CODING SCHEMES MAPPING DOCUMENT
UML MODEL AND SCHEMA

2022-03-15
APPROVED DOCUMENT
VERSION 1.0
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This document is maintained by the ENTSO-E CIM EG. Comments or remarks are to be provided at cim@entsoe.eu
### Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Release</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>2022-03-15</td>
<td>Updates in XSD v1.1: mRID of Document, Series and Timeseries (ID_String type) was enlarged from 35 to 60 characters. Approved by MC.</td>
</tr>
</tbody>
</table>


Objective

The purpose of this document is to provide the contextual and assembly UML models and the schema of the Resource Mapping document.

The schema of the Resource Mapping document could be used in various business processes.

It is not the purpose of this document to describe all the use cases, sequence diagrams, business processes, etc. for which this schema is to be used.

This document shall only be referenced in an implementation guide of a specific business process. The content of the business process implementation guide shall be as follows:

- Description of the business process;
- Use case of the business process;
- Sequence diagrams of the business process;
- List of the schema (XSD) to be used in the business process and versions of the schema;
- For each schema, dependency tables providing the necessary information for the generation of the XML instances, i.e. when the optional attributes are to be used, which codes from which ENTSO-E codelist are to be used.
Coding schemes mapping model

2.1 Coding schemes mapping document contextual model

2.1.1 Overview of the model

Figure 1 shows the model.

![Figure 1 - Coding schemes mapping document contextual model](image)

2.1.2 IsBasedOn relationships from the European style market profile

Table 1 shows the traceability dependency of the classes used in this package towards the upper level.

<table>
<thead>
<tr>
<th>Name</th>
<th>Complete IsBasedOn Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>DateAndOrTime</td>
<td>TC57CIM::IEC62325::MarketManagement::DateAndOrTime</td>
</tr>
<tr>
<td>MarketRegisteredResource</td>
<td>TC57CIM::IEC62325::MarketCommon::RegisteredResource</td>
</tr>
<tr>
<td>MarketParticipant</td>
<td>TC57CIM::IEC62325::MarketCommon::MarketParticipant</td>
</tr>
<tr>
<td>MarketRole</td>
<td>TC57CIM::IEC62325::MarketCommon::MarketRole</td>
</tr>
<tr>
<td>RegisteredResource</td>
<td>TC57CIM::IEC62325::MarketCommon::RegisteredResource</td>
</tr>
<tr>
<td>ResourceMappingMarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>
2.2 Coding schemes mapping document assembly model

2.2.1 Overview of the model

Figure 2 shows the model.

![Coding schemes mapping document assembly model diagram]

2.2.2 IsBasedOn relationships from the European style market profile

Table 2 shows the traceability dependency of the classes used in this package towards the upper level.
Table 2 - IsBasedOn dependency

<table>
<thead>
<tr>
<th>Name</th>
<th>Complete IsBasedOn Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>RegisteredResource</td>
<td>TC57CIM::IEC62325::MarketCommon::RegisteredResource</td>
</tr>
<tr>
<td>ResourceMapping_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>

2.2.3 Detailed Coding schemes mapping document assembly model

2.2.3.1 ResourceMapping_MarketDocument root class

An electronic document containing the information necessary to satisfy the requirements of a given business process.

The mapping document provides association between an object identified by a code in a given coding scheme and all the detailed objects in the CGMES detailed topology (e.g. a line with one EIC code is composed of N object for CGMES, segments, isolators, circuit breakers, etc.).

Table 3 shows all attributes of ResourceMapping_MarketDocument.

Table 3 - Attributes of Coding schemes mapping document assembly model::ResourceMapping_MarketDocument

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>mRID / ID_String</td>
<td>The unique identification of the document being exchanged within a business process flow. In the ESMP context, the “model authority” is defined as a party (originator of the exchange) that provides an identification in the context of a business exchange such as document identification,… Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>revisionNumber / ESMVersion_String</td>
<td>The identification of the version that distinguishes one evolution of a document from another.</td>
</tr>
<tr>
<td>2</td>
<td>[1..1]</td>
<td>type / MessageKind_String</td>
<td>The coded type of a document. The document type describes the principal characteristic of the document.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>sender_MarketParticipant.mRID / PartyID_String</td>
<td>The identification of a party in the energy market. In the ESMP context, the “model authority” is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. --- The MarketParticipant associated with an electronic document header.</td>
</tr>
</tbody>
</table>
### Table 4 - Association ends of Coding schemes mapping document assembly model::ResourceMapping_MarketDocument with other classes

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
</table>

#### 2.2.3.2 RegisteredResource

A resource that is registered through the market participant registration system. Examples include generating unit, load, and non-physical generator or load.
Table 5 - Attributes of Coding schemes mapping document assembly

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>mRID ResourceID_String</td>
<td>The unique identification of a resource. In the ESMP context, the “model authority” is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</td>
</tr>
<tr>
<td>1</td>
<td>[0..1]</td>
<td>name String</td>
<td>The name is any free human readable and possibly non unique text naming the object.</td>
</tr>
<tr>
<td>2</td>
<td>[0..1]</td>
<td>description String</td>
<td>The description is a free human readable text describing or naming the object. It may be non unique and may not correlate to a naming hierarchy.</td>
</tr>
</tbody>
</table>

2.2.3.3 TimeSeries

A set of time-ordered quantities being exchanged in relation to a product.

In the ESMP profile, the TimeSeries provides not only time-ordered quantities but also time-ordered information.

Table 6 shows all attributes of TimeSeries.

Table 6 - Attributes of Coding schemes mapping document assembly

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Attribute name / Attribute type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[1..1]</td>
<td>mRID ID_String</td>
<td>A unique identification of the time series. In the ESMP context, the “model authority” is defined as a party (originator of the exchange) that provides a unique identification in the context of a business exchange such as time series identification, bid identification, … Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.</td>
</tr>
<tr>
<td>1</td>
<td>[0..1]</td>
<td>description String</td>
<td>The description is a free human readable text describing or naming the object. It may be non unique and may not correlate to a naming hierarchy.</td>
</tr>
<tr>
<td>2</td>
<td>[0..1]</td>
<td>cancelledTS ESMPBoolean_String</td>
<td>An indicator stating that the TimeSeries, identified by the mRID, is withdrawn as well as all the values sent in a previous version of the TimeSeries in a previous document.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>start_DateAndOrTime.date Date</td>
<td>The date as “YYYY-MM-DD”, which conforms with ISO 8601. … A date and/or time associated with a TimeSeries.</td>
</tr>
<tr>
<td>4</td>
<td>[0..1]</td>
<td>start_DateAndOrTime.time Time</td>
<td>The time as “hh:mm:ss.sssZ”, which conforms with ISO 8601. … A date and/or time associated with a TimeSeries.</td>
</tr>
<tr>
<td>Order</td>
<td>mult.</td>
<td>Attribute name / Attribute type</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>-------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>5</td>
<td>[0..1]</td>
<td>end_DateAndOrTime.date Date</td>
<td>The date as &quot;YYYY-MM-DD&quot;, which conforms with ISO 8601. --- A date and/or time associated with a TimeSeries.</td>
</tr>
<tr>
<td>6</td>
<td>[0..1]</td>
<td>end_DateAndOrTime.time Time</td>
<td>The time as &quot;hh:mm:ss.sssZ&quot;, which conforms with ISO 8601. --- A date and/or time associated with a TimeSeries.</td>
</tr>
<tr>
<td>7</td>
<td>[1..1]</td>
<td>market_RegisteredResource.mRID ResourceID_String</td>
<td>The unique identification of a resource. In the ESMP context, the “model authority” is defined as an authorized issuing office that provides an agreed identification coding scheme for market participant, domain, measurement point, resources (generator, lines, substations, etc.) identification. Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this. For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. --- The identification of a resource associated with a TimeSeries.</td>
</tr>
<tr>
<td>8</td>
<td>[0..1]</td>
<td>market_RegisteredResource.name String</td>
<td>The name is any free human readable and possibly non unique text naming the object. --- The identification of a resource associated with a TimeSeries.</td>
</tr>
<tr>
<td>9</td>
<td>[0..1]</td>
<td>market_RegisteredResource.description String</td>
<td>The description is a free human readable text describing or naming the object. It may be non unique and may not correlate to a naming hierarchy. --- The identification of a resource associated with a TimeSeries.</td>
</tr>
</tbody>
</table>

Table 7 shows all association ends of TimeSeries with other classes.

### Table 7 - Association ends of Coding schemes mapping document assembly model::TimeSeries with other classes

<table>
<thead>
<tr>
<th>Order</th>
<th>mult.</th>
<th>Class name / Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>[1..*]</td>
<td>RegisteredResource RegisteredResource</td>
<td>The identification of a resource associated with a TimeSeries. Association Based On: Coding schemes mapping document contextual model::RegisteredResource.RegisteredResource[1..*] ---- Coding schemes mapping document contextual model::TimeSeries.[]</td>
</tr>
</tbody>
</table>

#### 2.2.4 Datatypes

The list of datatypes used for the Coding schemes mapping document assembly model is as follows:

- ESMP_DateTime datatype
- ESMPBoolean_String datatype, codelist IndicatorTypeList
- ESMPVersion_String datatype
- ID_String datatype
- MarketRoleKind_String datatype, codelist RoleTypeList
- MessageKind_String datatype, codelist MessageTypeList
- PartyID_String datatype, codelist CodingSchemeTypeList
- ResourceID_String datatype, codelist CodingSchemeTypeList
2.2.5 Coding schemes mapping XML schema

Figure 3 – ResourceMappingMarketDocument schema structure
2.2.6 Coding schemes mapping XML schema

The schema to be used to validate XML instances is to be identified by:

```xml
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
xmlns:sawsdl="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
  <xs:simpleType name="ResourceID_String">
    <xs:restriction base="xs:string">
      <xs:maxLength value="60"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="RegisteredResource">
    <xs:sequence>
      <xs:element name="mRID" type="ResourceID_String" minOccurs="1">
        <xs:sawsd1:modelReference>http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID</xs:sawsd1:modelReference>
      </xs:element>
      <xs:element name="name" type="xs:string" minOccurs="0">
      </xs:element>
      <xs:element name="description" type="xs:string" minOccurs="0">
      </xs:element>
    </xs:sequence>
  </xs:simpleType>
  <xs:simpleType name="ID_String">
    <xs:restriction base="xs:string">
      <xs:maxLength value="60"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="ESMPVersion_String">
    <xs:restriction base="xs:string"/>
  </xs:simpleType>
</xs:schema>
```
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document – UML model and schema
VERSION 1.0

<xs:simpleType name="MessageKind_String">
  <xs:restriction base="ecl:CodingSchemeTypeList"/>
</xs:simpleType>


<sawsdl:modelReference href="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">cim16#DateTime</sawsdl:modelReference>


<xs:element name="market_RegisteredResource.description" type="xs:string" minOccurs="0" maxOccurs="1"/>
<xs:element name="RegisteredResource" type="RegisteredResource" minOccurs="1" maxOccurs="unbounded"/>
</xs:sequence>
</xs:complexType>
</xs:schema>