REPORTING DOCUMENT
UML MODEL AND SCHEMA

2017-01-19
VERSION 1.0
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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>0</td>
<td>0</td>
<td>2017-01-19</td>
<td>First drafting of the document.</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>2017-01-30</td>
<td>Version to be submitted to Market Committee following WG EDI meeting in March 2017.</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 Reporting_MarketDocument. The schema of the Reporting_MarketDocument 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.
2 Reporting MarketDocument

2.1 Reporting 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 1 - IsBasedOn dependency

<table>
<thead>
<tr>
<th>Name</th>
<th>Complete IsBasedOn Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConnectingLine_RegisteredResource</td>
<td>TC57CIM::IEC62325::MarketCommon::RegisteredResource</td>
</tr>
<tr>
<td>Domain</td>
<td>TC57CIM::IEC62325::MarketManagement::Domain</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>Reporting_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</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 Reporting assembly model

2.2.1 Overview of the model

Figure 2 shows the 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>Point</td>
<td>TC57CIM::IEC62325::MarketManagement::Point</td>
</tr>
<tr>
<td>Reporting_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</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 Reporting assembly model

2.2.3.1 Reporting_MarketDocument root class

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

The reporting market document is to be used to report aggregated netted external market schedules, aggregated netted external TSO schedules and compensation program schedules.

Table 3 shows all attributes of Reporting_MarketDocument.

### Table 3 - Attributes of Reporting assembly model::Reporting_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>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>process.processType ProcessKind_String</td>
<td>The identification of the nature of process that the document addresses. --- The process dealt with in the 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 sender of the document.</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 sender of the document. --- 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 recipient of the document.</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 recipient of the document. --- The role associated with a MarketParticipant.</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>1..1</td>
<td>time_Period.timeInterval ESMP_DateTimeInterval</td>
<td>The start and end date and time for a given interval. --- This information provides the start and end date and time of the period covered by the document.</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>10</td>
<td>[1..1]</td>
<td>domain.mRID</td>
<td>The unique identification of the domain. This identification of the domain that is covered in the reporting market document. Depending on the reporting context it will correspond to one of the following: - a scheduling area; - a scheduling area border; - a control area; - a control area border; - a control block area; - a control block area border; - a synchronous area.</td>
</tr>
</tbody>
</table>

| 11    | [1..1] | subject_Domain.mRID             | The unique identification of the domain. This subject domain corresponds to the area being reported by the reporting market document. |

Table 4 shows all association ends of Reporting_MarketDocument with other classes.

**Table 4 - Association ends of Reporting assembly model::Reporting_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 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 Reporting 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>1</td>
<td>[1..1]</td>
<td>quantity</td>
<td>The principal quantity identified for a point. The quantity of product scheduled for the position within the timelInterval.</td>
</tr>
</tbody>
</table>

**2.2.3.3 Series_Period**

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

Table 6 shows all attributes of Series_Period.

**Table 6 - Attributes of Reporting 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</td>
<td>The start and end time of the period.</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>
</tbody>
</table>
Table 7 shows all association ends of Series_Period with other classes.

**Table 7 - Association ends of Reporting 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</td>
<td>The Point information associated with a given Series_Period.within a TimeSeries. Association Based On: Reporting contextual model::Series_Period[], Reporting contextual model::Point.Point[1..*]</td>
</tr>
</tbody>
</table>

2.2.3.4 **TimeSeries**

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

Table 8 shows all attributes of TimeSeries.

**Table 8 - Attributes of Reporting 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. The BusinessType identifies the trading nature of an energy product.</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 product is being delivered.</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 product is being extracted.</td>
</tr>
<tr>
<td>5</td>
<td>[0..1]</td>
<td>connectingLine_RegisteredResource.mRID ResourceID_String</td>
<td>The unique identification of a resource. --- The identification of the DC link(s) or controllable AC link(s) between areas.</td>
</tr>
<tr>
<td>6</td>
<td>[1..1]</td>
<td>quantity_Measure_Unit.name MeasurementUnitKind_String</td>
<td>The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure which is applied to the quantity in the Point class.</td>
</tr>
<tr>
<td>7</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>
</tbody>
</table>

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

**Table 9 - Association ends of Reporting 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>8</td>
<td>[1..*]</td>
<td>Series_Period Period</td>
<td>The time interval and resolution for a period associated with a TimeSeries. Association Based On: Reporting contextual model::TimeSeries[], Reporting contextual model::Series_Period.Period[1..*]</td>
</tr>
</tbody>
</table>
2.2.4 Datatypes

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

- ESMP_DateTimeInterval compound
- AreaID_String datatype, codelist CodingSchemeTypeList
- BusinessKind_String datatype, codelist BusinessTypeList
- CurveType_String datatype, codelist CurveTypeList
- 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
- ResourceID_String datatype, codelist CodingSchemeTypeList
- YMDHM_DateTime datatype
2.2.5 Reporting_MarketDocument XML schema structure

Figure 3 to Figure 5 provide the structure of the schema.

Figure 3 - Reporting_MarketDocument schema structure 1/3
Figure 4 - Reporting_MarketDocument schema structure 2/3

Figure 5 - Reporting_MarketDocument schema structure 3/3
2.2.6 Reporting_MarketDocument XML schema

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

urn:iec62325.351:tc57wg16:451-n:reportingdocument:2:0

```xml
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:cl="urn:entsoe.eu:wgedi:codelists"
xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
xmlns="urn:iec62325.351:tc57wg16:451-n:reportingdocument:2:0"
attributeFormDefault="unqualified" elementFormDefault="qualified"
targetNamespace="urn:iec62325.351:tc57wg16:451-n:reportingdocument:2:0"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <xs:import schemaLocation="urn:entsoe.eu:wgedi:codelists.xsd"
namespace="urn:entsoe.eu:wgedi:codelists" />
  <xs:element name="Reporting_MarketDocument" type="Reporting_MarketDocument" />
  <xs:simpleType name="Position_Integer"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
    <xs:restriction base="xs:integer">
      <xs:maxInclusive value="999999" />
      <xs:minInclusive value="1" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="Point" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
    <xs:sequence>
      <xs:element minOccurs="1" maxOccurs="1" name="position" type="Position_Integer"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.position" />
      <xs:element minOccurs="1" maxOccurs="1" name="quantity" type="xs:decimal"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.quantity" />
    </xs:sequence>
  </xs:complexType>
  <xs:simpleType name="ID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
    <xs:restriction base="xs:string">
      <xs:maxLength value="35" />
    </xs:restriction>
  </xs:simpleType>
  <xs:complexType name="ESMPVersion_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
    <xs:restriction base="xs:string">
      <xs:pattern value="[1-9](\[0-9]\){0,2}" />
    </xs:restriction>
  </xs:complexType>
  <xs:complexType name="MessageKind_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
    <xs:restriction base="cl:MessageTypeList" />
  </xs:complexType>
  <xs:complexType name="ProcessKind_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
    <xs:restriction base="cl:ProcessTypeList" />
  </xs:complexType>
  <xs:complexType name="PartyID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
    <xs:extension base="PartyID_String-base">
      <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList" use="required" />
    </xs:extension>
  </xs:complexType>
</xs:schema>
```
<xs:element minOccurs="1" maxOccurs="1" name="revisionNumber"
type="ESMPVersion_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.revisionNumber">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="type" type="MessageKind_String"
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="process.processType"
type="ProcessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Process.processType">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="sender_MarketParticipant.mRID"
type="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="sender_MarketParticipant.marketRole.type"
type="MarketRoleKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="receiver_MarketParticipant.mRID"
type="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="receiver_MarketParticipant.marketRole.type"
type="MarketRoleKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="createdDateTime"
type="ESMP_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.createdDateTime">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="time_Period.timeInterval"
type="ESMP_DateTimeInterval" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="domain.mRID" type="AreaID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="subject_Domain.mRID" type="AreaID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
</xs:element>

<xs:element minOccurs="1" maxOccurs="unbounded" name="TimeSeries" type="TimeSeries"
</xs:element>

<xs:complexType name="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
<xs:sequence>
<xs:element minOccurs="1" maxOccurs="1" name="timeInterval" type="ESMP_DateTimeInterval" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval">
</xs:element>

<xs:element minOccurs="1" maxOccurs="1" name="resolution" type="xs:duration" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.resolution">
</xs:element>

<xs:element minOccurs="1" maxOccurs="unbounded" name="Point" type="Point" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.Point">
</xs:element>
</xs:sequence>
</xs:complexType>

<xs:simpleType name="BusinessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
<xs:restriction base="cl:BusinessTypeList" />
</xs:simpleType>
<xs:simpleType name="EnergyProductKind_String"
  sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
  <xs:restriction base="cl:EnergyProductTypeList" />
</xs:simpleType>

<xs:simpleType name="ResourceID_String-base"
  sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
  <xs:restriction base="xs:string">
    <xs:maxLength value="60" />
  </xs:restriction>
</xs:simpleType>

<xs:complexType name="ResourceID_String"
  sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
  <xs:simpleContent>
    <xs:extension base="ResourceID_String-base">
      <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList" use="required" />
    </xs:extension>
  </xs:simpleContent>
</xs:complexType>

<xs:simpleType name="MeasurementUnitKind_String"
  sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
  <xs:restriction base="cl:UnitOfMeasureTypeList" />
</xs:simpleType>

<xs:simpleType name="CurveType_String"
  sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
  <xs:restriction base="cl:CurveTypeList" />
</xs:simpleType>

<xs:complexType name="TimeSeries"
  <xs:sequence>
    <xs:element minOccurs="1" maxOccurs="1" name="mRID" type="ID_String"
      sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
    </xs:element>
    <xs:element minOccurs="1" maxOccurs="1" name="businessType" type="BusinessKind_String"
      sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.businessType">
    </xs:element>
    <xs:element minOccurs="1" maxOccurs="1" name="product" type="EnergyProductKind_String"
    </xs:element>
    <xs:element minOccurs="1" maxOccurs="1" name="in_Domain.mRID" type="AreaID_String"
      sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
    </xs:element>
    <xs:element minOccurs="1" maxOccurs="1" name="out_Domain.mRID" type="AreaID_String"
      sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
    </xs:element>
    <xs:element minOccurs="0" maxOccurs="1" name="connectingLine_RegisteredResource.mRID" type="ResourceID_String"
      sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID">
    </xs:element>
    <xs:element minOccurs="1" maxOccurs="1" name="quantity_Measure_Unit.name" type="MeasurementUnitKind_String"
      sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name">
    </xs:element>
    <xs:element minOccurs="1" maxOccurs="1" name="curveType" type="CurveType_String"
      sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.curveType">
    </xs:element>
    <xs:element minOccurs="1" maxOccurs="unbounded" name="Period" type="Series_Period"
    </xs:element>
  </xs:sequence>
</xs:complexType>

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</xs:schema>