BS EN 61968-6:2016

BSI Standards Publication

Application integration at electric utilities — System interfaces for distribution management

Part 6: Interfaces for maintenance and construction

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National foreword

This British Standard is the UK implementation of EN 61968-6:2016. It is identical to IEC 61968-6:2015.

The UK participation in its preparation was entrusted to Technical Committee PEL/57, Power systems management and associated information exchange.

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

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Application integration at electric utilities - System interfaces for distribution management - Part 6: Interfaces for maintenance and construction (IEC 61968-6:2015)

Intégration d'applications pour les services électriques - Interfaces système pour la gestion de distribution - Partie 6 : Interfaces de maintenance et de construction (IEC 61968-6:2015)

Integration von Anwendungen in Anlagen der Elektrizitätsversorgung - Systemschnittstellen für Netzführung - Teil 6: Schnittstellen für Wartung und Konstruktion (IEC 61968-6:2015)

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European foreword

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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)	2016-07-15
• latest date by which the national standards conflicting with the document have to be withdrawn	(dow)	2018-08-11

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The text of the International Standard IEC 61968-6:2015 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 60050	series	International electrotechnical vocabulary	-	-
IEC 61968-1	-	Application integration at electric utilities - System interfaces for distribution management -- Part 1: Interface architecture and general requirements	EN 61968-1	-
IEC/TS 61968-2	-	Application integration at electric utilities - System interfaces for distribution management -- Part 2: Glossary	-	-
IEC 61968-4	-	Application integration at electric utilities - System interfaces for distribution management -- Part 4: Interfaces for records and asset management	EN 61968-4	-
IEC 61968-9	2013	Application integration at electric utilities - System interfaces for distribution management -- Part 9: Interfaces for meter reading and control	EN 61968-9	2014
IEC 61968-11	-	Application integration at electric utilities - System interfaces for distribution management -- Part 11: Common information model (CIM) extensions for distribution	EN 61968-11	-
IEC 61970-301	-	Energy management system application program interface (EMS-API) - Part 301: Common information model (CIM) base	EN 61970-301	-
IEC/TR 62051	-	Electricity metering - Glossary of terms	-	-
IEC 62055-31	-	Electricity metering - Payment systems -- Part 31: Particular requirements - Static payment meters for active energy (classes 1 and 2)	EN 62055-31	-

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –

Part 6: Interfaces for maintenance and construction

FOREWORD

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This part of International Standard IEC 61968 has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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

FDIS	Report on voting
57/1566/FDIS	57/1586/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 61968 series, published under the general title *Application integration at electric utilities – System interfaces for distribution management*, 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.

A bilingual version of this publication may be issued at a later date.

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INTRODUCTION

The IEC 61968 standard, taken as a whole, defines interfaces for the major elements of an interface architecture for Distribution Management Systems (DMS). IEC 61968-1, *Interface architecture and general recommendations*, identifies and establishes requirements for standard interfaces based on an Interface Reference Model (IRM). IEC 61968-3 to 9 of this standard define interfaces relevant to each of the major business functions described by the Interface Reference Model.

As used in IEC 61968, a DMS consists of various distributed application components for the utility to manage electrical distribution networks. These capabilities include monitoring and control of equipment for power delivery, management processes to ensure system reliability, voltage management, demand-side management, outage management, work management, automated mapping and facilities management.

This set of standards is limited to the definition of interfaces and is implementation independent. They provide for interoperability among different computer systems, platforms, and languages. Methods and technologies used to implement functionality conforming to these interfaces are considered outside of the scope of these standards; only the interface itself is specified in these standards.

The purpose of this part of IEC 61968 is to define a standard for the integration of Maintenance and Construction Systems (MC), which would include Work Management Systems, with other systems and business functions within the scope of IEC 61968. The scope of this standard is the exchange of information between Maintenance and Construction Systems and other systems within the utility enterprise. The specific details of communication protocols those systems employ are outside the scope of this standard. Instead, this standard will recognize and model the general capabilities that can be potentially provided by maintenance and construction systems including planned, unplanned and conditional maintenance. In this way, this standard will not be impacted by the specification, development and/or deployment of next generation maintenance systems, either through the use of standards or proprietary means.

The IEC 61968 series of standards is intended to facilitate *inter-application integration* as opposed to *intra-application integration*. Intra-application integration is aimed at programs in the same application system, usually communicating with each other using middleware that is embedded in their underlying runtime environment, and tends to be optimised for close, real-time, synchronous connections and interactive request/reply or conversation communication models. IEC 61968, by contrast, is intended to support the inter-application integration of a utility enterprise that needs to connect disparate applications that are already built or new (legacy or purchased applications), each supported by dissimilar runtime environments. Therefore, these interface standards are relevant to loosely coupled applications with more heterogeneity in languages, operating systems, protocols and management tools. This series of standards is intended to support applications that need to exchange data every few seconds, minutes, or hours rather than waiting for a nightly batch run. This series of standards, which are intended to be implemented with middleware services that exchange messages among applications, will complement, not replace, utility data warehouses, database gateways, and operational stores.

As used in IEC 61968, a Distribution Management System (DMS) consists of various distributed application components for the utility to manage electrical distribution networks. These capabilities include monitoring and control of equipment for power delivery, management processes to ensure system reliability, voltage management, demand-side management, outage management, work management, automated mapping and facilities management. Standard interfaces are defined for each class of applications identified in the Interface Reference Model (IRM), which is described in IEC 61968-1, *Interface architecture and general recommendations*.

This part of IEC 61968 contains the clauses listed in Table 1.

Table 1 – Document overview for IEC 61968-6

Clause	Title	Purpose
1	Scope	The scope and purpose of the document are described.
2	Normative references	Documents that contain provisions which, through reference in this text, constitute provisions of this International Standard.
3	Reference and information models	Description of general approach to work management system, reference model, use cases, interface reference model, maintenance and construction functions and components, message type terms and static information model.
4	Maintenance and construction message types	Message types related to the exchange of information for documents related to maintenance and construction.
Annex A	Message type verbs	Description of the verbs that are used for the message types.
Annex B	XML schemas for message payloads	To provide xsd information for use by developers to create IEC 61968-9 messages.

APPLICATION INTEGRATION AT ELECTRIC UTILITIES – SYSTEM INTERFACES FOR DISTRIBUTION MANAGEMENT –

Part 6: Interfaces for maintenance and construction

1 Scope

This part of IEC 61968 specifies the information content of a set of message types that can be used to support business functions related to Maintenance and Construction. Typical uses of the message types defined in this part of IEC 61968 include planned maintenance, unplanned maintenance, conditional maintenance, work management, new service requests, etc. Message types defined in other parts of IEC 61968 may also be relevant to these use cases.

The mapping of these messages to specific technologies such as XML will be described at a later date.

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 60050, *International Electrotechnical Vocabulary*

IEC 61968-1, *Application integration at electric utilities – System interfaces for distribution management – Part 1: Interface architecture and general recommendations*

IEC TS 61968-2, *Application integration at electric utilities – System interfaces for distribution management – Part 2: Glossary*

IEC 61968-4, *Application integration at electric utilities – System interfaces for distribution management – Part 4: Interfaces for records and asset management*

IEC 61968-9:2013, *Application integration at electric utilities – System interfaces for distribution management – Part 9: Interfaces for meter reading and control*

IEC 61968-11, *Application integration at electric utilities – System interfaces for distribution management – Part 11: Common information model (CIM) extensions for distribution*

IEC 61970-301, *Energy management system application program interface (EMS-API) – Part 301: Common information model (CIM)* base

IEC TR 62051, *Electricity metering – Glossary of terms*

IEC 62055-31, *Electricity metering – Payment systems – Part 31: Particular requirements – Static payment meters for active energy (classes 1 and 2)*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this standard, the terms and definitions given in IEC 60050-300, IEC TS 61968-2, IEC TR 62051, IEC 62055-31 and the following terms apply.

Where there is a difference between the definitions in this standard and those contained in other referenced IEC standards, then those defined in IEC 61968-2 shall take precedence over the others listed, and those defined in IEC 61968-6 shall take precedence over those defined in IEC 61968-2.

3.2 Abbreviations

AM	Asset Management
CIM	Common Information Model
NO	Network Operations
OMS	Outage Management System
WM	Work Management
GINV	Geographical Inventory
MAI	Maintenance & Inspection
CON	Construction
DGN	Design
SCHD	Work Scheduling and Dispatching
FRD	Field Recording
NE	Network Extension Planning
TCM	Trouble Call Management
MR&C	Meter Read and Control
CS	Customer Services
HR	Human Resources
FIN	Financials

4 Reference and information models

4.1 General

The message types defined in this document are based on a logical partitioning of the DMS business functions and components called the IEC 61968 Interface Reference Model.

Figure 1 provides an overview diagram which puts Maintenance and Construction as well as Work Management in context of Enterprise Asset Management. The diagram demonstrates the relationship between asset and power system resource. It also relates Work to the construction process (when new asset is built) and to the maintenance process (when inspection or repair is performed on the existing asset).

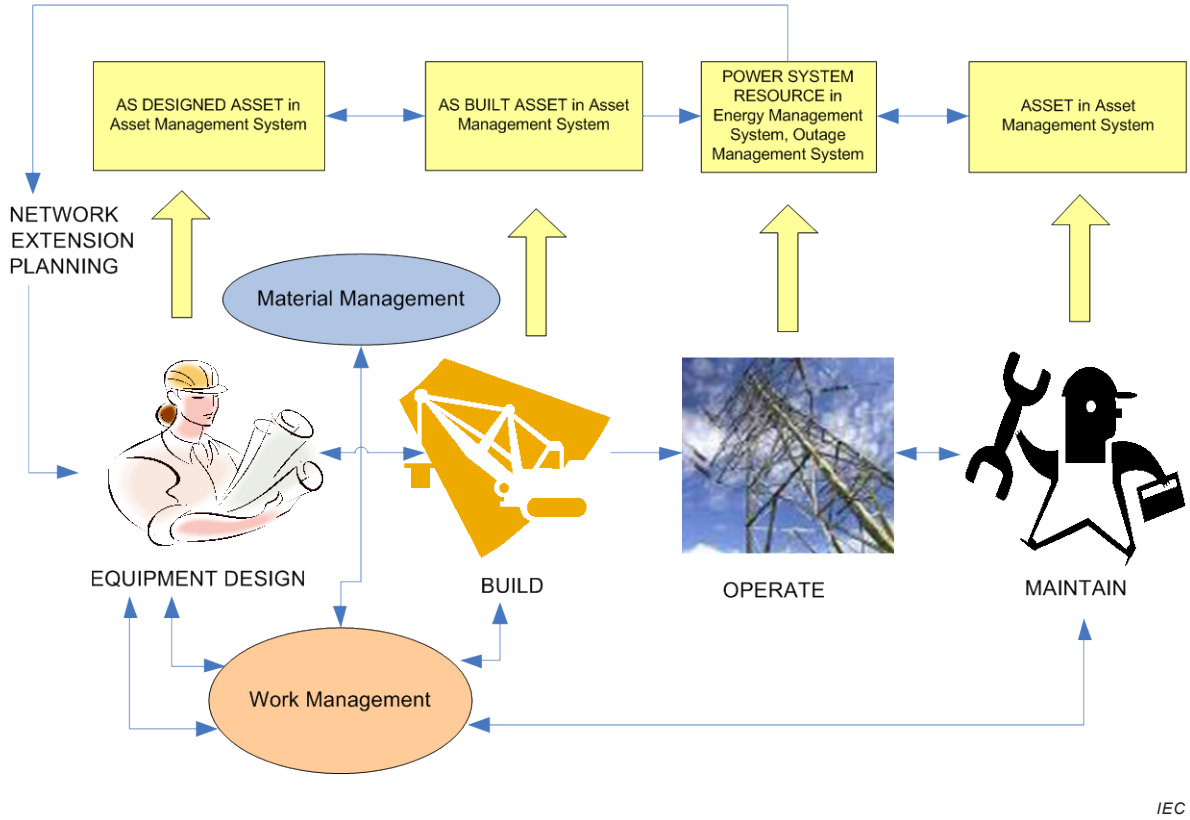


Figure 1 – Asset life cycle

The contents of the message types are based on a static information model to ensure consistency of field names and data types. Each message type is defined as a set of fields copied from the information model classes in IEC 61968-11. The message types defined in this standard are intended to satisfy a majority of typical applications. In some particular project implementations, it may be desirable to modify the set of fields using a methodology such as that described in IEC 61968-1.

4.2 Reference model

4.2.1 General

The diagram shown in Figure 2 serves as reference model and provides example of the logical components and data flows related to this International Standard. Subclause 4.5.2 provides references to terms that are defined by the CIM.

The diagram in Figure 2 describes the flows between the components in the reference model. The numbers in brackets provide linkages to the flow definitions. As per the title of Figure 2, this reference model includes only a subset of all maintenance and construction functions. The rest of the functions, especially functions related to Construction, will be included in future editions of this standard.

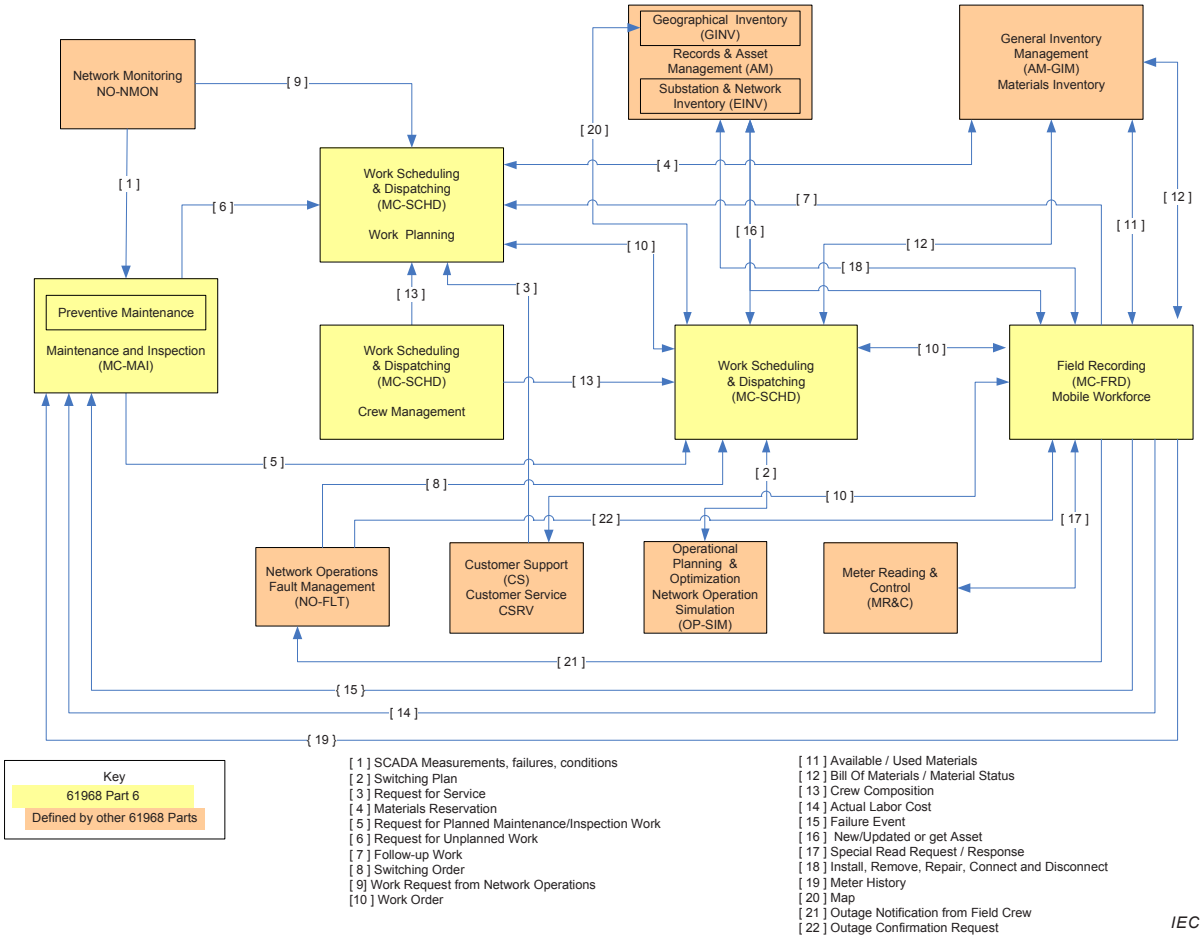


Figure 2 – IEC 61968-6 reference model for maintenance

The reference architecture reflects several main logical components (potentially realized as systems or subsystems) related to maintenance:

a) Geographical Inventory (GINV)
b) Maintenance and Inspection (MAI)
c) Construction (CON)
d) Design (DGN)
e) Work Scheduling and Dispatching (SCHD)
f) Field Recording (FRD)
g) Asset Management System (AM)
h) Network Operations Simulation (SIM)
i) Network Operations (NO)
j) Network Extension Planning (NE)
k) Trouble Call Management (TCM)
l) Meter Read and Control (MR&C)
m) Customer Service (CS)
n) Human Resources (HR)
o) Materials Management System
p) Financial System (FIN)

4.2.2 Geographical Inventory (GINV)

Management of geospatial data, typically by utilizing computer graphics technology to enter, store, and update graphic and non-graphic information. Geographic depictions and related non-graphic data elements for each entity are typically stored some form of a database. The graphic representations are referenced using a coordinate system that relates to locations on the surface of the earth. Information in the database can be queried and displayed based upon either the graphic or non-graphic attributes of the entities.

4.2.3 Maintenance and Inspection (MAI)

Work involving inspection, cleaning, adjustment, or other service of equipment to enable it to perform better or to extend its service life. Examples of maintenance work are routine oil changes and painting. Examples of inspection work are pole inspections, vault inspections, and substation inspections.

4.2.4 Construction

Examples of construction work include service installations, line extensions, and system betterment projects.

4.2.5 Design

A design is created by an engineer or work planner using the Design and Estimation System (DGN). Designs can be made up of individual line items or by a set of “Compatible Units” or CUs. Line items and Compatible Units are associated with a Design Location which is associated with the Location object in the CIM.

4.2.6 Work Scheduling and Dispatching (SCHD)

Work scheduling and dispatching makes it possible, for a defined scope of work, to assign the required resources and keep track of work progress.

4.2.7 Field Recording (FRD)

Field recording is often accomplished through hand held devices which allow field personnel to view and enter information relevant to the work they are performing in the field. For example, line crews and servicemen can access their respective district maps, do searches by pole number, substation, transformer number, switch numbers, and feeder names.

4.2.8 Network Operation Simulation (SIM)

This set of functions allows facilities to define, prepare and optimise the sequence of operations required for carrying out maintenance work on the system (release/clearance orders) and operational planning.

4.2.9 Customer Service (CS)

This function set covers the different aspects related to customer interfaces required for operation and commercial purposes.

4.2.10 Trouble call management (TCM)

Customer troubles related to blackouts are then transmitted and compared with network data in order to provide accurate information on the incident.

4.2.11 Financial (FIN)

Financial performance across the whole organization, which includes the evaluation of investments in capital projects, maintenance, or operations. These processes include risk and benefit costs and impact on levels of service.

4.2.12 Human resources

Human resource information contains personnel information for each employee. It includes such data as job code, employee status, department or place in the organisation, and job-related skills. This information is often needed and updated by work and project management-oriented business sub-functions.

4.2.13 Asset Management (AM) System

Utilities will employ some form of asset management software in an effort to maintain detailed records regarding their physical assets. Asset management is treated categorically in IEC 61968-4.

4.2.14 Network Operations (NO)

This function provides utilities for supervising main substation topology (breaker and switch state) and control equipment status. It also provides the utilities for handling network connectivity and loading conditions. It also makes it possible to locate customer telephone complaints and supervise the location of field crews.

4.3 Interface reference model

It is not the intention of this standard to define the applications and systems that vendors should produce. It is expected that a concrete (physical) application will provide the functionality of one or more abstract (logical) components as listed in this standard. These abstract components are grouped by the business functions of the Interface Reference Model.

In this standard, the term abstract component is used to refer to that portion of a software system that supports one or more of the interfaces defined in IEC 61968-3 to -9 and IEC 61968-13. It does not necessarily mean that compliant software is delivered either as separate modules or as a single system.

IEC 61968-1 describes infrastructure services common to all abstract components while IEC 61968-3 to -9 and -13 define the details of the information exchanged for specific types of abstract component.

IEC 61968 defines that:

a) An inter-application infrastructure is compliant if it supplies services defined in IEC 61869-1 to support at least two applications with interfaces compliant to sections of IEC 61968-3 to -9 and -13.

b) An application interface is compliant if it supports the interface standards defined in IEC 61968-3 to -9 and -13 for the relevant abstract components defined in the Interface Reference Model.

c) An application is only required to support interface standards of the applicable components listed under abstract components. An application is not required to support interfaces required by other abstract components of the same business sub-function or within the same business function. While this standard primarily defines information exchanged among components in different business functions, it will occasionally also define information exchanged among components within a single business function when a strong market need for this capability has been realised.

4.4 Maintenance and construction functions and components

The following table shows those functions and typical components that are applicable to the message types defined in this document: IEC 61968-6: Interfaces for maintenance and construction.

For the message types defined in this document, it is expected that the typical abstract components listed in Table 2 will be producers of information. Typical consumers of the information are the other components as listed in IEC 61968-1.

Table 2 – Business functions and abstract components

Business functions	Business sub-functions	Abstract components
Maintenance and Construction (MC)	Maintenance and Inspection (MAI)	Maintenance Orders Maintenance Rules Inspection/Maintenance History Work Procedures
	Construction (CON)	Work Flow Cost Reconciliation Work Approval Permits Customer Billing Tracking Project Costing
	Design (DGN)	Construction Engineering Estimating Bill of Materials Compatible Units
	Field Recording (FRD)	As-built Reporting Time Reporting Asset Condition
	Scheduling and Dispatching (SCHD)	Resource Management Work Planning Work Allocation Material Requisitioning

4.5 Static information model

4.5.1 Information model classes

The information model relevant to records and asset management consists of classes that provide a template for the attributes for each message. The classes are defined in detail in IEC 61968-11 or 61970-301.

4.5.2 Classes for maintenance and construction

Table 3 lists classes that are used within message types. All of the attributes of these classes are contained within a message type.

Table 3 – Maintenance and construction classes

Class name	Class description
Asset	Tangible resource of the utility, including power system equipment, various end devices, cabinets, buildings, etc. For electrical network equipment, the role of the asset is defined through PowerSystemResource and its subclasses, defined mainly in the Wires model (refer to IEC61970-301 and model package IEC61970::Wires). Asset description places emphasis on the physical characteristics of the equipment fulfilling that role.
WorkAsset	Asset used to perform work.
ProcedureDataSet	A data set recorded each time a procedure is executed. Observed results are captured in associated measurement values and/or values for properties relevant to the type of procedure performed
Procedure	Documented procedure for various types of work or work tasks on assets.
WorkLocation	Information about a particular location for various forms of work.
MaterialItem	The physical consumable supply used for work and other purposes. It includes items such as nuts, bolts, brackets, glue, etc.
Work	Document used to request, initiate, track and record work.
Meter	Physical asset that performs the metering role of the usage point. Used for measuring consumption and detection of events.
BaseWork	Common representation for work and work tasks.
WorkTimeSchedule	Time schedule specific to work.
WorkTask	A set of tasks is required to implement a design.

NOTE The class definitions provided here are for convenience purposes only. The normative definitions are provided by the CIM.

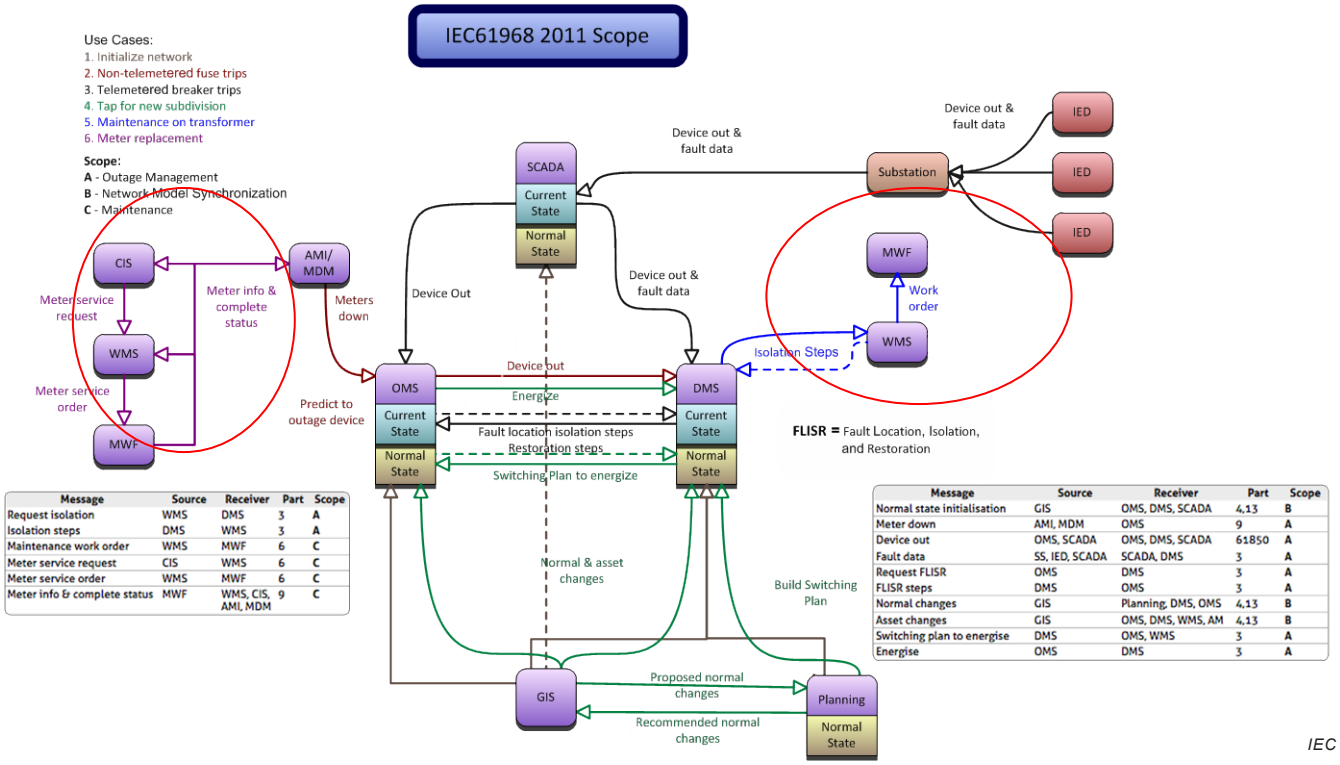
4.6 Maintenance and construction use cases

Continuing the iterative development process IEC 61968-6 has been supporting from the work management perspective the most common end-to-end business cases:

1) Initialize the network
2) Non-telemetred fuse trips
3) Telemetered breaker trips
4) Tap for new subdivision
5) Maintenance on transformer
6) Meter replacement

IEC 61968-6 has been addressing these use cases and messages in a holistic approach in collaboration with IEC 61968-3, -4, -9 and -13. The following diagram (see Figure 3) shows the end-to-end use cases and messages and expresses the required interaction between different parts of IEC 61968.

IEC 61968-6 has concentrated on work management use cases such as Maintenance of transformer and Meter Replacement (see red circles). Following this proposed interative process, the most important messages in these use cases: WorkRequest, MaintenanceOrder, ServiceOrder and SwitchingOrder have been addressed first and presented in this document.



Message	Source	Receiver	Part	Scope
Request isolation	WMS	DMS	3	A
Isolation steps	DMS	WMS	3	A
Maintenance work order	WMS	MWF	6	C
Meter service request	CIS	WMS	6	C
Meter service order	WMS	MWF	6	C
Meter info & complete status	MWF	WMS, CIS, AMI, MDM	9	C

Message	Source	Receiver	Part	Scope
Normal state initialisation	GIS	OMS, DMS, SCADA	4,13	B
Meter down	AMI, MDM	OMS	9	A
Device out	OMS, SCADA	OMS, DMS, SCADA	61850	A
Fault data	SS, IED, SCADA	SCADA, DMS	3	A
Request FLISR	OMS	DMS	3	A
FLISR steps	DMS	OMS	3	A
Normal changes	GIS	Planning, DMS, OMS	4,13	B
Asset changes	GIS	OMS, DMS, WMS, AM	4,13	B
Switching plan to energise	DMS	OMS, WMS	3	A
Energise	OMS	DMS	3	A

Figure 3 – End-to-end business cases and related messages

Clause 5 provides more detailed use cases for a specific interaction such as meter replacement or transformer repair. For these use cases, messages have been developed and presented along with the use case.

5 Maintenance and construction message types

5.1 General

The purpose of this section is to describe the message types related to IEC 61968-6. It is important to note that some of these message types may also be used by other parts of IEC 61968. The general approach to the realization of message structures and XML schemas for IEC 61968 messages is described in IEC 61968-1.

Although they may be represented in sequence diagrams for context and completeness, this document does not describe message formats that are defined by other parts of IEC 61968. The key message payload structures defined by this part of IEC 61968 refer to work related business processes such as:

- Requesting Work
- Work Scheduling and Dispatching
- Work Execution
- Work Closing

Work scheduling of an unplanned work includes work planning, materials reservation, composing the crew and obtaining the relevant permits if required. Upon planning the work, the work can be dispatched for execution.

The normative XML schemas for messages defined by this part are provided in Annex B, providing more detailed, annotated descriptions of the message structures. Message

structures are also diagrammed within this section. The notation convention shows required elements with a solid outline, and option elements with dashed outlines.

It is also important to note that the use cases and sequence diagrams provided in this section are informative in nature, and are intended to provide examples of usage for the normative messages definitions. There is no intent by this standard to standardize specific business processes.

5.2 Work

Work is created any time a person is required to perform an activity related to company assets. Examples of work include:

- Construction work (e.g. service installations, line extensions, and system betterment projects)
- Service work (e.g meter replacements, Turn-on, Turn-off, "switch replacement", "pole replacement" etc.)
- Maintenance work (e.g. routine oil changes, painting, "forest thinning", "switch maintenance", "battery replacement", etc.)
- Inspection or diagnosis work (e.g. pole inspections, vault inspections, Substation inspections, "identifying areas for forest thinning", "MV/LV substation visit", "ground measurement", "manual switch testing")
- Trouble work (e.g. Power outage, voltage quality problem, etc.)

Each type of work may have references to other CIM objects based on the type of work. For example, Maintenance work may not have a reference to a customer and construction work will most likely not have a cross reference to an unplanned outage.

5.3 Work request message

5.3.1 General

Request for new work can come from various sources:

1) Requests for work can come from any Network Operation systems. These are the systems that operate an asset (Distribution Management System, Outage Management System etc.). These requests for work can be: Emergency Maintenance (EM) and Corrective/Repair Maintenance (CM)
2) Requests for work can come from Maintenance system itself which creates a Job Plan for inspection and maintenance of an asset after an asset is registered. This maintenance is generally called:
   a) Preventive maintenance (PM)
   b) Conditional based maintenance
3) Requests for work can also come from the Asset Design system that designs new plant/equipment or modifies and old plant as result of engineering requests:

   Capital (CAP) work or Modified (MOD) work

5.3.2 Applications – Carry out planned maintenance with temporary equipment

Request for work is triggered by maintenance and inspection, or by periodic schedule for work. Example activity is tree trimming, which requires two cuts and a temporary generator or major maintenance on a power transformer where temporary facility is required.

Maintenance and inspection (can be asset management system) send the request for work to work scheduling subsystem. This request identifies and describes the work requested, provides the location of work, an asset on which the work will need to be performed (if work performed on asset) and desired time of work. It also provides priority of that work which will

work scheduling system have to take into account when prioritising incoming requests for work.

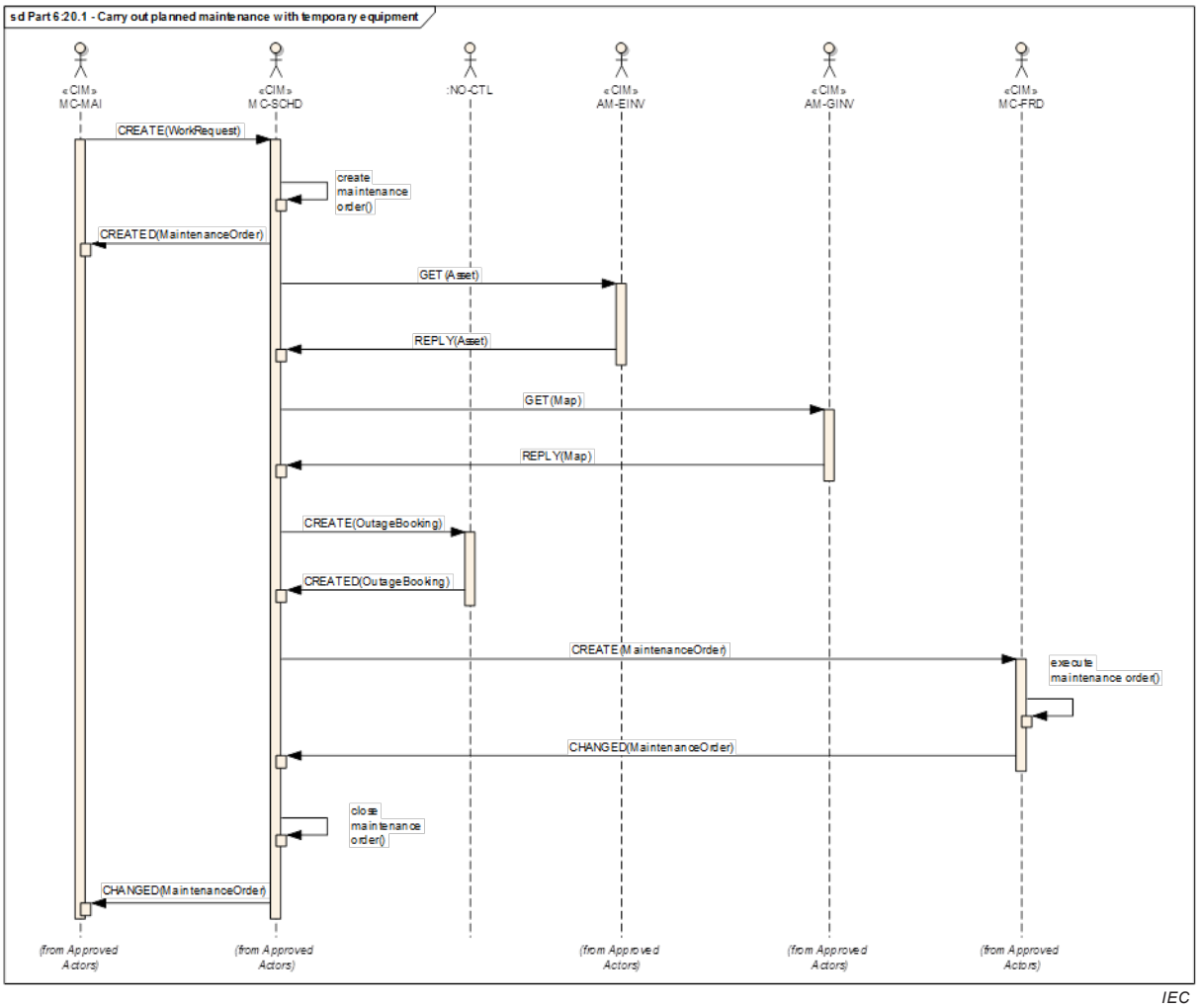


Figure 4 – Carry out planned maintenance with temporary equipment

The work scheduling system books an outage for this work in the Network Control system. It also ensures that temporary equipment is available so it can be used for the work. A Maintenance Order is created and relevant information sent to the mobile work force including: location, description and schedule of requested work along with identification of temporary equipment and procedure to do the work as well as necessary details about the target asset. After the work is executed by the mobile work force, the response message is sent to the work management system confirming that the work is completed. Subsequently, the Work Management system closes the work and sends to the asset management system response to their work request confirming that their requested work was completed and the work request is closed.

Some of the message payloads in Figure 4 such as OutageBooking and Map will be defined by other IEC 61968 parts, in this case by IEC 61968-3 and -4 respectively. They are included in Figure 4 for completeness of the exchange.

This use case and its message payloads detail the IEC 61968-6 IRM outlined in Figure 2. For example, CREATE(WorkRequest) message corresponds to interface 5 (Request for Planned Mainenance/Inspection work), GET(Asset) corresponds to interface 16 (New/Updated or Get Asset), GET(Map) corresponds to interface 20 (Map) from IRM while CREATE(MaintenanceOrder) corresponds to interface 10 (Work Order). This is because there can be different types of Work Order including Maintenance Order.

In relation to end-to-end business cases outlined in Figure 3, this use case fits into use cases group 5 (Maintenance on transformer).

5.3.3 Message format

The message payload structure shown in Figure 5 describes WorkRequests. It can be used for zero or more Work objects.

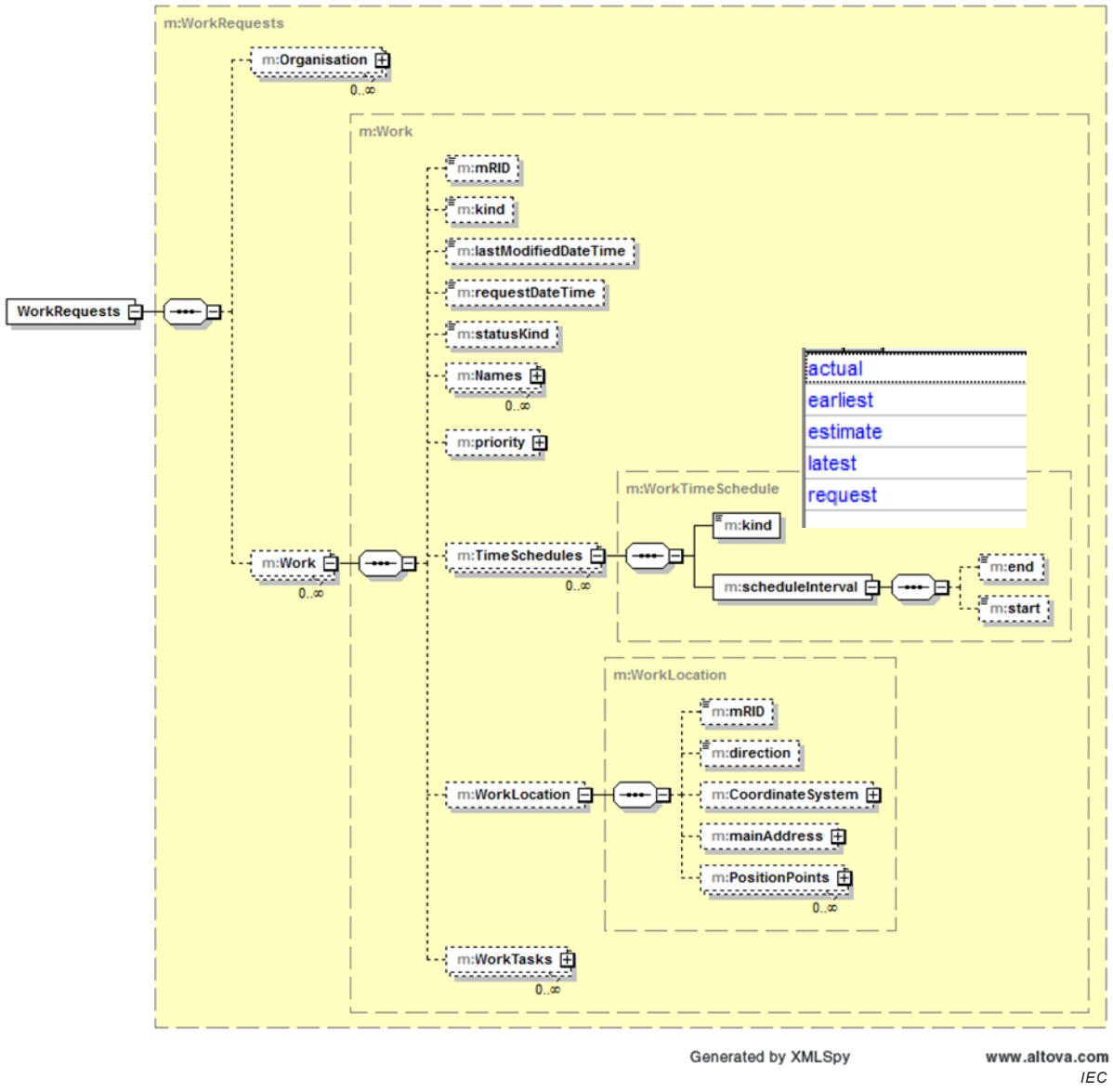


Figure 5 – Work request message format

The message may include more than one Work item. Work includes at least one WorkTask. Work Location is provided for the work but in addition location of an asset can be provided linked to the asset if that is required. Crew Type can also be provided in Work request identifying skills of the crew required for that type of work. The detailed, annotated XML schema is defined in Annex B.

5.4 Service order message

5.4.1 General

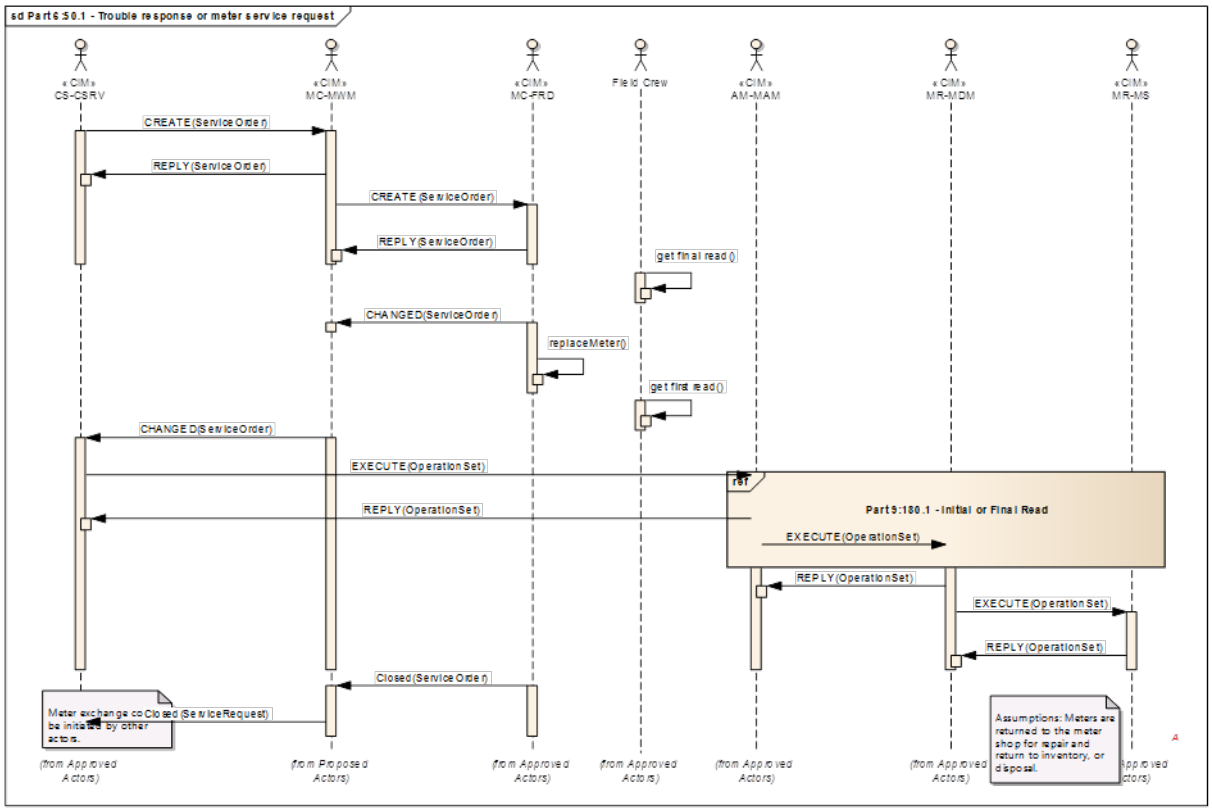
A service order is a subclass of work, where customer or/and an EndDeviceAsset is involved. As a consequence of changes to customer service or payment issues, a customer service may be disconnected and reconnected. A meter may need to be replaced or the service needs to be switched from one to another retailer. Service may be required on other customer assets such as solar panels.

Remark class including comment, time and type will be used to capture any applicable comments (for example CSR notes) at either the ServiceOrder or task level. Remark will be linked to person who provided this remark along with the role of that person.

5.4.2 Applications – Meter installation and removal

It may be necessary to install, remove or configure meters as a consequence of the registration of a new customer, removal of a customer or the switch of a customer from one supplier to another. There may also be the need to change out a meter which involves the removal of the old meter, installation of the new meter and configuration of the new meter as needed by the metering system.

Prior to meter installation, subscriptions have been established between the MS and the MDM to receive updates to customer data. The workflow for a meter change out is shown in Figure 6. This encompasses both the meter installation and meter removal processes.



IEC

Figure 6 – Meter installation and removal

There may be a delay between when the ServiceOrder is initiated and when the meter is actually replaced. REPLY acknowledges the receipt of the ServiceOrder. A CHANGED message would be sent back specifically to the originator to notify of the state change.

The meter is replaced by field personnel.

Final read is taken from meter, the meter is replaced and the first read is taken from the new meter. These meter reads can be sent to dedicated subscribers such as MDM or MS in two ways: ServiceOrder message provides capability to include the meter readings in the response message i.e. Closed(ServiceOrder). Meter readings can also be sent in a dedicated meter readings messages Created(MeterReadings).

The OperationSet steps are included to synchronize the revised Master Data (the configuration data for the new and old meters and the association changes with the UsagePoint) between the metering systems. This Master Data Management approach is described further in IEC 61968-9:2013.

This use case and its message payloads detail the IEC 61968-6 IRM outlined in Figure 2. For example, CREATE(ServiceOrder) message from Customer Support system to Work Scheduling system corresponds to interface 3 (Request for Service) while CREATE(ServiceOrder) from Work Scheduling System to Mobilie Work Force corresponds to interface 10 (Work Order). This is because there can be different types of Work Order including Service Order.

In relation to end-to-end business cases outlined in Figure 3, this use case fits into use cases group 6 (Meter Replacement).

5.4.3 Message format

The message payload structure shown in Figure 7 describes ServiceOrder. It can be used for zero or more Work objects.

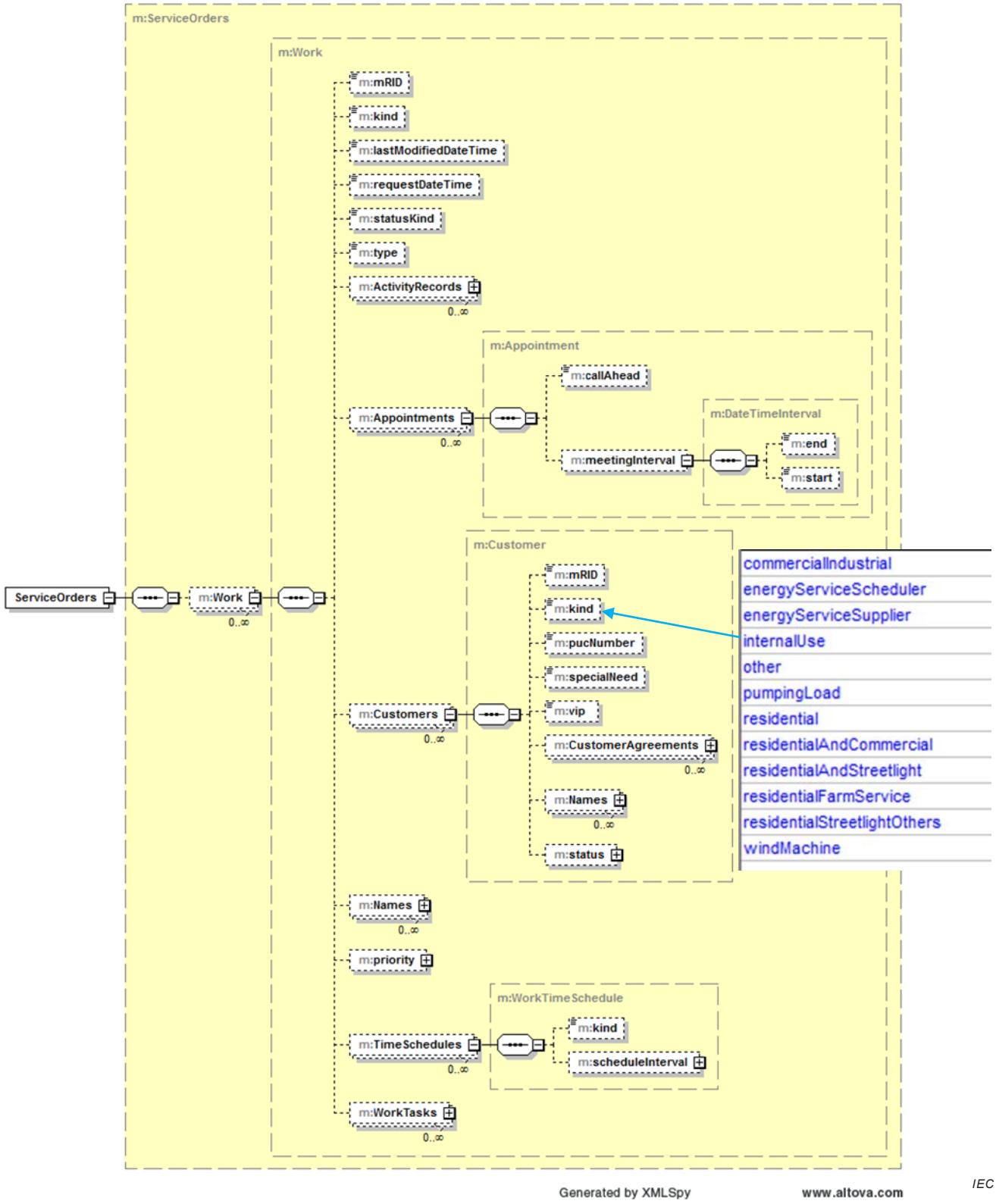


Figure 7 – Service order message format

The message may include more than one Work item. Each item may refer to multiple meters and by work tasks to provide the means to replace a meter. Message provides capability to identify the meter that is to be replaced and new meter that should be installed. An appointment can be arranged with the customer for whom the work is being done. Meter readings can be obtained as a part of the work. In the case of a meter replacement, readings for the old meter can be obtained as well as initial readings for the new meter.

An asset in this message can be not only meter but another type of asset such as solar panel. In the requesting message Time Schedule defines the planned time of meter exchange while in responding message it provides the actual time of meter exchange.

The response message can also provide the properties of new installed asset that can be shared with asset management system.

The detailed, annotated XML schema is defined in Annex B.

5.5 Maintenance order message

5.5.1 General

Maintenance order allows for work involving inspection, cleaning, adjustment, or other service of equipment to enable it to perform better or to extend its service life. Examples of maintenance work are routine oil changes and painting. Examples of inspection work are pole inspections, vault inspections, and substation inspections.

5.5.2 Applications

5.5.2.1 Maintenance of high voltage device (Transformer etc.) requested by Mobile Work Force

This use case describes a situation where a field worker identifies maintenance work that is required while performing related or unrelated work in the field, and that maintenance work requires materials and switching.

Figure 8 outlines the sequence of work request from Mobile Work Force.

The field worker notices an issue and communicates a work request back to engineering and maintenance.

A maintenance planner creates a maintenance work order, requests a switching plan, creates a bill of materials, and prioritizes the work. When the required materials and resources are available, the maintenance work order is released to mobile work force management.

The maintenance work order identifies observations made by the initial field worker, details of the assets to be worked on, location details and other information required by the maintenance crew to do the work.

When the maintenance crew is ready to perform the maintenance work order, they coordinate with network operations who manage the switching order to isolate the device. Note that other crews may be assigned to different steps / locations for the switching order, and the maintenance crew may not take part in the switching order at all.

After they perform the maintenance work, the maintenance crew updates the maintenance work order with the details of the completed work, and submits the update back to maintenance and engineering. They also coordinate with network operations who manages the switching order to bring the device back into service.

As part of their completion of the maintenance order, the maintenance crew updates the maintenance order with the actual materials used.

The work order is closed and the asset records updated to reflect the work that was done including the time and materials expended.

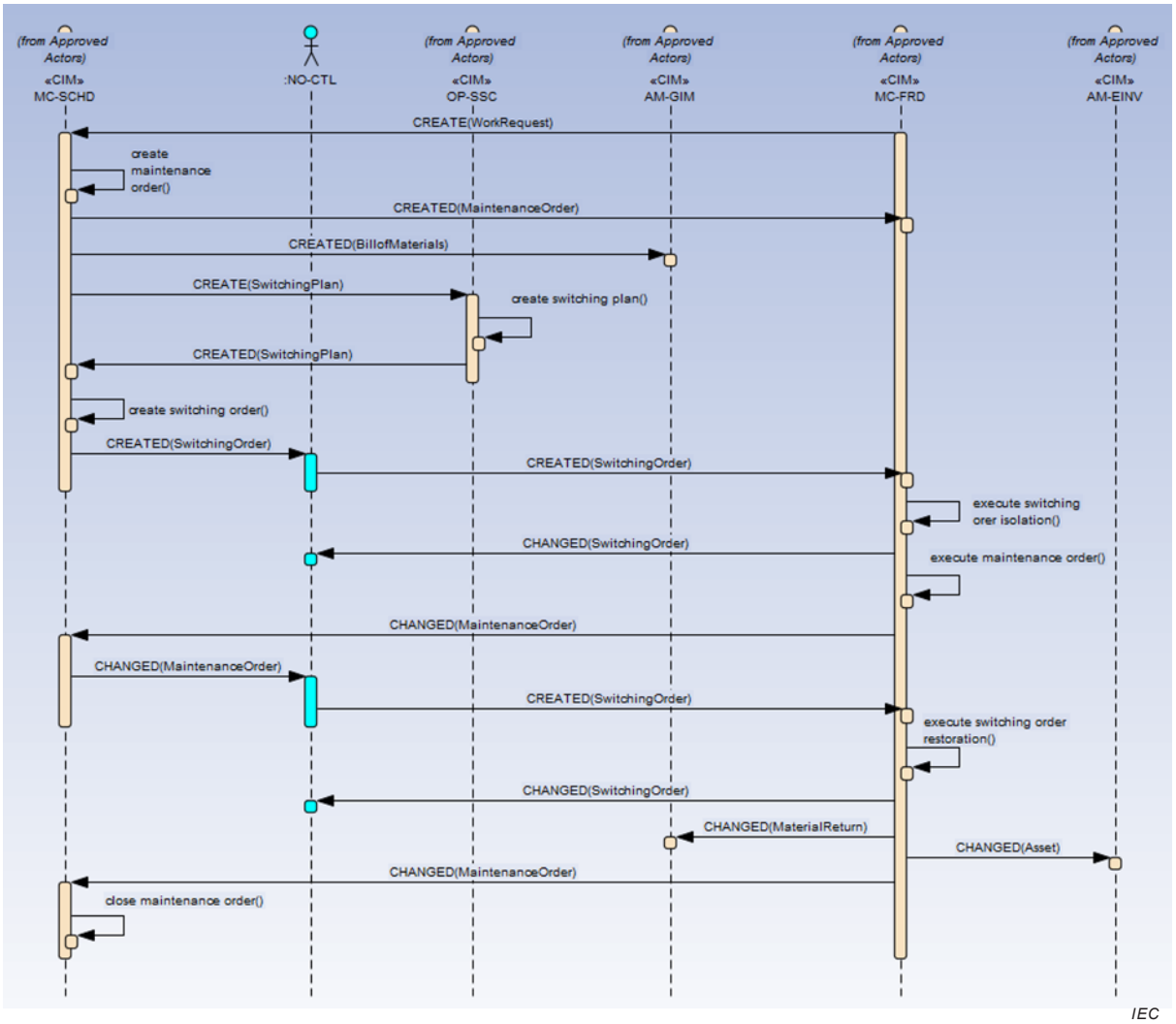


Figure 8 – Maintenance of high voltage device (transformer etc) requested by FRD

Some of the message payloads in the above diagram such as BillofMaterials, MaterialReturn and others will be defined by other IEC 61968 parts, in this case by IEC 61968-4. They are included in this diagram for completeness of the exchange.

This use case and its message payloads detail the IEC 61968-6 IRM outlined in Figure 2. For example, CREATE(WorkRequest) message corresponds to interface 7 (Follow up work), CREATE(BillofMaterials) corresponds to interface 4 (Materials Reservation), CREATE(SwitchingPlan) corresponds to interface 2 (Switching Plan) from IRM while CREATED(MaintenanceOrder) corresponds to interface 10 (Work Order). This is because there can be different types of Work Order including Maintenance Order.

In relation to end-to-end business cases outlined in Figure 3, this use case fits into use cases group 5 (Maintenance on transformer).

5.5.3 Message format

Figure 9 shows the message payload structure used for MaintenanceOrder messages.

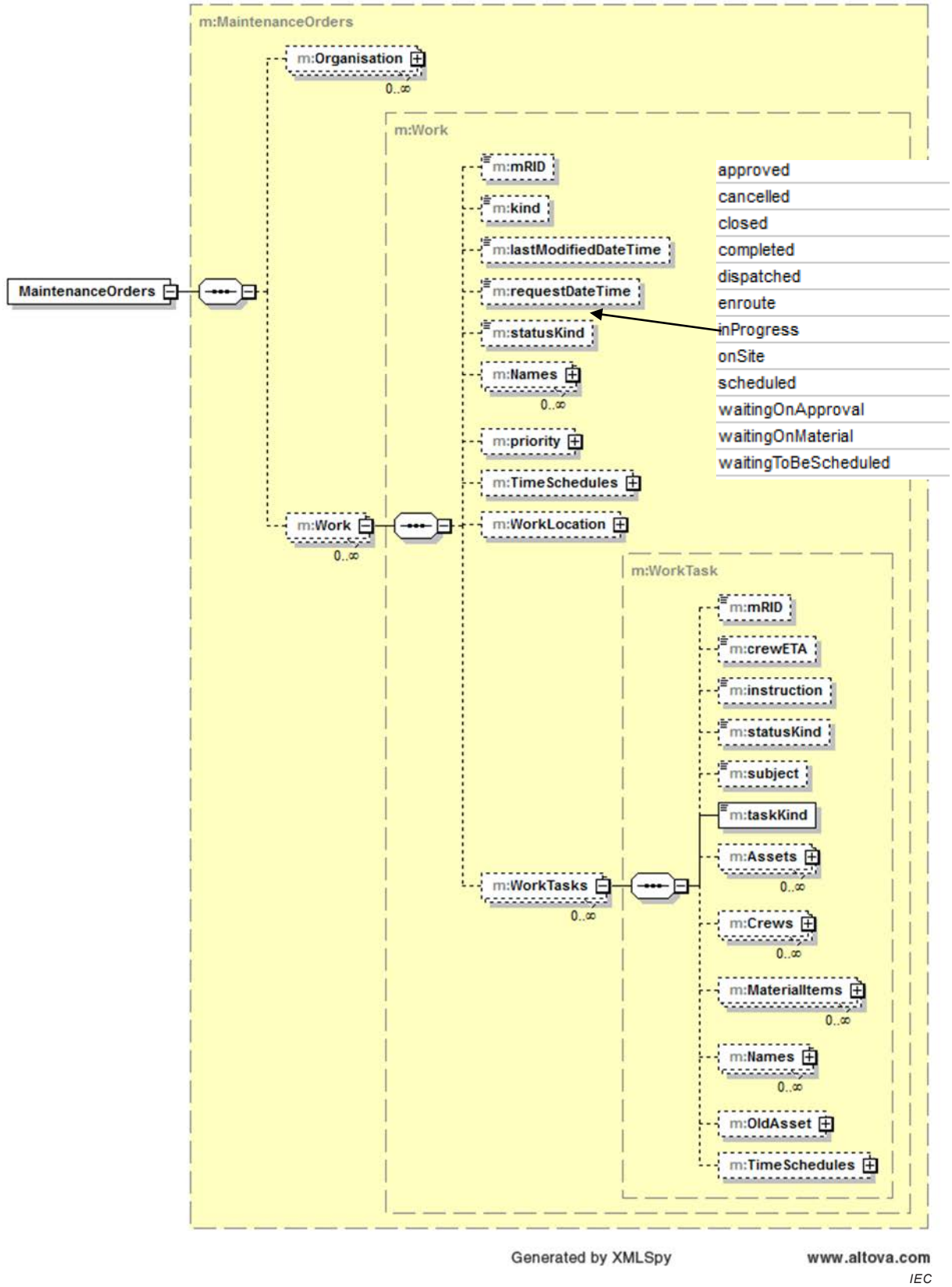


Figure 9 – MaintenanceOrder message format

6 Document conventions

6.1 UML diagrams

All UML-based sequence diagrams contained herein are to be considered as informative examples of how a message exchange could occur.

NOTE One of the strengths of the CIM is its flexibility. As technology advances, and new needs develop, new messages can be created. These new messages might involve additional systems (not pictured.) These new messages may leverage different options than the ones depicted in the example.

All UML-based communication diagrams and message flow diagrams contained herein are to be considered informative.

All UML-based class diagrams contained herein are to be considered informative. The reader is referred to IEC 61968-1 to locate the document that contains the normative definitions of the classes used in the CIM.

6.2 Message definitions

6.2.1 General

Message format diagrams contained in the body of this document are to be considered normative, with the normative XML Schemas being supplied in Annex B.

Use cases and sequence diagrams presented in this document are for informative purposes only, and represent usage examples for the normative message definitions.

6.2.2 Mandatory versus optional

The messages described within this standard were derived from use cases which satisfy an underlying business need for a specific information exchange. Each use case provides a given context for the use of the CIM. Message format diagrams describe the elements which are passed. The elements depicted in dashed-line boxes are to be considered optional in a given context. The elements depicted in solid boxes are to be considered mandatory in a given context. If a diagram should depict an entire class as mandatory or optional, the reader should interpret this to mean that the use of the class is either mandatory or optional, but not that every element within the class is now mandatory or optional. The reader must refer to the normative definition of the class to determine this.

Annex A
(normative)

Description of message type verbs

Table A.1 – Commonly used verbs

Verbs	Meaning	Message Structure
create	The ‘create’ verb is used to publish a request to the master system to create a new object. The master system may in turn publish the new object as an event using the verb ‘created’. The master system may also use the verb ‘reply’ to respond to the ‘create’ request, indicating whether the request has been processed successfully or not.	Request message will include HeaderType and Payload structures.
change	The ‘change’ verb is used to publish a request to the master system to make a change to an object based on the information in the message. The master system may in turn publish the changed object as an event using the verb ‘changed’ to notify that the object has been changed since last published. The master system may also use the verb ‘reply’ to respond to the ‘change’ request, indicating whether the request has been processed successfully or not.	Request message will include HeaderType, RequestType and optionally Payload structures. The requestType structure will potentially identify specific object IDs.
cancel	The’cancel’ verb is used to publish a request to the master system to cancel the object, most commonly in the cases where the object represents a business document. The master system may in turn publish the cancelled message as an event using the verb ‘canceled’ to notify that the document has been cancelled since last published. The master system may also use the verb ‘reply’ to respond to the ‘cancel’ request, indicating whether the request has been processed successfully or not. The ‘cancel’ verb is used when the business content of the document is no longer valid due to error(s).	Request message will include HeaderType, RequestType and optionally Payload structures. The requestType structure will potentially identify specific object IDs.
close	The ‘close’ verb is used to publish a request to the master system to close the object, most commonly in cases where the object represents a business document. The master system may in turn publish the closed message as an event using the verb ‘closed’ to notify that the document has been closed since last published. The master system may also use the verb ‘reply’ to respond to the ‘close’ request, indicating whether the request has been processed successfully or not. The ‘close’ verb is used when the business document reaches the end of its life cycle due to successful completion of a business process.	Request message will include HeaderType, RequestType and optionally Payload structures. The requestType structure will potentially identify specific object IDs.
delete	The ‘delete’ verb is used to publish a request to the master system to delete one or more objects. The master system may in turn publish the closed message as an event using the verb ‘deleted’ to notify that the object has been deleted since last published. The master system may also use the verb ‘reply’ to respond to the ‘delete’ request, indicating whether the request has been processed successfully or not. The ‘delete’ verb is used when the business object should no longer be kept in the integrated systems either due to error(s) or due to archiving needs. However, the master system will most likely retain a historical record of the object after deletion.	Request message will include HeaderType, RequestType and optionally Payload structures. The requestType structure will potentially identify specific object IDs.
get	The ‘get’ verb is used to issue a query request to the master system to return a set of zero or more objects that meet a specified criteria. The master system may in turn return zero or more objects using the ‘reply’ verb in a response message.	Request message will include HeaderType and RequestType structures. The requestType structure will potentially identify specific parameters to qualify the request, such as object IDs.

Verbs	Meaning	Message Structure
created	The ‘created’ verb is used to publish an event that is a notification of the creation of a object as a result of either an external request or an internal action within the master system of that object. This message type is usually subscribed by interested systems and could be used for mass updates. There is no need to reply to this message type.	Event message will include HeaderType and Payload structures.
changed	The ‘changed’ verb is used to publish an event that is a notification of the change of an objectt as a result of either an external request or an internal action within the master system of that object. This could be a generic change in the content of the object or a specific status change such as “approved”, “issued” etc. This message type is usually subscribed by interested systems and could be used for mass updates. There is no need to reply to this message type.	Event message will include HeaderType and Payload structures.
closed	The ‘closed’ verb is used to publish an event that is a notification of the normal closure of an objectt as a result of either an external request or an internal action within the master system of that object. This message type is usually subscribed by interested systems and could be used for mass updates. There is no need to reply to this message type.	Event message will include HeaderType and Payload structures.
canceled	The ‘canceled’ verb is used to publish an event that is a notification of the cancellation of an objectt as a result of either an external request or an internal action within the master system of that object. This message type is usually subscribed by interested systems and could be used for mass updates. There is no need to reply to this message type.	Event message will include HeaderType and Payload structures.
deleted	The ‘deleted’ verb is used to publish an event that is a notification of the deletion of an object as a result of either an external request or an internal action within the master system of that object. This message type is usually subscribed by interested systems and could be used for mass updates. There is no need to reply to this message type.	Event message will include HeaderType and Payload structures.
reply	There are two primary usages of the ‘reply’ verb, but in both cases it is only used in response to request messages, whether the pattern used is synchronous or asynchronous. The first usage is to indicate the success, partial success or failure of a transactional request to the master system to create, change, delete, cancel, or close a document. The second usage is in response to a ‘get’ request, where objects of interest may be returned in the response.	Used only for response messages. For responses to transactional requests, the message will contain HeaderType and ReplyType structures. For responses to get requests, the message will contain HeaderType, ReplyType and potentially Payload structures.
execute	This is used when the message is conveying a transaction that involves a variety of create, delete and/or change operations.	See OperationSet in Message.xsd.
executed	This provides for an event that indicates the execution of a transaction.	See OperationSet in Message.xsd.

It is important to note that the verbs are listed in the document are for convenience purposes and also to reflect changes that may be reflected in future versions of IEC 61968-1.

Note also that within the document (e.g. on sequence diagrams), verbs are case insensitive. However, within the standard Message they MUST be lower case. The verb SUBSCRIBE has been deprecated. Any usage of SUBSCRIBE is an indication that transport level (e.g. JMS) messages may be conveyed between parties, but these are not IEC 61968-9 messages.

Annex B
(normative)

XML Schemas for Message Payloads

B.1 General

The purpose of this annex is to provide XML schemas for message payloads to augment the descriptions provided earlier in this document. These XML Schemas were defined using profile definitions within CIMTool. These schemas may be extended as needed for specific implementation needs.

B.2 WorkRequest

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:a="http://langdale.com.au/2005/Message#" xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
xmlns="http://langdale.com.au/2005/Message#" xmlns:m="http://iec.ch/TC57/2014/WorkRequests#"
targetNamespace="http://iec.ch/TC57/2014/WorkRequests#" elementFormDefault="qualified"
attributeFormDefault="unqualified">
	<xs:annotation>
		<xs:documentation/>
	</xs:annotation>
	<xs:element name="WorkRequests" type="m:WorkRequests"/>
	<xs:complexType name="WorkRequests">
		<xs:sequence>
			<xs:element name="Organisation" type="m:Organisation" minOccurs="0"
maxOccurs="unbounded"/>
			<xs:element name="Work" type="m:Work" minOccurs="0"
maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="ActivityRecord" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#ActivityRecord">
		<xs:annotation>
			<xs:documentation>Records activity for an entity at a point in time; activity
may be for an event that has already occurred or for a planned activity.</xs:documentation>
		</xs:annotation>
		<xs:sequence>
			<xs:element name="createdDateTime" type="xs:dateTime" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#ActivityRecord.createdDateTime">
				<xs:annotation>
					<xs:documentation>Date and time this activity record has
been created (different from the 'status.dateTime', which is the time of a status change of the
associated object, if applicable).</xs:documentation>
				</xs:annotation>
			</xs:element>
			<xs:element name="reason" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#ActivityRecord.reason">
				<xs:annotation>
					<xs:documentation>Reason for event resulting in this activity
record, typically supplied when user initiated.</xs:documentation>
				</xs:annotation>
			</xs:element>
			<xs:element name="severity" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#ActivityRecord.severity">
				<xs:annotation>
```

```
                                        <xs:documentation>Severity level of event resulting in this
activity record.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="type" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#ActivityRecord.type">
                                    <xs:annotation>
                                        <xs:documentation>Type of event resulting in this activity
record.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="Asset" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Asset">
                            <xs:annotation>
                                <xs:documentation>Tangible resource of the utility, including power system
equipment, various end devices, cabinets, buildings, etc. For electrical network equipment, the role of
the asset is defined through PowerSystemResource and its subclasses, defined mainly in the Wires
model (refer to IEC61970-301 and model package IEC61970::Wires). Asset description places
emphasis on the physical characteristics of the equipment fulfilling that role.</xs:documentation>
                            </xs:annotation>
                            <xs:sequence>
                                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                                    <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="critical" type="xs:boolean" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset.critical">
                                    <xs:annotation>
                                        <xs:documentation>True if asset is considered critical for
some reason (for example, a pole with critical attachments).</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="utcNumber" type="xs:string" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset.utcNumber">
                                    <xs:annotation>
                                        <xs:documentation>Uniquely tracked commodity (UTC)
number.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Location" type="m:WorkLocation" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset.Location">
                                    <xs:annotation>
                                        <xs:documentation>Location of this
asset.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
```

```
                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                    <xs:sequence>
                                        <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name.name">
                                            <xs:annotation>
                                                <xs:documentation>Any free text
that name the object.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="NameType"
type="m:NameType" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                            <xs:annotation>
                                                <xs:documentation>Type of this
name.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                        </xs:sequence>
                    </xs:complexType>
                    <xs:complexType name="CoordinateSystem"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#CoordinateSystem">
                        <xs:annotation>
                            <xs:documentation>Coordinate reference system.</xs:documentation>
                        </xs:annotation>
                        <xs:sequence>
                            <xs:element name="crsUrn" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#CoordinateSystem.crsUrn">
                                <xs:annotation>
                                    <xs:documentation>A Uniform Resource Name (URN) for the
coordinate reference system (crs) used to define 'Location.PositionPoints'.</xs:documentation>
                                    <xs:documentation>An example would be the European
Petroleum Survey Group (EPSG) code for a coordinate reference system, defined in URN under the
Open Geospatial Consortium (OGC) namespace as: urn:ogc:def:uom:EPSG::XXXX, where XXXX is
an EPSG code (a full list of codes can be found at the EPSG Registry web site http://www.epsg-
registry.org/). To define the coordinate system as being WGS84 (latitude, longitude) using an EPSG
OGC, this attribute would be urn:ogc:def:uom:EPSG::4236.</xs:documentation>
                                    <xs:documentation>A profile should limit this code to a set of
allowed URNs agreed to by all sending and receiving parties.</xs:documentation>
                                </xs:annotation>
                            </xs:element>
                        </xs:sequence>
                    </xs:complexType>
                    <xs:complexType name="Crew" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Crew">
                        <xs:annotation>
                            <xs:documentation>Group of people with specific skills, tools, and
vehicles.</xs:documentation>
                        </xs:annotation>
                        <xs:sequence>
                            <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                                <xs:annotation>
                                    <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
```

```
                                        <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                        <xs:sequence>
                                            <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name.name">
                                                <xs:annotation>
                                                    <xs:documentation>Any free text
that name the object.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="NameType"
type="m:NameType" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                                <xs:annotation>
                                                    <xs:documentation>Type of this
name.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="Name" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name">
                            <xs:annotation>
                                <xs:documentation>The Name class provides the means to define any
number of human readable  names for an object. A name is &lt;b&gt;not&lt;/b&gt; to be used for
defining inter-object relationships. For inter-object relationships instead use the object identification
'mRID'.</xs:documentation>
                            </xs:annotation>
                            <xs:sequence>
                                <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.name">
                                    <xs:annotation>
                                        <xs:documentation>Any free text that name the
object.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="NameType" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                    <xs:annotation>
                                        <xs:documentation>Type of this name.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                        <xs:sequence>
                                            <xs:element name="description" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType.description">
```

```
                                                <xs:annotation>
                                                    <xs:documentation>Description of
the name type.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType.name">
                                                <xs:annotation>
                                                    <xs:documentation>Name of the
name type.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="NameTypeAuthority"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType.NameTypeAuthority">
                                                <xs:annotation>
                                                    <xs:documentation>Authority
responsible for managing names of this type.</xs:documentation>
                                                </xs:annotation>
                                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                    <xs:sequence>
                                                        <xs:element
name="description" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority.description">
                                                            <xs:annotation>

        <xs:documentation>Description of the name type authority.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameTypeAuthority.name">
                                                            <xs:annotation>

        <xs:documentation>Name of the name type authority.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                    </xs:sequence>
                                                </xs:complexType>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="NameType" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType">
            <xs:annotation>
                <xs:documentation>Type of name. Possible values for attribute 'name' are
implementation dependent but standard profiles may specify types. An enterprise may have multiple IT
systems each having its own local name for the same object, e.g. a planning system may have
different names from an EMS. An object may also have different names within the same IT system,
e.g. localName as defined in CIM version 14. The definition from CIM14 is:</xs:documentation>
                <xs:documentation>The localName is a human readable name of the object.
It is a free text name local to a node in a naming hierarchy similar to a file directory structure. A power
system related naming hierarchy may be: Substation, VoltageLevel, Equipment etc. Children of the
same parent in such a hierarchy have names that typically are unique among
them.</xs:documentation>
            </xs:annotation>
            <xs:sequence>
```

```
                        <xs:element name="description" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.description">
                            <xs:annotation>
                                <xs:documentation>Description of the name
type.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.name">
                            <xs:annotation>
                                <xs:documentation>Name of the name
type.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="NameTypeAuthority" type="m:NameTypeAuthority"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType.NameTypeAuthority">
                            <xs:annotation>
                                <xs:documentation>Authority responsible for managing
names of this type.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                    </xs:sequence>
                </xs:complexType>
                <xs:complexType name="NameTypeAuthority"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority">
                    <xs:annotation>
                        <xs:documentation>Authority responsible for creation and management of
names of a given type; typically an organization or an enterprise system.</xs:documentation>
                    </xs:annotation>
                    <xs:sequence>
                        <xs:element name="description" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameTypeAuthority.description">
                            <xs:annotation>
                                <xs:documentation>Description of the name type
authority.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority.name">
                            <xs:annotation>
                                <xs:documentation>Name of the name type
authority.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                    </xs:sequence>
                </xs:complexType>
                <xs:complexType name="Organisation" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Organisation">
                    <xs:annotation>
                        <xs:documentation>Organisation that might have roles as utility, contractor,
supplier, manufacturer, customer, etc.</xs:documentation>
                    </xs:annotation>
                    <xs:sequence>
                        <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                            <xs:annotation>
                                <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
```

```
                                        <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name">
                                        <xs:sequence>
                                            <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name.name">
                                                <xs:annotation>
                                                    <xs:documentation>Any free text
that name the object.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="NameType" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                                <xs:annotation>
                                                    <xs:documentation>Type of this
name.</xs:documentation>
                                                </xs:annotation>
                                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                    <xs:sequence>
                                                        <xs:element
name="description" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.description">
                                                            <xs:annotation>

        <xs:documentation>Description of the name type.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType.name">
                                                            <xs:annotation>

        <xs:documentation>Name of the name type.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                    </xs:sequence>
                                                </xs:complexType>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="phone1" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Organisation.phone1">
                                    <xs:annotation>
                                        <xs:documentation>Phone number.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                        <xs:sequence>
```

```
                                        <xs:element name="areaCode" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.areaCode">
                                            <xs:annotation>
                                                <xs:documentation>(if applicable)
Area or region code.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="cityCode" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.cityCode">
                                            <xs:annotation>
                                                <xs:documentation>City
code.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="countryCode" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.countryCode">
                                            <xs:annotation>
                                                <xs:documentation>Country
code.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="extension" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.extension">
                                            <xs:annotation>
                                                <xs:documentation>(if applicable)
Extension for this telephone number.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="localNumber" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.localNumber">
                                            <xs:annotation>
                                                <xs:documentation>Main (local) part
of this telephone number.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="streetAddress" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Organisation.streetAddress">
                                <xs:annotation>
                                    <xs:documentation>Street address.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                    <xs:sequence>
                                        <xs:element name="streetDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetAddress.streetDetail">
                                            <xs:annotation>
                                                <xs:documentation>Street
detail.</xs:documentation>
                                            </xs:annotation>
                                            <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                <xs:sequence>
```

<xs:element name="addressGeneral" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.addressGeneral">
<xs:annotation>
<xs:documentation>First line of a free form address or some additional address information (for example a mail stop).</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="buildingName" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.buildingName">
<xs:annotation>
<xs:documentation>(if applicable) In certain cases the physical location of the place of interest does not have a direct point of entry from the street, but may be located inside a larger structure such as a building, complex, office block, apartment, etc.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="code" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.code">
<xs:annotation>
<xs:documentation>(if applicable) Utilities often make use of external reference systems, such as those of the town-planner's department or surveyor general's mapping system, that allocate global reference codes to streets.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="name" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.name">
<xs:annotation>
<xs:documentation>Name of the street.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="number" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.number">
<xs:annotation>
<xs:documentation>Designator of the specific location on the street.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="prefix" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.prefix">
<xs:annotation>
<xs:documentation>Prefix to the street name. For example: North, South, East, West.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="suffix" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.suffix">
<xs:annotation>
<xs:documentation>Suffix to the street name. For example: North, South, East, West.</xs:documentation>
</xs:annotation>

```
                                                    </xs:element>
                                                    <xs:element
name="suiteNumber" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.suiteNumber">
                                                        <xs:annotation>

        <xs:documentation>Number of the apartment or suite.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="type"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.type">
                                                        <xs:annotation>

        <xs:documentation>Type of street. Examples include: street, circle, boulevard, avenue, road,
drive, etc.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element
name="withinTownLimits" type="xs:boolean" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.withinTownLimits">
                                                        <xs:annotation>

        <xs:documentation>True if this street is within the legal geographical boundaries of the
specified town (default).</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                </xs:sequence>
                                            </xs:complexType>
                                        </xs:element>
                                        <xs:element name="townDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetAddress.townDetail">
                                            <xs:annotation>
                                                <xs:documentation>Town
detail.</xs:documentation>
                                            </xs:annotation>
                                            <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                <xs:sequence>
                                                    <xs:element name="code"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.code">
                                                        <xs:annotation>

        <xs:documentation>Town code.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="country"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.country">
                                                        <xs:annotation>

        <xs:documentation>Name of the country.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.name">
                                                        <xs:annotation>

        <xs:documentation>Town name.</xs:documentation>
                                                        </xs:annotation>
```

```
                                                                    </xs:element>
                                                                    <xs:element name="section"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.section">
                                                                        <xs:annotation>

        <xs:documentation>Town section. For example, it is common for there to be 36 sections per
township.</xs:documentation>
                                                                        </xs:annotation>
                                                                    </xs:element>
                                                                    <xs:element
name="stateOrProvince" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.stateOrProvince">
                                                                        <xs:annotation>

        <xs:documentation>Name of the state or province.</xs:documentation>
                                                                        </xs:annotation>
                                                                    </xs:element>
                                                                </xs:sequence>
                                                            </xs:complexType>
                                                        </xs:element>
                                                    </xs:sequence>
                                                </xs:complexType>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                    <xs:complexType name="PositionPoint" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#PositionPoint">
                                        <xs:annotation>
                                            <xs:documentation>Set of spatial coordinates that determine a point, defined
in the coordinate system specified in 'Location.CoordinateSystem'. Use a single position point instance
to desribe a point-oriented location. Use a sequence of position points to describe a line-oriented
object (physical location of non-point oriented objects like cables or lines), or area of an object (like a
substation or a geographical zone – in this case, have first and last position point with the same
values).</xs:documentation>
                                        </xs:annotation>
                                        <xs:sequence>
                                            <xs:element name="sequenceNumber" type="xs:integer" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#PositionPoint.sequenceNumber">
                                                <xs:annotation>
                                                    <xs:documentation>Zero-relative sequence number of this
point within a series of points.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="xPosition" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#PositionPoint.xPosition">
                                                <xs:annotation>
                                                    <xs:documentation>X axis position.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="yPosition" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#PositionPoint.yPosition">
                                                <xs:annotation>
                                                    <xs:documentation>Y axis position.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="zPosition" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#PositionPoint.zPosition">
                                                <xs:annotation>
                                                    <xs:documentation>(if applicable) Z axis
position.</xs:documentation>
```

```
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="StreetAddress" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetAddress">
                <xs:annotation>
                    <xs:documentation>General purpose street and postal address
information.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="streetDetail" type="m:StreetDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetAddress.streetDetail">
                        <xs:annotation>
                            <xs:documentation>Street detail.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="townDetail" type="m:TownDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetAddress.townDetail">
                        <xs:annotation>
                            <xs:documentation>Town detail.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="StreetDetail" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail">
                <xs:annotation>
                    <xs:documentation>Street details, in the context of
address.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="addressGeneral" type="xs:string" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.addressGeneral">
                        <xs:annotation>
                            <xs:documentation>First line of a free form address or some
additional address information (for example a mail stop).</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="addressGeneral2" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.addressGeneral2">
                        <xs:annotation>
                            <xs:documentation>(if applicable) Second line of a free form
address.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="addressGeneral3" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.addressGeneral3">
                        <xs:annotation>
                            <xs:documentation>(if applicable) Third line of a free form
address.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="buildingName" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.buildingName">
                        <xs:annotation>
```

```
                        <xs:documentation>(if applicable) In certain cases the physical location of the place of interest does not have a direct point of entry from the street, but may be located inside a larger structure such as a building, complex, office block, apartment, etc.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="code" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.code">
                    <xs:annotation>
                        <xs:documentation>(if applicable) Utilities often make use of external reference systems, such as those of the town-planner's department or surveyor general's mapping system, that allocate global reference codes to streets.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="name" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.name">
                    <xs:annotation>
                        <xs:documentation>Name of the street.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="number" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.number">
                    <xs:annotation>
                        <xs:documentation>Designator of the specific location on the street.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="prefix" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.prefix">
                    <xs:annotation>
                        <xs:documentation>Prefix to the street name. For example: North, South, East, West.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="suffix" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.suffix">
                    <xs:annotation>
                        <xs:documentation>Suffix to the street name. For example: North, South, East, West.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="suiteNumber" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.suiteNumber">
                    <xs:annotation>
                        <xs:documentation>Number of the apartment or suite.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="type" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.type">
                    <xs:annotation>
                        <xs:documentation>Type of street. Examples include: street, circle, boulevard, avenue, road, drive, etc.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="withinTownLimits" type="xs:boolean" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.withinTownLimits">
                    <xs:annotation>
                        <xs:documentation>True if this street is within the legal geographical boundaries of the specified town (default).</xs:documentation>
                    </xs:annotation>
```

```
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="TownDetail" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail">
            <xs:annotation>
                <xs:documentation>Town details, in the context of address.</xs:documentation>
            </xs:annotation>
            <xs:sequence>
                <xs:element name="code" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.code">
                    <xs:annotation>
                        <xs:documentation>Town code.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="country" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.country">
                    <xs:annotation>
                        <xs:documentation>Name of the country.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.name">
                    <xs:annotation>
                        <xs:documentation>Town name.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="section" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.section">
                    <xs:annotation>
                        <xs:documentation>Town section. For example, it is common for there to be 36 sections per township.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="stateOrProvince" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.stateOrProvince">
                    <xs:annotation>
                        <xs:documentation>Name of the state or province.</xs:documentation>
                    </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="Work" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Work">
            <xs:annotation>
                <xs:documentation>Document used to request, initiate, track and record work.</xs:documentation>
            </xs:annotation>
            <xs:sequence>
                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                    <xs:annotation>
                        <xs:documentation>Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended.</xs:documentation>
```

```
                                        <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="kind" type="m:WorkKind" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.kind">
                                        <xs:annotation>
                                                <xs:documentation>Kind of work.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="lastModifiedDateTime" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Document.lastModifiedDateTime">
                                        <xs:annotation>
                                                <xs:documentation>Date and time this document was last
modified. Documents may potentially be modified many times during their
lifetime.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="requestDateTime" type="xs:dateTime" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Work.requestDateTime">
                                        <xs:annotation>
                                                <xs:documentation>Date and time work was
requested.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="statusKind" type="m:WorkStatusKind" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.statusKind">
                                        <xs:annotation>
                                                <xs:documentation>Kind of work status.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#IdentifiedObject.Names">
                                        <xs:annotation>
                                                <xs:documentation>All names of this identified
object.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="priority" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.priority">
                                        <xs:annotation>
                                                <xs:documentation>Priority of work.</xs:documentation>
                                        </xs:annotation>
                                        <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                <xs:sequence>
                                                        <xs:element name="justification" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Priority.justification">
                                                                <xs:annotation>
                                                                        <xs:documentation>Justification for
'rank'.</xs:documentation>
                                                                </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="rank" type="xs:integer"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Priority.rank">
                                                                <xs:annotation>
```

```
                                                <xs:documentation>Priority level;
usually, lower number means high priority, but the details are provided in 'type'.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="type" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Priority.type">
                                            <xs:annotation>
                                                <xs:documentation>Type describing
'rank'; e.g., high, emergency, etc.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="TimeSchedules" type="m:WorkTimeSchedule"
minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#BaseWork.TimeSchedules">
                                <xs:annotation>
                                    <xs:documentation>All time schedules for this work or work
task.</xs:documentation>
                                </xs:annotation>
                            </xs:element>
                            <xs:element name="WorkLocation" type="m:WorkLocation" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.WorkLocation">
                                <xs:annotation>
                                    <xs:documentation>Location for this
work/task.</xs:documentation>
                                </xs:annotation>
                            </xs:element>
                            <xs:element name="WorkTasks" type="m:WorkTask" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Work.WorkTasks">
                                <xs:annotation>
                                    <xs:documentation>All tasks in this
work.</xs:documentation>
                                </xs:annotation>
                            </xs:element>
                        </xs:sequence>
                    </xs:complexType>
                    <xs:simpleType name="WorkKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkKind">
                        <xs:annotation>
                            <xs:documentation>Kind of work.</xs:documentation>
                        </xs:annotation>
                        <xs:restriction base="xs:string">
                            <xs:enumeration value="connect">
                                <xs:annotation>
                                    <xs:documentation>Connect work.</xs:documentation>
                                </xs:annotation>
                            </xs:enumeration>
                            <xs:enumeration value="construction">
                                <xs:annotation>
                                    <xs:documentation>Construction work.</xs:documentation>
                                </xs:annotation>
                            </xs:enumeration>
                            <xs:enumeration value="disconnect">
                                <xs:annotation>
                                    <xs:documentation>Disconnect work.</xs:documentation>
                                </xs:annotation>
                            </xs:enumeration>
                            <xs:enumeration value="inspection">
```

```
                        <xs:annotation>
                            <xs:documentation>Inspection work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="maintenance">
                        <xs:annotation>
                            <xs:documentation>Maintenance work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="other">
                        <xs:annotation>
                            <xs:documentation>Other kind of work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="reconnect">
                        <xs:annotation>
                            <xs:documentation>(use 'connect' instead) Reconnect
work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="repair">
                        <xs:annotation>
                            <xs:documentation>Repair work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="service">
                        <xs:annotation>
                            <xs:documentation>Service work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="test">
                        <xs:annotation>
                            <xs:documentation>Test work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                </xs:restriction>
            </xs:simpleType>
            <xs:complexType name="WorkLocation" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkLocation">
                <xs:annotation>
                    <xs:documentation>Information about a particular location for various forms
of work.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                        <xs:annotation>
                            <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
                            <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="direction" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.direction">
                        <xs:annotation>
                            <xs:documentation>(if applicable) Direction that allows field
crews to quickly find a given asset. For a given location, such as a street address, this is the relative
direction in which to find the asset. For example, a streetlight may be located at the 'NW' (northwest)
```

```
corner of the customer's site, or a usage point may be located on the second floor of an apartment building.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="CoordinateSystem" type="m:CoordinateSystem" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.CoordinateSystem">
                                <xs:annotation>
                                        <xs:documentation>Coordinate system used to describe position points of this location.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="mainAddress" type="m:StreetAddress" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.mainAddress">
                                <xs:annotation>
                                        <xs:documentation>Main address of the location.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="PositionPoints" type="m:PositionPoint" minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.PositionPoints">
                                <xs:annotation>
                                        <xs:documentation>Sequence of position points describing this location, expressed in coordinate system 'Location.CoordinateSystem'.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                </xs:sequence>
        </xs:complexType>
        <xs:simpleType name="WorkStatusKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkStatusKind">
                <xs:annotation>
                        <xs:documentation>Kind of status, specific to work.</xs:documentation>
                </xs:annotation>
                <xs:restriction base="xs:string">
                        <xs:enumeration value="approved">
                                <xs:annotation>
                                        <xs:documentation>Work has been approved.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="cancelled">
                                <xs:annotation>
                                        <xs:documentation>Work has been canceled.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="closed">
                                <xs:annotation>
                                        <xs:documentation>Work has been closed (typically by a person responsible for work management) and is ready for billing.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="completed">
                                <xs:annotation>
                                        <xs:documentation>Work has been completed, i.e., crew can leave the work location and is available for another work.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="dispatched">
                                <xs:annotation>
```

```
                                        <xs:documentation>Crew has been
dispatched.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="enroute">
                                    <xs:annotation>
                                        <xs:documentation>Crew is 'en route'.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="inProgress">
                                    <xs:annotation>
                                        <xs:documentation>Work is in progress.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="onSite">
                                    <xs:annotation>
                                        <xs:documentation>Crew is on the site.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="scheduled">
                                    <xs:annotation>
                                        <xs:documentation>Work has been
scheduled.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="waitingOnApproval">
                                    <xs:annotation>
                                        <xs:documentation>Work approval is
pending.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="waitingOnMaterial">
                                    <xs:annotation>
                                        <xs:documentation>Work has been waiting on
material.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="waitingToBeScheduled">
                                    <xs:annotation>
                                        <xs:documentation>Work needs to be
scheduled.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                            </xs:restriction>
                        </xs:simpleType>
                        <xs:complexType name="WorkTask" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTask">
                            <xs:annotation/>
                            <xs:sequence>
                                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                                    <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
```

```
                        <xs:element name="crewETA" type="xs:dateTime" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.crewETA">
                                <xs:annotation>
                                        <xs:documentation>Estimated time of arrival, so that
customer or police/fire department can be informed when the crew will arrive.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="instruction" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.instruction">
                                <xs:annotation>
                                        <xs:documentation>Instructions for performing this
task.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="subject" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Document.subject">
                                <xs:annotation>
                                        <xs:documentation>Document subject.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="taskKind" type="m:WorkTaskKind" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.taskKind">
                                <xs:annotation>
                                        <xs:documentation>Kind of work.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="Assets" type="m:Asset" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTask.Assets">
                                <xs:annotation>
                                        <xs:documentation>All assets on which this non-replacement
work task is performed.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="Crews" type="m:Crew" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTask.Crews">
                                <xs:annotation>
                                        <xs:documentation>All crews participating in this work
task.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#IdentifiedObject.Names">
                                <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                </xs:sequence>
        </xs:complexType>
        <xs:simpleType name="WorkTaskKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTaskKind">
                <xs:annotation/>
                <xs:restriction base="xs:string">
                        <xs:enumeration value="exchange">
                                <xs:annotation>
                                        <xs:documentation>Work task deals with exchange of
assets.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
```

```
                        <xs:enumeration value="install">
                            <xs:annotation>
                                <xs:documentation>Work task deals with installation of
assets.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="investigate">
                            <xs:annotation>
                                <xs:documentation>Work task deals with investigation about
assets.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="remove">
                            <xs:annotation>
                                <xs:documentation>Work task deals with removal of
assets.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                    </xs:restriction>
                </xs:simpleType>
                <xs:complexType name="WorkTimeSchedule"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTimeSchedule">
                    <xs:annotation>
                        <xs:documentation>Time schedule specific to work.</xs:documentation>
                    </xs:annotation>
                    <xs:sequence>
                        <xs:element name="kind" type="m:WorkTimeScheduleKind" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTimeSchedule.kind">
                            <xs:annotation>
                                <xs:documentation>Kind of this work
schedule.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="scheduleInterval" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TimeSchedule.scheduleInterval">
                            <xs:annotation>
                                <xs:documentation>Schedule date and time
interval.</xs:documentation>
                            </xs:annotation>
                            <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                <xs:sequence>
                                    <xs:element name="end" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DateTimeInterval.end">
                                        <xs:annotation>
                                            <xs:documentation>End date and
time of this interval.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="start" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DateTimeInterval.start">
                                        <xs:annotation>
                                            <xs:documentation>Start date and
time of this interval.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                </xs:sequence>
                            </xs:complexType>
                        </xs:element>
                    </xs:sequence>
```

```
        </xs:complexType>
        <xs:simpleType name="WorkTimeScheduleKind"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTimeScheduleKind">
                <xs:annotation>
                        <xs:documentation>Kind of work schedule.</xs:documentation>
                </xs:annotation>
                <xs:restriction base="xs:string">
                        <xs:enumeration value="actual">
                                <xs:annotation>
                                        <xs:documentation>Actual work time
schedule.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="earliest">
                                <xs:annotation>
                                        <xs:documentation>Earliest work time
schedule.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="estimate">
                                <xs:annotation>
                                        <xs:documentation>Estimate work time
schedule.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="latest">
                                <xs:annotation>
                                        <xs:documentation>Latest work time
schedule.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="request">
                                <xs:annotation>
                                        <xs:documentation>Request work time
schedule.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                </xs:restriction>
        </xs:simpleType>
</xs:schema>
```

B.3 ServiceOrder

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2015 (http://www.altova.com) by nada reinprecht (ibm) -->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:a="http://langdale.com.au/2005/Message#" xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
xmlns="http://langdale.com.au/2005/Message#" xmlns:m="http://iec.ch/TC57/2014/ServiceOrders#"
targetNamespace="http://iec.ch/TC57/2014/ServiceOrders#" elementFormDefault="qualified"
attributeFormDefault="unqualified">
        <xs:annotation>
                <xs:documentation/>
        </xs:annotation>
        <xs:element name="ServiceOrders" type="m:ServiceOrders"/>
        <xs:complexType name="ServiceOrders">
                <xs:sequence>
                        <xs:element name="Work" type="m:Work" minOccurs="0"
maxOccurs="unbounded"/>
                </xs:sequence>
        </xs:complexType>
```

```
        <xs:complexType name="ActivityRecord"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ActivityRecord">
                <xs:annotation>
                        <xs:documentation>Records activity for an entity at a point in time; activity
may be for an event that has already occurred or for a planned activity.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="createdDateTime" type="xs:dateTime" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ActivityRecord.createdDateTime">
                                <xs:annotation>
                                        <xs:documentation>Date and time this activity record has
been created (different from the 'status.dateTime', which is the time of a status change of the
associated object, if applicable).</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="reason" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ActivityRecord.reason">
                                <xs:annotation>
                                        <xs:documentation>Reason for event resulting in this activity
record, typically supplied when user initiated.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="severity" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ActivityRecord.severity">
                                <xs:annotation>
                                        <xs:documentation>Severity level of event resulting in this
activity record.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="type" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ActivityRecord.type">
                                <xs:annotation>
                                        <xs:documentation>Type of event resulting in this activity
record.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="Appointment"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Appointment">
                <xs:annotation>
                        <xs:documentation>Meeting time and location.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="callAhead" type="xs:boolean" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Appointment.callAhead">
                                <xs:annotation>
                                        <xs:documentation>True if requested to call customer when
someone is about to arrive at their premises.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="meetingInterval" type="m:DateTimeInterval"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Appointment.meetingInterval">
                                <xs:annotation>
                                        <xs:documentation>Date and time reserved for
appointment.</xs:documentation>
                                </xs:annotation>
```

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                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="Asset" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Asset">
            <xs:annotation>
                <xs:documentation>Tangible resource of the utility, including power system equipment, various end devices, cabinets, buildings, etc. For electrical network equipment, the role of the asset is defined through PowerSystemResource and its subclasses, defined mainly in the Wires model (refer to IEC61970-301 and model package IEC61970::Wires). Asset description places emphasis on the physical characteristics of the equipment fulfilling that role.</xs:documentation>
            </xs:annotation>
            <xs:sequence>
                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#IdentifiedObject.mRID">
                    <xs:annotation>
                        <xs:documentation>Master resource identifier issued by a model authority. The mRID must semantically be a UUID as specified in RFC 4122. The mRID is globally unique.</xs:documentation>
                        <xs:documentation>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="amrSystem" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#EndDevice.amrSystem">
                    <xs:annotation>
                        <xs:documentation>Automated meter reading (AMR) or other communication system responsible for communications to this end device.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="critical" type="xs:boolean" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Asset.critical">
                    <xs:annotation>
                        <xs:documentation>True if asset is considered critical for some reason (for example, a pole with critical attachments).</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="formNumber" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Meter.formNumber">
                    <xs:annotation>
                        <xs:documentation>Meter form designation per ANSI C12.10 or other applicable standard. An alphanumeric designation denoting the circuit arrangement for which the meter is applicable and its specific terminal arrangement.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="serialNumber" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Asset.serialNumber">
                    <xs:annotation>
                        <xs:documentation>Serial number of this asset.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="utcNumber" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Asset.utcNumber">
                    <xs:annotation>
```

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                                        <xs:documentation>Uniquely tracked commodity (UTC)
number.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="MeterMultipliers" type="m:MeterMultiplier"
minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#Meter.MeterMultipliers">
                                    <xs:annotation>
                                        <xs:documentation>All multipliers applied at this
meter.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="MeterReadings" type="m:MeterReading" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Meter.MeterReadings">
                                    <xs:annotation>
                                        <xs:documentation>All meter readings provided by this
meter.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="CrewMember"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#CrewMember">
                            <xs:annotation>
                                <xs:documentation>Member of a crew.</xs:documentation>
                            </xs:annotation>
                            <xs:sequence>
                                <xs:element name="Person" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#PersonRole.Person">
                                    <xs:annotation>
                                        <xs:documentation>Person having this
role.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Person">
                                        <xs:sequence>
                                            <xs:element name="firstName" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Person.firstName">
                                                <xs:annotation>
                                                    <xs:documentation>Person's first
name.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="lastName" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Person.lastName">
                                                <xs:annotation>
                                                    <xs:documentation>Person's last
(family, sir) name.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
```

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                        </xs:complexType>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="Customer" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Customer">
                <xs:annotation>
                    <xs:documentation>Organisation receiving services from service supplier.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#IdentifiedObject.mRID">
                        <xs:annotation>
                            <xs:documentation>Master resource identifier issued by a model authority. The mRID must semantically be a UUID as specified in RFC 4122. The mRID is globally unique.</xs:documentation>
                            <xs:documentation>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="kind" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Customer.kind">
                        <xs:annotation>
                            <xs:documentation>Kind of customer.</xs:documentation>
                        </xs:annotation>
                        <xs:simpleType sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#CustomerKind">
                            <xs:restriction base="xs:string">
                                <xs:enumeration value="commercialIndustrial">
                                    <xs:annotation>
                                        <xs:documentation>Commercial industrial customer.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="energyServiceScheduler">
                                    <xs:annotation>
                                        <xs:documentation>Customer as energy service scheduler.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="energyServiceSupplier">
                                    <xs:annotation>
                                        <xs:documentation>Customer as energy service supplier.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="internalUse">
                                    <xs:annotation>
                                        <xs:documentation>Internal use customer.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="other">
                                    <xs:annotation>
                                        <xs:documentation>Other kind of customer.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="pumpingLoad">
```

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                                        <xs:annotation>
                                            <xs:documentation>Pumping load
customer.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="residential">
                                        <xs:annotation>
                                            <xs:documentation>Residential
customer.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="residentialAndCommercial">
                                        <xs:annotation>
                                            <xs:documentation>Residential and
commercial customer.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="residentialAndStreetlight">
                                        <xs:annotation>
                                            <xs:documentation>Residential and
streetlight customer.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="residentialFarmService">
                                        <xs:annotation>
                                            <xs:documentation>Residential farm
service customer.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration
value="residentialStreetlightOthers">
                                        <xs:annotation>
                                            <xs:documentation>Residential
streetlight or other related customer.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="windMachine">
                                        <xs:annotation>
                                            <xs:documentation>Wind machine
customer.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                </xs:restriction>
                            </xs:simpleType>
                        </xs:element>
                        <xs:element name="pucNumber" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Customer.pucNumber">
                            <xs:annotation>
                                <xs:documentation>(if applicable) Public utilities commission
(PUC) identification number.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="specialNeed" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Customer.specialNeed">
                            <xs:annotation>
                                <xs:documentation>True if customer organisation has special
service needs such as life support, hospitals, etc.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
```

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                    <xs:element name="vip" type="xs:boolean" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Customer.vip">
                        <xs:annotation>
                            <xs:documentation>(use 'priority' instead) True if this is an
important customer. Importance is for matters different than those in 'specialNeed'
attribute.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="CustomerAgreements" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Customer.CustomerAgreements">
                        <xs:annotation>
                            <xs:documentation>All agreements of this
customer.</xs:documentation>
                        </xs:annotation>
                        <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#CustomerAgreement">
                            <xs:sequence>
                                <xs:element name="mRID" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.mRID">
                                    <xs:annotation>
                                        <xs:documentation>Master resource
identifier issued by a model authority. The mRID must semantically be a UUID as specified in RFC
4122. The mRID is globally unique.</xs:documentation>
                                        <xs:documentation>For CIMXML
data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object
elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" type="m:Name"
minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this
identified object.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                    </xs:element>
                    <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.Names">
                        <xs:annotation>
                            <xs:documentation>All names of this identified
object.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="status" type="m:Status" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Customer.status">
                        <xs:annotation>
                            <xs:documentation>Status of this
customer.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="DateTimeInterval"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#DateTimeInterval">
                <xs:annotation>
```

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                        <xs:documentation>Interval between two date and time
points.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="end" type="xs:dateTime" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.end">
                                <xs:annotation>
                                        <xs:documentation>End date and time of this
interval.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="start" type="xs:dateTime" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.start">
                                <xs:annotation>
                                        <xs:documentation>Start date and time of this
interval.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="MeterMultiplier"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#MeterMultiplier">
                <xs:annotation>
                        <xs:documentation>Multiplier applied at the meter.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.mRID">
                                <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a
model authority. The mRID must semantically be a UUID as specified in RFC 4122. The mRID is
globally unique.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax,
the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object
elements.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="kind" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#MeterMultiplier.kind">
                                <xs:annotation>
                                        <xs:documentation>Kind of multiplier.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType sawsdl:modelReference="">
                                        <xs:attribute name="ref" type="xs:string"/>
                                </xs:complexType>
                        </xs:element>
                        <xs:element name="value" type="xs:float" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#MeterMultiplier.value">
                                <xs:annotation>
                                        <xs:documentation>Multiplier value.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.Names">
                                <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                </xs:annotation>
```

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                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="MeterReading"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#MeterReading">
            <xs:annotation>
                <xs:documentation>Set of values obtained from the
meter.</xs:documentation>
            </xs:annotation>
            <xs:sequence>
                <xs:element name="Readings" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#MeterReading.Readings">
                    <xs:annotation>
                        <xs:documentation>All reading values contained within this
meter reading.</xs:documentation>
                    </xs:annotation>
                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Reading">
                        <xs:sequence>
                            <xs:element name="reason" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Reading.reason">
                                <xs:annotation>
                                    <xs:documentation>Reason for this
reading being taken.</xs:documentation>
                                </xs:annotation>
                                <xs:simpleType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ReadingReasonKind">
                                    <xs:restriction base="xs:string">
                                        <xs:enumeration
value="billing">
                                            <xs:annotation>

        <xs:documentation>Reading(s) taken or to be taken in response to a billing-related inquiry by
a customer or other party. A variant of 'inquiry'.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration
value="demandReset">
                                            <xs:annotation>

        <xs:documentation>Reading(s) taken or to be taken in conjunction with the resetting of one or
more demand registers in a meter.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration
value="inquiry">
                                            <xs:annotation>

        <xs:documentation>Reading(s) taken or to be taken in response to an inquiry by a customer
or other party.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration
value="installation">
                                            <xs:annotation>

        <xs:documentation>Reading(s) taken or to be taken in conjunction with installation of a
meter.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
```

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                                                    <xs:enumeration
value="loadManagement">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken to support management of loads on
distribution networks or devices.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:enumeration>
                                                    <xs:enumeration
value="loadResearch">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken to support research and analysis of loads
on distribution networks or devices.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:enumeration>
                                                    <xs:enumeration
value="moveIn">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken in conjunction with a customer move-in
event.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:enumeration>
                                                    <xs:enumeration
value="moveOut">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken in conjunction with a customer move-out
event.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:enumeration>
                                                    <xs:enumeration
value="other">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken for some other reason or
purpose.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:enumeration>
                                                    <xs:enumeration
value="removal">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken in conjunction with removal of a
meter.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:enumeration>
                                                    <xs:enumeration
value="serviceConnect">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken in conjunction with a connection or re-
connection of service.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:enumeration>
                                                    <xs:enumeration
value="serviceDisconnect">
                                                        <xs:annotation>

            <xs:documentation>Reading(s) taken or to be taken in conjunction with a disconnection of
service.</xs:documentation>
```

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                                                    </xs:annotation>
                                                </xs:enumeration>
                                            </xs:restriction>
                                        </xs:simpleType>
                                    </xs:element>
                                    <xs:element name="reportedDateTime"
type="xs:dateTime" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#BaseReading.reportedDateTime">
                                        <xs:annotation>
                                            <xs:documentation>(used only when
there are detailed auditing requirements) Date and time at which the reading was first delivered to the
metering system.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="source" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#BaseReading.source">
                                        <xs:annotation>
                                            <xs:documentation>System that
originally supplied the reading (e.g., customer, AMI system, handheld reading system, another
enterprise system, etc.).</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="timeStamp" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#MeasurementValue.timeStamp">
                                        <xs:annotation>
                                            <xs:documentation>The time when
the value was last updated</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="value" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#BaseReading.value">
                                        <xs:annotation>
                                            <xs:documentation>Value of this
reading.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="ReadingQualities"
minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#BaseReading.ReadingQualities">
                                        <xs:annotation>
                                            <xs:documentation>All qualities of
this reading.</xs:documentation>
                                        </xs:annotation>
                                        <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ReadingQuality">
                                            <xs:sequence>
                                                <xs:element
name="comment" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingQuality.comment">
                                                    <xs:annotation>

        <xs:documentation>Elaboration on the quality code.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="source"
type="xs:string" minOccurs="0" maxOccurs="1"
```

```
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingQuality.source">
                                                <xs:annotation>
        <xs:documentation>System acting as the source of the quality code.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element
name="timeStamp" type="xs:dateTime" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingQuality.timeStamp">
                                                <xs:annotation>
        <xs:documentation>Date and time at which the quality code was assigned or
ascertained.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="ReadingType" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Reading.ReadingType">
                                    <xs:annotation>
                                        <xs:documentation>Type information
for this reading value.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ReadingType">
                                        <xs:sequence>
                                            <xs:element
name="accumulation" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.accumulation">
                                                <xs:annotation>
        <xs:documentation>Accumulation behaviour of a reading over time, usually
'measuringPeriod', to be used with individual endpoints (as opposed to 'macroPeriod' and 'aggregate'
that are used to describe aggregations of data from individual endpoints).</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element
name="aggregate" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.aggregate">
                                                <xs:annotation>
        <xs:documentation>Salient attribute of the reading data aggregated from individual endpoints.
This is mainly used to define a mathematical operation carried out over 'macroPeriod', but may also be
used to describe an attribute of the data when the 'macroPeriod' is not defined.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element
name="commodity" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.commodity">
                                                <xs:annotation>
        <xs:documentation>Commodity being measured.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
```

```
                                        <xs:element
name="consumptionTier" type="xs:integer" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.consumptionTier">
                                            <xs:annotation>

        <xs:documentation>In case of common flat-rate pricing for power, in which all purchases are
at a given rate, 'consumptionTier'=0. Otherwise, the value indicates the consumption tier, which can
be used in conjunction with TOU or CPP pricing.</xs:documentation>

        <xs:documentation>Consumption tier pricing refers to the method of billing in which a certain
"block" of energy is purchased/sold at one price, after which the next block of energy is purchased at
another price, and so on, all throughout a defined period. At the start of the defined period,
consumption is initially zero, and any usage is measured against the first consumption tier
('consumptionTier'=1). If this block of energy is consumed before the end of the period, energy
consumption moves to be reconed against the second consumption tier ('consumptionTier'=2), and so
on. At the end of the defined period, the consumption accumulator is reset, and usage within the
'consumptionTier'=1 restarts.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="cpp"
type="xs:integer" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ReadingType.cpp">
                                            <xs:annotation>

        <xs:documentation>Critical peak period (CPP) bucket the reading value is attributed to. Value
0 means not applicable. Even though CPP is usually considered a specialised form of time of use 'tou',
this attribute is defined explicitly for flexibility.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element
name="currency" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.currency">
                                            <xs:annotation>

        <xs:documentation>Metering-specific currency.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element
name="flowDirection" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.flowDirection">
                                            <xs:annotation>

        <xs:documentation>Flow direction for a reading where the direction of flow of the commodity
is important (for electricity measurements this includes current, energy, power, and
demand).</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element
name="macroPeriod" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.macroPeriod">
                                            <xs:annotation>

        <xs:documentation>Time period of interest that reflects how the reading is viewed or captured
over a long period of time.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element
name="measurementKind" type="xs:string" minOccurs="0" maxOccurs="1"
```

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sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.measurementKind">
                                                    <xs:annotation>

        <xs:documentation>Identifies "what" is being measured, as refinement of 'commodity'. When
combined with 'unit', it provides detail to the unit of measure. For example, 'energy' with a unit of
measure of 'kWh' indicates to the user that active energy is being measured, while with 'kVAh' or
'kVArh', it indicates apparent energy and reactive energy, respectively. 'power' can be combined in a
similar way with various power units of measure: Distortion power ('distortionVoltAmperes') with 'kVA'
is different from 'power' with 'kVA'.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element
name="measuringPeriod" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.measuringPeriod">
                                                    <xs:annotation>

        <xs:documentation>Time attribute inherent or fundamental to the reading value (as opposed
to 'macroPeriod' that supplies an "adjective" to describe aspects of a time period with regard to the
measurement). It refers to the way the value was originally measured and not to the frequency at
which it is reported or presented. For example, an hourly interval of consumption data would have
value 'hourly' as an attribute. However in the case of an hourly sampled voltage value, the
meterReadings schema would carry the 'hourly' interval size information.</xs:documentation>

        <xs:documentation>It is common for meters to report demand in a form that is measured over
the course of a portion of an hour, while enterprise applications however commonly assume the
demand (in kW or kVAr) normalised to 1 hour. The system that receives readings directly from the
meter therefore shall perform this transformation before publishing readings for use by the other
enterprise systems. The scalar used is chosen based on the block size (not any sub-interval
size).</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element
name="multiplier" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.multiplier">
                                                    <xs:annotation>

        <xs:documentation>Metering-specific multiplier.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="phases"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ReadingType.phases">
                                                    <xs:annotation>

        <xs:documentation>Metering-specific phase code.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="tou"
type="xs:integer" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ReadingType.tou">
                                                    <xs:annotation>

        <xs:documentation>Time of use (TOU) bucket the reading value is attributed to. Value 0
means not applicable.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
```

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                                                    <xs:element name="unit"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ReadingType.unit">
                                                        <xs:annotation>

        <xs:documentation>Metering-specific unit.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                </xs:sequence>
                                            </xs:complexType>
                                        </xs:element>
                                        <xs:element name="timePeriod" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#BaseReading.timePeriod">
                                            <xs:annotation>
                                                <xs:documentation>Start and end of
the period for those readings whose type has a time attribute such as 'billing', seasonal' or
'forTheSpecifiedPeriod'.</xs:documentation>
                                            </xs:annotation>
                                            <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#DateTimeInterval">
                                                <xs:sequence>
                                                    <xs:element name="end"
type="xs:dateTime" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.end">
                                                        <xs:annotation>

        <xs:documentation>End date and time of this interval.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="start"
type="xs:dateTime" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.start">
                                                        <xs:annotation>

        <xs:documentation>Start date and time of this interval.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                </xs:sequence>
                                            </xs:complexType>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="valuesInterval" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#MeterReading.valuesInterval">
                                <xs:annotation>
                                    <xs:documentation>Date and time interval of the data items
contained within this meter reading.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#DateTimeInterval">
                                    <xs:sequence>
                                        <xs:element name="end" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.end">
                                            <xs:annotation>
                                                <xs:documentation>End date and
time of this interval.</xs:documentation>
```

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                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="start" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.start">
                                                <xs:annotation>
                                                    <xs:documentation>Start date and
time of this interval.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="Name" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#Name">
                            <xs:annotation>
                                <xs:documentation>The Name class provides the means to define any
number of human readable  names for an object. A name is &lt;b&gt;not&lt;/b&gt; to be used for
defining inter-object relationships. For inter-object relationships instead use the object identification
'mRID'.</xs:documentation>
                            </xs:annotation>
                            <xs:sequence>
                                <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Name.name">
                                    <xs:annotation>
                                        <xs:documentation>Any free text that name the
object.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="NameType" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Name.NameType">
                                    <xs:annotation>
                                        <xs:documentation>Type of this name.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#NameType">
                                        <xs:sequence>
                                            <xs:element name="description" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#NameType.description">
                                                <xs:annotation>
                                                    <xs:documentation>Description of
the name type.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#NameType.name">
                                                <xs:annotation>
                                                    <xs:documentation>Name of the
name type.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="NameTypeAuthority"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#NameType.NameTypeAuthority">
                                                <xs:annotation>
                                                    <xs:documentation>Authority
responsible for managing names of this type.</xs:documentation>
                                                </xs:annotation>
```

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                                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#NameTypeAuthority">
                                                    <xs:sequence>
                                                        <xs:element
name="description" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#NameTypeAuthority.description">
                                                            <xs:annotation>

        <xs:documentation>Description of the name type authority.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#NameTypeAuthority.name">
                                                            <xs:annotation>

        <xs:documentation>Name of the name type authority.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                    </xs:sequence>
                                                </xs:complexType>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="ServiceLocation"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ServiceLocation">
                            <xs:annotation>
                                <xs:documentation>A real estate location, commonly referred to as
premises.</xs:documentation>
                            </xs:annotation>
                            <xs:sequence>
                                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.mRID">
                                    <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a
model authority. The mRID must semantically be a UUID as specified in RFC 4122. The mRID is
globally unique.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax,
the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object
elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="accessMethod" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ServiceLocation.accessMethod">
                                    <xs:annotation>
                                        <xs:documentation>Method for the service person to access
this service location. For example, a description of where to obtain a key if the facility is unmanned
and secured.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="direction" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Location.direction">
                                    <xs:annotation>
                                        <xs:documentation>(if applicable) Direction that allows field
crews to quickly find a given asset. For a given location, such as a street address, this is the relative
```

direction in which to find the asset. For example, a streetlight may be located at the 'NW' (northwest) corner of the customer's site, or a usage point may be located on the second floor of an apartment building.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="needsInspection" type="xs:boolean" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ServiceLocation.needsInspection">
<xs:annotation>
<xs:documentation>True if inspection is needed of facilities at this service location. This could be requested by a customer, due to suspected tampering, environmental concerns (e.g., a fire in the vicinity), or to correct incompatible data.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="siteAccessProblem" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ServiceLocation.siteAccessProblem">
<xs:annotation>
<xs:documentation>Problems previously encountered when visiting or performing work on this location. Examples include: bad dog, violent customer, verbally abusive occupant, obstructions, safety hazards, etc.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="CoordinateSystem" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Location.CoordinateSystem">
<xs:annotation>
<xs:documentation>Coordinate system used to describe position points of this location.</xs:documentation>
</xs:annotation>
<xs:complexType sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#CoordinateSystem">
<xs:sequence>
<xs:element name="crsUrn" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#CoordinateSystem.crsUrn">
<xs:annotation>
<xs:documentation>A Uniform Resource Name (URN) for the coordinate reference system (crs) used to define 'Location.PositionPoints'.</xs:documentation>
<xs:documentation>An example would be the European Petroleum Survey Group (EPSG) code for a coordinate reference system, defined in URN under the Open Geospatial Consortium (OGC) namespace as: urn:ogc:def:uom:EPSG::XXXX, where XXXX is an EPSG code (a full list of codes can be found at the EPSG Registry web site http://www.epsg-registry.org/). To define the coordinate system as being WGS84 (latitude, longitude) using an EPSG OGC, this attribute would be urn:ogc:def:uom:EPSG::4236.</xs:documentation>
<xs:documentation>A profile should limit this code to a set of allowed URNs agreed to by all sending and receiving parties.</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="Hazards" minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Location.Hazards">
<xs:annotation>
<xs:documentation>All asset hazards at this location.</xs:documentation>
</xs:annotation>

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                        <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                            <xs:sequence>
                                <xs:element name="type" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Hazard.type">
                                    <xs:annotation>
                                        <xs:documentation>Type of this
hazard.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                    </xs:element>
                    <xs:element name="mainAddress" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Location.mainAddress">
                        <xs:annotation>
                            <xs:documentation>Main address of the
location.</xs:documentation>
                        </xs:annotation>
                        <xs:complexType sawsdl:modelReference="">
                            <xs:attribute name="ref" type="xs:string"/>
                        </xs:complexType>
                    </xs:element>
                    <xs:element name="PositionPoints" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Location.PositionPoints">
                        <xs:annotation>
                            <xs:documentation>Sequence of position points describing
this location, expressed in coordinate system 'Location.CoordinateSystem'.</xs:documentation>
                        </xs:annotation>
                        <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#PositionPoint">
                            <xs:sequence>
                                <xs:element name="sequenceNumber"
type="xs:integer" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.sequenceNumber">
                                    <xs:annotation>
                                        <xs:documentation>Zero-relative
sequence number of this point within a series of points.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="xPosition" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.xPosition">
                                    <xs:annotation>
                                        <xs:documentation>X axis
position.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="yPosition" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.yPosition">
                                    <xs:annotation>
                                        <xs:documentation>Y axis
position.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
```

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                                        <xs:element name="zPosition" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.zPosition">
                                            <xs:annotation>
                                                <xs:documentation>(if applicable) Z
axis position.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="status" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Location.status">
                                <xs:annotation>
                                    <xs:documentation>Status of this
location.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Status">
                                    <xs:sequence>
                                        <xs:element name="dateTime" type="xs:dateTime"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Status.dateTime">
                                            <xs:annotation>
                                                <xs:documentation>Date and time
for which status 'value' applies.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="reason" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Status.reason">
                                            <xs:annotation>
                                                <xs:documentation>Reason code or
explanation for why an object went to the current status 'value'.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="remark" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Status.remark">
                                            <xs:annotation>
                                                <xs:documentation>Pertinent
information regarding the current 'value', as free form text.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="value" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Status.value">
                                            <xs:annotation>
                                                <xs:documentation>Status value at
'dateTime'; prior status changes may have been kept in instances of activity records associated with
the object to which this status applies.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="UsagePoints" type="m:UsagePoint" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ServiceLocation.UsagePoints">
                                <xs:annotation>
                                    <xs:documentation>All usage points delivering service (of the
same type) to this service location.</xs:documentation>
```

```
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="Status" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Status">
                <xs:annotation>
                    <xs:documentation>Current status information relevant to an entity.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="dateTime" type="xs:dateTime" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Status.dateTime">
                        <xs:annotation>
                            <xs:documentation>Date and time for which status 'value' applies.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="reason" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Status.reason">
                        <xs:annotation>
                            <xs:documentation>Reason code or explanation for why an object went to the current status 'value'.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="remark" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Status.remark">
                        <xs:annotation>
                            <xs:documentation>Pertinent information regarding the current 'value', as free form text.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="value" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Status.value">
                        <xs:annotation>
                            <xs:documentation>Status value at 'dateTime'; prior status changes may have been kept in instances of activity records associated with the object to which this status applies.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="UsagePoint" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#UsagePoint">
                <xs:annotation>
                    <xs:documentation>Logical or physical point in the network to which readings or events may be attributed. Used at the place where a physical or virtual meter may be located; however, it is not required that a meter be present.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#IdentifiedObject.mRID">
                        <xs:annotation>
                            <xs:documentation>Master resource identifier issued by a model authority. The mRID must semantically be a UUID as specified in RFC 4122. The mRID is globally unique.</xs:documentation>
                            <xs:documentation>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</xs:documentation>
                        </xs:annotation>
```

```
                </xs:element>
                <xs:element name="checkBilling" type="xs:boolean" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.checkBilling">
                    <xs:annotation>
                        <xs:documentation>True if as a result of an inspection or
otherwise, there is a reason to suspect that a previous billing may have been performed with
erroneous data. Value should be reset once this potential discrepancy has been
resolved.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="grounded" type="xs:boolean" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.grounded">
                    <xs:annotation>
                        <xs:documentation>True if grounded.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="isSdp" type="xs:boolean" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#UsagePoint.isSdp">
                    <xs:annotation>
                        <xs:documentation>If true, this usage point is a service
delivery point, i.e., a usage point where the ownership of the service changes
hands.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="isVirtual" type="xs:boolean" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.isVirtual">
                    <xs:annotation>
                        <xs:documentation>If true, this usage point is virtual, i.e., no
physical location exists in the network where a meter could be located to collect the meter readings.
For example, one may define a virtual usage point to serve as an aggregation of usage for all of a
company's premises distributed widely across the distribution territory. Otherwise, the usage point is
physical, i.e., there is a logical point in the network where a meter could be located to collect meter
readings.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="nominalServiceVoltage" type="m:Voltage"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.nominalServiceVoltage">
                    <xs:annotation>
                        <xs:documentation>Nominal service
voltage.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="phaseCode" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.phaseCode">
                    <xs:annotation>
                        <xs:documentation>Phase code. Number of wires and
specific nominal phases can be deduced from enumeration literal values. For example, ABCN is three-
phase, four-wire, s12n (splitSecondary12N) is single-phase, three-wire, and s1n and s2n are single-
phase, two-wire.</xs:documentation>
                    </xs:annotation>
                    <xs:simpleType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#PhaseCode">
                        <xs:restriction base="xs:string">
                            <xs:enumeration value="A">
                                <xs:annotation>
                                    <xs:documentation>Phase
A.</xs:documentation>
```

```
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="AB">
                <xs:annotation>
                    <xs:documentation>Phases A and
B.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="ABC">
                <xs:annotation>
                    <xs:documentation>Phases A, B,
and C.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="ABCN">
                <xs:annotation>
                    <xs:documentation>Phases A, B, C,
and N.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="ABN">
                <xs:annotation>
                    <xs:documentation>Phases A, B,
and neutral.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="AC">
                <xs:annotation>
                    <xs:documentation>Phases A and
C.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="ACN">
                <xs:annotation>
                    <xs:documentation>Phases A, C and
neutral.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="AN">
                <xs:annotation>
                    <xs:documentation>Phases A and
neutral.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="B">
                <xs:annotation>
                    <xs:documentation>Phase
B.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="BC">
                <xs:annotation>
                    <xs:documentation>Phases B and
C.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="BCN">
                <xs:annotation>
                    <xs:documentation>Phases B, C,
and neutral.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
```

```
                                        <xs:enumeration value="BN">
                                            <xs:annotation>
                                                <xs:documentation>Phases B and
neutral.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="C">
                                            <xs:annotation>
                                                <xs:documentation>Phase
C.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="CN">
                                            <xs:annotation>
                                                <xs:documentation>Phases C and
neutral.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="N">
                                            <xs:annotation>
                                                <xs:documentation>Neutral
phase.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="s1">
                                            <xs:annotation>
                                                <xs:documentation>Secondary
phase 1.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="s12">
                                            <xs:annotation>
                                                <xs:documentation>Secondary
phase 1 and 2.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="s12N">
                                            <xs:annotation>
                                                <xs:documentation>Secondary
phases 1, 2, and neutral.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="s1N">
                                            <xs:annotation>
                                                <xs:documentation>Secondary
phase 1 and neutral.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="s2">
                                            <xs:annotation>
                                                <xs:documentation>Secondary
phase 2.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="s2N">
                                            <xs:annotation>
                                                <xs:documentation>Secondary
phase 2 and neutral.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                    </xs:restriction>
                                </xs:simpleType>
```

```
                </xs:element>
                <xs:element name="ratedCurrent" type="m:CurrentFlow" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.ratedCurrent">
                    <xs:annotation>
                        <xs:documentation>Current flow that this usage point is
configured to deliver.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="serviceDeliveryRemark" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.serviceDeliveryRemark">
                    <xs:annotation>
                        <xs:documentation>Remarks about this usage point, for
example the reason for it being rated with a non-nominal priority.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="servicePriority" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.servicePriority">
                    <xs:annotation>
                        <xs:documentation>Priority of service for this usage point.
Note that usage points at the same service location can have different priorities.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.Names">
                    <xs:annotation>
                        <xs:documentation>All names of this identified
object.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="ServiceMultipliers" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.ServiceMultipliers">
                    <xs:annotation>
                        <xs:documentation>All multipliers applied at this usage
point.</xs:documentation>
                    </xs:annotation>
                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ServiceMultiplier">
                        <xs:sequence>
                            <xs:element name="mRID" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.mRID">
                                <xs:annotation>
                                    <xs:documentation>Master resource
identifier issued by a model authority. The mRID must semantically be a UUID as specified in RFC
4122. The mRID is globally unique.</xs:documentation>
                                    <xs:documentation>For CIMXML
data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object
elements.</xs:documentation>
                                </xs:annotation>
                            </xs:element>
                            <xs:element name="kind" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ServiceMultiplier.kind">
                                <xs:annotation>
                                    <xs:documentation>Kind of
multiplier.</xs:documentation>
                                </xs:annotation>
```

```
                                                <xs:simpleType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#ServiceMultiplierKind">
                                                    <xs:restriction base="xs:string">
                                                        <xs:enumeration
value="ctRatio">
                                                            <xs:annotation>

        <xs:documentation>Current transformer ratio used to convert associated quantities to real
measurements.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:enumeration>
                                                        <xs:enumeration
value="ptRatio">
                                                            <xs:annotation>

        <xs:documentation>Voltage transformer ratio used to convert associated quantities to real
measurements.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:enumeration>
                                                        <xs:enumeration
value="transformerRatio">
                                                            <xs:annotation>

        <xs:documentation>Product of the CT ratio and PT ratio.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:enumeration>
                                                    </xs:restriction>
                                                </xs:simpleType>
                                            </xs:element>
                                            <xs:element name="value" type="xs:float"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#ServiceMultiplier.value">
                                                <xs:annotation>
                                                    <xs:documentation>Multiplier
value.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="Names" type="m:Name"
minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#IdentifiedObject.Names">
                                                <xs:annotation>
                                                    <xs:documentation>All names of this
identified object.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="UsagePointLocation" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePoint.UsagePointLocation">
                                    <xs:annotation>
                                        <xs:documentation>Location of this usage
point.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#UsagePointLocation">
                                        <xs:sequence>
                                            <xs:element name="accessMethod" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePointLocation.accessMethod">
                                                <xs:annotation>
```

```
                                        <xs:documentation>Method for the
service person to access this usage point location. For example, a description of where to obtain a key
if the facility is unmanned and secured.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="remark" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePointLocation.remark">
                                    <xs:annotation>
                                        <xs:documentation>Remarks about
this location.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="siteAccessProblem"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#UsagePointLocation.siteAccessProblem">
                                    <xs:annotation>
                                        <xs:documentation>Problems
previously encountered when visiting or performing work at this location. Examples include: bad dog,
violent customer, verbally abusive occupant, obstructions, safety hazards, etc.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="CoordinateSystem"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Location.CoordinateSystem">
                                    <xs:annotation>
                                        <xs:documentation>Coordinate
system used to describe position points of this location.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#CoordinateSystem">
                                        <xs:sequence>
                                            <xs:element name="crsUrn"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#CoordinateSystem.crsUrn">
                                                <xs:annotation>

        <xs:documentation>A Uniform Resource Name (URN) for the coordinate reference system
(crs) used to define 'Location.PositionPoints'.</xs:documentation>

        <xs:documentation>An example would be the European Petroleum Survey Group (EPSG)
code for a coordinate reference system, defined in URN under the Open Geospatial Consortium
(OGC) namespace as: urn:ogc:def:uom:EPSG::XXXX, where XXXX is an EPSG code (a full list of
codes can be found at the EPSG Registry web site http://www.epsg-registry.org/). To define the
coordinate system as being WGS84 (latitude, longitude) using an EPSG OGC, this attribute would be
urn:ogc:def:uom:EPSG::4236.</xs:documentation>

        <xs:documentation>A profile should limit this code to a set of allowed URNs agreed to by all
sending and receiving parties.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="Hazards" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Location.Hazards">
                                    <xs:annotation>
                                        <xs:documentation>All asset
hazards at this location.</xs:documentation>
```

```
                                                    </xs:annotation>
                                                    <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                        <xs:sequence>
                                                            <xs:element name="type"
type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Hazard.type">
                                                                <xs:annotation>

        <xs:documentation>Type of this hazard.</xs:documentation>
                                                                </xs:annotation>
                                                            </xs:element>
                                                        </xs:sequence>
                                                    </xs:complexType>
                                                </xs:element>
                                                <xs:element name="mainAddress" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Location.mainAddress">
                                                    <xs:annotation>
                                                        <xs:documentation>Main address of
the location.</xs:documentation>
                                                    </xs:annotation>
                                                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetAddress">
                                                        <xs:sequence>
                                                            <xs:element
name="streetDetail" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#StreetAddress.streetDetail">
                                                                <xs:annotation>

        <xs:documentation>Street detail.</xs:documentation>
                                                                </xs:annotation>
                                                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail">

        <xs:sequence>

        <xs:element name="addressGeneral" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#StreetDetail.addressGeneral">

        <xs:annotation>

                <xs:documentation>Additional address information, for example a
mailstop.</xs:documentation>

        </xs:annotation>

        </xs:element>

        <xs:element name="buildingName" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#StreetDetail.buildingName">

        <xs:annotation>

                <xs:documentation>(if applicable) In certain cases the physical location of the place of
interest does not have a direct point of entry from the street, but may be located inside a larger
structure such as a building, complex, office block, apartment, etc.</xs:documentation>

        </xs:annotation>
```

```
</xs:element>

<xs:element name="code" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.code">

<xs:annotation>

<xs:documentation>(if applicable) Utilities often make use of external reference
systems, such as those of the town-planner's department or surveyor general's mapping system, that
allocate global reference codes to streets.</xs:documentation>

</xs:annotation>

</xs:element>

<xs:element name="name" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.name">

<xs:annotation>

<xs:documentation>Name of the street.</xs:documentation>

</xs:annotation>

</xs:element>

<xs:element name="number" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.number">

<xs:annotation>

<xs:documentation>Designator of the specific location on the
street.</xs:documentation>

</xs:annotation>

</xs:element>

<xs:element name="prefix" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.prefix">

<xs:annotation>

<xs:documentation>Prefix to the street name. For example: North, South, East,
West.</xs:documentation>

</xs:annotation>

</xs:element>

<xs:element name="suffix" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.suffix">

<xs:annotation>

<xs:documentation>Suffix to the street name. For example: North, South, East,
West.</xs:documentation>

</xs:annotation>

</xs:element>
```

<xs:element name="suiteNumber" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.suiteNumber">

<xs:annotation>

<xs:documentation>Number of the apartment or suite.</xs:documentation>

</xs:annotation>

</xs:element>

<xs:element name="type" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.type">

<xs:annotation>

<xs:documentation>Type of street. Examples include: street, circle, boulevard, avenue, road, drive, etc.</xs:documentation>

</xs:annotation>

</xs:element>

<xs:element name="withinTownLimits" type="xs:boolean" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetDetail.withinTownLimits">

<xs:annotation>

<xs:documentation>True if this street is within the legal geographical boundaries of the specified town (default).</xs:documentation>

</xs:annotation>

</xs:element>

</xs:sequence>

</xs:complexType>
</xs:element>
<xs:element name="townDetail" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#StreetAddress.townDetail">

<xs:annotation>

<xs:documentation>Town detail.</xs:documentation>

</xs:annotation>
<xs:complexType sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#TownDetail">

<xs:sequence>

<xs:element name="code" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#TownDetail.code">

<xs:annotation>

<xs:documentation>Town code.</xs:documentation>

</xs:annotation>

```
        </xs:element>

        <xs:element name="country" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#TownDetail.country">

        <xs:annotation>

                <xs:documentation>Name of the country.</xs:documentation>

        </xs:annotation>

        </xs:element>

        <xs:element name="name" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#TownDetail.name">

        <xs:annotation>

                <xs:documentation>Town name.</xs:documentation>

        </xs:annotation>

        </xs:element>

        <xs:element name="section" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#TownDetail.section">

        <xs:annotation>

                <xs:documentation>Town section. For example, it is common for there to be 36
sections per township.</xs:documentation>

        </xs:annotation>

        </xs:element>

        <xs:element name="stateOrProvince" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#TownDetail.stateOrProvince">

        <xs:annotation>

                <xs:documentation>Name of the state or province.</xs:documentation>

        </xs:annotation>

        </xs:element>

        </xs:sequence>
                                                                        </xs:complexType>
                                                                </xs:element>
                                                        </xs:sequence>
                                                </xs:complexType>
                                        </xs:element>
                                        <xs:element name="PositionPoints" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Location.PositionPoints">
                                                <xs:annotation>
                                                        <xs:documentation>Sequence of
position points describing this location, expressed in coordinate system
'Location.CoordinateSystem'.</xs:documentation>
```

```
                                                </xs:annotation>
                                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#PositionPoint">
                                                        <xs:sequence>
                                                                <xs:element
name="sequenceNumber" type="xs:integer" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.sequenceNumber">
                                                                        <xs:annotation>

        <xs:documentation>Zero-relative sequence number of this point within a series of
points.</xs:documentation>
                                                                        </xs:annotation>
                                                                </xs:element>
                                                                <xs:element
name="xPosition" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.xPosition">
                                                                        <xs:annotation>

        <xs:documentation>X axis position.</xs:documentation>
                                                                        </xs:annotation>
                                                                </xs:element>
                                                                <xs:element
name="yPosition" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.yPosition">
                                                                        <xs:annotation>

        <xs:documentation>Y axis position.</xs:documentation>
                                                                        </xs:annotation>
                                                                </xs:element>
                                                                <xs:element
name="zPosition" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#PositionPoint.zPosition">
                                                                        <xs:annotation>

        <xs:documentation>(if applicable) Z axis position.</xs:documentation>
                                                                        </xs:annotation>
                                                                </xs:element>
                                                        </xs:sequence>
                                                </xs:complexType>
                                        </xs:element>
                                </xs:sequence>
                        </xs:complexType>
                </xs:element>
        </xs:sequence>
</xs:complexType>
<xs:complexType name="Work" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#Work">
        <xs:annotation>
                <xs:documentation>Document used to request, initiate, track and record
work.</xs:documentation>
        </xs:annotation>
        <xs:sequence>
                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.mRID">
                        <xs:annotation>
```

```
                                        <xs:documentation>Master resource identifier issued by a
model authority. The mRID must semantically be a UUID as specified in RFC 4122. The mRID is
globally unique.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax,
the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object
elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="kind" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#BaseWork.kind">
                                    <xs:annotation>
                                        <xs:documentation>Kind of work.</xs:documentation>
                                    </xs:annotation>
                                    <xs:simpleType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#WorkKind">
                                        <xs:restriction base="xs:string">
                                            <xs:enumeration value="connect">
                                                <xs:annotation>
                                                    <xs:documentation>Connect
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="construction">
                                                <xs:annotation>
                                                    <xs:documentation>Construction
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="disconnect">
                                                <xs:annotation>
                                                    <xs:documentation>Disconnect
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="inspection">
                                                <xs:annotation>
                                                    <xs:documentation>Inspection
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="maintenance">
                                                <xs:annotation>
                                                    <xs:documentation>Maintenance
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="other">
                                                <xs:annotation>
                                                    <xs:documentation>Other kind of
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="reconnect">
                                                <xs:annotation>
                                                    <xs:documentation>(use 'connect'
instead) Reconnect work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="repair">
                                                <xs:annotation>
                                                    <xs:documentation>Repair
work.</xs:documentation>
```

```
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="service">
                                                <xs:annotation>
                                                    <xs:documentation>Service
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="test">
                                                <xs:annotation>
                                                    <xs:documentation>Test
work.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                        </xs:restriction>
                                    </xs:simpleType>
                                </xs:element>
                                <xs:element name="lastModifiedDateTime" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Document.lastModifiedDateTime">
                                    <xs:annotation>
                                        <xs:documentation>Date and time this document was last
modified. Documents may potentially be modified many times during their
lifetime.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="requestDateTime" type="xs:dateTime" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Work.requestDateTime">
                                    <xs:annotation>
                                        <xs:documentation>Date and time work was
requested.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="statusKind" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#BaseWork.statusKind">
                                    <xs:annotation>
                                        <xs:documentation>Kind of work status.</xs:documentation>
                                    </xs:annotation>
                                    <xs:simpleType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#WorkStatusKind">
                                        <xs:restriction base="xs:string">
                                            <xs:enumeration value="approved">
                                                <xs:annotation>
                                                    <xs:documentation>Work has been
approved.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="cancelled">
                                                <xs:annotation>
                                                    <xs:documentation>Work has been
canceled.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
                                            <xs:enumeration value="closed">
                                                <xs:annotation>
                                                    <xs:documentation>Work has been
closed (typically by a person responsible for work management) and is ready for
billing.</xs:documentation>
                                                </xs:annotation>
                                            </xs:enumeration>
```

```
                                        <xs:enumeration value="completed">
                                            <xs:annotation>
                                                <xs:documentation>Work has been
completed, i.e., crew can leave the work location and is available for another
work.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="dispatched">
                                            <xs:annotation>
                                                <xs:documentation>Crew has been
dispatched.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="enroute">
                                            <xs:annotation>
                                                <xs:documentation>Crew is 'en
route'.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="inProgress">
                                            <xs:annotation>
                                                <xs:documentation>Work is in
progress.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="onSite">
                                            <xs:annotation>
                                                <xs:documentation>Crew is on the
site.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="scheduled">
                                            <xs:annotation>
                                                <xs:documentation>Work has been
scheduled.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="waitingOnApproval">
                                            <xs:annotation>
                                                <xs:documentation>Work approval is
pending.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="waitingOnMaterial">
                                            <xs:annotation>
                                                <xs:documentation>Work has been
waiting on material.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                        <xs:enumeration value="waitingToBeScheduled">
                                            <xs:annotation>
                                                <xs:documentation>Work needs to
be scheduled.</xs:documentation>
                                            </xs:annotation>
                                        </xs:enumeration>
                                    </xs:restriction>
                                </xs:simpleType>
                            </xs:element>
                            <xs:element name="type" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Document.type">
                                <xs:annotation>
```

```
                                        <xs:documentation>Utility-specific classification of this
document, according to its corporate standards, practices, and existing IT systems (e.g., for
management of assets, maintenance, work, outage, customers, etc.).</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="ActivityRecords" type="m:ActivityRecord" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#BaseWork.ActivityRecords">
                                    <xs:annotation/>
                                </xs:element>
                                <xs:element name="Appointments" type="m:Appointment" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Work.Appointments">
                                    <xs:annotation>
                                        <xs:documentation>All appointments for this
work.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Customers" type="m:Customer" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Work.Customers">
                                    <xs:annotation>
                                        <xs:documentation>All the customers for which this work is
performed.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="priority" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#BaseWork.priority">
                                    <xs:annotation>
                                        <xs:documentation>Priority of work.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Priority">
                                        <xs:sequence>
                                            <xs:element name="justification" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Priority.justification">
                                                <xs:annotation>
                                                    <xs:documentation>Justification for
'rank'.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="rank" type="xs:integer"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Priority.rank">
                                                <xs:annotation>
                                                    <xs:documentation>Priority level;
usually, lower number means high priority, but the details are provided in 'type'.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="type" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Priority.type">
                                                <xs:annotation>
```

```
                                                    <xs:documentation>Type describing
'rank'; e.g., high, emergency, etc.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="TimeSchedules" type="m:WorkTimeSchedule"
minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#BaseWork.TimeSchedules">
                                    <xs:annotation>
                                        <xs:documentation>All time schedules for this work or work
task.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="WorkTasks" type="m:WorkTask" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#Work.WorkTasks">
                                    <xs:annotation>
                                        <xs:documentation>All tasks in this
work.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="WorkTask" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#WorkTask">
                            <xs:annotation/>
                            <xs:sequence>
                                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.mRID">
                                    <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a
model authority. The mRID must semantically be a UUID as specified in RFC 4122. The mRID is
globally unique.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax,
the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object
elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="instruction" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#WorkTask.instruction">
                                    <xs:annotation>
                                        <xs:documentation>Instructions for performing this
task.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="statusKind" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#BaseWork.statusKind">
                                    <xs:annotation>
                                        <xs:documentation>Kind of work status.</xs:documentation>
                                    </xs:annotation>
                                    <xs:simpleType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#WorkStatusKind">
                                        <xs:restriction base="xs:string">
                                            <xs:enumeration value="approved">
                                                <xs:annotation>
                                                    <xs:documentation>Work has been
approved.</xs:documentation>
```

```
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="cancelled">
                                        <xs:annotation>
                                            <xs:documentation>Work has been
canceled.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="closed">
                                        <xs:annotation>
                                            <xs:documentation>Work has been
closed (typically by a person responsible for work management) and is ready for
billing.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="completed">
                                        <xs:annotation>
                                            <xs:documentation>Work has been
completed, i.e., crew can leave the work location and is available for another
work.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="dispatched">
                                        <xs:annotation>
                                            <xs:documentation>Crew has been
dispatched.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="enroute">
                                        <xs:annotation>
                                            <xs:documentation>Crew is 'en
route'.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="inProgress">
                                        <xs:annotation>
                                            <xs:documentation>Work is in
progress.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="onSite">
                                        <xs:annotation>
                                            <xs:documentation>Crew is on the
site.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="scheduled">
                                        <xs:annotation>
                                            <xs:documentation>Work has been
scheduled.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="waitingOnApproval">
                                        <xs:annotation>
                                            <xs:documentation>Work approval is
pending.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="waitingOnMaterial">
                                        <xs:annotation>
                                            <xs:documentation>Work has been
waiting on material.</xs:documentation>
```

```
                                        </xs:annotation>
                                    </xs:enumeration>
                                    <xs:enumeration value="waitingToBeScheduled">
                                        <xs:annotation>
                                            <xs:documentation>Work needs to
be scheduled.</xs:documentation>
                                        </xs:annotation>
                                    </xs:enumeration>
                                </xs:restriction>
                            </xs:simpleType>
                        </xs:element>
                        <xs:element name="subject" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Document.subject">
                            <xs:annotation>
                                <xs:documentation>Document subject.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="Assets" type="m:Asset" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#WorkTask.Assets">
                            <xs:annotation>
                                <xs:documentation>All assets on which this non-replacement
work task is performed.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="Crews" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#WorkTask.Crews">
                            <xs:annotation>
                                <xs:documentation>All crews participating in this work
task.</xs:documentation>
                            </xs:annotation>
                            <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Crew">
                                <xs:sequence>
                                    <xs:element name="mRID" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.mRID">
                                        <xs:annotation>
                                            <xs:documentation>Master resource
identifier issued by a model authority. The mRID must semantically be a UUID as specified in RFC
4122. The mRID is globally unique.</xs:documentation>
                                            <xs:documentation>For CIMXML
data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object
elements.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="CrewMembers"
type="m:CrewMember" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#Crew.CrewMembers">
                                        <xs:annotation>
                                            <xs:documentation>All members of
this crew.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="Names" type="m:Name"
minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#IdentifiedObject.Names">
                                        <xs:annotation>
                                            <xs:documentation>All names of this
identified object.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
```

```
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="Names" type="m:Name" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="OldAsset" type="m:Asset" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#WorkTask.OldAsset">
                                    <xs:annotation>
                                        <xs:documentation>Old asset replaced by this work
task.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="TimeSchedules" type="m:WorkTimeSchedule"
minOccurs="0" maxOccurs=" unbounded " sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#BaseWork.TimeSchedules">
                                    <xs:annotation>
                                        <xs:documentation>All time schedules for this work or work
task.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="WorkLocation" type="m:ServiceLocation" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#BaseWork.WorkLocation">
                                    <xs:annotation>
                                        <xs:documentation>Location for this
work/task.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="WorkTimeSchedule"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#WorkTimeSchedule">
                            <xs:annotation>
                                <xs:documentation>Time schedule specific to work.</xs:documentation>
                            </xs:annotation>
                            <xs:sequence>
                                <xs:element name="kind" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#WorkTimeSchedule.kind">
                                    <xs:annotation>
                                        <xs:documentation>Kind of this work
schedule.</xs:documentation>
                                    </xs:annotation>
                                    <xs:simpleType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#WorkTimeScheduleKind">
                                        <xs:restriction base="xs:string">
                                            <xs:enumeration value="actual">
                                                <xs:annotation/>
                                            </xs:enumeration>
                                            <xs:enumeration value="earliest">
                                                <xs:annotation/>
                                            </xs:enumeration>
                                            <xs:enumeration value="estimate">
                                                <xs:annotation/>
```

```
                                        </xs:enumeration>
                                        <xs:enumeration value="latest">
                                                <xs:annotation/>
                                        </xs:enumeration>
                                        <xs:enumeration value="request">
                                                <xs:annotation/>
                                        </xs:enumeration>
                                </xs:restriction>
                        </xs:simpleType>
                </xs:element>
                <xs:element name="scheduleInterval" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#TimeSchedule.scheduleInterval">
                        <xs:annotation>
                                <xs:documentation>Schedule date and time
interval.</xs:documentation>
                        </xs:annotation>
                        <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-dcim12#DateTimeInterval">
                                <xs:sequence>
                                        <xs:element name="end" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.end">
                                                <xs:annotation>
                                                        <xs:documentation>End date and
time of this interval.</xs:documentation>
                                                </xs:annotation>
                                        </xs:element>
                                        <xs:element name="start" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-schema-cim16-
dcim12#DateTimeInterval.start">
                                                <xs:annotation>
                                                        <xs:documentation>Start date and
time of this interval.</xs:documentation>
                                                </xs:annotation>
                                        </xs:element>
                                </xs:sequence>
                        </xs:complexType>
                </xs:element>
        </xs:sequence>
    </xs:complexType>
    <xs:simpleType name="Voltage" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#Voltage">
        <xs:annotation>
                <xs:documentation>Electrical voltage, can be both AC and
DC.</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:float"/>
    </xs:simpleType>
    <xs:simpleType name="CurrentFlow" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#CurrentFlow">
        <xs:annotation>
                <xs:documentation>Electrical current with sign convention: positive flow is out
of the conducting equipment into the connectivity node. Can be both AC and DC.</xs:documentation>
        </xs:annotation>
        <xs:restriction base="xs:float"/>
    </xs:simpleType>
</xs:schema>
```

B.4 MaintenanceOrder

```
<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMLSpy v2015 (http://www.altova.com) by nada reinprecht (ibm) -->
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:a="http://langdale.com.au/2005/Message#" xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
xmlns="http://langdale.com.au/2005/Message#"
xmlns:m="http://iec.ch/TC57/2014/MaintenanceOrders#"
targetNamespace="http://iec.ch/TC57/2014/MaintenanceOrders#" elementFormDefault="qualified"
attributeFormDefault="unqualified">
	<xs:annotation>
		<xs:documentation/>
	</xs:annotation>
	<xs:element name="MaintenanceOrders" type="m:MaintenanceOrders"/>
	<xs:complexType name="MaintenanceOrders">
		<xs:sequence>
			<xs:element name="Organisation" type="m:Organisation" minOccurs="0"
maxOccurs="unbounded"/>
			<xs:element name="Work" type="m:Work" minOccurs="0"
maxOccurs="unbounded"/>
		</xs:sequence>
	</xs:complexType>
	<xs:complexType name="ActivityRecord" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#ActivityRecord">
		<xs:annotation>
			<xs:documentation>Records activity for an entity at a point in time; activity
may be for an event that has already occurred or for a planned activity.</xs:documentation>
		</xs:annotation>
		<xs:sequence>
			<xs:element name="createdDateTime" type="xs:dateTime" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#ActivityRecord.createdDateTime">
				<xs:annotation>
					<xs:documentation>Date and time this activity record has
been created (different from the 'status.dateTime', which is the time of a status change of the
associated object, if applicable).</xs:documentation>
				</xs:annotation>
			</xs:element>
			<xs:element name="reason" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#ActivityRecord.reason">
				<xs:annotation>
					<xs:documentation>Reason for event resulting in this activity
record, typically supplied when user initiated.</xs:documentation>
				</xs:annotation>
			</xs:element>
			<xs:element name="severity" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#ActivityRecord.severity">
				<xs:annotation>
					<xs:documentation>Severity level of event resulting in this
activity record.</xs:documentation>
				</xs:annotation>
			</xs:element>
			<xs:element name="type" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#ActivityRecord.type">
				<xs:annotation>
					<xs:documentation>Type of event resulting in this activity
record.</xs:documentation>
				</xs:annotation>
			</xs:element>
		</xs:sequence>
	</xs:complexType>
```

```
        <xs:complexType name="Asset" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset">
                <xs:annotation>
                        <xs:documentation>Tangible resource of the utility, including power system equipment, various end devices, cabinets, buildings, etc. For electrical network equipment, the role of the asset is defined through PowerSystemResource and its subclasses, defined mainly in the Wires model (refer to IEC61970-301 and model package IEC61970::Wires). Asset description places emphasis on the physical characteristics of the equipment fulfilling that role.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                                <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="critical" type="xs:boolean" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset.critical">
                                <xs:annotation>
                                        <xs:documentation>True if asset is considered critical for some reason (for example, a pole with critical attachments).</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="utcNumber" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset.utcNumber">
                                <xs:annotation>
                                        <xs:documentation>Uniquely tracked commodity (UTC) number.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="Location" type="m:WorkLocation" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset.Location">
                                <xs:annotation>
                                        <xs:documentation>Location of this asset.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="Names" minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                                <xs:annotation>
                                        <xs:documentation>All names of this identified object.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                        <xs:sequence>
                                                <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.name">
                                                        <xs:annotation>
                                                                <xs:documentation>Any free text that name the object.</xs:documentation>
                                                        </xs:annotation>
                                                </xs:element>
```

```
                                        <xs:element name="NameType"
type="m:NameType" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                            <xs:annotation>
                                                <xs:documentation>Type of this
name.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="Procedures" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Asset.Procedures">
                                <xs:annotation>
                                    <xs:documentation>All procedures applicable to this
asset.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Procedure">
                                    <xs:sequence>
                                        <xs:element name="instruction" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Procedure.instruction">
                                            <xs:annotation>
                                                <xs:documentation>Textual
description of this procedure.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="kind" type="m:ProcedureKind"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Procedure.kind">
                                            <xs:annotation>
                                                <xs:documentation>Kind of
procedure.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="sequenceNumber"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Procedure.sequenceNumber">
                                            <xs:annotation>
                                                <xs:documentation>Sequence
number in a sequence of procedures being performed.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="Measurements" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Procedure.Measurements">
                                            <xs:annotation>
                                                <xs:documentation>Document
containing this measurement.</xs:documentation>
                                            </xs:annotation>
                                            <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Measurement">
                                                <xs:sequence>
                                                    <xs:element
name="measurementType" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Measurement.measurementType">
                                                        <xs:annotation>

                <xs:documentation>Specifies the type of measurement. For example, this specifies if the
measurement represents an indoor temperature, outdoor temperature, bus voltage, line flow,
etc.</xs:documentation>
```

```
                                                                </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="phases"
type="m:PhaseCode" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Measurement.phases">
                                                                <xs:annotation>

        <xs:documentation>Indicates to which phases the measurement applies and avoids the need
to use 'measurementType' to also encode phase information (which would explode the types). The
phase information in Measurement, along with 'measurementType' and 'phases' uniquely defines a
Measurement for a device, based on normal network phase. Their meaning will not change when the
computed energizing phasing is changed due to jumpers or other reasons.</xs:documentation>

        <xs:documentation>If the attribute is missing three phases (ABC) shall be
assumed.</xs:documentation>
                                                                </xs:annotation>
                                                        </xs:element>
                                                        <xs:element
name="unitMultiplier" type="m:UnitMultiplier" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Measurement.unitMultiplier">
                                                                <xs:annotation>

        <xs:documentation>The unit multiplier of the measured quantity.</xs:documentation>
                                                                </xs:annotation>
                                                        </xs:element>
                                                        <xs:element
name="unitSymbol" type="m:UnitSymbol" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Measurement.unitSymbol">
                                                                <xs:annotation>

        <xs:documentation>The unit of measure of the measured quantity.</xs:documentation>
                                                                </xs:annotation>
                                                        </xs:element>
                                                </xs:sequence>
                                        </xs:complexType>
                                </xs:element>
                        </xs:sequence>
                </xs:complexType>
        </xs:element>
</xs:sequence>
</xs:complexType>
<xs:complexType name="AssetLocationHazard"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#AssetLocationHazard">
        <xs:annotation>
                <xs:documentation>Potential hazard related to the location of an asset.
Examples are trees growing under overhead power lines, a park being located by a substation (i.e.,
children climb fence to recover a ball), a lake near an overhead distribution line (fishing pole/line
contacting power lines), dangerous neighbour, etc.</xs:documentation>
        </xs:annotation>
        <xs:sequence>
                <xs:element name="type" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Hazard.type">
                        <xs:annotation>
                                <xs:documentation>Type of this hazard.</xs:documentation>
                        </xs:annotation>
                </xs:element>
        </xs:sequence>
</xs:complexType>
<xs:complexType name="Crew" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Crew">
        <xs:annotation>
```

```
                        <xs:documentation>Group of people with specific skills, tools, and
vehicles.</xs:documentation>
                    </xs:annotation>
                    <xs:sequence>
                        <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                            <xs:annotation>
                                <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
                                <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="CrewMembers" type="m:CrewMember" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Crew.CrewMembers">
                            <xs:annotation>
                                <xs:documentation>All members of this
crew.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="Names" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                            <xs:annotation>
                                <xs:documentation>All names of this identified
object.</xs:documentation>
                            </xs:annotation>
                            <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                <xs:sequence>
                                    <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name.name">
                                        <xs:annotation>
                                            <xs:documentation>Any free text
that name the object.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="NameType" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                        <xs:annotation>
                                            <xs:documentation>Type of this
name.</xs:documentation>
                                        </xs:annotation>
                                        <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                            <xs:sequence>
                                                <xs:element
name="description" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.description">
                                                    <xs:annotation>

        <xs:documentation>Description of the name type.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType.name">
                                                    <xs:annotation>
```

```
        <xs:documentation>Name of the name type.</xs:documentation>
                                                                </xs:annotation>
                                                        </xs:element>
                                                        <xs:element
name="NameTypeAuthority" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.NameTypeAuthority">
                                                                <xs:annotation>

        <xs:documentation>Authority responsible for managing names of this
type.</xs:documentation>
                                                                </xs:annotation>
                                                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">

        <xs:sequence>

        <xs:element name="description" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority.description">

        <xs:annotation>

                <xs:documentation>Description of the name type authority.</xs:documentation>

        </xs:annotation>

        </xs:element>

        <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority.name">

        <xs:annotation>

                <xs:documentation>Name of the name type authority.</xs:documentation>

        </xs:annotation>

        </xs:element>

        </xs:sequence>
                                                                </xs:complexType>
                                                        </xs:element>
                                                </xs:sequence>
                                        </xs:complexType>
                                </xs:element>
                        </xs:sequence>
                </xs:complexType>
        </xs:element>
        <xs:element name="WorkAssets" type="m:WorkAsset" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Crew.WorkAssets">
                <xs:annotation>
                        <xs:documentation>All work assets used by this
crew.</xs:documentation>
                </xs:annotation>
        </xs:element>
    </xs:sequence>
</xs:complexType>
<xs:complexType name="CrewMember" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#CrewMember">
    <xs:annotation>
        <xs:documentation>Member of a crew.</xs:documentation>
```

```
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="Person" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#PersonRole.Person">
                                <xs:annotation>
                                        <xs:documentation>Person having this
role.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Person">
                                        <xs:sequence>
                                                <xs:element name="firstName" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Person.firstName">
                                                        <xs:annotation>
                                                                <xs:documentation>Person's first
name.</xs:documentation>
                                                        </xs:annotation>
                                                </xs:element>
                                                <xs:element name="lastName" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Person.lastName">
                                                        <xs:annotation>
                                                                <xs:documentation>Person's last
(family, sir) name.</xs:documentation>
                                                        </xs:annotation>
                                                </xs:element>
                                        </xs:sequence>
                                </xs:complexType>
                        </xs:element>
                </xs:sequence>
        </xs:complexType>
        <xs:complexType name="DiagramObject" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagramObject">
                <xs:annotation>
                        <xs:documentation>An object that defines one or more points in a given
space. This object can be associated with anything that specializes IdentifiedObject. For single line
diagrams such objects typically include such items as analog values, breakers, disconnectors, power
transformers, and transmission lines.</xs:documentation>
                </xs:annotation>
                <xs:sequence/>
        </xs:complexType>
        <xs:complexType name="Name" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name">
                <xs:annotation>
                        <xs:documentation>The Name class provides the means to define any
number of human readable  names for an object. A name is &lt;b&gt;not&lt;/b&gt; to be used for
defining inter-object relationships. For inter-object relationships instead use the object identification
'mRID'.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.name">
                                <xs:annotation>
                                        <xs:documentation>Any free text that name the
object.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="NameType" type="m:NameType" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                <xs:annotation>
                                        <xs:documentation>Type of this name.</xs:documentation>
```

```
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="NameType" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType">
                <xs:annotation>
                    <xs:documentation>Type of name. Possible values for attribute 'name' are implementation dependent but standard profiles may specify types. An enterprise may have multiple IT systems each having its own local name for the same object, e.g. a planning system may have different names from an EMS. An object may also have different names within the same IT system, e.g. localName as defined in CIM version 14. The definition from CIM14 is:</xs:documentation>
                    <xs:documentation>The localName is a human readable name of the object. It is a free text name local to a node in a naming hierarchy similar to a file directory structure. A power system related naming hierarchy may be: Substation, VoltageLevel, Equipment etc. Children of the same parent in such a hierarchy have names that typically are unique among them.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="description" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.description">
                        <xs:annotation>
                            <xs:documentation>Description of the name type.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.name">
                        <xs:annotation>
                            <xs:documentation>Name of the name type.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="NameTypeAuthority" type="m:NameTypeAuthority" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.NameTypeAuthority">
                        <xs:annotation>
                            <xs:documentation>Authority responsible for managing names of this type.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                </xs:sequence>
            </xs:complexType>
            <xs:complexType name="NameTypeAuthority" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority">
                <xs:annotation>
                    <xs:documentation>Authority responsible for creation and management of names of a given type; typically an organization or an enterprise system.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="description" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority.description">
                        <xs:annotation>
                            <xs:documentation>Description of the name type authority.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="name" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameTypeAuthority.name">
                        <xs:annotation>
```

```
                                        <xs:documentation>Name of the name type
authority.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="Organisation" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Organisation">
                            <xs:annotation>
                                <xs:documentation>Organisation that might have roles as utility, contractor,
supplier, manufacturer, customer, etc.</xs:documentation>
                            </xs:annotation>
                            <xs:sequence>
                                <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                                    <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="Names" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name">
                                        <xs:sequence>
                                            <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name.name">
                                                <xs:annotation>
                                                    <xs:documentation>Any free text
that name the object.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="NameType" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                                <xs:annotation>
                                                    <xs:documentation>Type of this
name.</xs:documentation>
                                                </xs:annotation>
                                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType">
                                                    <xs:sequence>
                                                        <xs:element
name="description" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.description">
                                                            <xs:annotation>

        <xs:documentation>Description of the name type.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#NameType.name">
```

```
<xs:annotation>
<xs:documentation>Name of the name type.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element
name="NameTypeAuthority" type="m:NameTypeAuthority" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#NameType.NameTypeAuthority">
<xs:annotation>
<xs:documentation>Authority responsible for managing names of this
type.</xs:documentation>
</xs:annotation>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>
</xs:sequence>
</xs:complexType>
</xs:element>
<xs:element name="phone1" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Organisation.phone1">
<xs:annotation>
<xs:documentation>Phone number.</xs:documentation>
</xs:annotation>
<xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
<xs:sequence>
<xs:element name="areaCode" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.areaCode">
<xs:annotation>
<xs:documentation>(if applicable)
Area or region code.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="cityCode" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.cityCode">
<xs:annotation>
<xs:documentation>City
code.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="countryCode" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.countryCode">
<xs:annotation>
<xs:documentation>Country
code.</xs:documentation>
</xs:annotation>
</xs:element>
<xs:element name="extension" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.extension">
<xs:annotation>
<xs:documentation>(if applicable)
Extension for this telephone number.</xs:documentation>
</xs:annotation>
</xs:element>
```

```
                                        <xs:element name="localNumber" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TelephoneNumber.localNumber">
                                            <xs:annotation>
                                                <xs:documentation>Main (local) part
of this telephone number.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="streetAddress" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Organisation.streetAddress">
                                <xs:annotation>
                                    <xs:documentation>Street address.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                    <xs:sequence>
                                        <xs:element name="streetDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetAddress.streetDetail">
                                            <xs:annotation>
                                                <xs:documentation>Street
detail.</xs:documentation>
                                            </xs:annotation>
                                            <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                <xs:sequence>
                                                    <xs:element
name="addressGeneral" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.addressGeneral">
                                                        <xs:annotation>

                <xs:documentation>First line of a free form address or some additional address information
(for example a mail stop).</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element
name="buildingName" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.buildingName">
                                                        <xs:annotation>

                <xs:documentation>(if applicable) In certain cases the physical location of the place of interest
does not have a direct point of entry from the street, but may be located inside a larger structure such
as a building, complex, office block, apartment, etc.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="code"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.code">
                                                        <xs:annotation>

                <xs:documentation>(if applicable) Utilities often make use of external reference systems, such
as those of the town-planner's department or surveyor general's mapping system, that allocate global
reference codes to streets.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="name"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.name">
                                                        <xs:annotation>
```

```
            <xs:documentation>Name of the street.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="number"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.number">
                                                <xs:annotation>

            <xs:documentation>Designator of the specific location on the street.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="prefix"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.prefix">
                                                <xs:annotation>

            <xs:documentation>Prefix to the street name. For example: North, South, East,
West.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="suffix"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.suffix">
                                                <xs:annotation>

            <xs:documentation>Suffix to the street name. For example: North, South, East,
West.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element
name="suiteNumber" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.suiteNumber">
                                                <xs:annotation>

            <xs:documentation>Number of the apartment or suite.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="type"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.type">
                                                <xs:annotation>

            <xs:documentation>Type of street. Examples include: street, circle, boulevard, avenue, road,
drive, etc.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element
name="withinTownLimits" type="xs:boolean" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.withinTownLimits">
                                                <xs:annotation>

            <xs:documentation>True if this street is within the legal geographical boundaries of the
specified town (default).</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="townDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetAddress.townDetail">
                                    <xs:annotation>
```

```
                                                    <xs:documentation>Town
detail.</xs:documentation>
                                                </xs:annotation>
                                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                    <xs:sequence>
                                                        <xs:element name="code"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.code">
                                                            <xs:annotation>

        <xs:documentation>Town code.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="country"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.country">
                                                            <xs:annotation>

        <xs:documentation>Name of the country.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.name">
                                                            <xs:annotation>

        <xs:documentation>Town name.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="section"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.section">
                                                            <xs:annotation>

        <xs:documentation>Town section. For example, it is common for there to be 36 sections per
township.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element
name="stateOrProvince" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.stateOrProvince">
                                                            <xs:annotation>

        <xs:documentation>Name of the state or province.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                    </xs:sequence>
                                                </xs:complexType>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                            </xs:sequence>
        </xs:complexType>
        <xs:simpleType name="PhaseCode" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#PhaseCode">
                            <xs:annotation>
                                <xs:documentation>An unordered enumeration of phase identifiers. Allows
designation of phases for both transmission and distribution equipment, circuits and loads.  The
enumeration, by itself, does not describe how the phases are connected together or connected to
ground. Ground is not explicitly denoted as a phase.</xs:documentation>
```

```
                <xs:documentation>Residential and small commercial loads are often served
from single-phase, or split-phase, secondary circuits. For example of s12N, phases 1 and 2 refer to
hot wires that are 180 degrees out of phase, while N refers to the neutral wire. Through single-phase
transformer connections, these secondary circuits may be served from one or two of the primary
phases A, B, and C. For three-phase loads, use the A, B, C phase codes instead of
s12N.</xs:documentation>
            </xs:annotation>
            <xs:restriction base="xs:string">
                <xs:enumeration value="A">
                    <xs:annotation>
                        <xs:documentation>Phase A.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="AB">
                    <xs:annotation>
                        <xs:documentation>Phases A and B.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="ABC">
                    <xs:annotation>
                        <xs:documentation>Phases A, B, and C.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="ABCN">
                    <xs:annotation>
                        <xs:documentation>Phases A, B, C, and
N.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="ABN">
                    <xs:annotation>
                        <xs:documentation>Phases A, B, and
neutral.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="AC">
                    <xs:annotation>
                        <xs:documentation>Phases A and C.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="ACN">
                    <xs:annotation>
                        <xs:documentation>Phases A, C and
neutral.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="AN">
                    <xs:annotation>
                        <xs:documentation>Phases A and
neutral.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="B">
                    <xs:annotation>
                        <xs:documentation>Phase B.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="BC">
                    <xs:annotation>
                        <xs:documentation>Phases B and C.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
```

```
                        <xs:enumeration value="BCN">
                            <xs:annotation>
                                <xs:documentation>Phases B, C, and
neutral.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="BN">
                            <xs:annotation>
                                <xs:documentation>Phases B and
neutral.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="C">
                            <xs:annotation>
                                <xs:documentation>Phase C.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="CN">
                            <xs:annotation>
                                <xs:documentation>Phases C and
neutral.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="N">
                            <xs:annotation>
                                <xs:documentation>Neutral phase.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="none">
                            <xs:annotation>
                                <xs:documentation>No phases
specified.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="s1">
                            <xs:annotation>
                                <xs:documentation>Secondary phase 1.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="s12">
                            <xs:annotation>
                                <xs:documentation>Secondary phase 1 and
2.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="s12N">
                            <xs:annotation>
                                <xs:documentation>Secondary phases 1, 2, and
neutral.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="s1N">
                            <xs:annotation>
                                <xs:documentation>Secondary phase 1 and
neutral.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="s2">
                            <xs:annotation>
                                <xs:documentation>Secondary phase 2.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
```

```
                        <xs:enumeration value="s2N">
                            <xs:annotation>
                                <xs:documentation>Secondary phase 2 and
neutral.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                    </xs:restriction>
                </xs:simpleType>
                <xs:complexType name="Procedure" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Procedure">
                    <xs:annotation>
                        <xs:documentation>Documented procedure for various types of work or work
tasks on assets.</xs:documentation>
                    </xs:annotation>
                    <xs:sequence>
                        <xs:element name="instruction" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Procedure.instruction">
                            <xs:annotation>
                                <xs:documentation>Textual description of this
procedure.</xs:documentation>
                            </xs:annotation>
                        </xs:element>
                        <xs:element name="kind" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Procedure.kind">
                            <xs:annotation>
                                <xs:documentation>Kind of procedure.</xs:documentation>
                            </xs:annotation>
                            <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                <xs:sequence/>
                            </xs:complexType>
                        </xs:element>
                        <xs:choice minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Procedure.ProcedureDataSets">
                            <xs:annotation>
                                <xs:documentation>All data sets captured by this
procedure.</xs:documentation>
                            </xs:annotation>
                            <xs:element name="DiagnosisDataSet" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="">
                                <xs:annotation/>
                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#DiagnosisDataSet">
                                    <xs:sequence>
                                        <xs:element name="effect" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.effect">
                                            <xs:annotation>
                                                <xs:documentation>Effect of
problem.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="failureMode"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.failureMode">
                                            <xs:annotation>
                                                <xs:documentation>Failuer
mode, for example: Failure to Insulate; Failure to conduct; Failure to contain oil; Failure to provide
ground plane; Other.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
```

```
                                                <xs:element name="finalCause"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.finalCause">
                                                    <xs:annotation>
                                                        <xs:documentation>Cause
of problem determined during diagnosis.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="finalCode"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.finalCode">
                                                    <xs:annotation>
                                                        <xs:documentation>Code for
diagnosed probem type.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="finalOrigin"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.finalOrigin">
                                                    <xs:annotation>
                                                        <xs:documentation>Origin of
problem determined during diagnosis.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="finalRemark"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.finalRemark">
                                                    <xs:annotation>

        <xs:documentation>Remarks pertaining to findings during problem
diagnosis.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="phaseCode"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.phaseCode">
                                                    <xs:annotation>

        <xs:documentation>Phase(s) diagnosed.</xs:documentation>
                                                    </xs:annotation>
                                                    <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                        <xs:sequence/>
                                                    </xs:complexType>
                                                </xs:element>
                                                <xs:element name="preliminaryCode"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.preliminaryCode">
                                                    <xs:annotation>
                                                        <xs:documentation>Code for
problem type determined during preliminary assessment.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="preliminaryDateTime"
type="xs:dateTime" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.preliminaryDateTime">
                                                    <xs:annotation>
                                                        <xs:documentation>Date
and time preliminary assessment of problem was performed.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
```

```
                                                <xs:element name="preliminaryRemark"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.preliminaryRemark">
                                                    <xs:annotation>

        <xs:documentation>Remarks pertaining to preliminary assessment of
problem.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="rootCause"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.rootCause">
                                                    <xs:annotation>
                                                        <xs:documentation>Root
cause of problem determined during diagnosis.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="rootOrigin"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.rootOrigin">
                                                    <xs:annotation>
                                                        <xs:documentation>Root
origin of problem determined during diagnosis.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                                <xs:element name="rootRemark"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DiagnosisDataSet.rootRemark">
                                                    <xs:annotation>

        <xs:documentation>Remarks pertaining to root cause findings during problem
diagnosis.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                            </xs:sequence>
                                        </xs:complexType>
                                    </xs:element>
                                    <xs:element name="InspectionDataSet" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="">
                                        <xs:annotation/>
                                        <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#InspectionDataSet">
                                            <xs:sequence>
                                                <xs:element name="locationCondition"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#InspectionDataSet.locationCondition">
                                                    <xs:annotation>

        <xs:documentation>Description of the conditions of the location where the asset
resides.</xs:documentation>
                                                    </xs:annotation>
                                                </xs:element>
                                            </xs:sequence>
                                        </xs:complexType>
                                    </xs:element>
                                    <xs:element name="MaintenanceDataSet" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="">
                                        <xs:annotation/>
                                        <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#MaintenanceDataSet">
                                            <xs:sequence>
```

```
                                        <xs:element name="conditionAfter"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#MaintenanceDataSet.conditionAfter">
                                            <xs:annotation>

        <xs:documentation>Condition of asset just following maintenance
procedure.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="conditionBefore"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#MaintenanceDataSet.conditionBefore">
                                            <xs:annotation>

        <xs:documentation>Description of the condition of the asset just prior to maintenance being
performed.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="maintCode"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#MaintenanceDataSet.maintCode">
                                            <xs:annotation>
                                                <xs:documentation>Code for
the type of maintenance performed.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
                            <xs:element name="TestDataSet" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="">
                                <xs:annotation/>
                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TestDataSet">
                                    <xs:sequence>
                                        <xs:element name="conclusion"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TestDataSet.conclusion">
                                            <xs:annotation>

        <xs:documentation>Conclusion drawn from test results.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="specimenID"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TestDataSet.specimenID">
                                            <xs:annotation>
                                                <xs:documentation>Identifier
of specimen used in inspection or test.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element
name="specimenToLabDateTime" type="xs:dateTime" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TestDataSet.specimenToLabDateTime">
                                            <xs:annotation>
                                                <xs:documentation>Date
and time the specimen was received by the lab.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                    </xs:sequence>
                                </xs:complexType>
                            </xs:element>
```

```
                </xs:choice>
            </xs:sequence>
        </xs:complexType>
        <xs:simpleType name="ProcedureKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#ProcedureKind">
            <xs:annotation>
                <xs:documentation>Kind of procedure.</xs:documentation>
            </xs:annotation>
            <xs:restriction base="xs:string">
                <xs:enumeration value="diagnosis">
                    <xs:annotation>
                        <xs:documentation>Diagnosis procedure.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="inspection">
                    <xs:annotation>
                        <xs:documentation>Inspection procedure.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="maintenance">
                    <xs:annotation>
                        <xs:documentation>Maintenance procedure.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="other">
                    <xs:annotation>
                        <xs:documentation>Other procedure.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="test">
                    <xs:annotation>
                        <xs:documentation>Test procedure.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
            </xs:restriction>
        </xs:simpleType>
        <xs:complexType name="Status" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Status">
            <xs:annotation>
                <xs:documentation>Current status information relevant to an entity.</xs:documentation>
            </xs:annotation>
            <xs:sequence>
                <xs:element name="dateTime" type="xs:dateTime" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Status.dateTime">
                    <xs:annotation>
                        <xs:documentation>Date and time for which status 'value' applies.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="reason" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Status.reason">
                    <xs:annotation>
                        <xs:documentation>Reason code or explanation for why an object went to the current status 'value'.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="remark" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Status.remark">
```

```
                                <xs:annotation>
                                        <xs:documentation>Pertinent information regarding the
current 'value', as free form text.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="value" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Status.value">
                                <xs:annotation>
                                        <xs:documentation>Status value at 'dateTime'; prior status
changes may have been kept in instances of activity records associated with the object to which this
status applies.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                </xs:sequence>
        </xs:complexType>
        <xs:simpleType name="UnitMultiplier" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#UnitMultiplier">
                <xs:annotation>
                        <xs:documentation>The unit multipliers defined for the CIM. When applied to
unit symbols that already contain a multiplier, both multipliers are used. For example, to exchange
kilograms using unit symbol of kg, one uses the "none" multiplier, to exchange metric ton (Mg), one
uses the "k" multiplier.</xs:documentation>
                </xs:annotation>
                <xs:restriction base="xs:string">
                        <xs:enumeration value="E">
                                <xs:annotation>
                                        <xs:documentation>Exa 10**18.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="G">
                                <xs:annotation>
                                        <xs:documentation>Giga 10**9.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="M">
                                <xs:annotation>
                                        <xs:documentation>Mega 10**6.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="P">
                                <xs:annotation>
                                        <xs:documentation>Peta 10**15</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="T">
                                <xs:annotation>
                                        <xs:documentation>Tera 10**12.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="Y">
                                <xs:annotation>
                                        <xs:documentation>Yotta 10**24</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="Z">
                                <xs:annotation>
                                        <xs:documentation>Zetta 10**21</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="a">
                                <xs:annotation>
                                        <xs:documentation>atto 10**-18.</xs:documentation>
```

```
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="c">
                <xs:annotation>
                    <xs:documentation>Centi 10**-2.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="d">
                <xs:annotation>
                    <xs:documentation>Deci 10**-1.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="da">
                <xs:annotation>
                    <xs:documentation>deca 10**1.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="f">
                <xs:annotation>
                    <xs:documentation>femto 10**-15.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="h">
                <xs:annotation>
                    <xs:documentation>hecto 10**2.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="k">
                <xs:annotation>
                    <xs:documentation>Kilo 10**3.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="m">
                <xs:annotation>
                    <xs:documentation>Milli 10**-3.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="micro">
                <xs:annotation>
                    <xs:documentation>Micro 10**-6.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="n">
                <xs:annotation>
                    <xs:documentation>Nano 10**-9.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="none">
                <xs:annotation>
                    <xs:documentation>No multiplier or equivalently multiply by
1.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="p">
                <xs:annotation>
                    <xs:documentation>Pico 10**-12.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="y">
                <xs:annotation>
                    <xs:documentation>yocto 10**-24.</xs:documentation>
                </xs:annotation>
```

```
                        </xs:enumeration>
                        <xs:enumeration value="z">
                                <xs:annotation>
                                        <xs:documentation>zepto 10**-21.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                </xs:restriction>
        </xs:simpleType>
        <xs:simpleType name="UnitSymbol" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#UnitSymbol">
                <xs:annotation>
                        <xs:documentation>The units defined for usage in the
CIM.</xs:documentation>
                </xs:annotation>
                <xs:restriction base="xs:string">
                        <xs:enumeration value="A">
                                <xs:annotation>
                                        <xs:documentation>Current in Ampere.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="A2">
                                <xs:annotation>
                                        <xs:documentation>Ampere squared
(A²).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="A2h">
                                <xs:annotation>
                                        <xs:documentation>ampere-squared hour, Ampere-squared
hour.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="A2s">
                                <xs:annotation>
                                        <xs:documentation>Ampere squared time in square ampere
(A²s).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="APerA">
                                <xs:annotation>
                                        <xs:documentation>Current, Ratio of Amperages  Note:
Users may need to supply a prefix such as ‘m’ to show rates such as ‘mA/A’.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="APerm">
                                <xs:annotation>
                                        <xs:documentation>A/m, magnetic field strength, Ampere per
metre.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="Ah">
                                <xs:annotation>
                                        <xs:documentation>Ampere-hours, Ampere-
hours.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="As">
                                <xs:annotation>
                                        <xs:documentation>Ampere seconds
(A·s).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
```

```
                <xs:enumeration value="Bq">
                    <xs:annotation>
                        <xs:documentation>Radioactivity in Becquerel
(1/s).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Btu">
                    <xs:annotation>
                        <xs:documentation>Energy, British Thermal
Unit.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="C">
                    <xs:annotation>
                        <xs:documentation>Electric charge in Coulomb
(A·s).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="CPerkg">
                    <xs:annotation>
                        <xs:documentation>exposure (x rays), Coulomb per
kilogram.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="CPerm2">
                    <xs:annotation>
                        <xs:documentation>surface charge density, Coulomb per
square metre.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="CPerm3">
                    <xs:annotation>
                        <xs:documentation>electric charge density, Coulomb per
cubic metre.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="F">
                    <xs:annotation>
                        <xs:documentation>Electric capacitance in Farad
(C/V).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="FPerm">
                    <xs:annotation>
                        <xs:documentation>permittivity, Farad per
metre.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="G">
                    <xs:annotation>
                        <xs:documentation>Magnetic flux density, Gauss (1 G = 10-4
T).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Gy">
                    <xs:annotation>
                        <xs:documentation>Absorbed dose in Gray
(J/kg).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="GyPers">
                    <xs:annotation>
```

```
                                <xs:documentation>absorbed dose rate, Gray per
second.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="H">
                            <xs:annotation>
                                <xs:documentation>Electric inductance in Henry
(Wb/A).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="HPerm">
                            <xs:annotation>
                                <xs:documentation>permeability, Henry per
metre.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="Hz">
                            <xs:annotation>
                                <xs:documentation>Frequency in Hertz
(1/s).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="HzPerHz">
                            <xs:annotation>
                                <xs:documentation>Frequency, Rate of frequency change
Note: Users may need to supply a prefix such as ‘m’ to show rates such as
‘mHz/Hz’.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="HzPers">
                            <xs:annotation>
                                <xs:documentation>Rate of change of frequency in Hertz per
second.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="J">
                            <xs:annotation>
                                <xs:documentation>Energy in joule (N·m = C·V =
W·s).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="JPerK">
                            <xs:annotation>
                                <xs:documentation>Heat capacity in
Joule/Kelvin.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="JPerkg">
                            <xs:annotation>
                                <xs:documentation>Specific energy, Joule /
kg.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="JPerkgK">
                            <xs:annotation>
                                <xs:documentation>Specific heat capacity, specific entropy,
Joule per kilogram Kelvin.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="JPerm3">
                            <xs:annotation>
```

```
                        <xs:documentation>energy density, Joule per cubic
metre.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="JPermol">
                    <xs:annotation>
                        <xs:documentation>molar energy, Joule per
mole.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="JPermolK">
                    <xs:annotation>
                        <xs:documentation>molar entropy, molar heat capacity, Joule
per mole kelvin.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="JPers">
                    <xs:annotation>
                        <xs:documentation>Energy rate joule per second
(J/s),</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="K">
                    <xs:annotation>
                        <xs:documentation>Temperature in
Kelvin.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="M">
                    <xs:annotation>
                        <xs:documentation>Length, nautical mile (1 M = 1852
m).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Mx">
                    <xs:annotation>
                        <xs:documentation>Magnetic flux, Maxwell (1 Mx = 10-8
Wb).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="N">
                    <xs:annotation>
                        <xs:documentation>Force in Newton
(kg·m/s²).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="NPerm">
                    <xs:annotation>
                        <xs:documentation>Surface tension, Newton per
metre.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Nm">
                    <xs:annotation>
                        <xs:documentation>Moment of force, Newton
metre.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Oe">
                    <xs:annotation>
                        <xs:documentation>Magnetic field, Œrsted (1 Oe = (103/4p)
A/m).</xs:documentation>
```

```
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Pa">
                    <xs:annotation>
                        <xs:documentation>Pressure in Pascal (N/m²). Note: the
absolute or relative measurement of pressure is implied with this entry. See below for more explicit
forms.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Pas">
                    <xs:annotation>
                        <xs:documentation>Dynamic viscosity, Pascal
second.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Q">
                    <xs:annotation>
                        <xs:documentation>Quantity power, Q.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Qh">
                    <xs:annotation>
                        <xs:documentation>Quantity energy,
Qh.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="S">
                    <xs:annotation>
                        <xs:documentation>Conductance in
Siemens.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="SPerm">
                    <xs:annotation>
                        <xs:documentation>Conductance per length
(F/m).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Sv">
                    <xs:annotation>
                        <xs:documentation>Dose equivalent in Sievert
(J/kg).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="T">
                    <xs:annotation>
                        <xs:documentation>Magnetic flux density in Tesla
(Wb/m2).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="V">
                    <xs:annotation>
                        <xs:documentation>Electric potential in Volt
(W/A).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="V2">
                    <xs:annotation>
                        <xs:documentation>Volt squared
(W²/A²).</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
```

```
                <xs:enumeration value="V2h">
                    <xs:annotation>
                        <xs:documentation>volt-squared hour, Volt-squared-
hours.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VA">
                    <xs:annotation>
                        <xs:documentation>Apparent power in Volt Ampere (See
also real power and reactive power.)</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VAh">
                    <xs:annotation>
                        <xs:documentation>Apparent energy in Volt Ampere
hours.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VAr">
                    <xs:annotation>
                        <xs:documentation>Reactive power in Volt Ampere reactive.
The “reactive” or “imaginary” component of electrical power (VIsin(phi)). (See also real power and
apparent power).</xs:documentation>
                        <xs:documentation>Note: Different meter designs use
different methods to arrive at their results. Some meters may compute reactive power as an arithmetic
value, while others compute the value vectorially. The data consumer should determine the method in
use and the suitability of the measurement for the intended purpose.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VArh">
                    <xs:annotation>
                        <xs:documentation>Reactive energy in Volt Ampere reactive
hours.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VPerHz">
                    <xs:annotation>
                        <xs:documentation>Magnetic flux in Volt per
Hertz.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VPerV">
                    <xs:annotation>
                        <xs:documentation>Voltage, Ratio of voltages Note: Users
may need to supply a prefix such as ‘m’ to show rates such as ‘mV/V’.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VPerVA">
                    <xs:annotation>
                        <xs:documentation>Power factor, PF, the ratio of the active
power to the apparent power. Note: The sign convention used for power factor will differ between IEC
meters and EEI (ANSI) meters. It is assumed that the data consumers understand the type of meter
being used and agree on the sign convention in use at any given utility.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="VPerVAr">
                    <xs:annotation>
                        <xs:documentation>Power factor, PF, the ratio of the active
power to the apparent power. Note: The sign convention used for power factor will differ between IEC
meters and EEI (ANSI) meters. It is assumed that the data consumers understand the type of meter
being used and agree on the sign convention in use at any given utility.</xs:documentation>
                    </xs:annotation>
```

```
                </xs:enumeration>
                <xs:enumeration value="VPerm">
                        <xs:annotation>
                                <xs:documentation>electric field strength, Volt per
metre.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Vh">
                        <xs:annotation>
                                <xs:documentation>Volt-hour, Volt
hours.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="Vs">
                        <xs:annotation>
                                <xs:documentation>Volt second (Ws/A).</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="W">
                        <xs:annotation>
                                <xs:documentation>Real power in Watt (J/s). Electrical power
may have real and reactive components. The real portion of electrical power (I²R or VIcos(phi)), is
expressed in Watts. (See also apparent power and reactive power.)</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="WPerA">
                        <xs:annotation>
                                <xs:documentation>Active power per current flow, watt per
Ampere.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="WPerW">
                        <xs:annotation>
                                <xs:documentation>Signal Strength, Ratio of power  Note:
Users may need to supply a prefix such as ‘m’ to show rates such as ‘mW/W’.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="WPerm2">
                        <xs:annotation>
                                <xs:documentation>Heat flux density, irradiance, Watt per
square metre.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="WPerm2sr">
                        <xs:annotation>
                                <xs:documentation>radiance, Watt per square metre
steradian.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="WPermK">
                        <xs:annotation>
                                <xs:documentation>Thermal conductivity in Watt/metre
Kelvin.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="WPers">
                        <xs:annotation>
                                <xs:documentation>Ramp rate in Watt per
second.</xs:documentation>
                        </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="WPersr">
```

```
                        <xs:annotation>
                            <xs:documentation>Radiant intensity, Watt per
steradian.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="Wb">
                        <xs:annotation>
                            <xs:documentation>Magnetic flux in Weber
(V·s).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="Wh">
                        <xs:annotation>
                            <xs:documentation>Real energy in Watt
hours.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="anglemin">
                        <xs:annotation>
                            <xs:documentation>Plane angle,
minute.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="anglesec">
                        <xs:annotation>
                            <xs:documentation>Plane angle,
second.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="bar">
                        <xs:annotation>
                            <xs:documentation>Pressure, bar (1 bar = 100
kPa).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="cd">
                        <xs:annotation>
                            <xs:documentation>Luminous intensity in
candela.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="charPers">
                        <xs:annotation>
                            <xs:documentation>Data rate (baud) in characters per
second.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="character">
                        <xs:annotation>
                            <xs:documentation>Number of
characters.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="cosPhi">
                        <xs:annotation>
                            <xs:documentation>Power factor,
dimensionless.</xs:documentation>
                            <xs:documentation>Note 1: This definition of power factor
only holds for balanced systems. See the alternative definition under code 153.</xs:documentation>
                            <xs:documentation>Note 2: Beware of differing sign
conventions in use between the IEC and EEI. It is assumed that the data consumer understands the
type of meter in use and the sign convention in use by the utility.</xs:documentation>
```

```
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="count">
                <xs:annotation>
                    <xs:documentation>Amount of substance, Counter
value.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="d">
                <xs:annotation>
                    <xs:documentation>Time, day = 24 h = 86400
s.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="dB">
                <xs:annotation>
                    <xs:documentation>Sound pressure level in decibel. Note:
multiplier “d” is included in this unit symbol for compatibility with IEC 61850-7-3.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="dBm">
                <xs:annotation>
                    <xs:documentation>Power level (logrithmic ratio of signal
strength , Bel-mW), normalized to 1mW. Note:  multiplier “d” is included in this unit symbol for
compatibility with IEC 61850-7-3.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="deg">
                <xs:annotation>
                    <xs:documentation>Plane angle in
degrees.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="degC">
                <xs:annotation>
                    <xs:documentation>Relative temperature in degrees
Celsius.</xs:documentation>
                    <xs:documentation>In the SI unit system the symbol is ºC.
Electric charge is measured in coulomb that has the unit symbol C. To distinguish degree Celsius form
coulomb the symbol used in the UML is degC. Reason for not using ºC is the special character º is
difficult to manage in software.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="ft3">
                <xs:annotation>
                    <xs:documentation>Volume, cubic foot.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="gPerg">
                <xs:annotation>
                    <xs:documentation>Concentration, The ratio of the mass of a
solute divided by the mass of  the solution. Note: Users may need use a prefix such a ‘µ’ to express a
quantity such as ‘µg/g’.</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="gal">
                <xs:annotation>
                    <xs:documentation>Volume, US gallon (1 gal = 231 in3 = 128
fl ounce).</xs:documentation>
                </xs:annotation>
            </xs:enumeration>
            <xs:enumeration value="h">
```

```
                        <xs:annotation>
                            <xs:documentation>Time, hour = 60 min = 3600
s.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="ha">
                        <xs:annotation>
                            <xs:documentation>Area, hectare.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="kat">
                        <xs:annotation>
                            <xs:documentation>Catalytic activity, katal = mol /
s.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="katPerm3">
                        <xs:annotation>
                            <xs:documentation>catalytic activity concentration, katal per
cubic metre.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="kg">
                        <xs:annotation>
                            <xs:documentation>Mass in kilogram. Note: multiplier “k” is
included in this unit symbol for compatibility with IEC 61850-7-3.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="kgPerJ">
                        <xs:annotation>
                            <xs:documentation>Weigh per energy in kilogram/joule
(kg/J). Note: multiplier “k” is included in this unit symbol for compatibility with IEC 61850-7-
3.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="kgPerm3">
                        <xs:annotation>
                            <xs:documentation>Density in kilogram/cubic metre (kg/m³).
Note: multiplier “k” is included in this unit symbol for compatibility with IEC 61850-7-
3.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="kgm">
                        <xs:annotation>
                            <xs:documentation>Moment of mass in kilogram metre
(kg·m) (first moment of mass). Note: multiplier “k” is included in this unit symbol for compatibility with
IEC 61850-7-3.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="kgm2">
                        <xs:annotation>
                            <xs:documentation>Moment of mass in kilogram square
metre (kg·m²) (Second moment of mass, commonly called the moment of inertia). Note: multiplier “k”
is included in this unit symbol for compatibility with IEC 61850-7-3.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="kn">
                        <xs:annotation>
                            <xs:documentation>Speed, knot (1 kn = 1852/3600)
m/s.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
```

```
                        <xs:enumeration value="l">
                            <xs:annotation>
                                <xs:documentation>Volume, litre = dm3 =
m3/1000.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="lPerh">
                            <xs:annotation>
                                <xs:documentation>Volumetric flow rate, litre per
hour.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="lPerl">
                            <xs:annotation>
                                <xs:documentation>Concentration, The ratio of the volume of
a solute divided by the volume of  the solution. Note: Users may need use a prefix such a ‘µ’ to
express a quantity such as ‘µL/L’.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="lPers">
                            <xs:annotation>
                                <xs:documentation>Volumetric flow rate in litre per
second.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="lm">
                            <xs:annotation>
                                <xs:documentation>Luminous flux in lumen
(cd·sr).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="lx">
                            <xs:annotation>
                                <xs:documentation>Illuminance in lux
(lm/m²).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m">
                            <xs:annotation>
                                <xs:documentation>Length in meter.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m2">
                            <xs:annotation>
                                <xs:documentation>Area in square metre
(m²).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m2Pers">
                            <xs:annotation>
                                <xs:documentation>Viscosity in metre square / second
(m²/s).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m3">
                            <xs:annotation>
                                <xs:documentation>Volume in cubic metre
(m³).</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m3Compensated">
                            <xs:annotation>
```

```
                                        <xs:documentation>Volume, cubic metre, with the value
compensated for weather effects.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m3Perh">
                                <xs:annotation>
                                        <xs:documentation>Volumetric flow rate, cubic metre per
hour.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m3Perkg">
                                <xs:annotation>
                                        <xs:documentation>Specific volume, cubic metre per
kilogram, v.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m3Pers">
                                <xs:annotation>
                                        <xs:documentation>Volumetric flow rate in cubic metres per
second (m³/s).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="m3Uncompensated">
                                <xs:annotation>
                                        <xs:documentation>Volume, cubic metre, with the value
uncompensated for weather effects.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="mPerm3">
                                <xs:annotation>
                                        <xs:documentation>Fuel efficiency in metre per cubic metre
(m/m³).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="mPers">
                                <xs:annotation>
                                        <xs:documentation>Velocity in metre per second
(m/s).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="mPers2">
                                <xs:annotation>
                                        <xs:documentation>Acceleration in metre per second
squared (m/s²).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="min">
                                <xs:annotation>
                                        <xs:documentation>Time, minute  = 60
s.</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="mmHg">
                                <xs:annotation>
                                        <xs:documentation>Pressure, millimeter of mercury (1 mmHg
is approximately 133.3 Pa).</xs:documentation>
                                </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="mol">
                                <xs:annotation>
                                        <xs:documentation>Amount of substance in
mole.</xs:documentation>
```

```
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="molPerkg">
                        <xs:annotation>
                            <xs:documentation>Concentration, Molality, the amount of
solute in moles and the amount of solvent in kilograms.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="molPerm3">
                        <xs:annotation>
                            <xs:documentation>Concentration, The amount of substance
concentration, (c), the amount of solvent in moles divided by the volume of solution in
m³.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="molPermol">
                        <xs:annotation>
                            <xs:documentation>Concentration, Molar fraction (?), the
ratio of the molar amount of a solute divided by the molar amount of the solution.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="none">
                        <xs:annotation>
                            <xs:documentation>Dimension less quantity, e.g. count, per
unit, etc.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="ohm">
                        <xs:annotation>
                            <xs:documentation>Electric resistance in ohm
(V/A).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="ohmPerm">
                        <xs:annotation>
                            <xs:documentation>Electric resistance per length in ohm per
metre ((V/A)/m).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="ohmm">
                        <xs:annotation>
                            <xs:documentation>resistivity, Ohm metre,
(rho).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="onePerHz">
                        <xs:annotation>
                            <xs:documentation>Reciprocal of frequency
(1/Hz).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="onePerm">
                        <xs:annotation>
                            <xs:documentation>Wavenumber, reciprocal metre,
(1/m).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="ppm">
                        <xs:annotation>
                            <xs:documentation>Concentration in parts per
million.</xs:documentation>
                        </xs:annotation>
```

```
                    </xs:enumeration>
                    <xs:enumeration value="rad">
                        <xs:annotation>
                            <xs:documentation>Plane angle in radian
(m/m).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="radPers">
                        <xs:annotation>
                            <xs:documentation>Angular velocity in radians per second
(rad/s).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="radPers2">
                        <xs:annotation>
                            <xs:documentation>Angular acceleration, radian per second
squared.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="rev">
                        <xs:annotation>
                            <xs:documentation>Amount of rotation,
Revolutions.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="rotPers">
                        <xs:annotation>
                            <xs:documentation>Rotations per second (1/s). See also Hz
(1/s).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="s">
                        <xs:annotation>
                            <xs:documentation>Time in seconds.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="sPers">
                        <xs:annotation>
                            <xs:documentation>Time, Ratio of time Note: Users may
need to supply a prefix such as ‘µ’ to show rates such as ‘µs/s’</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="sr">
                        <xs:annotation>
                            <xs:documentation>Solid angle in steradian
(m2/m2).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="therm">
                        <xs:annotation>
                            <xs:documentation>Energy, Therm.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="tonne">
                        <xs:annotation>
                            <xs:documentation>mass, “tonne” or “metric  ton” (1000 kg =
1 Mg).</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                </xs:restriction>
            </xs:simpleType>
```

```
        <xs:simpleType name="VehicleUsageKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#VehicleUsageKind">
                <xs:annotation>
                        <xs:documentation>Usage of a vehicle.</xs:documentation>
                </xs:annotation>
                <xs:restriction base="xs:string">
                        <xs:enumeration value="contractor">
                                <xs:annotation/>
                        </xs:enumeration>
                        <xs:enumeration value="crew">
                                <xs:annotation/>
                        </xs:enumeration>
                        <xs:enumeration value="other">
                                <xs:annotation/>
                        </xs:enumeration>
                        <xs:enumeration value="user">
                                <xs:annotation/>
                        </xs:enumeration>
                </xs:restriction>
        </xs:simpleType>
        <xs:complexType name="Work" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Work">
                <xs:annotation>
                        <xs:documentation>Document used to request, initiate, track and record work.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                        <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                                <xs:annotation>
                                        <xs:documentation>Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended.</xs:documentation>
                                        <xs:documentation>For CIMXML data files in RDF syntax conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="kind" type="m:WorkKind" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.kind">
                                <xs:annotation>
                                        <xs:documentation>Kind of work.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="lastModifiedDateTime" type="xs:dateTime" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Document.lastModifiedDateTime">
                                <xs:annotation>
                                        <xs:documentation>Date and time this document was last modified. Documents may potentially be modified many times during their lifetime.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="requestDateTime" type="xs:dateTime" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Work.requestDateTime">
                                <xs:annotation>
                                        <xs:documentation>Date and time work was requested.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
```

```
                        <xs:element name="statusKind" type="m:WorkStatusKind" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.statusKind">
                                <xs:annotation>
                                        <xs:documentation>Kind of work status.</xs:documentation>
                                </xs:annotation>
                        </xs:element>
                        <xs:element name="Names" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                                <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name">
                                        <xs:sequence>
                                                <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name.name">
                                                        <xs:annotation>
                                                                <xs:documentation>Any free text
that name the object.</xs:documentation>
                                                        </xs:annotation>
                                                </xs:element>
                                                <xs:element name="NameType"
type="m:NameType" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                                        <xs:annotation>
                                                                <xs:documentation>Type of this
name.</xs:documentation>
                                                        </xs:annotation>
                                                </xs:element>
                                        </xs:sequence>
                                </xs:complexType>
                        </xs:element>
                        <xs:element name="priority" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.priority">
                                <xs:annotation>
                                        <xs:documentation>Priority of work.</xs:documentation>
                                </xs:annotation>
                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                        <xs:sequence>
                                                <xs:element name="justification" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Priority.justification">
                                                        <xs:annotation>
                                                                <xs:documentation>Justification for
'rank'.</xs:documentation>
                                                        </xs:annotation>
                                                </xs:element>
                                                <xs:element name="rank" type="xs:integer"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Priority.rank">
                                                        <xs:annotation>
                                                                <xs:documentation>Priority level;
usually, lower number means high priority, but the details are provided in 'type'.</xs:documentation>
                                                        </xs:annotation>
                                                </xs:element>
                                                <xs:element name="type" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Priority.type">
                                                        <xs:annotation>
```

```
                                                    <xs:documentation>Type describing
'rank'; e.g., high, emergency, etc.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="TimeSchedules" type="m:WorkTimeSchedule"
minOccurs="0" maxOccurs=" unbounded " sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#BaseWork.TimeSchedules">
                                    <xs:annotation>
                                        <xs:documentation>All time schedules for this work or work
task.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="WorkLocation" type="m:WorkLocation" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.WorkLocation">
                                    <xs:annotation>
                                        <xs:documentation>Location for this
work/task.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="WorkTasks" type="m:WorkTask" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Work.WorkTasks">
                                    <xs:annotation>
                                        <xs:documentation>All tasks in this
work.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:complexType name="WorkAsset" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkAsset">
                            <xs:annotation>
                                <xs:documentation>Asset used to perform work.</xs:documentation>
                            </xs:annotation>
                            <xs:complexContent>
                                <xs:extension base="m:Asset">
                                    <xs:sequence>
                                        <xs:element name="lastCalibrationDate" type="xs:date"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Tool.lastCalibrationDate">
                                            <xs:annotation>
                                                <xs:documentation>(if applicable) Date the
tool was last calibrated.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="odometerReadDateTime"
type="xs:dateTime" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Vehicle.odometerReadDateTime">
                                            <xs:annotation>
                                                <xs:documentation>Date and time the last
odometer reading was recorded.</xs:documentation>
                                            </xs:annotation>
                                        </xs:element>
                                        <xs:element name="odometerReading" type="m:Length"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Vehicle.odometerReading">
                                            <xs:annotation>
```

```
                                        <xs:documentation>Odometer reading of this vehicle as of the 'odometerReadingDateTime'. Refer to associated ActivityRecords for earlier readings.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="usageKind" type="m:VehicleUsageKind" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Vehicle.usageKind">
                                    <xs:annotation>
                                        <xs:documentation>Kind of usage of the vehicle.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                            </xs:sequence>
                        </xs:extension>
                    </xs:complexContent>
                </xs:complexType>
                <xs:simpleType name="WorkKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkKind">
                    <xs:annotation>
                        <xs:documentation>Kind of work.</xs:documentation>
                    </xs:annotation>
                    <xs:restriction base="xs:string">
                        <xs:enumeration value="connect">
                            <xs:annotation>
                                <xs:documentation>Connect work.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="construction">
                            <xs:annotation>
                                <xs:documentation>Construction work.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="disconnect">
                            <xs:annotation>
                                <xs:documentation>Disconnect work.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="inspection">
                            <xs:annotation>
                                <xs:documentation>Inspection work.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="maintenance">
                            <xs:annotation>
                                <xs:documentation>Maintenance work.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="other">
                            <xs:annotation>
                                <xs:documentation>Other kind of work.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="reconnect">
                            <xs:annotation>
                                <xs:documentation>(use 'connect' instead) Reconnect work.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="repair">
                            <xs:annotation>
                                <xs:documentation>Repair work.</xs:documentation>
```

```
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="service">
                        <xs:annotation>
                            <xs:documentation>Service work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="test">
                        <xs:annotation>
                            <xs:documentation>Test work.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                </xs:restriction>
            </xs:simpleType>
            <xs:complexType name="WorkLocation" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkLocation">
                <xs:annotation>
                    <xs:documentation>Information about a particular location for various forms of work.</xs:documentation>
                </xs:annotation>
                <xs:sequence>
                    <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                        <xs:annotation>
                            <xs:documentation>Master resource identifier issued by a model authority. The mRID is unique within an exchange context. Global uniqueness is easily achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly recommended.</xs:documentation>
                            <xs:documentation>For CIMXML data files in RDF syntax conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="direction" type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.direction">
                        <xs:annotation>
                            <xs:documentation>(if applicable) Direction that allows field crews to quickly find a given asset. For a given location, such as a street address, this is the relative direction in which to find the asset. For example, a streetlight may be located at the 'NW' (northwest) corner of the customer's site, or a usage point may be located on the second floor of an apartment building.</xs:documentation>
                        </xs:annotation>
                    </xs:element>
                    <xs:element name="CoordinateSystem" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.CoordinateSystem">
                        <xs:annotation>
                            <xs:documentation>Coordinate system used to describe position points of this location.</xs:documentation>
                        </xs:annotation>
                        <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#CoordinateSystem">
                            <xs:sequence>
                                <xs:element name="crsUrn" type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#CoordinateSystem.crsUrn">
                                    <xs:annotation>
                                        <xs:documentation>A Uniform Resource Name (URN) for the coordinate reference system (crs) used to define 'Location.PositionPoints'.</xs:documentation>
                                        <xs:documentation>An example would be the European Petroleum Survey Group (EPSG) code for a coordinate reference system, defined in URN under the Open Geospatial Consortium (OGC) namespace as:
```

```
urn:ogc:def:uom:EPSG::XXXX, where XXXX is an EPSG code (a full list of codes can be found at the
EPSG Registry web site http://www.epsg-registry.org/). To define the coordinate system as being
WGS84 (latitude, longitude) using an EPSG OGC, this attribute would be
urn:ogc:def:uom:EPSG::4236.</xs:documentation>
                                                    <xs:documentation>A profile should
limit this code to a set of allowed URNs agreed to by all sending and receiving
parties.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="Hazards" type="m:AssetLocationHazard" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Location.Hazards">
                                    <xs:annotation>
                                        <xs:documentation>All asset hazards at this
location.</xs:documentation>
                                    </xs:annotation>
                                </xs:element>
                                <xs:element name="mainAddress" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.mainAddress">
                                    <xs:annotation>
                                        <xs:documentation>Main address of the
location.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                        <xs:sequence>
                                            <xs:element name="status" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetAddress.status">
                                                <xs:annotation>
                                                    <xs:documentation>Status of this
address.</xs:documentation>
                                                </xs:annotation>
                                                <xs:complexType
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Status">
                                                    <xs:sequence>
                                                        <xs:element
name="dateTime" type="xs:dateTime" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Status.dateTime">
                                                            <xs:annotation>

        <xs:documentation>Date and time for which status 'value' applies.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="reason"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Status.reason">
                                                            <xs:annotation>

        <xs:documentation>Reason code or explanation for why an object went to the current status
'value'.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="remark"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Status.remark">
                                                            <xs:annotation>

        <xs:documentation>Pertinent information regarding the current 'value', as free form
text.</xs:documentation>
```

```
                                                                    </xs:annotation>
                                                                </xs:element>
                                                                <xs:element name="value"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Status.value">
                                                                    <xs:annotation>

        <xs:documentation>Status value at 'dateTime'; prior status changes may have been kept in
instances of activity records associated with the object to which this status
applies.</xs:documentation>
                                                                    </xs:annotation>
                                                                </xs:element>
                                                            </xs:sequence>
                                                        </xs:complexType>
                                                    </xs:element>
                                                    <xs:element name="streetDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetAddress.streetDetail">
                                                        <xs:annotation>
                                                            <xs:documentation>Street
detail.</xs:documentation>
                                                        </xs:annotation>
                                                        <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                            <xs:sequence>
                                                                <xs:element
name="addressGeneral" type="xs:string" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.addressGeneral">
                                                                    <xs:annotation>

        <xs:documentation>First line of a free form address or some additional address information
(for example a mail stop).</xs:documentation>
                                                                    </xs:annotation>
                                                                </xs:element>
                                                                <xs:element
name="buildingName" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.buildingName">
                                                                    <xs:annotation>

        <xs:documentation>(if applicable) In certain cases the physical location of the place of interest
does not have a direct point of entry from the street, but may be located inside a larger structure such
as a building, complex, office block, apartment, etc.</xs:documentation>
                                                                    </xs:annotation>
                                                                </xs:element>
                                                                <xs:element name="code"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.code">
                                                                    <xs:annotation>

        <xs:documentation>(if applicable) Utilities often make use of external reference systems, such
as those of the town-planner's department or surveyor general's mapping system, that allocate global
reference codes to streets.</xs:documentation>
                                                                    </xs:annotation>
                                                                </xs:element>
                                                                <xs:element name="name"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.name">
                                                                    <xs:annotation>

        <xs:documentation>Name of the street.</xs:documentation>
                                                                    </xs:annotation>
                                                                </xs:element>
```

```
                                                    <xs:element name="number"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.number">
                                                        <xs:annotation>

        <xs:documentation>Designator of the specific location on the street.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="prefix"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.prefix">
                                                        <xs:annotation>

        <xs:documentation>Prefix to the street name. For example: North, South, East,
West.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="suffix"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.suffix">
                                                        <xs:annotation>

        <xs:documentation>Suffix to the street name. For example: North, South, East,
West.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element
name="suiteNumber" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.suiteNumber">
                                                        <xs:annotation>

        <xs:documentation>Number of the apartment or suite.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element name="type"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#StreetDetail.type">
                                                        <xs:annotation>

        <xs:documentation>Type of street. Examples include: street, circle, boulevard, avenue, road,
drive, etc.</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                    <xs:element
name="withinTownLimits" type="xs:boolean" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetDetail.withinTownLimits">
                                                        <xs:annotation>

        <xs:documentation>True if this street is within the legal geographical boundaries of the
specified town (default).</xs:documentation>
                                                        </xs:annotation>
                                                    </xs:element>
                                                </xs:sequence>
                                            </xs:complexType>
                                        </xs:element>
                                        <xs:element name="townDetail" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#StreetAddress.townDetail">
                                            <xs:annotation>
                                                <xs:documentation>Town
detail.</xs:documentation>
                                            </xs:annotation>
```

```
                                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                    <xs:sequence>
                                                        <xs:element name="code"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.code">
                                                            <xs:annotation>
        <xs:documentation>Town code.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="country"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.country">
                                                            <xs:annotation>
        <xs:documentation>Name of the country.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="name"
type="xs:string" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.name">
                                                            <xs:annotation>
        <xs:documentation>Town name.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element name="section"
type="xs:string" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#TownDetail.section">
                                                            <xs:annotation>
        <xs:documentation>Town section. For example, it is common for there to be 36 sections per
township.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                        <xs:element
name="stateOrProvince" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TownDetail.stateOrProvince">
                                                            <xs:annotation>
        <xs:documentation>Name of the state or province.</xs:documentation>
                                                            </xs:annotation>
                                                        </xs:element>
                                                    </xs:sequence>
                                                </xs:complexType>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="PositionPoints" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Location.PositionPoints">
                                    <xs:annotation>
                                        <xs:documentation>Sequence of position points describing
this location, expressed in coordinate system 'Location.CoordinateSystem'.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                        <xs:sequence>
                                            <xs:element name="sequenceNumber"
type="xs:integer" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#PositionPoint.sequenceNumber">
```

```
                                                <xs:annotation>
                                                    <xs:documentation>Zero-relative
sequence number of this point within a series of points.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="xPosition" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#PositionPoint.xPosition">
                                                <xs:annotation>
                                                    <xs:documentation>X axis
position.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="yPosition" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#PositionPoint.yPosition">
                                                <xs:annotation>
                                                    <xs:documentation>Y axis
position.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="zPosition" type="xs:string"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#PositionPoint.zPosition">
                                                <xs:annotation>
                                                    <xs:documentation>(if applicable) Z
axis position.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                            </xs:sequence>
                        </xs:complexType>
                        <xs:simpleType name="WorkStatusKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkStatusKind">
                            <xs:annotation>
                                <xs:documentation>Kind of status, specific to work.</xs:documentation>
                            </xs:annotation>
                            <xs:restriction base="xs:string">
                                <xs:enumeration value="approved">
                                    <xs:annotation>
                                        <xs:documentation>Work has been
approved.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="cancelled">
                                    <xs:annotation>
                                        <xs:documentation>Work has been
canceled.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="closed">
                                    <xs:annotation>
                                        <xs:documentation>Work has been closed (typically by a
person responsible for work management) and is ready for billing.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                                <xs:enumeration value="completed">
                                    <xs:annotation>
                                        <xs:documentation>Work has been completed, i.e., crew can
leave the work location and is available for another work.</xs:documentation>
```

```
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="dispatched">
                        <xs:annotation>
                            <xs:documentation>Crew has been
dispatched.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="enroute">
                        <xs:annotation>
                            <xs:documentation>Crew is 'en route'.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="inProgress">
                        <xs:annotation>
                            <xs:documentation>Work is in progress.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="onSite">
                        <xs:annotation>
                            <xs:documentation>Crew is on the site.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="scheduled">
                        <xs:annotation>
                            <xs:documentation>Work has been
scheduled.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="waitingOnApproval">
                        <xs:annotation>
                            <xs:documentation>Work approval is
pending.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="waitingOnMaterial">
                        <xs:annotation>
                            <xs:documentation>Work has been waiting on
material.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                    <xs:enumeration value="waitingToBeScheduled">
                        <xs:annotation>
                            <xs:documentation>Work needs to be
scheduled.</xs:documentation>
                        </xs:annotation>
                    </xs:enumeration>
                </xs:restriction>
            </xs:simpleType>
            <xs:complexType name="WorkTask" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTask">
                <xs:annotation/>
                <xs:sequence>
                    <xs:element name="mRID" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.mRID">
                        <xs:annotation>
                            <xs:documentation>Master resource identifier issued by a
model authority. The mRID is unique within an exchange context. Global uniqueness is easily
achieved by using a UUID,  as specified in RFC 4122, for the mRID. The use of UUID is strongly
recommended.</xs:documentation>
```

```
                                        <xs:documentation>For CIMXML data files in RDF syntax
conforming to IEC 61970-552 Edition 1, the mRID is mapped to rdf:ID or rdf:about attributes that
identify CIM object elements.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="crewETA" type="xs:dateTime" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.crewETA">
                                        <xs:annotation>
                                                <xs:documentation>Estimated time of arrival, so that
customer or police/fire department can be informed when the crew will arrive.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="instruction" type="xs:string" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.instruction">
                                        <xs:annotation>
                                                <xs:documentation>Instructions for performing this
task.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="statusKind" type="m:WorkStatusKind" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#BaseWork.statusKind">
                                        <xs:annotation>
                                                <xs:documentation>Kind of work status.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="subject" type="xs:string" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Document.subject">
                                        <xs:annotation>
                                                <xs:documentation>Document subject.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="taskKind" type="m:WorkTaskKind" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.taskKind">
                                        <xs:annotation>
                                                <xs:documentation>Kind of work.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="Assets" type="m:Asset" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTask.Assets">
                                        <xs:annotation>
                                                <xs:documentation>All assets on which this non-replacement
work task is performed.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="Crews" type="m:Crew" minOccurs="0"
maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTask.Crews">
                                        <xs:annotation>
                                                <xs:documentation>All crews participating in this work
task.</xs:documentation>
                                        </xs:annotation>
                                </xs:element>
                                <xs:element name="MaterialItems" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.MaterialItems">
                                        <xs:annotation/>
                                        <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#MaterialItem">
                                                <xs:sequence>
                                                        <xs:element name="Names" type="m:Name"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#IdentifiedObject.Names">
```

```
                                                <xs:annotation>
                                                    <xs:documentation>All names of this
identified object.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="quantity" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#MaterialItem.quantity">
                                                <xs:annotation>
                                                    <xs:documentation>Quantity of
material used.</xs:documentation>
                                                </xs:annotation>
                                                <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                                    <xs:sequence>
                                                        <xs:element
name="multiplier" type="m:UnitMultiplier" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IntegerQuantity.multiplier">
                                                            <xs:annotation/>
                                                        </xs:element>
                                                        <xs:element name="unit"
type="m:UnitSymbol" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IntegerQuantity.unit">
                                                            <xs:annotation/>
                                                        </xs:element>
                                                        <xs:element name="value"
type="xs:integer" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#IntegerQuantity.value">
                                                            <xs:annotation/>
                                                        </xs:element>
                                                    </xs:sequence>
                                                </xs:complexType>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
                                </xs:element>
                                <xs:element name="Names" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#IdentifiedObject.Names">
                                    <xs:annotation>
                                        <xs:documentation>All names of this identified
object.</xs:documentation>
                                    </xs:annotation>
                                    <xs:complexType sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name">
                                        <xs:sequence>
                                            <xs:element name="name" type="xs:string"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Name.name">
                                                <xs:annotation>
                                                    <xs:documentation>Any free text
that name the object.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                            <xs:element name="NameType"
type="m:NameType" minOccurs="0" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#Name.NameType">
                                                <xs:annotation>
                                                    <xs:documentation>Type of this
name.</xs:documentation>
                                                </xs:annotation>
                                            </xs:element>
                                        </xs:sequence>
                                    </xs:complexType>
```

```
                </xs:element>
                <xs:element name="OldAsset" type="m:Asset" minOccurs="0"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTask.OldAsset">
                    <xs:annotation>
                        <xs:documentation>Old asset replaced by this work
task.</xs:documentation>
                    </xs:annotation>
                </xs:element>
                <xs:element name="TimeSchedules" type="m:WorkTimeSchedule"
minOccurs="0" maxOccurs=" unbounded " sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#BaseWork.TimeSchedules">
                    <xs:annotation>
                        <xs:documentation>All time schedules for this work or work
task.</xs:documentation>
                    </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:simpleType name="WorkTaskKind" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#WorkTaskKind">
            <xs:annotation/>
            <xs:restriction base="xs:string">
                <xs:enumeration value="exchange">
                    <xs:annotation>
                        <xs:documentation>Work task deals with exchange of
assets.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="install">
                    <xs:annotation>
                        <xs:documentation>Work task deals with installation of
assets.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="investigate">
                    <xs:annotation>
                        <xs:documentation>Work task deals with investigation about
assets.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
                <xs:enumeration value="remove">
                    <xs:annotation>
                        <xs:documentation>Work task deals with removal of
assets.</xs:documentation>
                    </xs:annotation>
                </xs:enumeration>
            </xs:restriction>
        </xs:simpleType>
        <xs:complexType name="WorkTimeSchedule"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTimeSchedule">
            <xs:annotation>
                <xs:documentation>Time schedule specific to work.</xs:documentation>
            </xs:annotation>
            <xs:sequence>
                <xs:element name="kind" type="m:WorkTimeScheduleKind" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTimeSchedule.kind">
                    <xs:annotation>
                        <xs:documentation>Kind of this work
schedule.</xs:documentation>
                    </xs:annotation>
                </xs:element>
```

```
                        <xs:element name="scheduleInterval" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#TimeSchedule.scheduleInterval">
                            <xs:annotation>
                                <xs:documentation>Schedule date and time
interval.</xs:documentation>
                            </xs:annotation>
                            <xs:complexType
sawsdl:modelReference="http://www.w3.org/2002/07/owl#Thing">
                                <xs:sequence>
                                    <xs:element name="end" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DateTimeInterval.end">
                                        <xs:annotation>
                                            <xs:documentation>End date and
time of this interval.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                    <xs:element name="start" type="xs:dateTime"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#DateTimeInterval.start">
                                        <xs:annotation>
                                            <xs:documentation>Start date and
time of this interval.</xs:documentation>
                                        </xs:annotation>
                                    </xs:element>
                                </xs:sequence>
                            </xs:complexType>
                        </xs:element>
                    </xs:sequence>
                </xs:complexType>
                <xs:simpleType name="WorkTimeScheduleKind"
sawsdl:modelReference="http://iec.ch/TC57/CIM-generic#WorkTimeScheduleKind">
                    <xs:annotation>
                        <xs:documentation>Kind of work schedule.</xs:documentation>
                    </xs:annotation>
                    <xs:restriction base="xs:string">
                        <xs:enumeration value="actual">
                            <xs:annotation>
                                <xs:documentation>Actual work time
schedule.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="earliest">
                            <xs:annotation>
                                <xs:documentation>Earliest work time
schedule.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="estimate">
                            <xs:annotation>
                                <xs:documentation>Estimate work time
schedule.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="latest">
                            <xs:annotation>
                                <xs:documentation>Latest work time
schedule.</xs:documentation>
                            </xs:annotation>
                        </xs:enumeration>
                        <xs:enumeration value="request">
                            <xs:annotation>
```

```
                                        <xs:documentation>Request work time
schedule.</xs:documentation>
                                    </xs:annotation>
                                </xs:enumeration>
                        </xs:restriction>
                </xs:simpleType>
                <xs:simpleType name="Length" sawsdl:modelReference="http://iec.ch/TC57/CIM-
generic#Length">
                        <xs:annotation>
                                <xs:documentation>Unit of length. Never negative.</xs:documentation>
                        </xs:annotation>
                        <xs:restriction base="xs:float"/>
                </xs:simpleType>
</xs:schema>
```

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