SHORT MEDIUM TERM ADEQUACY PROGNOSIS DOCUMENT
UML MODEL AND SCHEMA

2022-03-15
APPROVED DOCUMENT
VERSION 1.1
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## 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>2021-04-21</td>
<td>Approved by SOC</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2022-03-15</td>
<td>Updates in XSD v1.1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• mRID of Document, Series and Timeseries (ID_String type) was enlarged</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>from 35 to 60 characters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>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 Short Medium Term Adequacy Prognosis document.

The schema of the Short Medium Term Adequacy Prognosis 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.
Short medium term adequacy prognosis model

2.1 Short medium term adequacy prognosis contextual model

2.1.1 Overview of the model

Figure 1 - Short medium term adequacy prognosis contextual model
2.1.2 IsBasedOn relationships from the European style market profile

Table 1 - IsBasedOn dependency 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>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>MktPSRTType</td>
<td>TC57CIM::IEC62325::MarketManagement::MktPSRType</td>
</tr>
<tr>
<td>Percentile_Quantity</td>
<td>TC57CIM::IEC62325::MarketManagement::Quantity</td>
</tr>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Probability_Quantity</td>
<td>TC57CIM::IEC62325::MarketManagement::Probability_Quantity</td>
</tr>
<tr>
<td>ProcessType_Process</td>
<td>TC57CIM::IEC62325::MarketManagement::Process</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>ShortMediumTermAdequacyPrognosis_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</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 Short medium term adequacy prognosis assembly model

2.2.1 Overview of the model

Figure 2 - Short medium term adequacy prognosis assembly model

Figure 2 shows the model.
2.2.2  IsBasedOn relationships from the European style market profile

Table 2 - IsBasedOn dependency 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>Percentile_Quantity</td>
<td>TC57CIM::IEC62325::MarketManagement::Quantity</td>
</tr>
<tr>
<td>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Series_Period</td>
<td>TC57CIM::IEC62325::MarketManagement::Period</td>
</tr>
<tr>
<td>ShortMediumTermAdequacyPrognosis_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 Short medium term adequacy prognosis assembly model

2.2.3.1  ShortMediumTermAdequacyPrognosis_MarketDocument root class

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

Table 3 - Attributes of Short medium term adequacy prognosis assembly model::ShortMediumTermAdequacyPrognosis_MarketDocument shows all attributes of ShortMediumTermAdequacyPrognosis_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.</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>processType_Process.processType ProcessKind_String</td>
<td>The identification of the nature of process that the document addresses. --- The Process associated with an electronic document header that is valid for the whole document.</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. --- The 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. --- The document owner. --- The role associated with a MarketParticipant.</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. --- The 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. --- The document recipient. --- The role associated with a MarketParticipant.</td>
</tr>
</tbody>
</table>
### Table 4 - Association ends of Short medium term adequacy prognosis assembly model::ShortMediumTermAdequacyPrognosis_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 Percentile_Quantity

The quantity attribute provides the information relative to the percentage level of quality of the prognosis quantity.

### Table 5 - Attributes of Short medium term adequacy prognosis assembly model::Percentile_Quantity

<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>type String</td>
<td>The description of the type of the quantity.</td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>quantity Decimal</td>
<td>The quantity value. The association role provides the information about what is expressed.</td>
</tr>
</tbody>
</table>

#### 2.2.3.3 Point

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

### Table 6 - Attributes of Short medium term adequacy prognosis 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></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 6 - Attributes of Short medium term adequacy prognosis 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</td>
<td>A sequential value representing the relative position within a given time interval.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Position_Integer</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>quantity</td>
<td>The principal quantity identified for a point.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decimal</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>[0..1]</td>
<td>generationOutageProbability_Quantity.quantity</td>
<td>The quantity value. The association role provides the information about what is expressed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decimal</td>
<td></td>
</tr>
</tbody>
</table>

### Table 7 - Association ends of Short medium term adequacy prognosis 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>Percentile_Quantity</td>
<td>The percentile quantity value provided. Association Based On: Short medium term adequacy prognosis contextual model::Point.[]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percentile_Quantity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PERCENTILE_Quantity</td>
<td></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 - Attributes of Short medium term adequacy prognosis assembly model::Series_Period shows all attributes of 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</td>
<td>The start and end time of the period.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ESMP_DateTimeInterval</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>resolution</td>
<td>The definition of the number of units of time that compose an individual step within a period.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Duration</td>
<td></td>
</tr>
</tbody>
</table>
### Table 9 - Association ends of Short medium term adequacy prognosis 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>The Point information associated with a given Series_Period.within a TimeSeries. Association Based On: Short medium term adequacy prognosis contextual model::Series_Period.[] ..... Short medium term adequacy prognosis contextual model::Point.Point[1..*]</td>
</tr>
</tbody>
</table>

### 2.2.3.5 TimeSeries

A set of time-ordered quantities being exchanged.

### Table 10 - Attributes of Short medium term adequacy prognosis assembly model::TimeSeries

A set of time-ordered quantities being exchanged.

<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>curveType CurveType_String</td>
<td>The identification of the coded representation of the type of curve being described.</td>
</tr>
<tr>
<td>3</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 associated with the quantities in a TimeSeries.</td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>domain.mRID AreaID_String</td>
<td>The unique identification of the domain. --- The domain associated with a TimeSeries.</td>
</tr>
<tr>
<td>5</td>
<td>[0..1]</td>
<td>mkTPSRTyp.psrType PsrType_String</td>
<td>The coded type of a power system resource. --- The identification of the type of resource associated with a TimeSeries.</td>
</tr>
<tr>
<td>6</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 Short medium term adequacy prognosis assembly model::TimeSeries with other classes shows all association ends of TimeSeries with other classes.
### Table 11 - Association ends of Short medium term adequacy prognosis 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>7</td>
<td>[1..*]</td>
<td>Series_Period</td>
<td>The time interval and resolution for a period associated with a TimeSeries. Association Based On: Short medium term adequacy prognosis contextual model::TimeSeries[ ]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Series_Period</td>
<td>Short medium term adequacy prognosis contextual model::Series_Period.Series_Period[1..*]</td>
</tr>
</tbody>
</table>
2.2.4 Datatypes

The list of datatypes used for the Short medium term adequacy prognosis assembly model is as follows:

- ESMP_DateTimeInterval compound
- AreaID_String datatype, codelist CodingSchemeTypeList
- BusinessKind_String datatype, codelist BusinessTypeList
- CurveType_String datatype, codelist CurveTypeList
- DirectionKind_String datatype, codelist DirectionTypeList
- 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
- PsrType_String datatype, codelist AssetTypeList
- YMDHM_DateTime datatype
2.2.5 ShortMediumTermAdequacyPrognosis_MarketDocument XML schema

Figure 3 - ShortMediumTermAdequacyPrognosis_MarketDocument schema structure
2.2.6 Short Medium Term Adequacy Prognosis 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:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:cim="http://iec.ch/TC57/2013/CIM"
  xmlns:sawsdl="http://www.iec.ch/cimprofile"
  xmlns:entsoe="http://www.entsoe.eu:wg
di:codelists.xsd"

  targetNamespace="urn:iec62325.351:tc57wg16:451-n:smtaprognosisdocument:1:1"
  elementFormDefault="qualified"
  attributeFormDefault="unqualified">

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

  <xs:element name="ShortMediumTermAdequacyPrognosis_MarketDocument"
    type="ShortMediumTermAdequacyPrognosis_MarketDocument"/>

  <xs:complexType name="Position_Integer">
    <xs:sequence>
      <xs:element name="position" type="xs:integer" minOccurs="1"/>
    </xs:sequence>
  </xs:complexType>

  <xs:complexType name="Point">
    <xs:sequence>
      <xs:element name="position" type="Position_Integer" minOccurs="1" maxOccurs="1"/>
    </xs:sequence>
  </xs:complexType>

  <xs:simpleType name="Percentile_Quantity">
    <xs:restriction base="xs:decimal">
      <xs:minInclusive value="1"/>
      <xs:maxInclusive value="999999"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:simpleType name="Quantity">
    <xs:restriction base="xs:decimal">
      <xs:minInclusive value="1" maxOccurs="unbounded"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:simpleType name="GenerationOutageProbability">
    <xs:restriction base="xs:decimal">
      <xs:minInclusive value="1" maxOccurs="1"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:simpleType name="Percentile">
    <xs:restriction base="Percentile_Quantity">
      <xs:minInclusive value="0" maxOccurs="1"/>  
    </xs:restriction>
  </xs:simpleType>

  <xs:schema name="ShortMediumTermAdequacyPrognosis_MarketDocument">
    <xs:element name="ShortMediumTermAdequacyPrognosis_MarketDocument">
      <xs:complexType>
        <xs:sequence>
          <xs:element name="position" type="Position_Integer" minOccurs="1" maxOccurs="1"/>
          <xs:element name="Point" type="Point" minOccurs="1" maxOccurs="1"/>
        </xs:sequence>
      </xs:complexType>
    </xs:element>
  </xs:schema>
</xs:schema>
```
ENTSO-E Short Medium Term Adequacy Prognosis document – UML model and schema

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<x:simpleType name="YMDHM_DateTime">
  <xs:simpleType name="ESMP_DateTimeInterval">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="start" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"/>
        <xs:element name="end" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"/>
      </xs:sequence>
    </xs:complexType>
  </xs:simpleType>
</xs:simpleType>

<x:simpleType name="Series_Period">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="timeInterval" type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"/>
      <xs:element name="resolution" type="xs:duration" minOccurs="1" maxOccurs="1"/>
      <xs:element name="Point" type="Point" minOccurs="1" maxOccurs="unbounded"/>
    </xs:sequence>
  </xs:complexType>
</xs:simpleType>

<x:simpleType name="ID_String">
  <xs:restriction base="xs:string">
    <xs:maxLength value="60"/>
  </xs:restriction>
</xs:simpleType>

<x:simpleType name="ESMPVersion_String">
  <xs:restriction base="xs:string">
    <xs:pattern value="[1-9][0-9]"/>
  </xs:restriction>
</xs:simpleType>

<x:simpleType name="MessageKind_String">
  <xs:restriction base="ecl:MessageTypeId"/>
</xs:simpleType>
1. Short Medium Term Adequacy Prognosis

European Network of Transmission System Operators for Electricity
<xs:element name="sender_MarketParticipant.mRID" type="PartyID_String" minOccurs="1" maxOccurs="1"/>
<sawsdl:modelReference>http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
<xs:element name="sender_MarketParticipant.marketRole.type" type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"/>
<sawsdl:modelReference>http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
<xs:element name="receiver_MarketParticipant.mRID" type="PartyID_String" minOccurs="1" maxOccurs="1"/>
<sawsdl:modelReference>http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
<xs:element name="receiver_MarketParticipant.marketRole.type" type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"/>
<sawsdl:modelReference>http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
<xs:element name="createdDateTime" type="ESMP_DateTime" minOccurs="1" maxOccurs="1"/>
<sawsdl:modelReference>http://iec.ch/TC57/2013/CIM-schema-cim16#Document.createdDateTime"/>
<xs:element name="time_Period.timeInterval" type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"/>
<sawsdl:modelReference>http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval"/>
<xs:element name="TimeSeries" type="TimeSeries" minOccurs="1" maxOccurs="unbounded"/>