European Network of Transmission System Operators for Electricity

CAPACITY DOCUMENT
UML MODEL AND SCHEMA

2022-10-18
AGREED DOCUMENT
VERSION 1.3
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Maintenance notice:

This document is maintained by the ENTSO-E CIM EG. Comments or remarks are to be provided at cim@entso.eu
## Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Release</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
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<tr>
<td>0</td>
<td>0</td>
<td>2016-12-05</td>
<td>First drafting of the document based on maintenance request from WG EDI.</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>2017-01-10</td>
<td>Version to be submitted to Market Committee following WG EDI meeting in January 2017.</td>
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<tr>
<td>1</td>
<td>1</td>
<td>2021-11-09</td>
<td>Updates in schema 'iec62325.351:tc57wg16:451-3:capacitydocument:8:1.xsd':  &lt;br&gt;  • An optional secondaryQuantity attribute was added into the Point class of Capacity document.  &lt;br&gt;  • An optional secondary measurement unit was added at Timeseries level.  &lt;br&gt;  • Measure_Unit was renamed to Measurement_Unit to align the end name with the ESMP one.  &lt;br&gt;  Approved by MC.</td>
</tr>
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<td>1</td>
<td>2</td>
<td>2022-05-10</td>
<td>Updates in schema 'iec62325.351:tc57wg16:451-3:capacitydocument:8:2.xsd':  &lt;br&gt;  • Added new optional requesting_MarketParticipant.mRID and requesting_MarketParticipant.marketRole.type at Timeseries.  &lt;br&gt;  Approved by MC.</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>2022-10-18</td>
<td>Updates in schema 'iec62325.351:tc57wg16:451-3:capacitydocument:8:3.xsd':  &lt;br&gt;  • Added new optional flowDirection.direction attribute at Timeseries.  &lt;br&gt;  Agreed by CIM EG.</td>
</tr>
</tbody>
</table>
1. Objective

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

The schema of the Capacity_MarketDocument could be used in various business processes related to the transmission capacity. This document could be used to exchange information on net transmission capacity, available transmission capacity, etc.

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.
2. Capacity MarketDocument

2.1. Capacity contextual model

2.1.1. Overview of the model

Figure 1 shows the model.
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>Auction</td>
<td>TC57CIM::IEC62325::MarketManagement::Auction</td>
</tr>
<tr>
<td>Capacity_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>Domain</td>
<td>TC57CIM::IEC62325::MarketManagement::Domain</td>
</tr>
<tr>
<td>FlowDirection</td>
<td>TC57CIM::IEC62325::MarketManagement::FlowDirection</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>Measure_Unit</td>
<td>TC57CIM::IEC62325::MarketManagement::Unit</td>
</tr>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Process</td>
<td>TC57CIM::IEC62325::MarketManagement::Process</td>
</tr>
<tr>
<td>Reason</td>
<td>TC57CIM::IEC62325::MarketManagement::Reason</td>
</tr>
<tr>
<td>Received_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>RegisteredResource</td>
<td>TC57CIM::IEC62325::MarketCommon::RegisteredResource</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>Time_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>
2.2. Capacity assembly model

2.2.1. Overview of the model

Figure 2 shows the model.

![UML diagram of Capacity assembly model]

Figure 2 - Capacity assembly model

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>Capacity_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Reason</td>
<td>TC57CIM::IEC62325::MarketManagement::Reason</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>TimeSeries</td>
<td>TC57CIM::IEC62325::MarketManagement::TimeSeries</td>
</tr>
</tbody>
</table>

2.2.3. Detailed Capacity assembly model

2.2.3.1. Capacity_MarketDocument root class

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

The Capacity_MarketDocument enables the exchange of information related to transmission capacity. These exchanges could be related to capacity determination or capacity allocation.

The values exchanged could be related to NTC, ATC, AAC, released AAC, offered capacity or general capacity information.

Table 3 shows all attributes of Capacity_MarketDocument.

Table 3 - Attributes of Capacity assembly model::Capacity_MarketDocument

<table>
<thead>
<tr>
<th>Order</th>
<th>mull.</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.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>revisionNumber ESMPVersion_String</td>
<td>The identification of the version that distinguishes one evolution of a document from another.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>process.processType ProcessKind_String</td>
<td>The identification of the nature of process that the document addresses.</td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>sender_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. Document owner.</td>
</tr>
<tr>
<td>5</td>
<td>[1..1]</td>
<td>sender_MarketParticipant.marketRole.type MarketRoleKind_String</td>
<td>The identification of the role played by a market player. Document owner.</td>
</tr>
<tr>
<td>6</td>
<td>[1..1]</td>
<td>receiver_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. Document recipient.</td>
</tr>
<tr>
<td>7</td>
<td>[1..1]</td>
<td>receiver_MarketParticipant.marketRole.type MarketRoleKind_String</td>
<td>The identification of the role played by a market player. Document recipient.</td>
</tr>
<tr>
<td>8</td>
<td>[1..1]</td>
<td>createdDateTime ESMP_DateTime</td>
<td>The date and time of the creation of the document.</td>
</tr>
<tr>
<td>9</td>
<td>[0..1]</td>
<td>docStatus Action_Status</td>
<td>The identification of the condition or position of the document with regard to its standing.</td>
</tr>
<tr>
<td>10</td>
<td>[0..1]</td>
<td>received_MarketDocument.mRID ID_String</td>
<td>The unique identification of the document being exchanged within a business process flow. The identification of the received document. The identification of an electronic document that is related to an electronic document header</td>
</tr>
</tbody>
</table>
Table 4 shows all association ends of Capacity_MarketDocument with other classes.

### Table 4 - Association ends of Capacity assembly model::Capacity_MarketDocument 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>15</td>
<td>[0..*]</td>
<td>Reason.Reason</td>
<td>Reason Association Based On: Capacity contextual model::Reason.Reason[0..*] Capacity contextual model::Capacity_MarketDocument.[]</td>
</tr>
</tbody>
</table>

2.2.3.2. **Point**

The identification of the values being addressed within a specific interval of time.

Table 5 shows all attributes of Point.

### Table 5 - Attributes of Capacity assembly model::Point

<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>position.Position_Integer</td>
<td>A sequential value representing the relative position within a given time interval.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>quantity.Decimal</td>
<td>The principal quantity identified for a point.</td>
</tr>
<tr>
<td>2</td>
<td>[0..1]</td>
<td>secondaryQuantity.Decimal</td>
<td>The secondary quantity identified for a point.</td>
</tr>
</tbody>
</table>

Table 6 shows all association ends of Point with other classes.
Table 6 - Association ends of Capacity assembly model::Point 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>3</td>
<td>[0..*]</td>
<td>Reason Reason</td>
<td>Association Based On: Capacity contextual model::Reason.Reason[0..*]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.2.3.3. Reason

The motivation of an act.

Table 7 shows all attributes of Reason.

Table 7 - Attributes of Capacity assembly model::Reason

<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>code ReasonCode_String</td>
<td>The motivation of an act in coded form.</td>
</tr>
<tr>
<td>1</td>
<td>[0..1]</td>
<td>text ReasonText_String</td>
<td>The textual explanation corresponding to the reason code.</td>
</tr>
</tbody>
</table>

2.2.3.4. Series_Period

The identification of the period of time corresponding to a given time interval and resolution.

Table 8 shows all attributes of Series_Period.

Table 8 - Attributes of Capacity assembly model::Series_Period

<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>timeInterval ESMP_DateTimeInterval</td>
<td>The start and end time of the period.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>resolution Duration</td>
<td>The definition of the number of units of time that compose an individual step within a period.</td>
</tr>
</tbody>
</table>

Table 9 shows all association ends of Series_Period with other classes.

Table 9 - Association ends of Capacity assembly model::Series_Period 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>2</td>
<td>[1..*]</td>
<td>Point Point</td>
<td>Association Based On: Capacity contextual model::Point.Point[1..*]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2.2.3.5. TimeSeries

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

Table 10 shows all attributes of TimeSeries.
### Table 10 - Attributes of Capacity assembly model::TimeSeries

<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.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>businessType BusinessKind_String</td>
<td>The identification of the nature of the time series.</td>
</tr>
<tr>
<td>2</td>
<td>[1..1]</td>
<td>product EnergyProductKind_String</td>
<td>The identification of the nature of an energy product such as power, energy, reactive power, etc.</td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>in_Domain.mRID AreaID_String</td>
<td>The unique identification of the domain. --- The area where the energy is to be put.</td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>out_Domain.mRID AreaID_String</td>
<td>The unique identification of the domain. --- The area where the energy is coming from.</td>
</tr>
<tr>
<td>5</td>
<td>[1..1]</td>
<td>measurement_Unit.name MeasurementUnitKind_String</td>
<td>The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure that is applied to the quantities in which the time series is expressed, e.g. MAW.</td>
</tr>
<tr>
<td>6</td>
<td>[0..1]</td>
<td>secondary_Measurement_Unit.name MeasurementUnitKind_String</td>
<td>The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in a TimeSeries.</td>
</tr>
<tr>
<td>7</td>
<td>[0..1]</td>
<td>auction.mRID ID_String</td>
<td>The unique identification of the auction. --- The identification of a set of specifications created by the auction operator.</td>
</tr>
<tr>
<td>8</td>
<td>[0..1]</td>
<td>auction.category Category_String</td>
<td>The product category of an auction. --- The identification of a set of specifications created by the auction operator.</td>
</tr>
<tr>
<td>9</td>
<td>[0..1]</td>
<td>curveType CurveType_String</td>
<td>The identification of the coded representation of the type of curve being described.</td>
</tr>
<tr>
<td>10</td>
<td>[0..1]</td>
<td>connectingLine_RegisteredResource.mRID ResourceID_String</td>
<td>The unique identification of a resource. --- The identification of a resource associated with a TimeSeries. The identification of a set of lines that connect two areas; the transmission capacity rights are related to this set of lines.</td>
</tr>
<tr>
<td>11</td>
<td>[0..1]</td>
<td>requesting_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. --- The identification of a market participant associated with a TimeSeries.</td>
</tr>
<tr>
<td>12</td>
<td>[0..1]</td>
<td>requesting_MarketParticipant.marketRole.type MarketRoleKind_String</td>
<td>The identification of the role played by a market player. --- The identification of a market participant associated with a TimeSeries.</td>
</tr>
<tr>
<td>13</td>
<td>[0..1]</td>
<td>flowDirection.direction DirectionKind_String</td>
<td>The coded identification of the direction of energy flow. --- The flow direction associated with a TimeSeries.</td>
</tr>
</tbody>
</table>

### Table 11 - Association ends of Capacity 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>14</td>
<td>[1..*]</td>
<td>Series_Period Period</td>
<td>Association Based On: Capacity contextual model::Series_Period.Period[1..*] --- Capacity contextual model::TimeSeries[]</td>
</tr>
</tbody>
</table>
### 2.2.4. Datatypes

The list of datatypes used for the Capacity assembly model is as follows:

- Action_Status compound
- ESMP_DateTimeInterval compound
- AreaID_String datatype, codelist CodingSchemeTypeList
- BusinessKind_String datatype, codelist BusinessTypeList
- Category_String datatype, codelist CategoryTypeList
- CurveType_String datatype, codelist CurveTypeList
- DirectionKind_String datatype, codelist DirectionTypeList
- EnergyProductKind_String datatype, codelist EnergyProductTypeList
- ESMP_DateTime datatype
- ESMPVersion_String datatype
- ID_String datatype
- MarketRoleKind_String datatype, codelist RoleTypeList
- MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- MessageKind_String datatype, codelist MessageTypeList
- PartyID_String datatype, codelist CodingSchemeTypeList
- Position_Integer datatype
- ProcessKind_String datatype, codelist ProcessTypeList
- ReasonCode_String datatype, codelist ReasonCodeTypeList
- ReasonText_String datatype
- ResourceID_String datatype, codelist CodingSchemeTypeList
- Status_String datatype, codelist StatusTypeList
- YMDHM_DateTime datatype
2.3. Capacity_MarketDocument XML schema

2.3.1. Capacity_MarketDocument XML schema structure

Figure 3 provides the structure of the schema.
2.3.2. Capacity_MarketDocument XML schema

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

```xml
```

And the schema location is defined as:

```xml
<xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-entsoe-eu-wgedi-codelists.xsd"/>
```

The targetNamespace is defined as:

```xml
xmlns:sawsdl=http://www.w3.org/2001/XMLSchema
```

The targetNamespace is defined as:

```xml
xmlns:sawsdl=http://www.w3.org/2001/XMLSchema
```

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The targetNamespace is defined as:

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The targetNamespace is defined as:

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The targetNamespace is defined as:

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```

The targetNamespace is defined as:

```xml
xmlns:sawsdl=http://www.w3.org/2001/XMLSchema
```

The targetNamespace is defined as:

```xml
xmlns:sawsdl=http://www.w3.org/2001/XMLSchema
```

The targetNamespace is defined as:

```xml
xmlns:sawsdl=http://www.w3.org/2001/XMLSchema
```
ENTSO-E Capacity document – UML model and schema
VERSION 1.3

European Network of Transmission System Operators for Electricity
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