international reference library easing the communication between business partners.

The below checklist may serve as guide for those who plan to provide input to the dictionary. It is recommended that involved persons are familiar with IEC 61360-1.

The checklist addresses common problems that were identified in the past.

C.2 Generic issues

☐ Are the technical committees identified on international level within IEC which need to be involved?

One change request should be addressed to one technical committee only.

☐ For reasons of easier handling of a change request the maximum number of rows in each sheet of its documentation tables should be limited to about 100 rows. In case of large data sets the accompanying description tables may be split up into several associated sheets.

The related data set, i.e. the IEC 62656-1 conforming files, can contain more than 100 rows. This data set shall always represent the complete proposed data set.

C.3 Extension of existing classes by adding properties

☐ Each of the proposed properties should be verified, whether it is independent of its class.

If yes, provide a class where to collect all such items; if no, identify the existing class to which the new properties should belong.

EXAMPLE 1 A property "Manufacturer" would apply to many classes as most products are being manufactured by at least one organization.

EXAMPLE 2 A property "Vendor" will apply to many product classes as most products are being brought into the market by at least one organization.

EXAMPLE 3 A property "Measuring principle" will apply probably only to the class dealing with measuring instruments.

☐ The content of the attribute "Definition" should be based on valid IEC or ISO standards.

Where possible, definitions should be written in a style that they are independent of a specific class.

☐ Reference should be made only to current IEC or ISO standards. Only in cases where IEC or ISO standards are not available, reference to publicly available National Standards or expert literature should be made.

☐ If requesting properties with units other than SI-units, new properties shall be specified if the property in question already exists having a SI-unit.

Units from different unit systems should not be applied to the same property. In such cases additional properties should be specified (See below).

In order to describe conductors with sizes in American Wire Gauge (AWG) one should specify a new property called e.g. AWG size.

☐ Are eventually existing interdependencies considered among properties?

EXAMPLE 4 The rated current of a device depends on the maximum value of the temperature for which it is foreseen.

☐ Does an attribute "symbol" exist? Is it supplied in the related attribute? Is its language independency considered? Is it correctly spelled?

☐ Does an attribute "short name" exist? Is it supplied in the related attribute? Is its language independency considered? Is it correctly spelled?

☐ Are dates always in the notion "YYYY-MM-DD"?

☐ The "level" construct should be applied when defining a range in quantitative properties.

NOTE 1 To express a minimum and/or maximum value the level construct is applicable and the same property is used only once.

☐ Was a quality check applied to the input file(s) for IEC?

NOTE 2 Before a work item will be accepted a formal quality check will be made by the management of the data base. If the syntax is not in line, there is a risk of the work item not being accepted due to poor quality.

☐ A spelling checker should be used when preparing the textual content. British English (en-UK) is the favourite language of IEC.

NOTE 3 Within the IEC Common Data Dictionary, the English language is the leading language, and is the only one considered to be the Standard.

C.4 Setting up new classes with associated properties

☐ If the existing classes do not cover the desired concepts, a new class has to be set up with definition, preferred name, etc. The next higher class node in the hierarchy (supertype) has to be identified to which it should be related.

☐ The classifying property has to be created which is controlling possible subclasses of the class.

Annex D
(informative)

IEC Maintenance procedure for IEC standards in database format

Annex D informs about the actual situation concerning the data base procedure as documented in ISO/IEC Directives Supplement [4].

Annex D will not be updated if the procedure changes.

NOTE The current version of the directives can be accessed via http://www.iec.ch/members_experts/refdocs/.

The procedure is specified in detail in ISO/IEC Directives Supplement:2016, Annex SL. Figure D.1 and Figure D.2 summarize the process.

Experience has proven that the originally specified time for resolution of evaluation issues (1 week) can be too short. Thus, a time span greater than one week for this step should be tolerated.

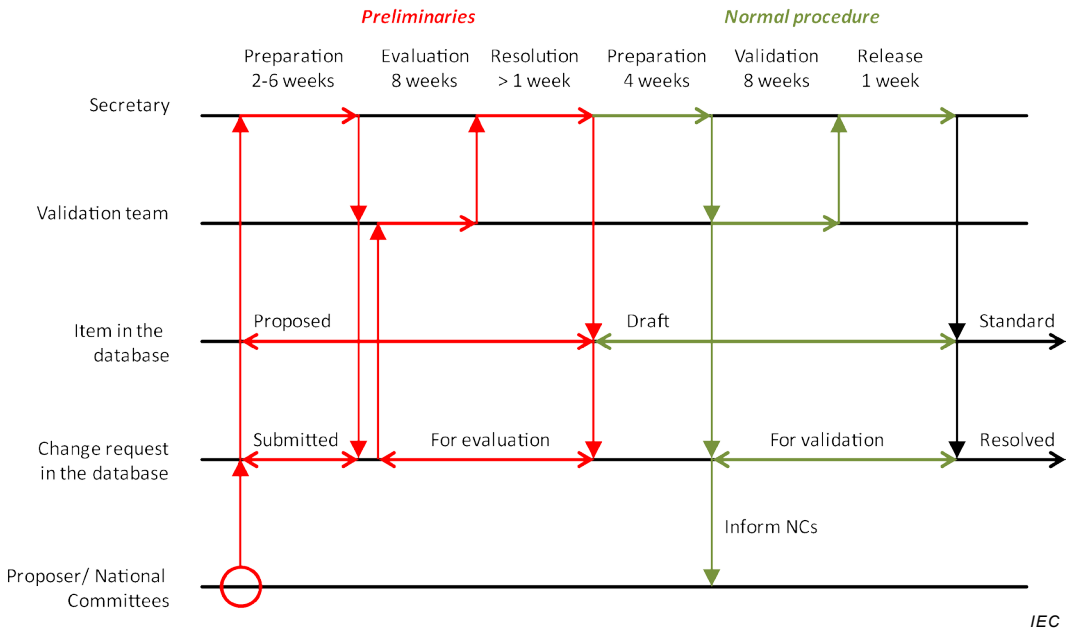

Figure D.1 – The normal database procedure (see ISO/IEC Directives Supplement:2016, Annex SL)

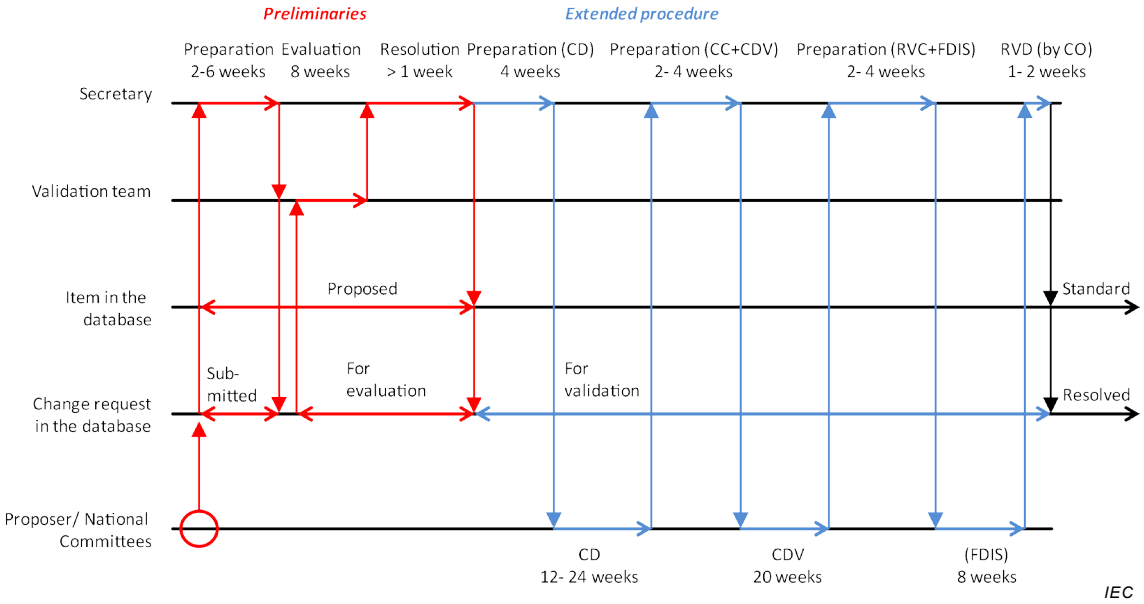

Figure D.2 – The extended database procedure (see ISO/IEC Directives Supplement:2016, Annex SL)

IEC subcommittee 3D uses the infrastructure of IEC CDD for its work. Figure D.3 shows the IEC CDD environments, their interaction, and the related documents.

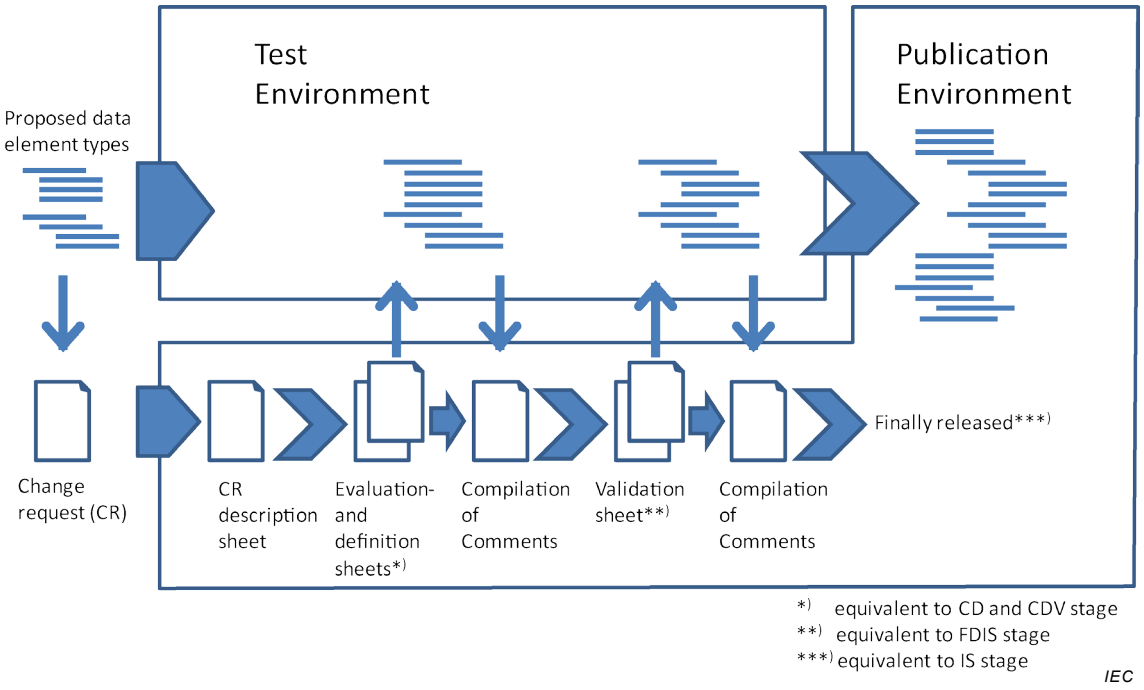

Figure D.3 – Process and related documentation

Annex E
(informative)

Nature of definitions and terminological principles

There are different ways to write definitions of concepts or terms; the two most common types of definitions are "intensional" or "extensional" definitions.

Intensional definitions indicate the superordinate concept followed by the characteristic(s) that distinguish the concept from other concepts. In practice, intensional definitions are preferable to other concept descriptions. They should be used whenever possible as they most clearly reveal the essential characteristics of a concept.

NOTE 1 A more detailed treatise of the subject can be found in ISO 704:2009.

NOTE 2 Intensional definitions are best used when something has a clearly-defined set of qualities, and work well for specifying sets that are too large to list in an extensional definition. It is impossible to give an extensional definition for an infinite set, but an intensional one can often be stated concisely.

EXAMPLE 1 There is an infinite number of even numbers, impossible to list, but even numbers can be defined by saying that they are integer multiples of two.

An extensional definition lists all the concepts corresponding to the objects in the extension. In defining classes, an extensional definition would list all the objects allowed within the intension of the class. This kind of definition is to be used only if the number of subordinate objects to be enumerated is limited, the list of subordinate objects is complete under one criterion of subdivision, and the subordinate objects are known.

EXAMPLE 2 An extensional definition of the term "nation of the world" might be given by listing all of the nations of the world.

Extensional definitions are more frequently used to define concepts which correspond to properties. In many cases, a closed set of permissible values for a property can be presented as elements in the definition of the property. Such sets of permissible values may be the basis for consistency checking when users assign values to properties.

Annex F
(informative)

Conventions for writing definitions

F.1 General

In addition to the rules specified, Annex F provides additional guidance on the wording of definitions.

Below a high level overview is given of the conventions for writing definitions as laid down in the standards ISO/IEC 11179-4:2004 [5] and ISO 704:2009 (see Clause 2).

F.2 ISO/IEC 11179-4

F.2.1 Requirements

A data definition shall:

a) be stated in the singular;
b) state what the concept is, not what it is not;
c) be stated as one descriptive phrase or sentence;
d) contain only commonly understood abbreviations;
e) be expressed without embedding definitions of other data or underlying concepts.

F.2.2 Recommendations

A data definition should:

a) state the essential meaning of the concept;
b) be precise and unambiguous;
c) be concise;
d) be able to stand alone;
e) be expressed without embedding rationale, functional usage, or procedural information;
f) avoid circular reasoning
g) use the same terminology and consistent logical structure for related definitions;
h) be appropriate for the type of metadata item being defined.

F.3 ISO 704

The conventions set out in ISO 704 can be summarized as follows:

a) Define what it is, not what it is not.
b) Define the concept, do not write a list of examples (extensional definitions, i.e., a list of subordinate concepts, are allowed in highly specialized domains only).
c) Avoid circular definitions.
d) Do not define two concepts. A definition shall describe only one concept. It shall not include hidden definitions for any concepts used to identify characteristics. Any characteristic that requires an explanation shall be defined separately as a concept or given in a note.
e) A definition is valid if it can replace a designation in a text without loss of or change in meaning.

f) Definitions shall be as brief as possible and as complex as necessary. Complex definitions can contain several dependent clauses, but carefully written definitions contain only that information which makes the concept unique. Any additional descriptive information deemed necessary should be included in a note.

g) The definition should not contain characteristics that belong logically to super ordinate or subordinate concepts.

h) A definition shall describe the content of the concept precisely. It shall be neither too narrow nor too broad.

F.4 Additional conventions

a) The term “value” shall not be written in plural even if it is a level type (e.g., minimum, typical and maximum value)

b) Always include the term “value” in the definition for quantitative DETs except for conditional data element types.

c) Changing attributes to conform to the new conventions of this part of IEC 61360 is by default a revision change (minor change) unless specified otherwise, and will only be done along with a change request associated with the relevant data element type.

Bibliography

The documents referenced here contain information that is recommended to know for people who create or maintain IEC 61360 compliant dictionaries or parts thereof.

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[5] ISO/IEC 11179-4:2004, *Information technology – Metadata registries (MDR) – Part 4: Formulation of data definitions*

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[7] IEC PAS 62569-1:2009, *Generic specification of information on products – Part 1: Principles and methods*

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[11] IEC TS 62720:2013, *Identification of units of measurement for computer-based processing*

[12] ISO 13584 (all parts), *Industrial automation systems and integration – Parts library*

[13] ISO 13584-42, *Industrial automation systems and integration – Parts library – Part 42: Description methodology: Methodology for structuring parts families*

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