IEC 61968-6

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INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Application integration at electric utilities – System interfaces for distribution management –
Part 6: Interfaces for maintenance and construction

Intégration d'applications pour les services électriques – Interfaces système pour la gestion de distribution –
Partie 6: Interfaces de maintenance et de construction

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Part 6: Interfaces for maintenance and construction**

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

Part 6: Interfaces for maintenance and construction

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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.

This bilingual version (2016-08) corresponds to the monolingual English version, published in 2015-07.

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.

The French version of this standard has not been voted upon.

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- withdrawn,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.

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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).
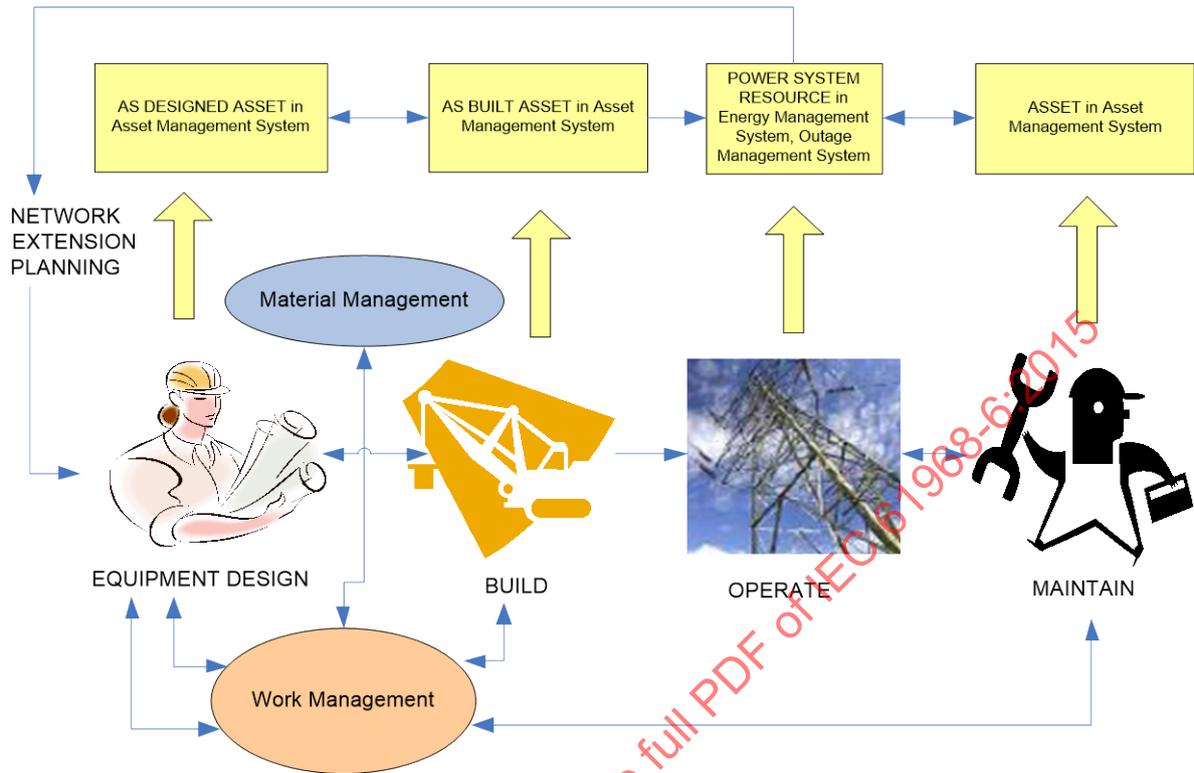
Figure 1 – Asset life cycle

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.
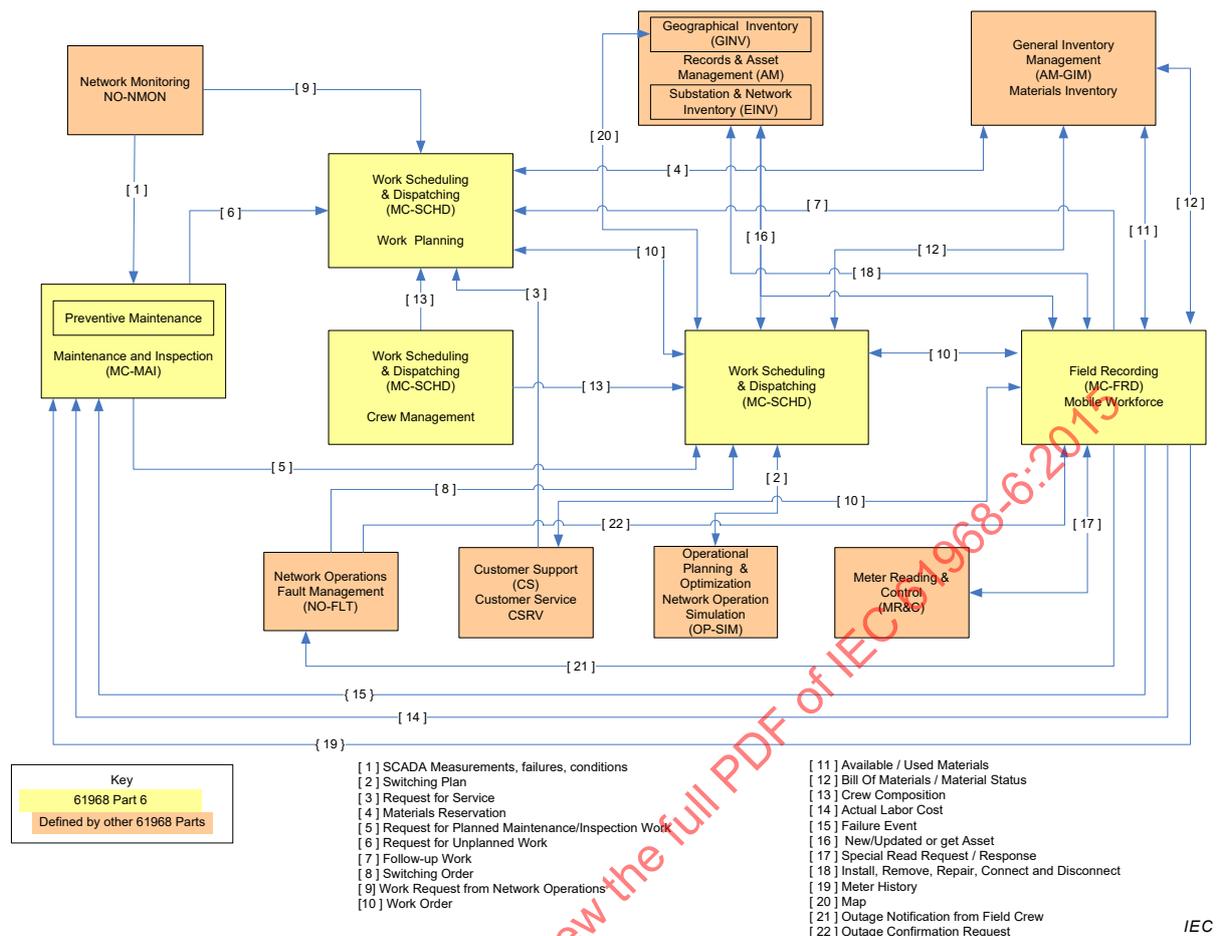
Figure 2 – IEC 61968-6 reference model for maintenance

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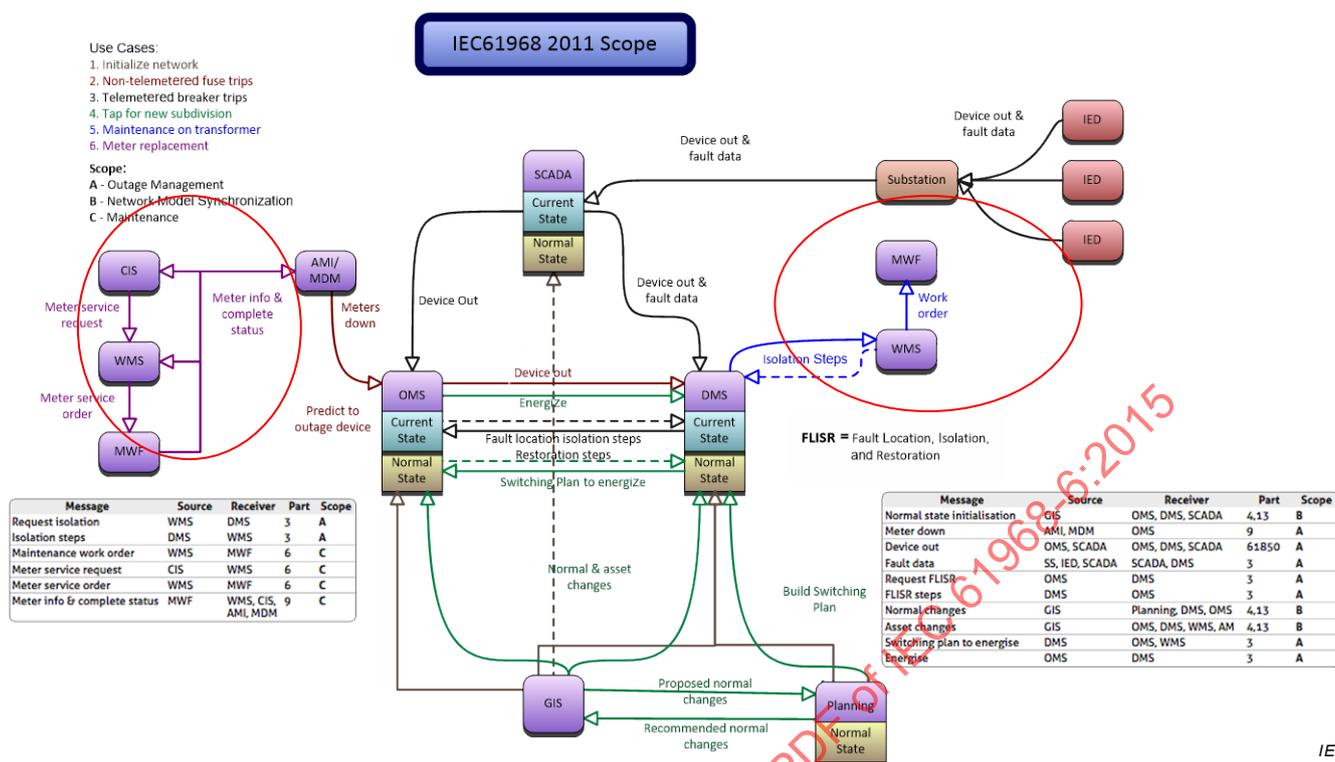
Figure 3 – End-to-end business cases and related messages

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.
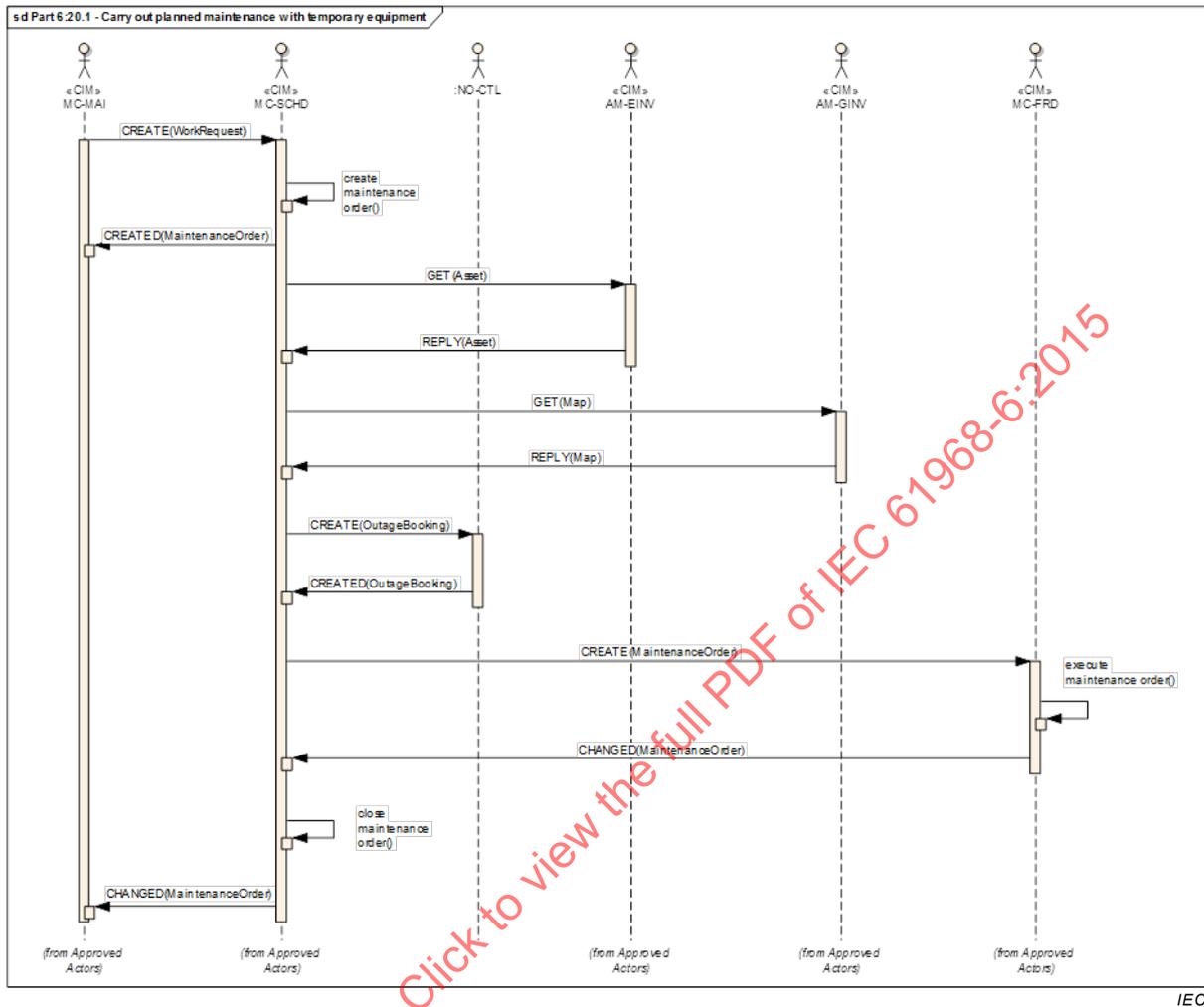
Figure 4 – Carry out planned maintenance with temporary equipment

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.
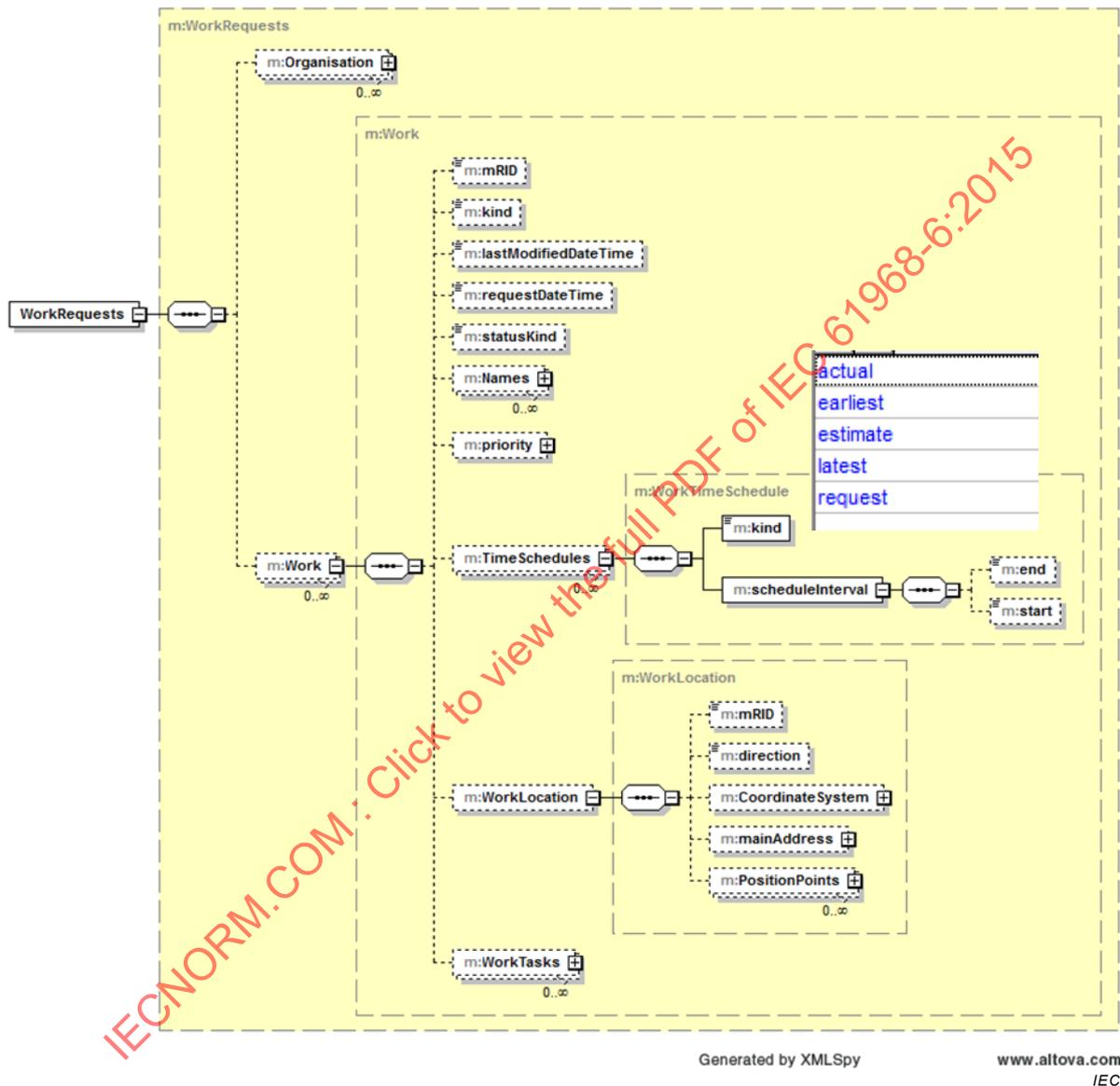
Figure 5 – Work request message format

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.
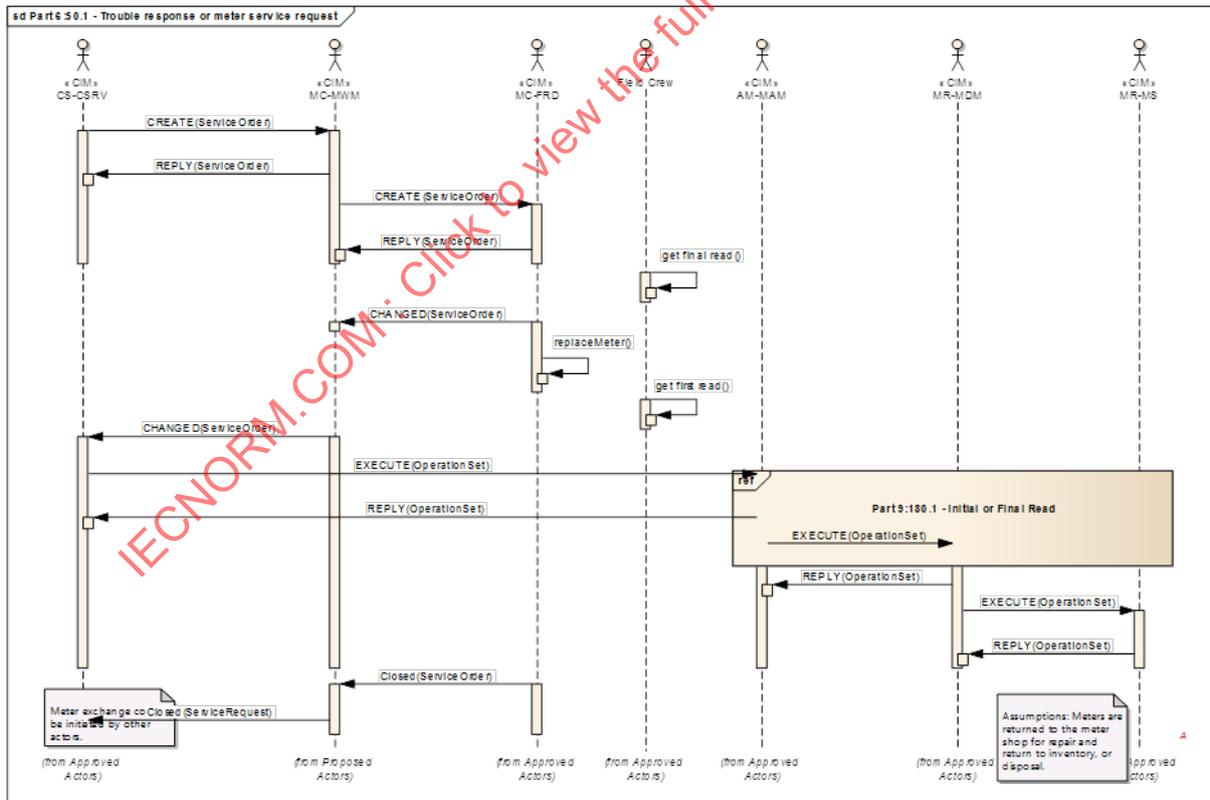
Figure 6 – Meter installation and removal

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.
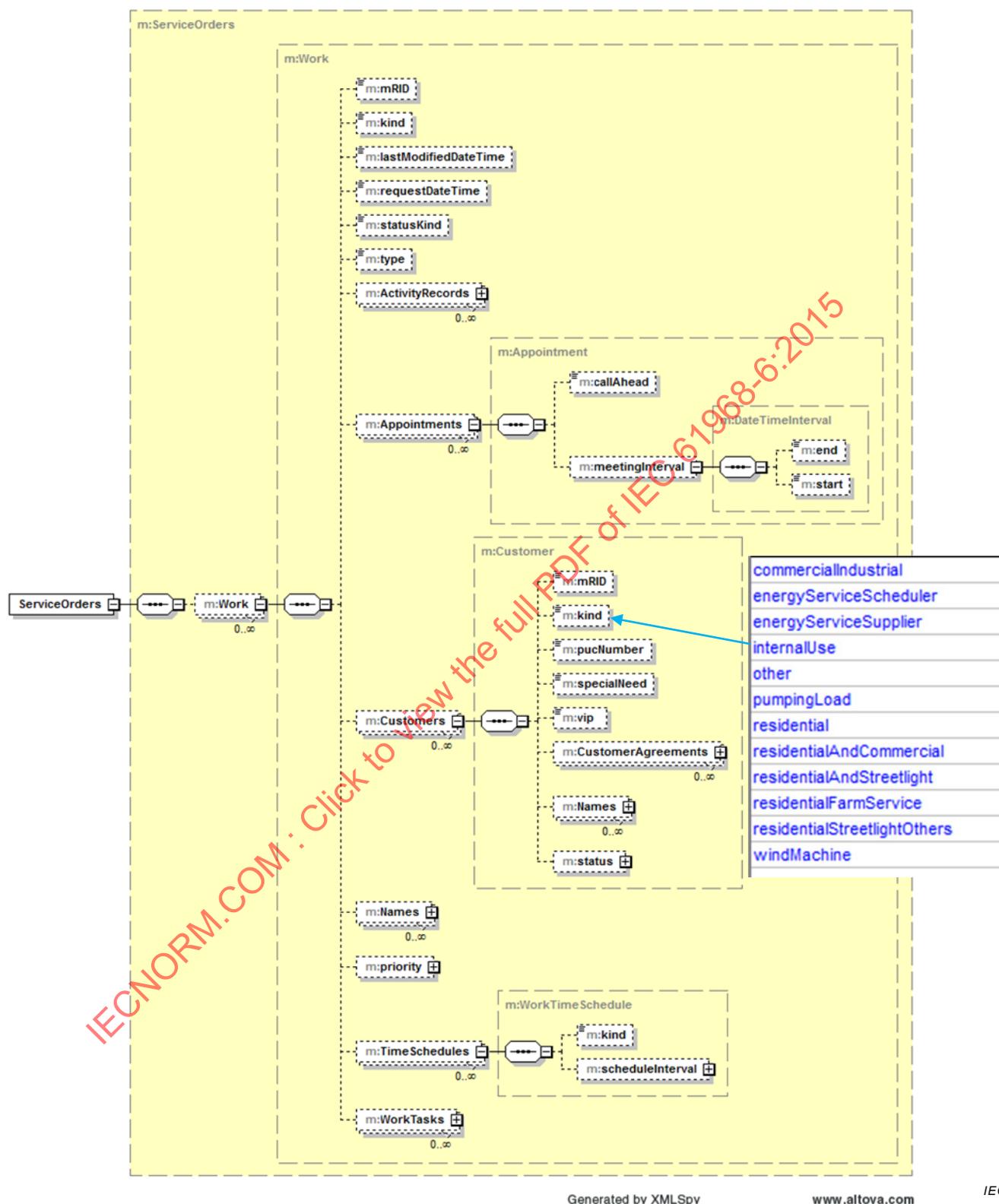
Figure 7 – Service order message format

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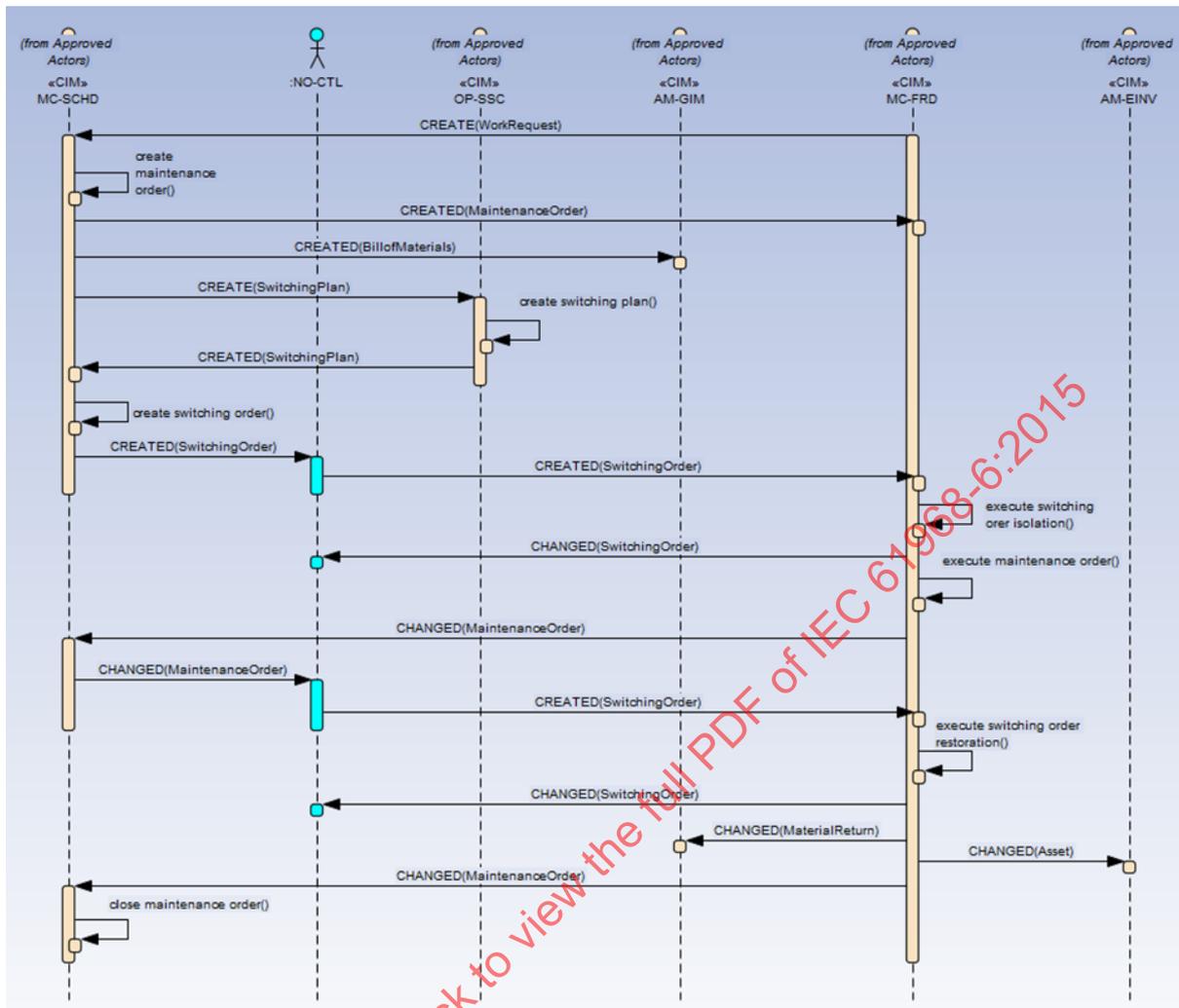
Figure 8 – Maintenance of high voltage device (transformer etc) requested by FRD

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.
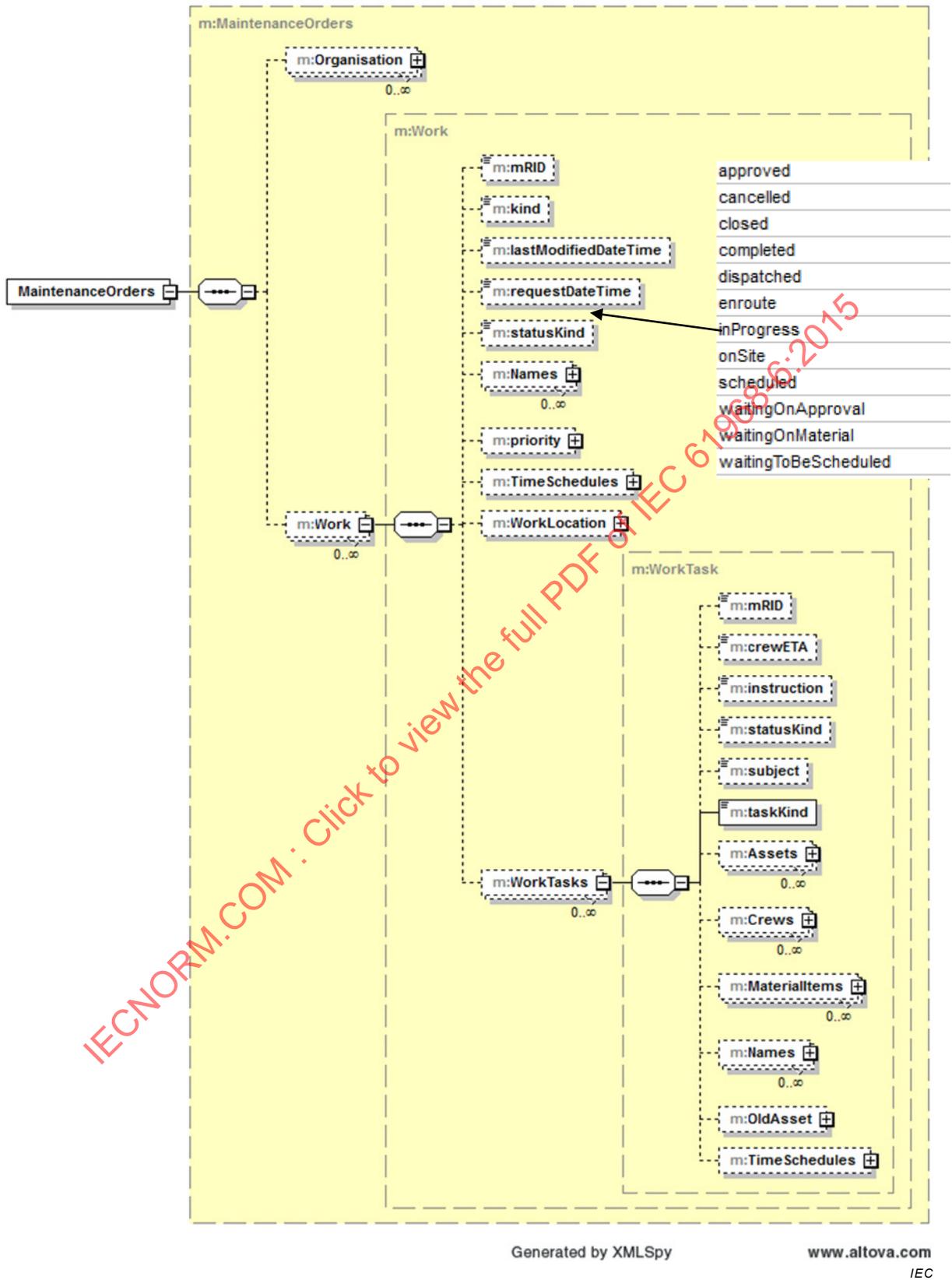
Figure 9 – MaintenanceOrder message format

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
<?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">
```

```xml
                <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>
```

```xml
<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>
```

```xml
                                                <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>
```

```xml
            </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>
```

```xml
                    <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>
```

```xml
                    <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>
```

```xml
        </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
<?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>
```

```xml
        <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>
```

```
                    </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>
```

```
                    <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">
```

```
                                            <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>
```

```
                                                        <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>
```

```
                                                    </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"

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>

```xml
<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: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>
```

```
                                        </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>
```

```
<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>

```xml
                    <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>
```

```
                              <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>
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                    </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>
```

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```
					</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>
```

```xml
<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>
```

```xml
                                                        </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 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
<?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>
```

```xml
<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>
```

```xml
                    <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>
```

```xml
                                        <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>
```

```xml
                    </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>
```

```xml
<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>
```

```xml
                    <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>
```

```xml
<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`

```xml
                                        <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>
```

```xml
                                                <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>
```

```xml
        </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>
```

```xml
                        <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>
```

Bibliography

IEC 60050-311, *International electrotechnical vocabulary – Part 311: Electrical and electronic measurements – General terms relating to measurements*

IEC 60050-312, *International electrotechnical vocabulary – Part 312: Electrical and electronic measurements – General terms relating to electrical measurements*

IEC 60050-314, *International electrotechnical vocabulary – Part 314: Electrical and electronic measurements – Specific terms according to the type of instrument*

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SOMMAIRE

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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INTÉGRATION D'APPLICATIONS POUR LES SERVICES ÉLECTRIQUES – INTERFACES SYSTÈME POUR LA GESTION DE DISTRIBUTION –

Partie 6: Interfaces de maintenance et de construction

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Cette partie de la norme internationale IEC 61968 a été établie par le comité d'études 57 de l'IEC: Gestion des systèmes de puissance et échanges d'informations associés.

La présente version bilingue (2016-08) correspond à la version anglaise monolingue publiée en 2015-07.

Le texte anglais de cette norme est issu des documents 57/1566/FDIS et 57/1586/RVD.

Le rapport de vote 57/1586/RVD donne toute information sur le vote ayant abouti à l'approbation de cette norme.

La version française de cette norme n'a pas été soumise au vote.

Cette publication a été rédigée selon les Directives ISO/IEC, Partie 2.

Une liste de toutes les parties de la série IEC 61968, publiées sous le titre général *Intégration d'applications pour les services électriques – Interfaces système pour la gestion de distribution*, peut être consultée sur le site web de l'IEC.

Le comité a décidé que le contenu de cette publication ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous "http://webstore.iec.ch" dans les données relatives à la publication recherchée. A cette date, la publication sera

- reconduite,
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- remplacée par une édition révisée, ou
- amendée.

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INTRODUCTION

La norme IEC 61968, dans son ensemble, définit les interfaces des principaux éléments d'une architecture d'interface des systèmes de gestion de distribution (DMS[1]). L'IEC 61968-1, *Architecture des interfaces et recommandations générales*, identifie et établit des exigences pour des interfaces normalisées basées sur un Modèle d'Interface de Référence (IRM[2]). Les IEC 61968-3 à -9 de la présente norme définissent les interfaces relatives aux principales fonctions métier décrites dans le Modèle d'Interface de Référence.

Au sens de l'IEC 61968, un système de gestion de distribution (DMS) se compose de divers composants d'application distribués permettant à l'entreprise de distribution de gérer les réseaux de distribution électriques. Ces capacités incluent la surveillance et la commande des équipements de fourniture d'énergie, les processus de gestion qui assurent la fiabilité du système, la gestion de la tension, la gestion de la demande, la gestion des interruptions de service, la gestion des travaux, la mise en correspondance automatisée et la gestion des équipements.

Cet ensemble de normes se limite à la définition des interfaces et dépend de la mise en œuvre. Elles pourvoient à l'interopérabilité entre les différents systèmes informatiques, plates-formes et langages. Les processus et les technologies utilisés pour mettre en application une fonctionnalité se conformant à ces interfaces sont considérés comme étant hors du domaine d'application de ces normes. Seule l'interface elle-même est spécifiée.

Cette présente partie de l'IEC 61968 a pour objet de définir une norme d'intégration des systèmes de Maintenance et de Construction (MC), comprenant les systèmes de gestion des travaux, avec d'autres systèmes et fonctions métier du domaine d'application de l'IEC 61968. Le domaine d'application de la présente Norme est l'échange d'informations entre les systèmes de Maintenance et de Construction et d'autres systèmes de l'entreprise de distribution. Les détails spécifiques des protocoles de communication que ces systèmes utilisent n'entrent pas dans le domaine d'application de la présente norme. La présente norme reconnaît et modélise plutôt les capacités générales que peuvent potentiellement fournir les systèmes de maintenance et de construction, y compris la maintenance planifiée, non planifiée et conditionnelle. Ainsi, la présente norme ne sera pas affectée par la spécification, le développement et/ou le déploiement des systèmes de maintenance de prochaine génération, ni par l'utilisation de normes ou des moyens propriétaires.

La série de normes IEC 61968 est prévue pour faciliter l'*intégration interapplications*, par opposition à l'*intégration intra-applications*. L'intégration intra-applications est destinée aux programmes d'un même système d'application, communiquant habituellement les uns avec les autres en utilisant des intergiciels (middleware) qui sont intégrés dans leur environnement d'exécution sous-jacent et tendent à être optimisés pour des connexions proches, en temps réel et synchrones, et des interrogations/réponses interactives ou des modèles de communication conversationnels. L'IEC 61968, en revanche, est prévue pour prendre en charge l'intégration interapplications d'une entreprise de distribution qui a besoin de relier des systèmes disparates existants ou futurs (applications héritées ou achetées), chacun supporté par des environnements d'exécution différents. Par conséquent, ces normes d'interface sont appropriées pour les applications faiblement couplées avec une plus grande hétérogénéité dans le langage, les systèmes d'exploitation, les protocoles et les outils de gestion. Cette série de normes est prévue pour supporter des applications qui nécessitent l'échange de données environ toutes les secondes, minutes ou heures, plutôt que d'attendre un traitement de nuit par lot. Cette série de normes, qui est destinée à être mise en œuvre avec des services d'intergiciel, qui échangent des messages parmi des applications, complétera, mais ne remplacera pas, les entrepôts de données de l'entreprise de distribution, les passerelles de base de données, et les archives opérationnelles.

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1   DMS = *Distribution Management System*.

2   IRM = *Interface Reference Model*.

Au sens de l'IEC 61968, un système de gestion de distribution (DMS) se compose de divers composants d'application distribués permettant à l'entreprise de distribution de gérer les réseaux de distribution électriques. Ces capacités incluent la surveillance et la commande des équipements de fourniture d'énergie, les processus de gestion qui assurent la fiabilité du système, la gestion de la tension, la gestion de la demande, la gestion des interruptions de service, la gestion des travaux, la mise en correspondance automatisée et la gestion des équipements. Des interfaces normalisées sont définies pour chaque classe d'applications identifiée dans le Modèle d'Interface de Référence (IRM), qui est décrit dans l'IEC 61968-1, *Architecture des interfaces et recommandations générales.*

La présente partie de l'IEC 61968 contient les articles figurant dans le Tableau 1.

Tableau 1 – Vue d'ensemble du document IEC 61968-6

Article	Titre	Objet
1	Domaine d'application	Domaine d'application et objet du document.
2	Références normatives	Documents qui contiennent des dispositions qui, par suite de la référence qui y est faite, constituent des dispositions valables pour la présente norme internationale.
3	Modèles de référence et d'information	Description de l'approche générale du système de gestion des travaux, du modèle de référence, des cas d'utilisation, du Modèle d'Interface de Référence, des fonctions et composants de maintenance et de construction, des termes de type de message et du modèle d'information statique.
4	Types de messages de maintenance et de construction	Types de messages sur l'échange d'informations pour les documents relatifs à la maintenance et la construction.
Annexe A	Verbes de types de messages	Description des verbes utilisés pour les types de messages
Annexe B	Schémas XML pour les charges utiles des messages	Donne les informations xsd que les développeurs utilisent pour créer les messages de l'IEC 61968- 9.

INTÉGRATION D'APPLICATIONS POUR LES SERVICES ÉLECTRIQUES – INTERFACES SYSTÈME POUR LA GESTION DE DISTRIBUTION –

Partie 6: Interfaces de maintenance et de construction

1   Domaine d'application

Cette partie de l'IEC 61968 spécifie le contenu informatif d'un ensemble de types de messages qui peut être utilisé pour prendre en charge les fonctions métier liées à la Maintenance et la Construction. En règle générale, l'utilisation des types de messages définis dans cette partie de l'IEC 61968 inclut la maintenance planifiée, la maintenance non planifiée, la maintenance conditionnelle, la gestion des travaux, les nouvelles demandes de service, etc. Les types de messages définis dans les autres parties de l'IEC 61968 peuvent également être pertinents dans ces cas d'utilisation.

La mise en correspondance de ces messages avec des technologies spécifiques (XML, par exemple) sera décrite ultérieurement.

2   Références normatives

Les documents suivants sont cités en référence de manière normative, en intégralité ou en partie, dans le présent document et sont indispensables pour son application. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60050, *Vocabulaire électrotechnique international*

IEC 61968-1, *Intégration d'applications pour les services électriques – Interfaces système pour la gestion de distribution – Partie 1: Architecture des interfaces et recommandations générales*

IEC TS 61968-2, *Application integration at electric utilities – System interfaces for distribution management – Part 2: Glossary* (disponible en anglais seulement)

IEC 61968-4, *Application integration at electric utilities – System interfaces for distribution management – Part 4: Interfaces for records and asset management* (disponible en anglais seulement)

IEC 61968-9:2013, *Intégration d'applications pour les services électriques – Interfaces système pour la gestion de distribution – Partie 9: interface pour le relevé et la commande des compteurs*

IEC 61968-11, *Intégration d'applications pour les services électriques – Interfaces système pour la gestion de distribution – Partie 11: Extensions du modèle d'information commun (CIM) pour la distribution*

IEC 61970-301, *Interface de programmation d'application pour système de gestion d'énergie (EMS-API) – Partie 301: Base de modèle d'information commun (CIM)*

IEC TR 62051, *Lecture des compteurs électriques – Glossaire de termes* (disponible en anglais seulement)

IEC 62055-31, *Equipements de comptage de l'électricité – Systèmes à paiement – Partie 31: Exigences particulières – Compteurs statiques à paiement d'énergie active (classes 1 et 2)*

3 Termes, définitions et abréviations

3.1 Termes et définitions

Pour les besoins de la présente norme, les termes et les définitions donnés dans l'IEC 60050-300, l'IEC TS 61968-2, l'IEC TR 62051, l'IEC 62055-31 et les suivants s'appliquent.

En cas de différence entre les définitions de la présente norme et celle des autres normes référencées de l'IEC, celles définies dans la l'IEC 61968-2 doivent l'emporter sur toutes les autres, et celles définies dans l'IEC61968-6 doivent l'emporter sur celles de l'IEC 61968-2.

3.2 Abréviations

AM	Asset Management (Gestion des biens)
CIM	Common Information Model (Modèle d'information commun)
NO	Network Operations (Exploitation du réseau)
OMS	Outage Management System (Système de gestion des interruptions de service)
WM	Work Management (Gestion des travaux)
GINV	Geographical Inventory (Inventaire géographique)
MAI	Maintenance et Inspection
CON	Construction
DGN	Design (Conception)
SCHD	Work Scheduling and Dispatching (Programmation et répartition du travail)
FRD	Field Recording (Enregistrement de terrain)
NE	Network Extension Planning (Planification des extensions réseau)
TCM	Trouble Call Management (Gestion des appels sur incident)
MR&C	Meter Read and Control (Relevé et commande de compteur)
CS	Customer Services (Assistance à la clientèle)
HR	Human Resources (Ressources humaines)
FIN	Finances

4 Modèles de référence et d'information

4.1 Générale

Les types de messages définis dans le présent document reposent sur un partitionnement logique des fonctions métier et composants DMS, appelé Modèle d'Interface de Référence de l'IEC 61968.

La Figure 1 présente un schéma synoptique qui place la Maintenance et la Construction, ainsi que la gestion des travaux, au centre de la gestion des biens de l'entreprise. Le schéma montre les relations qu'entretiennent les biens et les ressources du système de puissance. Il établit également un lien entre le travail et le processus de construction (lorsqu'un nouveau bien est construit) et le processus de maintenance (en cas d'inspection ou de réparation du bien existant).

IEC
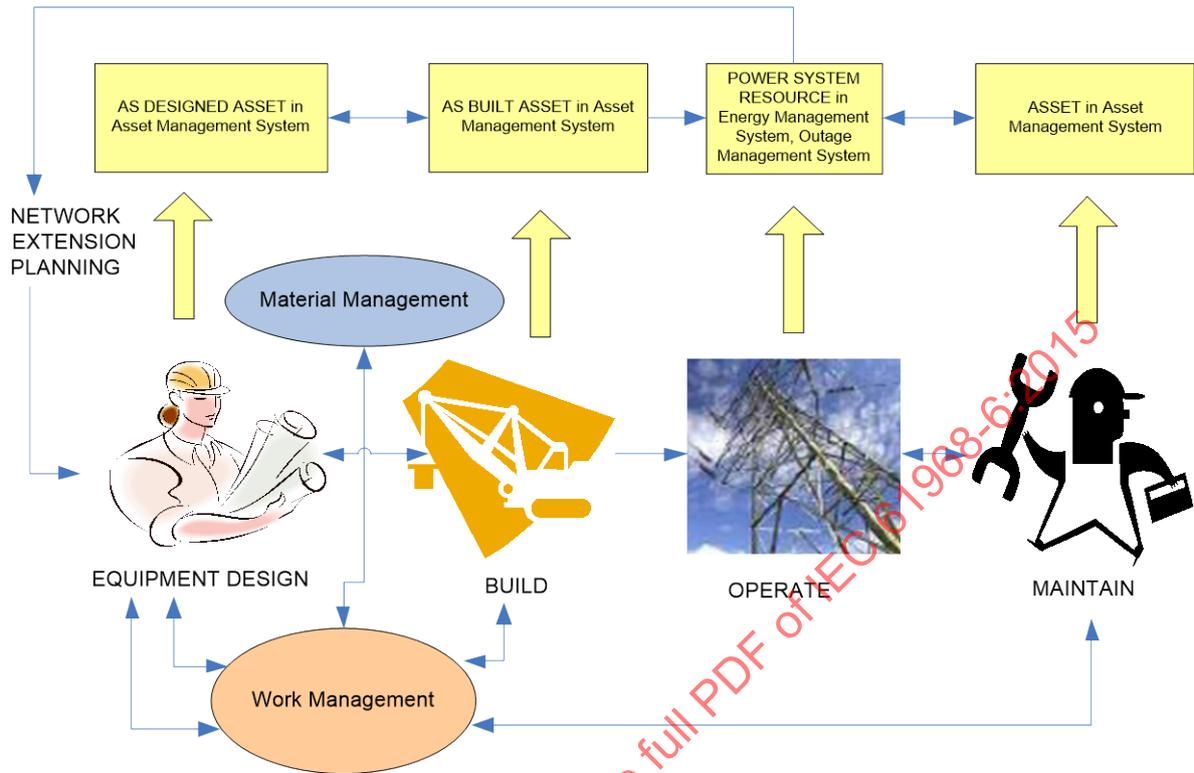
Anglais	Français
AS DESIGNED ASSET in Asset Management System	BIEN CONFORME À LA CONCEPTION dans le Système de gestion des biens
AS BUILT ASSET in Asset Management System	BIEN CONFORME À L'EXÉCUTION dans le Système de gestion des biens
POWER SYSTEM RESOURCE in Energy Management System, Outage Management System	RESSOURCES DU SYSTÈME DE PUISSANCE dans le Système de gestion d'énergie, Système de gestion des interruptions de service
ASSET in Asset Management System	BIEN dans le Système de gestion des biens
NETWORK EXTENSION PLANNING	PLANIFICATION DES EXTENSIONS DE RESEAU
Material Management	Gestion des matériaux
EQUIPMENT DESIGN	CONCEPTION DES EQUIPEMENTS
BUILD	CONSTRUIRE
OPERATE	EXPLOITER
MAINTAIN	MAINTENIR
Work Management	Gestion des travaux

Figure 1 – Cycle de vie d'un bien

Le contenu des types de messages repose sur un modèle d'information statique visant à assurer la cohérence des noms de champ et des types de données. Chaque type de message est défini comme un ensemble de champs copiés à partir des classes du modèle d'information de l'IEC 61968-11. Les types de messages définis dans la présente norme ont pour objet de satisfaire à une majorité des applications classiques. Dans certaines mises en œuvre de projets particuliers, il peut être souhaitable de modifier l'ensemble des champs à l'aide d'une méthodologie s'apparentant à celle décrite dans l'IEC 61968-1.

4.2 Modèle de référence

4.2.1 Généralités

Le diagramme présenté à la Figure 2 sert de modèle de référence et donne un exemple de composants logiques et de flux de données liés à la présente norme internationale. Le paragraphe 4.5.2 fait référence aux termes définis par le CIM.

Le diagramme de la Figure 2 décrit les flux entre les composants du modèle de référence. Les numéros entre crochets indiquent les liaisons entre les définitions de flux. Selon le titre de la Figure 2, ce modèle de référence comprend seulement un sous-ensemble de toutes les fonctions de maintenance et de construction. Les autres fonctions, notamment les fonctions liées à la Construction, seront incluses dans les éditions ultérieures de la présente norme.
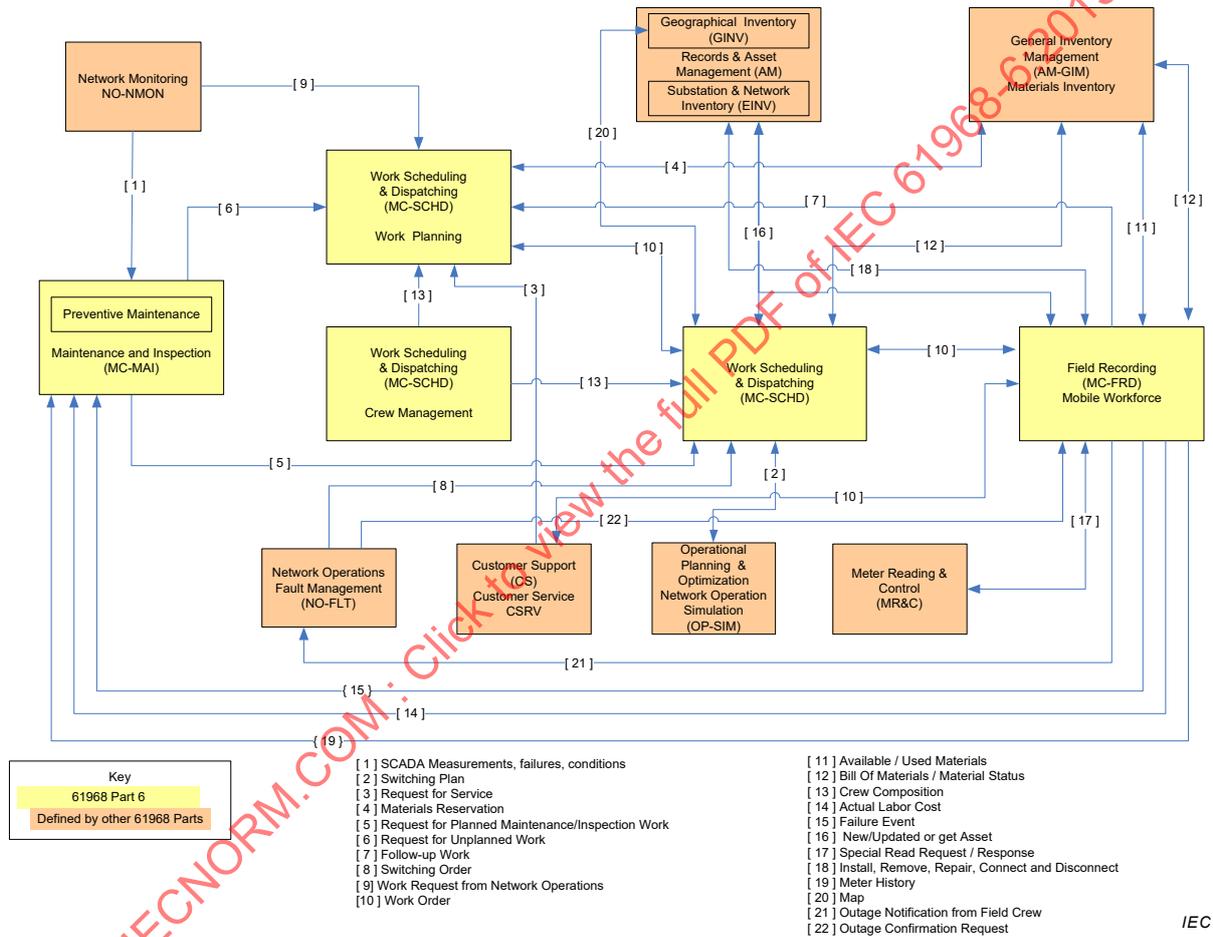
Anglais	Français
Network Monitoring	Surveillance de réseau
Geographical Inventory	Inventaire géographique
Records & Asset Management	Gestion des enregistrements & des biens
Substation & Network Inventory	Inventaire de poste et de réseau
General Inventory Management	Gestion d'inventaire général
Materials Inventory	Inventaire des matériaux
Work Scheduling & Dispatching	Programmation et répartition du travail
Work Planning	Planification du travail
Preventive Maintenance	Maintenance préventive
Maintenance and Inspection	Maintenance et Inspection

Anglais	Français
Crew Management	Gestion des équipes
Field Recording	Enregistrement de terrain
Mobile Workforce	Effectif mobile
Network Operations Fault Management	Gestion des défauts d'exploitation du réseau
Customer Support	Assistance à la clientèle
Customer Service	Service clientèle
Operational Planning & Optimization	Planification opérationnelle et optimisation
Network Operation Simulation	Simulation de l'exploitation du réseau
Meter Reading & Control	Relevé et Commande de compteur
Key	Légende
61968 Part 6	61968 Partie 6
Defined by other 61968 Parts	Défini par les autres parties de l'IEC 61968
SCADA Measurements, failures, conditions	Mesures, défaillances, conditions SCADA
Switching Plan	Plan de commutation
Request for Service	Demande de service
Materials Reservation	Réservation de matériaux
Request for Planned Maintenance/Inspection Work	Demande de maintenance planifiée/travail d'inspection
Request for Unplanned Work	Demande de travail non planifié
Follow-up Work	Travail de suivi
Switching Order	Ordre de commutation
Work Request from Network Operations	Demande de travail à partir de l'exploitation du réseau
Work Order	Ordre de travaux
Available / Used Materials	Matériaux disponibles/utilisés
Bill Of Materials / Materials Status	Nomenclature/Statut du matériel
Crew Composition	Composition de l'équipe
Actual Labor Cost	Coût réel de la main-d'œuvre
Failure Event	Événement de défaillance
New/Updated or get Asset	Bien nouveau/mis à jour ou obtenu
Special Read Request / Response	Demande/Réponse de relevé spécial
Install, Remove, Repair, Connect and Disconnect	Installation, Dépose, Réparation, Connexion et Déconnexion
Meter History	Historique du compteur
Map	Carte
Outage Notification from Field Crew	Notification d'interruption de service par l'équipe de terrain
Outage Confirmation Request	Demande de confirmation d'interruption de service

Figure 2 – Modèle de référence de l'IEC 61968-6 pour la maintenance

L'architecture de référence reflète plusieurs composants logiques principaux (prenant potentiellement la forme de systèmes ou de sous-systèmes) liés à la maintenance:

a) Inventaire géographique (GINV)

b) Maintenance et Inspection (MAI)

c) Construction (CON)

d) Conception (DGN)

e) Programmation et répartition du travail (SCHD)

f) Enregistrement de terrain (FRD)

g) Système de gestion des biens (AM)

h) Simulation de l'exploitation du réseau (SIM)

i) Exploitation du réseau (NO)

j) Planification des extensions réseau (NE)

k) Gestion des appels sur incident (TCM)

l) Relevé et commande de compteur (MR&C)

m) Assistance à la clientèle (CS)

n) Ressources humaines (HR)

o) Système de gestion des matériaux

p) Système financier (FIN)

4.2.2 Inventaire géographique (GINV)

Gestion de données géospatiales, typiquement par l'utilisation de technologie graphique informatique pour saisir, stocker et mettre à jour des informations graphiques et non graphiques. Les descriptions géographiques et les éléments de données connexes non graphiques pour chaque entité sont généralement stockés dans une certaine forme de base de données. Les représentations graphiques sont référencées en utilisant un système de coordonnées qui se rapporte aux emplacements sur la surface de la terre. Les informations dans la base de données peuvent être interrogées et affichées en fonction des attributs, graphiques ou non graphiques des entités.

4.2.3 Maintenance et Inspection (MAI)

Travaux impliquant l'inspection, le nettoyage, l'ajustement ou autre entretien des équipements pour leur permettre de fonctionner mieux ou pour prolonger leur durée de vie utile. Les exemples de travaux de maintenance sont les vidanges d'huile et la peinture de routine. Les exemples de travaux d'inspection sont les inspections des poteaux, les inspections des voûtes et les inspections des postes.

4.2.4 Construction

Les exemples de travaux de construction incluent les installations d'entretien, les extensions de ligne et les projets d'amélioration des systèmes.

4.2.5 Conception

Une conception est créée par un ingénieur ou un planificateur de tâches à l'aide du système de conception et d'estimation (DGN). Les conceptions peuvent être composées d'éléments de ligne individuels ou d'un ensemble d'unités compatibles ("compatible units" ou CU). Les éléments de ligne et les unités compatibles sont associés à un emplacement de conception, lui-même associé à l'objet d'emplacement du CIM.

4.2.6 Programmation et répartition du travail (SCHD)

La programmation et la répartition du travail permettent, dans le cadre d'un travail défini, d'affecter les ressources requises et de suivre l'avancement des travaux.

4.2.7 Enregistrement de terrain (FRD)

L'enregistrement de terrain est souvent accompli au moyen de dispositifs portatifs qui permettent au personnel de terrain de visualiser et saisir les informations pertinentes pour le travail qu'il accomplit sur le terrain. Par exemple, les équipes de ligne et le personnel d'entretien peuvent accéder à leurs cartes de district respectives, effectuer des recherches

par numéro de poteau, par poste, par numéro de transformateur, par numéros de commutateur et par noms de départ.

4.2.8   Simulation de l'exploitation du réseau (SIM)

Cet ensemble de fonctions permet à des installations de définir, élaborer et optimiser la séquence d'opérations requise pour accomplir l'intervention de maintenance sur le système (ordres de libération/annulation) et la planification opérationnelle.

4.2.9   Assistance à la clientèle (CS)

Cet ensemble de fonctions couvre différents aspects liés aux interfaces clientèle requises à des fins d'exploitation et commerciales.

4.2.10   Gestion des appels sur incident (TCM)

Les perturbations client liées aux extinctions totales sont alors émises et comparées avec des données réseau afin de fournir des informations exactes sur l'incident.

4.2.11   Finances (FIN)

Performance financière dans toute l'organisation, qui comprend l'évaluation des investissements dans des projets d'investissement, de la maintenance ou de l'exploitation. Ces processus impliquent les coûts du risque et des prestations ainsi que l'impact sur les niveaux de service.

4.2.12   Ressources humaines

Les informations de ressources humaines contiennent les informations personnelles de chaque employé. Elles comprennent des données telles que le code de fonction, le statut d'employé, le service ou la place dans l'organisation et les compétences liées au travail. Ces informations sont souvent nécessaires et mises à jour par des sous-fonctions métier orientées gestion de projet et de travaux.

4.2.13   Système de gestion des biens (AM)

Les entreprises de distribution utilisent certains types de logiciels de gestion des biens afin de maintenir des enregistrements détaillés concernant leurs biens matériels. La gestion des biens est abordée de manière catégorique dans l'IEC 61968-4.

4.2.14   Exploitation du réseau (NO)

Cette fonction permet aux entreprises de distribution de surveiller la topologie de poste principale (état de disjoncteur et de commutateur) et le statut d'équipement de commande. Elle fournit également aux entreprises de distribution les moyens de gérer l'état de charge et de connectivité du réseau. Elle rend également possibles la localisation des plaintes téléphoniques des clients et la surveillance de la localisation des équipes de terrain.

4.3   Modèle d'Interface de Référence

Il n'est pas dans l'intention de la présente norme de définir les applications et les systèmes qu'il convient que les fournisseurs proposent. Il est prévu qu'une application (physique) concrète offre la fonctionnalité d'un ou de plusieurs composants (logiques) abstraits tels qu'ils sont énumérés dans la présente norme. Ces composants abstraits sont regroupés par les fonctions métier du Modèle d'Interface de Référence.

Dans la présente norme, le terme "composant abstrait" est utilisé pour se référer à la partie d'un système logiciel qui supporte une ou plusieurs des interfaces définies dans les IEC 61968-3 à -9 et l'IEC 61968-13. Cela ne signifie pas nécessairement que le logiciel conforme est livré en modules séparés ou en un seul système.

L'IEC 61968-1 décrit les services d'infrastructure communs à tous les composants abstraits. Les IEC 61968-3 à -9 et -13 définissent les détails des informations échangées pour les types particuliers de composants abstraits.

L'IEC 61968 définit que:

a) Une infrastructure interapplications est conforme si elle assure les services définis dans la Partie 1 pour prendre en charge au moins deux applications avec des interfaces conformes aux sections des IEC 61968-3 à -9 et -13.

b) Une interface d'application est conforme si elle prend en charge les normes d'interface définies dans les IEC 61968-3 à -9 et -13 concernant les composants abstraits correspondants, définis dans le Modèle d'Interface de Référence.

c) Une application est requise uniquement pour prendre en charge les normes d'interface des composants applicables énumérés dans les composants abstraits. Une application n'est pas requise pour prendre en charge les interfaces exigées par d'autres composants abstraits des mêmes sous-fonctions métier ou de la même fonction métier. Alors que la présente norme définit principalement les informations échangées entre des composants de différentes fonctions métier, elle peut également définir occasionnellement les informations échangées entre des composants d'une fonction métier unique quand une forte demande du marché, pour ces potentialités, a été appréhendée.

4.4   Fonctions et composants de maintenance et de construction

Le tableau ci-dessous présente certaines fonctions et certains composants classiques applicables aux types de messages définis dans le présent document: IEC 61968-6: Interfaces de maintenance et de construction.

Pour les types de messages définis dans le présent document, il est prévu que les composants abstraits classiques énumérés dans le Tableau 2 soient à l'origine des informations. Les utilisateurs classiques des informations sont les autres composants figurant dans l'IEC 61968-1.

Tableau 2 – Fonctions métier et composants abstraits

Fonctions métier	Sous-fonctions métier	Composants abstraits
Maintenance et Construction (MC)	Maintenance et Inspection (MAI)	Ordres de maintenance
		Règles de maintenance
		Historique de la maintenance/de l'inspection
		Procédures des travaux
	Construction (CON)	Tâches d'exécution
		Rapprochement des coûts
		Approbation de travail
		Permis de travail
		Facturation client
		Suivi
		Évaluation des coûts de projet
	Conception (DGN)	Étude de construction
		Estimation
		Nomenclature de produits
		Unités compatibles
	Enregistrement de terrain (FRD)	Rapport de réalisation
		Compte-rendu des temps
		État des biens

Fonctions métier	Sous-fonctions métier	Composants abstraits
	Programmation et répartition (SCHD)	Gestion des ressources
		Planification du travail
		Attribution du travail
		Réquisition de matériaux

4.5 Modèle d'information statique

4.5.1 Classes de modèle d'information

Le modèle d'information adapté aux enregistrements et à la gestion des biens est composé de classes offrant un modèle aux attributs de chaque message. Les classes sont définies en détail dans l'IEC 61968-11 ou 61970-301.

4.5.2 Classes de maintenance et de construction

Le Tableau 3 répertorie les classes utilisées dans les types de messages. Tous les attributs de ces classes sont contenus dans un type de message.

Tableau 3 – Classes de maintenance et de construction

Nom de la classe	Description de la classe
Asset	Ressource tangible du service public, y compris l'équipement du système de puissance, les divers dispositifs finaux, les armoires, les bâtiments, etc. Pour l'équipement du réseau électrique, le rôle du bien est défini par le truchement de PowerSystemResource et de ses sous-classes, définies principalement dans le modèle Wires (se référer à l'IEC 61970-301 et au paquetage du modèle IEC61970::Wires). La description du bien met l'accent sur les caractéristiques physiques de l'équipement remplissant le rôle en question.
WorkAsset	Bien utilisé pour exécuter un travail.
ProcedureDataSet	Ensemble de données enregistré à chaque exécution d'une procédure. Les résultats observés sont capturés dans des valeurs de mesure associées et/ou des valeurs de propriétés adaptées au type de procédure réalisé
Procedure	Procédure documentée pour différents types de travaux ou de tâches réalisés sur des biens.
WorkLocation	Informations relatives à un emplacement particulier pour diverses formes de travail.
MaterialItem	Fourniture physique consommable utilisée pour le travail et à d'autres fins. Il s'agit d'éléments tels que des écrous, des boulons, des attaches, de la colle, etc.
Work	Document utilisé pour demander, déclencher, suivre et enregistrer des travaux.
Meter	Bien physique qui accomplit le rôle de comptage du UsagePoint. Utilisé pour mesurer la consommation et la détection d'événements.
BaseWork	Représentation commune du travail et des tâches afférentes.
WorkTimeSchedule	Planning spécifique à un travail.
WorkTask	Un ensemble de tâches est requis pour mettre en œuvre une conception.

NOTE Les définitions de classe sont données ici à titre indicatif uniquement. Les définitions normatives sont fournies par le CIM.

4.6 Maintenance et construction – Cas d'utilisation

Faisant suite au processus de développement itératif l'IEC 61968-6 a poursuivi la prise en charge en matière de potentialité de gestion des travaux des cas métier de bout en bout les plus courants:

1) Initialiser le réseau

2) Déclenchements de fusible non télémesurés

3) Déclenchements de disjoncteur télémesurés

4) Prise pour une nouvelle sous-division

5) Maintenance du transformateur

6) Remplacement de compteur

Ces cas d'utilisation et messages ont été traités par l'IEC 61968-6 dans le cadre d'une approche holistique en collaboration avec les IEC 61968-3, -4, -9 et -13. Le diagramme suivant (voir Figure 3) illustre les cas d'utilisation et messages de bout en bout et exprime l'interaction requise entre les différentes parties de l'IEC 61968.

L'IEC 61968-6 s'est concentrée sur les cas d'utilisation de gestion des travaux tels que la Maintenance de transformateur et le Remplacement de compteur (voir dans les cercles en rouge). Suite à ce processus interactif proposé, les messages les plus importants de ces cas d'utilisation: WorkRequest, MaintenanceOrder, ServiceOrder et SwitchingOrder, ont été traités en premier et présentés dans le présent document.
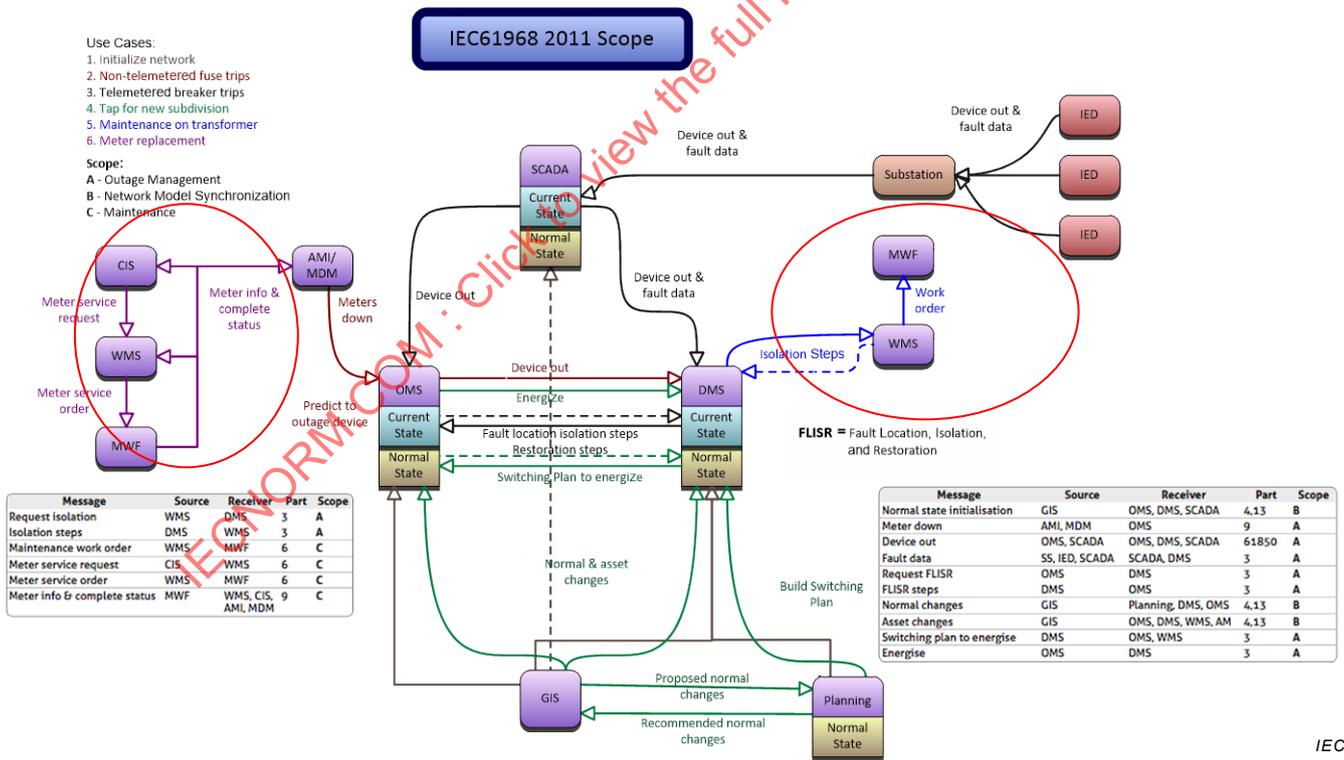
Anglais	Français
IEC 61968 2011 Scope	IEC 61968 2011 Domaine d'application
Use Cases:	Cas d'utilisation:
Initialize network	Initialisation du réseau
Non-telemetered fuse trips	Déclenchements de fusible non télémesurés
Telemetered breaker trips	Déclenchements de disjoncteur télémesurés
Tap for new subdivision	Prise pour nouvelle sous-division

Anglais	Français
Maintenance on transformer	Maintenance de transformateur
Meter replacement	Remplacement de compteur
Current State	État en cours
Normal State	État normal
Device out & fault data	Arrêt du dispositif & données de défaillance
Substation	Poste
Scope	Domaine d'application
Outage Management	Gestion des interruptions de service
Network Model Synchronization	Synchronisation du modèle de réseau
Maintenance	Maintenance
Meter service request	Demande de service de compteur
Meter info & complete status	Infos de compteur & statut complet
Meters down	Compteurs arrêtés
Meter down	Compteur arrêté
Device Out	Dispositif arrêté
Work order	Ordre de travail
Isolation Steps	Procédure d'isolation
Meter service order	Ordre de service de compteur
Predict to outage device	Prévision d'interruption du dispositif
Energize	Alimenter
Fault location isolation steps	Procédure d'isolation de l'emplacement du défaut
Restoration steps	Procédure de restauration
Switching Plan to energize	Plan de commutation pour alimentation
FLISR = Fault Location, Isolation, and Restoration	FLSIR = Localisation du défaut, isolation et restauration
Receiver	Destinataire
Part	Partie
Request Isolation	Demande d'isolation
Maintenance Work Order	Ordre de travaux de maintenance
Normal state initialisation	Initialisation à l'état normal
Fault data	Données de défaillance
Request FLISR	Demande FLSIR
FLISR steps	Procédure FLSIR
Normal changes	Changements normaux
Asset changes	Changements de bien
Normal & asset changes	Changements normaux et de bien
Build Switching Plan	Générer plan de commutation
Proposed normal changes	Changements normaux proposés
Recommended normal changes	Changements normaux recommandés
Planning	planification

Figure 3 – Cas métier de bout en bout et messages connexes

L'Article 5 présente des cas d'utilisation plus détaillés pour une interaction spécifique (telle que le remplacement du compteur ou la réparation du transformateur). Des messages ont été développés et présentés pour chaque cas d'utilisation.

5 Types de messages de Maintenance et de Construction

5.1 Généralités

La présente section a pour objet de décrire les types de messages liés à l'IEC 61968-6. Il est important de noter que certains de ces types de messages peuvent également être utilisés par d'autres parties de l'IEC 61968. L'approche générale de la réalisation des structures de message et des schémas XML des messages de l'IEC 61968 est décrite dans l'IEC 61968-1.

Même s'ils peuvent être représentés sous forme de diagrammes de séquence pour le contexte et l'exhaustivité, le présent document ne décrit pas les formats de message définis dans d'autres parties de l'IEC 61968. Les structures de charge utile de message clés définies par la présente partie de l'IEC 61968 se réfèrent aux processus métier liés aux travaux, tels que:

- Demande de travail
- Programmation et répartition du travail
- Exécution du travail
- Fermeture du travail

La programmation d'un travail non planifié consiste à planifier le travail, réserver les matériaux, composer l'équipe et obtenir les permis nécessaires, le cas échéant. Lors de sa planification, le travail peut être réparti pour être exécuté.

Les schémas XML normatifs pour les messages définis par la présente partie sont fournis dans l'Annexe B. Ils donnent des descriptions plus détaillées et mieux annotées des structures de message. Les structures de message sont également présentées sous forme de diagramme dans la présente section. La convention de notation indique les éléments exigés par une ligne continue et les éléments facultatifs par une ligne en pointillés.

Il est également important de noter que les cas d'utilisation et les diagrammes de séquences ne sont fournis dans cette section qu'à titre informatif, et qu'ils sont destinés à donner des exemples d'utilisation des définitions de messages normatifs. La présente norme n'a pas vocation à normaliser les processus métier spécifiques.

5.2 Travail

Un travail est créé à chaque fois qu'une personne est tenue d'effectuer une activité liée à des biens de l'entreprise. Exemples de travail:

- Travaux de construction (par exemple, installations d'entretien, extensions de ligne et projets d'amélioration des systèmes)
- Travaux d'entretien (par exemple, remplacement du compteur, mise sous tension, mise hors tension, "remplacement de commutateur", "remplacement de poteau", etc.)
- Travaux de maintenance (par exemple, vidanges d'huile de routine, peinture, "élagage", "maintenance de commutateur", "remplacement de batterie", etc.)
- Travaux d'inspection ou de diagnostic (par exemple, inspections des poteaux, inspections des voûtes, inspections des postes, "identification des zones d'élagage", "visite de poste MT/BT", "mesurage au sol", "essais de commutateur manuel")
- Travaux sur incident (par exemple, coupure de courant, problème de qualité de la tension, etc.)

Chaque type de travail peut faire référence à d'autres objets CIM en fonction du type de travail. Par exemple, les travaux de maintenance peuvent ne pas faire référence à un client, et le travail de construction est susceptible de ne pas présenter une référence croisée à une indisponibilité fortuite.

5.3 Message de demande de travail

5.3.1 Généralités

Une demande de nouveau travail peut provenir de différentes sources:

1) Des demandes de travail peuvent provenir de systèmes d'exploitation du réseau. Il s'agit de systèmes qui font fonctionner un bien (système de gestion de distribution, système de gestion des interruptions de service, etc.). Ces demandes de travail peuvent être: des maintenances d'urgence (EM) et des maintenances correctrices/réparatrices (CM)

2) Des demandes de travail peuvent provenir du système de Maintenance lui-même, qui crée un plan de travail pour l'inspection et la maintenance d'un bien suite à son enregistrement. Cette maintenance est en général appelée:

   a) Maintenance préventive (PM)

   b) Maintenance conditionnelle

3) Des demandes de travail peuvent également provenir du système de conception d'un bien qui conçoit une installation/un équipement ou modifie une ancienne installation suite à des demandes d'ingénierie:

   Travail capital (CAP) ou modifié (MOD)

5.3.2 Applications – Réalisation de la maintenance planifiée avec des équipements temporaires

Une demande de travail est générée suite à une opération de maintenance et une inspection ou selon un planning de travail périodique. L'élagage est un exemple d'activité, qui requiert deux coupes et un générateur temporaire ou une maintenance majeure sur un transformateur de puissance, où une installation temporaire est requise.

La Maintenance et l'Inspection (un système de gestion des biens, par exemple) envoient la demande de travail au sous-système de programmation du travail. Cette demande identifie et décrit le travail demandé, indique le lieu, le bien sur lequel il est à réaliser (le cas échéant) et la durée souhaitée du travail. Elle précise également dans quelle mesure le travail qui active le système de programmation est à prendre en compte lors de la hiérarchisation des demandes de travail entrantes.
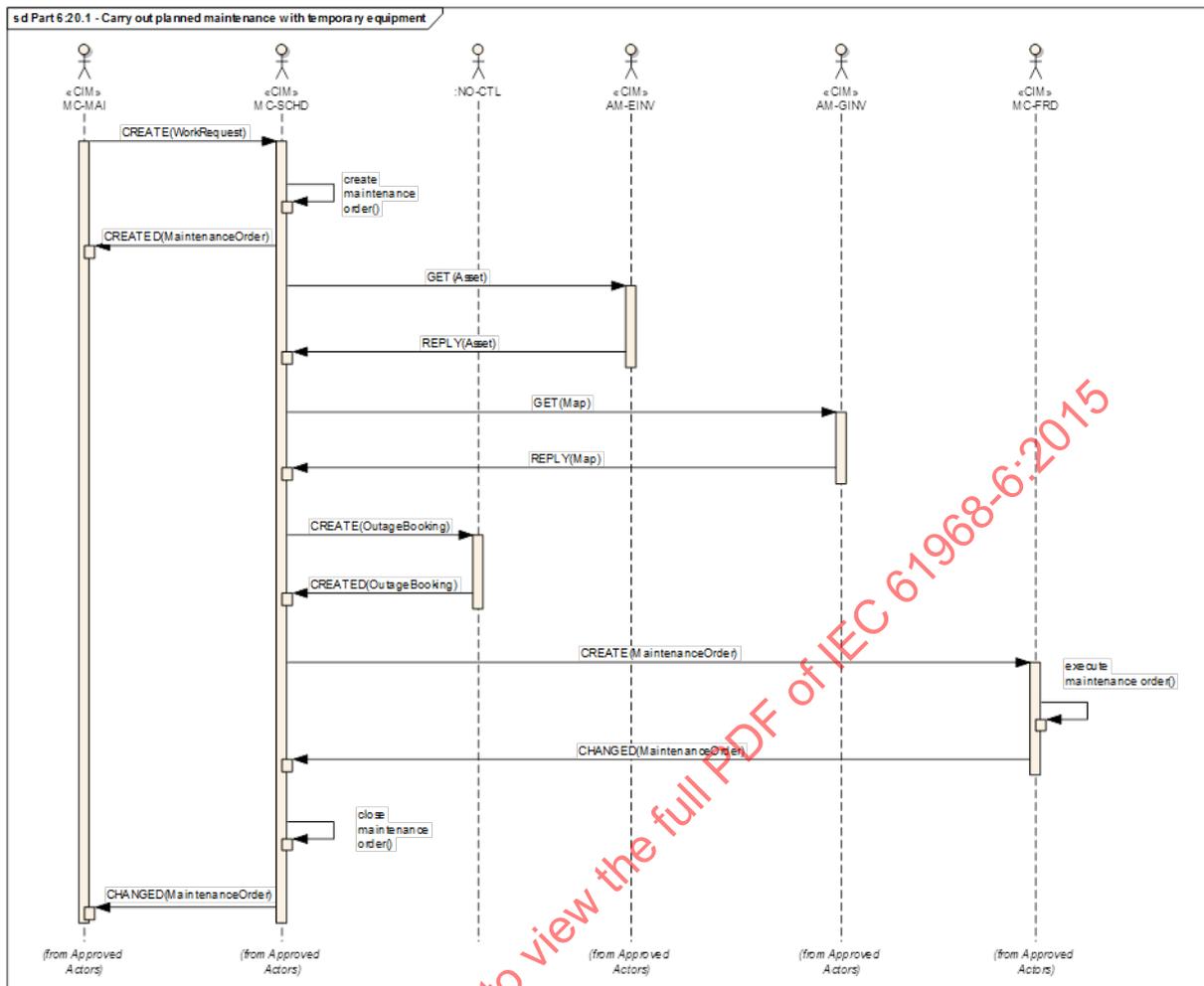
Anglais	Français
Carry out planned maintenance with temporary equipment	Réalisation de la maintenance planifiée avec des équipements temporaires
create maintenance order	créer un ordre de maintenance
execute maintenance order	exécuter un ordre de maintenance
close maintenance order	fermer un ordre de maintenance
from Approved Actors	d'acteurs approuvés

Figure 4 – Réalisation de la maintenance planifiée avec des équipements temporaires

Le système de programmation du travail consigne une interruption de service pour ce travail dans le système de conduite du réseau. Il garantit également la disponibilité d'un équipement temporaire de manière à pouvoir l'utiliser pour le travail. L'ordre de maintenance est créé, et les informations pertinentes sont envoyées à l'effectif mobile, y compris: l'emplacement, la description et la programmation du travail demandé, l'identification de l'équipement temporaire et la procédure à suivre pour exécuter le travail, ainsi que les détails nécessaires relatifs au bien cible. À l'issue du travail exécuté par l'effectif mobile, le message de réponse est envoyé au système de gestion des travaux pour confirmer la fin du travail. Ensuite, le système de gestion des travaux ferme le travail et envoie au système de gestion des biens une réponse à sa demande de travail, confirmant que le travail demandé a été exécuté et que la demande de travail est close.

Certaines des charges utiles de message dans la Figure 4, telles que OutageBooking et Map, seront définies par d'autres parties de l'IEC 61968, dans ce cas par l'IEC 61968-3 et -4 respectivement. Elles sont incluses dans ce diagramme pour l'exhaustivité de l'échange.

Ce cas d'utilisation et ses charges utiles de message détaillent l'IRM de l'IEC 61968-6 présentée à la Figure 2. Par exemple, le message CREATE(WorkRequest) correspond à l'interface 5 (Demande de Maintenance planifiée/travaux d'inspection), GET(Asset) correspond à l'interface 16 (Bien nouveau/mis à jour ou obtenu), GET(Map) correspond à l'interface 20 (Carte) de l'IRM alors que CREATE(MaintenanceOrder) correspond à l'interface 10 (Ordre de travaux). Cela s'explique par le fait qu'il peut y avoir différents types d'ordres de travaux, y compris l'Ordre de maintenance.

En lien avec les cas métier de bout en bout présentés à la Figure 3, ce cas d'utilisation correspond au groupe de cas d'utilisation 5 (Maintenance du transformateur).

5.3.3   Format de message

La structure de charge utile de message présentée en figure 5 décrit WorkRequests. Elle peut être utilisée pour aucun ou plusieurs objets Work.
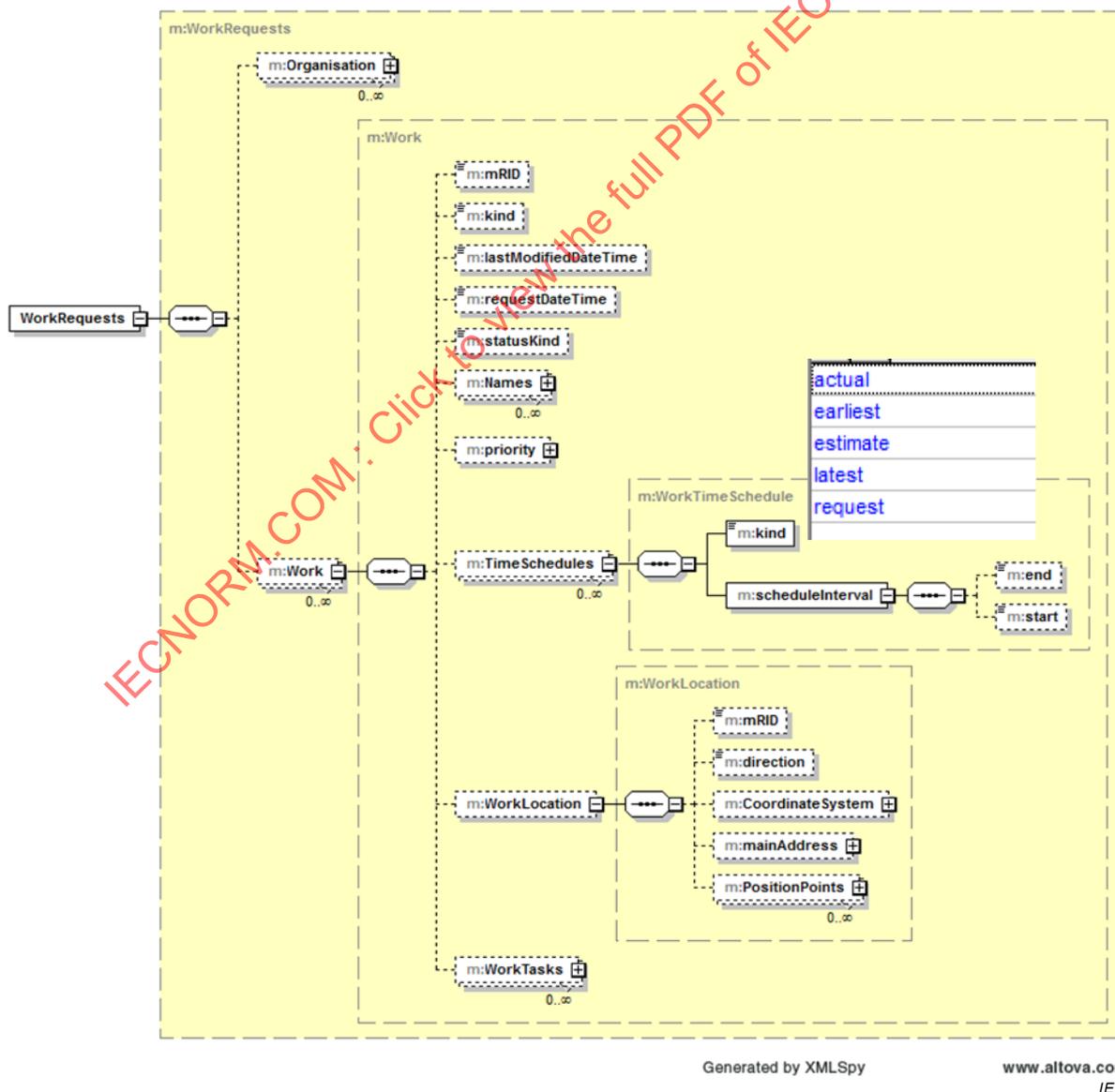
Figure 5 – Format de message de demande de travail

Le message peut contenir plusieurs éléments de Work. Work contient au moins un WorkTask. Work Location est fourni pour le travail mais l'emplacement d'un bien peut également être indiqué en relation avec le bien si cela est exigé. Le type d'équipe peut également être indiqué dans la demande de travail et identifie les compétences de l'équipe requise pour ce type de travail. Le schéma XML détaillé et annoté est défini à l'Annexe B.

5.4   Message d'ordre de service

5.4.1   Généralités

L'ordre de service est une sous-classe de work, dans laquelle le client et/ou un EndDeviceAsset sont concernés. Suite aux changements d'assistance à la clientèle ou de modes de paiement, une assistance à la clientèle peut être déconnectée et reconnectée. Il peut être nécessaire de remplacer le compteur, ou que le service passe d'un revendeur à un autre. Les biens d'un client (tels que des panneaux solaires) peuvent faire l'objet d'un service.

La classe de remarque comprenant les commentaires, la durée et le type, est utilisée pour capturer tous les commentaires applicables (notes CSR, par exemple) au niveau du ServiceOrder ou de la tâche. La remarque est liée à la personne qui l'a formulée, et à son rôle.

5.4.2   Applications – Installation et retrait du compteur

Il peut être nécessaire d'installer, de retirer ou de configurer des compteurs du fait de l'enregistrement ou inscription d'un nouveau client, du retrait d'un client ou du transfert d'un client d'un fournisseur à un autre. Il peut également être nécessaire de remplacer un compteur, ce qui implique de retirer l'ancien compteur, d'installer le nouveau compteur et de configurer le nouveau compteur selon les besoins du système de comptage.

Avant l'installation du compteur, les souscriptions ont été établies entre le MS et le MDM pour recevoir les mises à jour de données du client. Le flux de travail pour le remplacement d'un compteur est illustré à la Figure 6. Cela comprend les processus d'installation et de retrait du compteur.
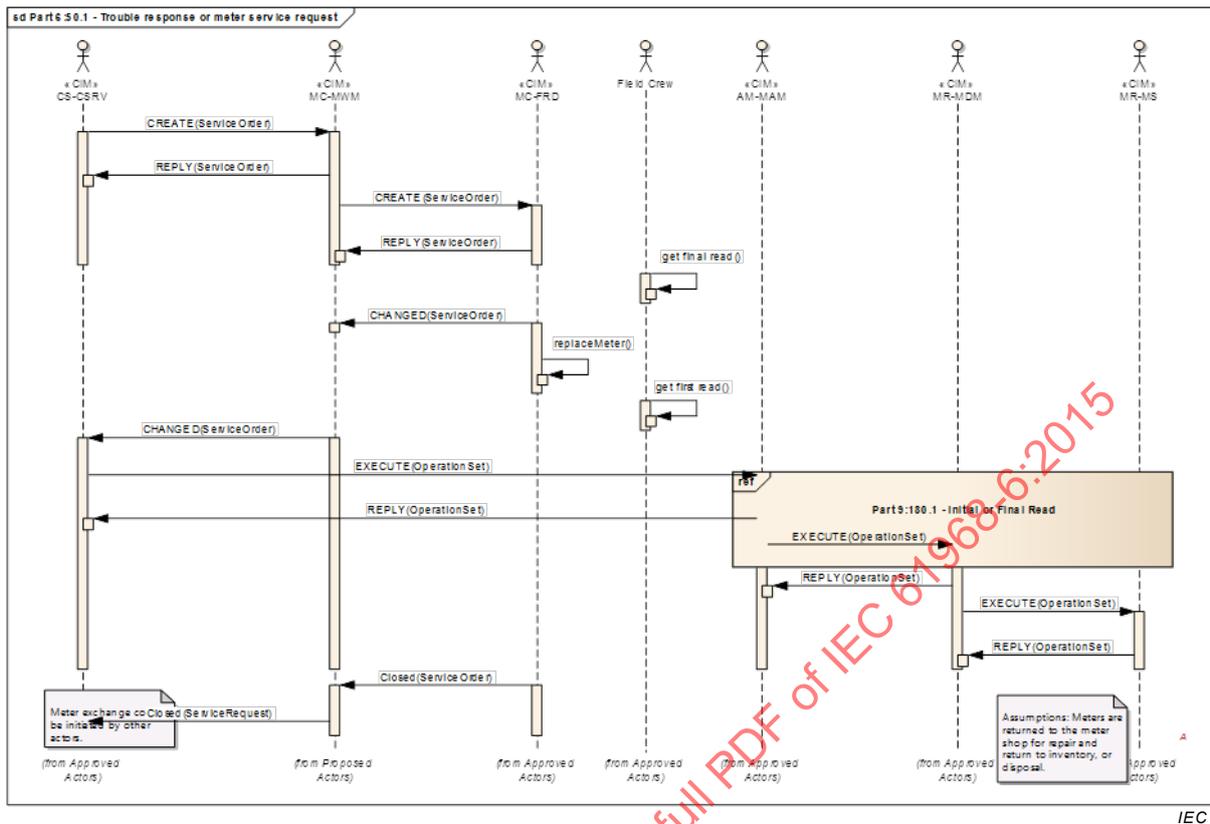
Anglais	Français
Trouble response or meter service request	Réponse à un incident ou demande de service de compteur
Part 9:180. 1 – Initial or Final Read	Partie 9:180. 1 – Relevé initial ou final
Meter exchange could be initiated by other actors	D'autres acteurs peuvent être à l'origine de l'échange de compteur
from Proposed Actors	d'acteurs proposés
from Approved Actors	d'acteurs approuvés
Assumptions: Meters are returned to the meter shop for repair and return to inventory, or disposal	Hypothèses: les compteurs sont renvoyés au magasin pour réparation, et renvoyés pour inventaire ou mis au rebut

Figure 6 – Installation et retrait du compteur

Il peut y avoir un délai entre le moment où le ServiceOrder est lancé et celui où le compteur est réellement remplacé. REPLY accuse réception du ServiceOrder. Un message CHANGED est renvoyé à l'émetteur pour l'informer du changement d'état.

Le compteur est remplacé par le personnel de terrain.

Le relevé final a lieu sur le compteur, lequel est remplacé, le premier relevé ayant lieu sur le nouveau compteur. Ces relevés de compteur peuvent être envoyés aux souscripteurs spécialisés (tels que MDM ou MS) de deux manières: le message ServiceOrder offre la possibilité d'inclure les relevés de compteur dans le message de réponse, c'est-à-dire Closed(ServiceOrder). Les relevés de compteur peuvent également être envoyés dans les messages spécialisés Created(MeterReadings).

La procédure OperationSet est incluse pour synchroniser les données de maître révisées (les données de configuration pour l'ancien compteur et le nouveau, et les changements d'association avec UsagePoint) entre les systèmes de comptage. Cette approche de gestion de données de maître est décrite plus en détail dans l'IEC 61968-9:2013.

Ce cas d'utilisation et ses charges utiles de message détaillent l'IRM de l'IEC 61968-6 présentée à la Figure 2. Par exemple, le message CREATE(ServiceOrder) envoyé du système d'assistance à la clientèle au système de Programmation du Travail correspond à l'interface 3 (Demande de service) alors que CREATE(ServiceOrder) envoyé du système de Programmation du Travail à l'effectif mobile correspond à l'interface 10 (Ordre de travaux). Cela s'explique par le fait qu'il peut y avoir différents types d'Ordres de travaux, y compris l'Ordre de service.

En lien avec les cas métier de bout en bout présentés à la Figure 3, ce cas d'utilisation correspond au groupe de cas d'utilisation 6 (Remplacement de compteur).

5.4.3   Format de message

La structure de charge utile de message présentée en Figure 7 décrit ServiceOrder. Elle peut être utilisée pour aucun ou plusieurs objets Work.

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IEC
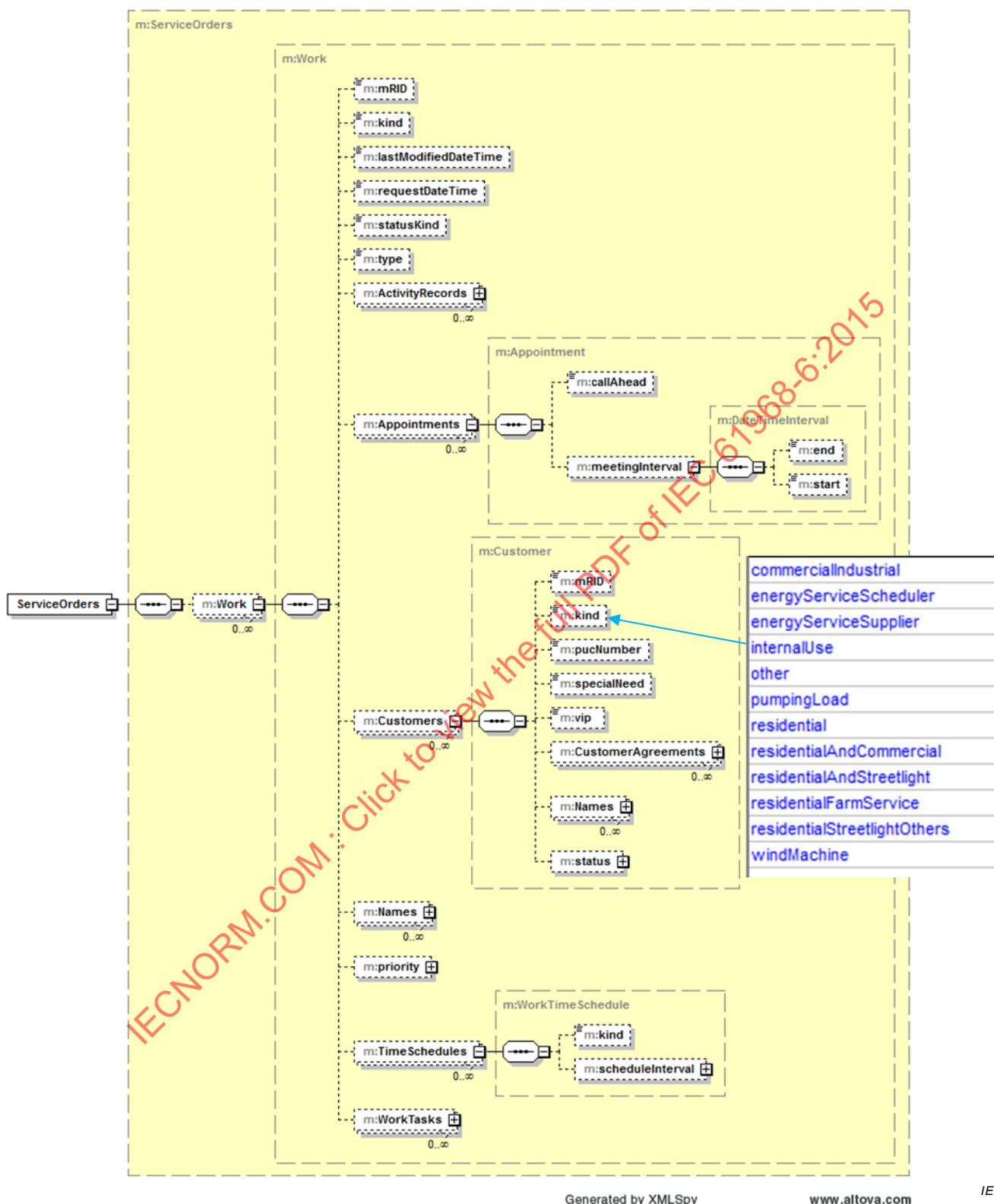
Anglais	Français
Generated by XMLSpy	Généré par XMLSpy

Figure 7 – Format de message d'ordre de service

Le message peut contenir plusieurs éléments de Work. Chaque élément peut faire référence à plusieurs compteurs et par tâches d'exécution pour fournir les moyens de remplacer un compteur. Le message offre la possibilité d'identifier le compteur qui est à remplacer et le

nouveau qu'il convient d'installer. Un rendez-vous peut être convenu avec le client pour lequel le travail est exécuté. Les relevés de compteur peuvent être obtenus dans le cadre du travail. En cas de remplacement du compteur, les relevés de l'ancien compteur peuvent être obtenus avec les premiers relevés du nouveau compteur.

Un bien dans ce message peut non seulement être un compteur, mais également un autre type de bien (tel qu'un panneau solaire). Dans le message de demande, le planning définit la durée prévue de l'échange de compteur, alors que le message de réponse indique la durée réelle de l'échange.

Le message de réponse peut également indiquer les propriétés du nouveau bien installé qui peuvent être partagées avec le système de gestion des biens.

Le schéma XML détaillé et annoté est défini à l'Annexe B.

5.5 Message d'ordre de maintenance

5.5.1 Généralités

L'ordre de maintenance permet les travaux d'inspection, de nettoyage, d'ajustement ou d'autres entretiens des équipements pour leur permettre de mieux fonctionner ou pour prolonger leur durée de vie utile. Les exemples de travaux de maintenance sont les vidanges d'huile et la peinture de routine. Les exemples de travaux d'inspection sont les inspections des poteaux, les inspections des voûtes et les inspections des postes.

5.5.2 Applications

5.5.2.1 Maintenance des dispositifs haute tension (transformateur, etc.) demandée par l'effectif mobile

Ce cas d'utilisation décrit une situation dans laquelle un homme de terrain identifie le travail de maintenance nécessaire lors de l'exécution d'un travail avec ou sans rapport sur le terrain, ce travail de maintenance nécessitant des matériaux et des plans de commutation.

La Figure 8 illustre la séquence de la demande de travail provenant de l'effectif mobile.

L'homme de terrain notifie un problème et renvoie une demande de travail à l'ingénierie et la maintenance.

Un agent de planification crée un ordre de travaux de maintenance, demande un plan de commutation, crée une nomenclature de produits et hiérarchise les travaux. Lorsque les matériaux et les ressources nécessaires sont disponibles, l'ordre de travaux de maintenance est envoyé à la gestion de l'effectif mobile.

L'ordre de travaux de maintenance identifie les observations formulées par le premier homme de terrain, détaille les biens sur lesquels intervenir, les emplacements et d'autres informations dont a besoin l'équipe de maintenance pour exécuter le travail.

Lorsque l'équipe de maintenance est prête à réaliser l'ordre de travaux de maintenance, elle coordonne, en collaboration avec l'équipe d'exploitation du réseau, les personnes qui gèrent l'ordre de commutation visant à isoler le dispositif. Noter que différentes étapes/différents emplacements peuvent être affectés à d'autres équipes pour exécuter l'ordre de commutation, l'équipe de maintenance ne pouvant pas du tout prendre part à l'ordre de commutation.

À l'issue des travaux de maintenance, l'équipe de maintenance met à jour l'ordre de travaux de maintenance avec les détails du travail réalisé, puis renvoie le document mis à jour à la maintenance et l'ingénierie. De même, en collaboration avec l'équipe d'exploitation du réseau, elle coordonne les personnes qui gèrent l'ordre de commutation de manière à remettre le dispositif en service.

Dans le cadre de l'exécution de l'ordre de maintenance, l'équipe de maintenance met à jour l'ordre de maintenance avec les matériaux utilisés.

L'ordre de travaux est fermé et les enregistrements concernant les biens sont mis à jour de manière à refléter le travail réalisé, y compris le temps passé et les matériaux utilisés.
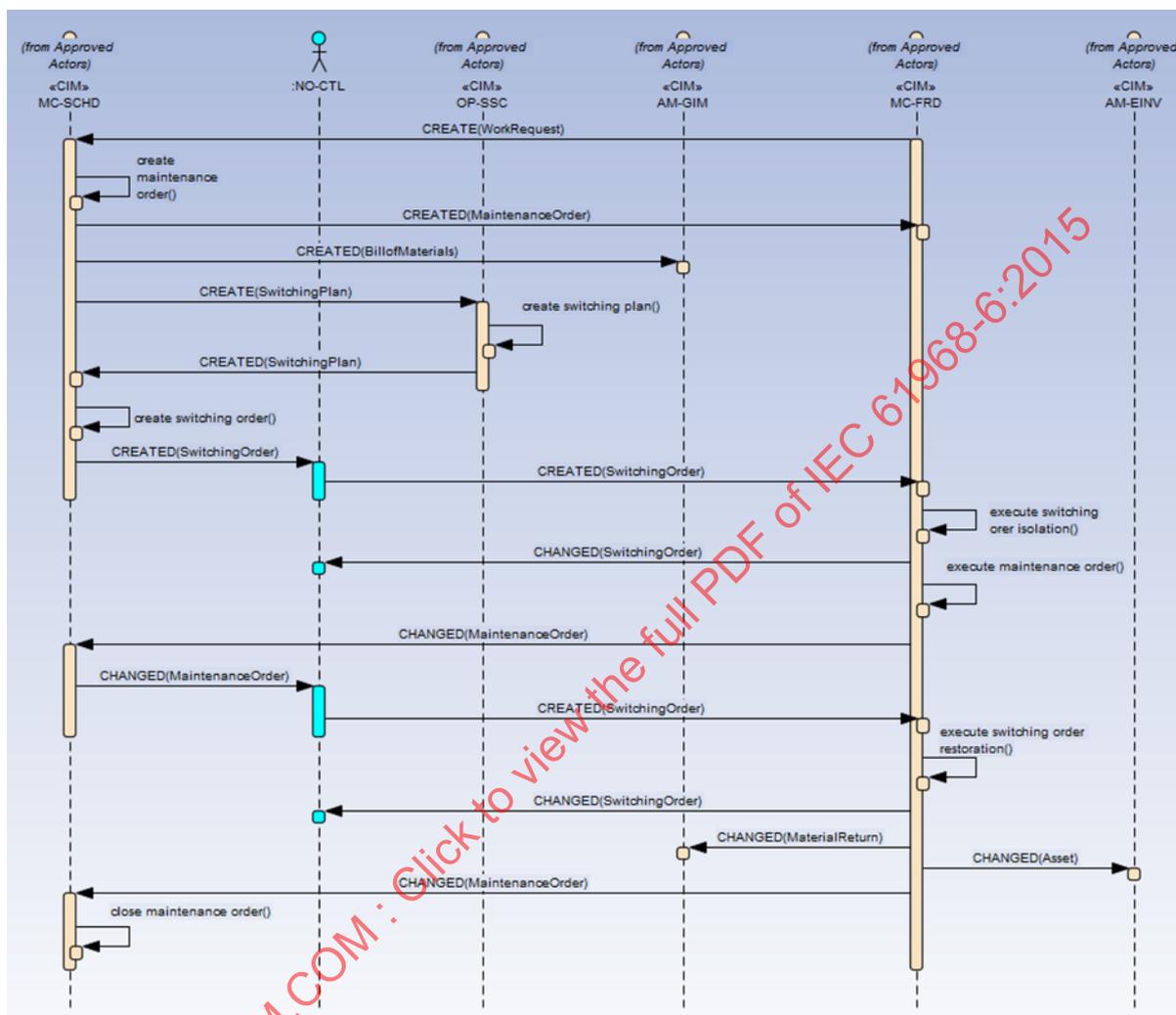
Anglais	Français
from Approved Actors	d'acteurs approuvés
create maintenance order	créer un ordre de maintenance
create switching plan	créer un plan de commutation
create switching order	créer un ordre de commutation
execute switching order isolation	exécuter l'isolation de l'ordre de commutation
execute maintenance order	exécuter un ordre de maintenance
execute switching order restoration	exécuter la restauration de l'ordre de commutation
close maintenance order	fermer un ordre de maintenance

**Figure 8 – Maintenance de dispositifs haute tension (transformateur, etc.)
demandée par l'enregistrement de terrain (FRD)**

Certaines des charges utiles de message dans le diagramme ci-dessus telles que BillofMaterials, MaterialReturn et d'autres, seront définies par d'autres parties de l'IEC 61968,

dans ce cas par l'IEC 61968-4. Elles sont incluses dans ce diagramme pour l'exhaustivité de l'échange.

Ce cas d'utilisation et ses charges utiles de message détaillent l'IRM de l'IEC 61968-6 présentée à la Figure 2. Par exemple, le message CREATE(WorkRequest) correspond à l'interface 7 (Travaux de suivi), CREATE(BillofMaterials) correspond à l'interface 4 (Réservation des matériaux), CREATE(SwitchingPlan) correspond à l'interface 2 (Plan de commutation) de l'IRM alors que CREATED(MaintenanceOrder) correspond à l'interface 10 (Ordre de travaux). Cela s'explique par le fait qu'il peut y avoir différents types d'Ordres de travaux, y compris l'Ordre de maintenance.

En lien avec les cas métier de bout en bout présentés à la Figure 3, ce cas d'utilisation correspond au groupe de cas d'utilisation 5 (Maintenance du transformateur).

5.5.3 Format de message

La Figure 9 illustre la structure de charge utile de message utilisée pour les messages MaintenanceOrder.
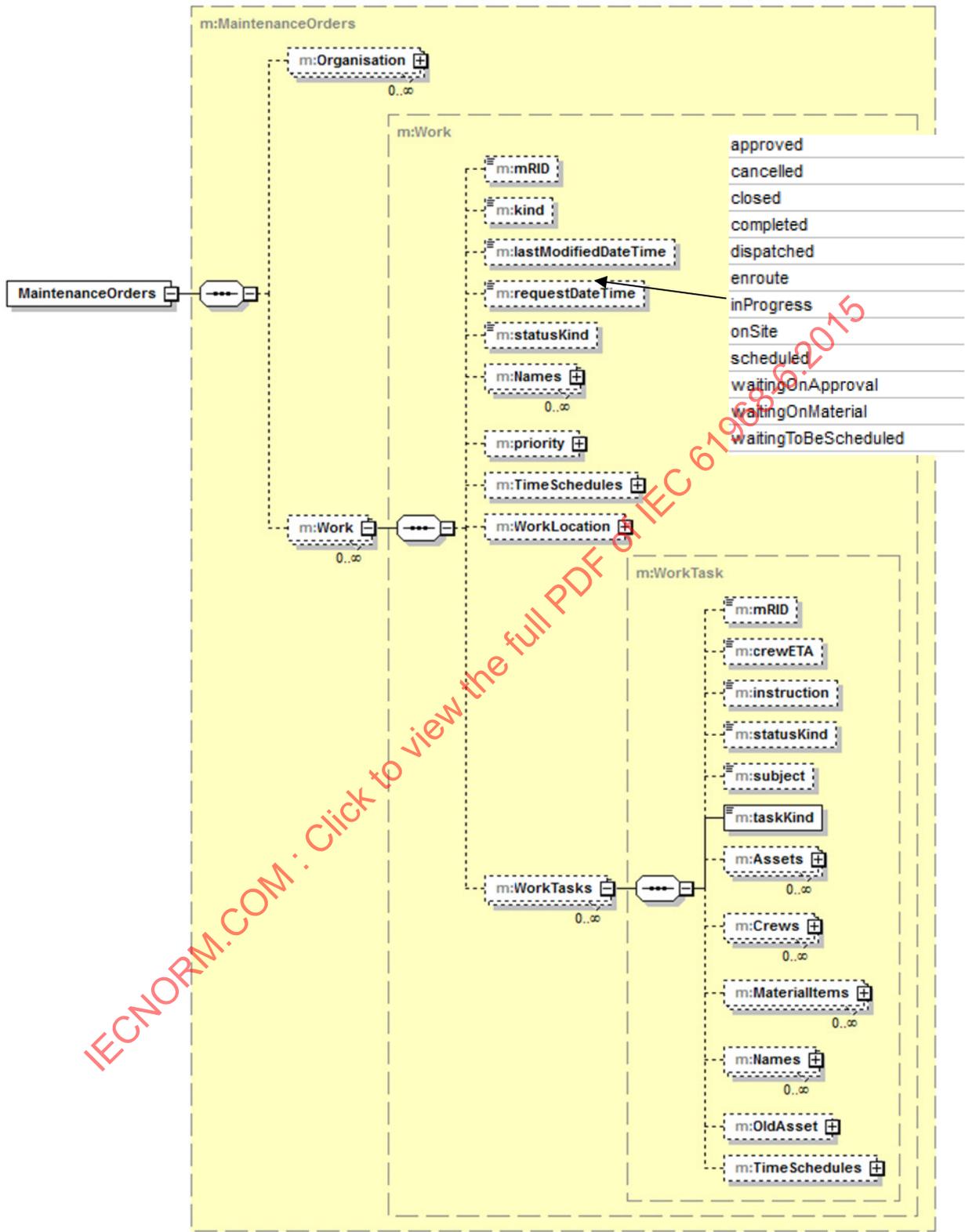
Generated by XMLSpy
www.altova.com

IEC

Anglais	Français
Generated by XMLSpy	Généré par XMLSpy

Figure 9 – Format de message MaintenanceOrder

6 Conventions du document

6.1 Diagrammes UML

Tous les diagrammes de séquences UML présentés ici sont à considérer à titre informatif quant à la manière dont les messages sont échangés.

NOTE La souplesse est l'un des points forts du CIM. Au fur et à mesure des avancées technologiques et du développement de nouveaux besoins, de nouveaux messages peuvent être créés. Ces nouveaux messages peuvent impliquer des systèmes supplémentaires (non présentés ici). Ces nouveaux messages peuvent s'appuyer sur des options différentes de celles présentées dans l'exemple.

Tous les diagrammes UML et diagrammes de flux de messages présentés ici sont donnés à titre informatif.

Tous les diagrammes de classes UML présentés ici sont à considérer à titre informatif. Le lecteur est invité à consulter l'IEC 61968-1 pour rechercher le document contenant les définitions normatives des classes utilisées dans le CIM.

6.2 Définitions de message

6.2.1 Général

Les diagrammes de format de message présentés dans le corps du présent document sont à considérer à titre informatif, les schémas XML normatifs étant fournis à l'Annexe B.

Les cas d'utilisation et les diagrammes de séquences du présent document sont donnés à titre informatif uniquement. Il s'agit d'exemples d'utilisation des définitions de message normatives.

6.2.2 Obligatoire versus facultatif

Les messages décrits dans la présente norme sont déduits de cas d'utilisation satisfaisant à un besoin métier sous-jacent pour un échange d'informations spécifique. Chaque cas d'utilisation fournit un contexte particulier pour l'utilisation du CIM. Les diagrammes de format de message décrivent les éléments qui sont transmis. Les éléments décrits dans les cadres en pointillés sont à considérer comme étant facultatifs dans un contexte donné. Les éléments décrits dans les cadres en ligne continue sont à considérer comme étant obligatoires dans un contexte donné. S'il convient qu'un diagramme décrive une classe entière comme étant obligatoire ou facultative, il convient que le lecteur comprenne que c'est son utilisation qui est obligatoire ou facultative, mais pas tous les éléments qu'elle contient. Le lecteur doit se référer à la définition normative de la classe pour déterminer cela.

Annexe A
(normative)

Description des verbes de type de message

Tableau A.1 – Verbes généralement utilisés

Verbes	Signification	Structure du message
create	Le verbe 'create' (créer) sert à éditer une demande auprès du système maître pour créer un nouvel objet. Le système maître peut à son tour éditer le nouvel objet comme un événement en utilisant le verbe 'created' (créé). Le système maître peut aussi utiliser le verbe 'reply' (répondre) pour répondre à une demande 'create', indiquant si la demande a été traitée avec succès ou non.	Le message de demande inclura les structures HeaderType et Payload
change	Le verbe 'change' (changer) sert à éditer une demande auprès du système maître pour apporter un changement à un objet en fonction de l'information contenue dans le message. Le système maître peut à son tour éditer l'objet changé comme un événement en utilisant le verbe 'changed' (changé) pour signaler que l'objet a été modifié depuis sa dernière édition. Le système maître peut aussi utiliser le verbe 'reply' (répondre) pour répondre à une demande 'change', indiquant si la demande a été traitée avec succès ou non.	Le message de demande inclura les structures HeaderType, RequestType ainsi que, facultativement, les structures Payload. La structure requestType identifiera potentiellement les ID d'objets spécifiques.
cancel	Le verbe 'cancel' (annuler) sert à éditer une demande auprès du système maître pour annuler un objet, le plus souvent dans les cas où l'objet représente un document métier. Le système maître peut à son tour éditer le message annulé comme un événement en utilisant le verbe 'canceled' (annulé) pour signaler que le document a été annulé depuis sa dernière édition. Le système maître peut aussi utiliser le verbe 'reply' (répondre) pour répondre à une demande 'cancel', indiquant si la demande a été traitée avec succès ou non. Le verbe 'cancel' est utilisé lorsque le contenu commercial du document n'est plus valide en raison d'une ou plusieurs erreurs.	Le message de demande inclura les structures HeaderType, RequestType ainsi que, facultativement, les structures Payload. La structure requestType identifiera potentiellement les ID d'objets spécifiques.
close	Le verbe 'close' (fermer) sert à éditer une demande auprès du système maître pour fermer un objet, le plus souvent dans les cas où l'objet représente un document métier. Le système maître peut à son tour éditer le message fermé comme un événement en utilisant le verbe 'closed' (fermé) pour signaler que le document a été fermé depuis sa dernière édition. Le système maître peut aussi utiliser le verbe 'reply' (répondre) pour répondre à une demande 'close', indiquant si la demande a été traitée avec succès ou non. Le verbe 'close' (fermer) est utilisé lorsque le document métier atteint la fin de son cycle de vie en raison de l'achèvement réussi d'un processus métier.	Le message de demande inclura les structures HeaderType, RequestType ainsi que, facultativement, les structures Payload. La structure requestType identifiera potentiellement les ID d'objets spécifiques.
delete	Le verbe 'delete' (supprimer) est utilisé pour éditer une demande auprès du système maître pour supprimer un ou plusieurs objets. Le système maître peut à son tour éditer le message fermé comme un événement en utilisant le verbe 'deleted' (supprimé) pour signaler que l'objet a été supprimé depuis sa dernière édition. Le système maître peut aussi utiliser le verbe 'reply' (répondre) pour répondre à une demande 'delete', indiquant si la demande a été traitée avec succès ou non. Le verbe 'delete' est utilisé lorsqu'il convient de ne plus conserver l'objet métier dans les systèmes intégrés soit en raison d'une ou plusieurs erreurs, soit pour des raisons d'archivage. Cependant, le système maître conservera très vraisemblablement un enregistrement historique de l'objet après sa suppression.	Le message de demande inclura les structures HeaderType, RequestType ainsi que, facultativement, les structures Payload. La structure requestType identifiera potentiellement les ID d'objets spécifiques.
get	Le verbe 'get' (récupérer) est utilisé pour émettre une demande d'interrogation à un système maître pour retourner un ensemble d'un nombre zéro ou supérieur d'objets qui satisfont à un critère spécifié. Le système maître peut à son tour retourner un nombre zéro ou supérieur d'objets en utilisant le verbe 'reply' (répondre) dans un message de réponse.	Le message de demande inclura les structures HeaderType et RequestType. La structure requestType identifiera potentiellement les paramètres spécifiques pour qualifier la demande, tels que les ID d'objets.

Verbes	Signification	Structure du message
created	Le verbe 'created' (créé) est utilisé pour éditer un événement qui est une notification de la création d'un objet suite à une demande externe ou à une action interne au système maître de l'objet en question. Ce type de message fait habituellement l'objet d'un abonnement de la part des systèmes intéressés et pourrait être utilisé pour des mises à jour en masse. Il n'est pas indispensable de répondre à ce type de message.	Le message d'événement inclura les structures HeaderType et Payload.
changed	Le verbe 'changed' (changé) est utilisé pour éditer un événement qui est une notification du changement d'un objet suite à une demande externe ou à une action interne au système maître de l'objet en question. Il pourrait s'agir d'un changement générique du contenu de l'objet ou d'un changement de statut spécifique tel que "approved" (approuvé), "issued" (émis) etc. Ce type de message fait habituellement l'objet d'un abonnement de la part des systèmes intéressés et pourrait être utilisé pour des mises à jour en masse. Il n'est pas indispensable de répondre à ce type de message.	Le message d'événement inclura les structures HeaderType et Payload.
closed	Le verbe 'closed' (fermé) est utilisé pour éditer un événement qui est une notification de la fermeture normale d'un objet suite à une demande externe ou à une action interne au système maître de l'objet en question. Ce type de message fait habituellement l'objet d'un abonnement de la part des systèmes intéressés et pourrait être utilisé pour des mises à jour en masse. Il n'est pas indispensable de répondre à ce type de message.	Le message d'événement inclura les structures HeaderType et Payload.
canceled	Le verbe 'canceled' (annulé) est utilisé pour éditer un événement qui est une notification de l'annulation d'un objet suite à une demande externe ou à une action interne au système maître de l'objet en question. Ce type de message fait habituellement l'objet d'un abonnement de la part des systèmes intéressés et pourrait être utilisé pour des mises à jour en masse. Il n'est pas indispensable de répondre à ce type de message.	Le message d'événement inclura les structures HeaderType et Payload.
deleted	Le verbe 'deleted' (supprimé) est utilisé pour éditer un événement qui est une notification de la suppression d'un objet suite à une demande externe ou à une action interne au système maître de l'objet en question. Ce type de message fait habituellement l'objet d'un abonnement de la part des systèmes intéressés et pourrait être utilisé pour des mises à jour en masse. Il n'est pas indispensable de répondre à ce type de message.	Le message d'événement inclura les structures HeaderType et Payload.
reply	Il existe deux principales utilisations du verbe 'reply' (répondre). Toutefois, dans les deux cas, il est seulement utilisé en réponse à des messages de demande, et ce, que le modèle utilisé soit synchrone ou asynchrone. La première utilisation est d'indiquer le succès, le succès partiel ou l'échec d'une demande transactionnelle au système maître de créer, changer, supprimer, annuler ou fermer un document. La seconde utilisation est en réponse à une demande 'get', lorsque les objets d'intérêt peuvent être retournés dans la réponse.	Utilisé uniquement pour les messages de réponse. Pour les réponses à des demandes transactionnelles, le message contiendra les structures HeaderType et ReplyType. Pour les réponses à des demandes "get", le message contiendra les structures HeaderType, ReplyType et, potentiellement, la structure Payload.
execute	Ce verbe est utilisé lorsque le message achemine une transaction impliquant une variété d'opérations de création, de suppression et/ou de changement.	Voir OperationSet dans Message.xsd.
executed	Est fourni pour un événement qui indique l'exécution d'une transaction.	Voir OperationSet dans Message.xsd.

Il est important de noter que les verbes présentés dans le document sont donnés à titre indicatif et visent à refléter les changements qui peuvent être apportés dans les versions ultérieures de l'IEC 61968-1.

Noter également que dans le document (sur les diagrammes de séquences, par exemple), les verbes sont insensibles à la casse. Toutefois, dans le message de la norme, ils DOIVENT être en minuscules. Le verbe SUBSCRIBE est obsolète. Tout usage de SUBSCRIBE est une

indication que les messages de niveau de transport (JMS, par exemple) peuvent être acheminés entre les parties, mais il ne s'agit pas de messages de l'IEC 61968-9.

Annexe B
(normative)

Schémas XML pour les charges utiles de message

B.1　Généralités

La présente annexe a pour objet de fournir des schémas XML pour les charges utiles de message afin d'augmenter les descriptions fournies précédemment dans ce document. Ces schémas XML ont été définis à l'aide de définitions de profil dans CIMTool. Ces schémas peuvent être étendus en fonction des besoins de mise en œuvre spécifiques.

B.2　WorkRequest

```xml
<?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>
```

```xml
                    <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>
```

```xml
                                        <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>
```

```xml
                    </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>
```

```xml
            <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>
```

```xml
        <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>
```

```
                    </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>
```

```
            </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">
```

```
                                                <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>
```

```xml
                <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>
```

<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>

```
                                </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"
```

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>

```xml
                        <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>
```

```
                                                        </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>
```

```xml
<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>

```xml
                    <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>
```

```
                                                        <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>
```
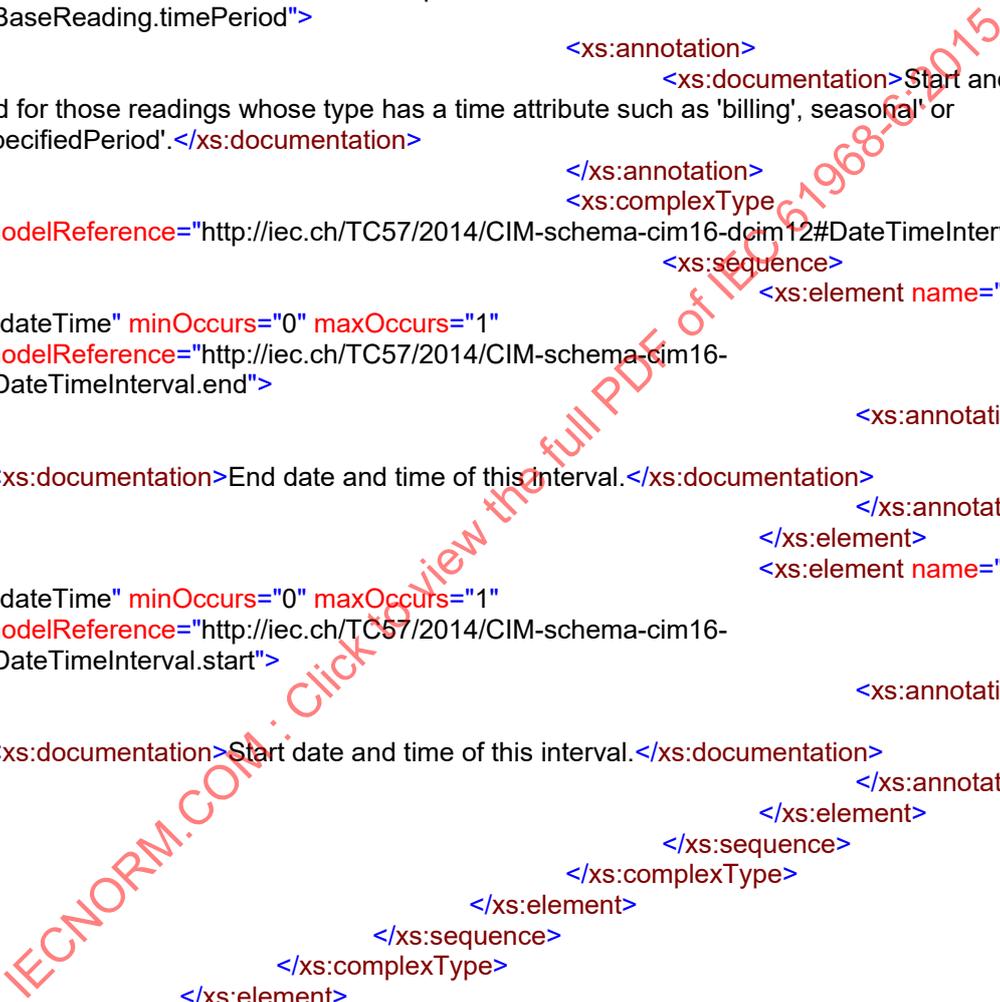
```
                    </xs:annotation>
                </xs:element>
            </xs:sequence>
        </xs:complexType>
        <xs:complexType name="Status" sawsdl:modelReference="http://iec.ch/TC57/2014/CIM-
schema-cim16-dcim12#Status">
            <xs:annotation>
                <xs:documentation>Current 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>
```

```xml
                                               <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>
```

```xml
        </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>
```

```xml
<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>
```

```xml
            </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>
```

```xml
                    <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>