IMPLICIT AUCTION RESULT DOCUMENT
UML MODEL AND SCHEMA

2022-02-01
APPROVED DOCUMENT
VERSION 1.1
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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>1</td>
<td>2018-03-12</td>
<td>First drafting of the document.</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>2018-05-08</td>
<td>Document approved by MC</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2022-02-01</td>
<td>Updates in implicit auction document XSD v7.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Quantity_Measure_Unit.name &amp; Price_Measure_Unit.name attributes were</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>renamed to Quantity_Measurement_Unit.name &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Price_Measurement_Unit.name to be compliant with the ESMP.</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 ImplicitAuctionResult_MarketDocument.

The schema of the ImplicitAuctionResult_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.
2.1 Implicit auction result contextual model
2.1.1 Overview of the model

Figure 1 shows the model.

![Figure 1 - Implicit auction result contextual model](image-url)
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>Auction</td>
<td>TC57CIM::IEC62325::MarketManagement::Auction</td>
</tr>
<tr>
<td>Currency_Unit</td>
<td>TC57CIM::IEC62325::MarketManagement::Unit</td>
</tr>
<tr>
<td>Domain</td>
<td>TC57CIM::IEC62325::MarketManagement::Domain</td>
</tr>
<tr>
<td>ImplicitAuctionResult_MarketDocument</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketDocument</td>
</tr>
<tr>
<td>MarketAgreement</td>
<td>TC57CIM::IEC62325::MarketManagement::MarketAgreement</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>Price</td>
<td>TC57CIM::IEC62325::MarketManagement::Price</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>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 Implicit auction result assembly model

2.2.1 Overview of the model

Figure 2 shows the model.

Figure 2 - Implicit auction result 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>
<thead>
<tr>
<th>Name</th>
<th>Complete IsBasedOn Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>ImplicitAuctionResult_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 Implicit auction result assembly model

2.2.3.1 ImplicitAuctionResult_MarketDocument root class

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

An implicit auction result document is issued by the market operator at the end of a specific auctioning cycle or by the System Operator once the NTC values have been agreed. It could be yearly, monthly or daily auctions in addition to intraday auctions.

Table 3 shows all attributes of ImplicitAuctionResult_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 revisionNumber</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>sender_MarketParticipant.mRID PartyID_String</td>
<td>The identification of a party in the energy market. --- Document owner.</td>
</tr>
<tr>
<td>4</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>5</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>6</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>7</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>8</td>
<td>[1..1]</td>
<td>period.timeInterval ESMP_DateTimeInterval</td>
<td>The start and end date and time for a given interval. --- The beginning and ending date and time of the period that the implicit auction result document is covering.</td>
</tr>
<tr>
<td>9</td>
<td>[0..1]</td>
<td>domain.mRID AreaID_String</td>
<td>The unique identification of the domain. --- The domain covered within the implicit auction result document.</td>
</tr>
</tbody>
</table>
Table 4 shows all association ends of ImplicitAuctionResult_MarketDocument with other classes.

Table 4 - Association ends of Implicit auction result assembly model::ImplicitAuctionResult_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 Implicit auction result 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>This information defines the quantity auctioned for the interval in question and that is expressed in the measurement unit quantity. The principal quantity identified for a point.</td>
</tr>
<tr>
<td>2</td>
<td>[1..1]</td>
<td>price.amount Amount_Decimal</td>
<td>A number of monetary units specified in a unit of currency. This information defines the price expressed in the unit of measurement of price per unit of quantity in compliance with the pricing scheme based on local market rules. For market prices the price provided is always the InArea price. A price may be negative in cases where it is providing the difference between in and out area market prices. Price differential calculated with the following formula: InArea - OutArea.</td>
</tr>
</tbody>
</table>

2.2.3.3 Reason
The motivation of an act.

Table 6 shows all attributes of Reason.

Table 6 - Attributes of Implicit auction result 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 7 shows all attributes of Series_Period.
### Table 7 - Attributes of Implicit auction result 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>ESMP_DateTimeInterval</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The start and end time of the period.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>[1..1]</td>
<td>resolution</td>
<td>Duration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The definition of the number of units of time that compose an individual step within a period.</td>
<td></td>
</tr>
</tbody>
</table>

Table 8 shows all association ends of Series_Period with other classes.

### Table 8 - Association ends of Implicit auction result 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>Association Based On: Implicit auction result contextual model::Point.Point[1..*]... Implicit auction result contextual model::Series_Period[]</td>
</tr>
</tbody>
</table>

#### 2.2.3.5 TimeSeries

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

Table 9 shows all attributes of TimeSeries.

### Table 9 - Attributes of Implicit auction result 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</td>
<td>ID_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A unique identification of the time series.</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>[0..1]</td>
<td>auction.mRID</td>
<td>ID_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The unique identification of the auction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>--- A unique identification of the set of specifications that clearly defines the allocation process to which the time series is addressed.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>[0..1]</td>
<td>auction.type</td>
<td>AuctionKind_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The kind of the auction (e.g. implicit, explicit,...).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>--- A unique identification of the set of specifications that clearly defines the allocation process to which the time series is addressed.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>[1..1]</td>
<td>businessType</td>
<td>BusinessKind_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The identification of the nature of the time series.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>[1..1]</td>
<td>in_Domain.mRID</td>
<td>AreaID_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The unique identification of the domain.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>--- The area where the energy is to be put.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>[1..1]</td>
<td>out_Domain.mRID</td>
<td>AreaID_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The unique identification of the domain.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>--- The area where the energy is coming from.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>[0..1]</td>
<td>marketAgreement.type</td>
<td>CapacityContractKind_String</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The specification of the kind of the agreement, e.g. long term, daily contract.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>--- The contract type defines the conditions under which the capacity was allocated and handled, e.g.: daily auction, weekly auction, monthly auction, yearly auction, Long term contract, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The significance of this type is dependent on the in area and out area specific coded working methods.</td>
<td></td>
</tr>
</tbody>
</table>
Table 10 shows all association ends of TimeSeries with other classes.

### Table 10 - Association ends of Implicit auction result 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>11</td>
<td>[1..*]</td>
<td>Series_Period.Period</td>
<td>Association Based On: Implicit auction result contextual model::Series_Period.Period[1..*] ***** Implicit auction result contextual model::TimeSeries[]</td>
</tr>
<tr>
<td>12</td>
<td>[0..*]</td>
<td>Reason.Reason</td>
<td>Association Based On: Implicit auction result contextual model::Reason.Reason[0..*] ***** Implicit auction result contextual model::TimeSeries[]</td>
</tr>
</tbody>
</table>

#### 2.2.4 Datatypes

The list of datatypes used for the Implicit auction result assembly model is as follows:

- `ESMP_DateTimeInterval` compound
- `Amount_Decimal` datatype
- `AreaID_String` datatype, codelist `CodingSchemeTypeList`
- `AuctionKind_String` datatype, codelist `AuctionTypeList`
- `BusinessKind_String` datatype, codelist `BusinessTypeList`
- `CapacityContractKind_String` datatype, codelist `ContractTypeList`
- `CurrencyCode_String` datatype, codelist `CurrencyTypeList`
- `CurveType_String` datatype, codelist `CurveTypeList`
- `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
- `ReasonCode_String` datatype, codelist `ReasonCodeTypeList`
- `ReasonText_String` datatype
- `YMDHM_DateTime` datatype
2.2.5 ImplicitAuctionResult_MarketDocument XML schema structure

Figure 3 - ImplicitAuctionResult_MarketDocument XML schema structure
2.2.6 ImplicitAuctionResult_MarketDocument XML schema

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

urn:iec62325.351:tc57wg16:451-3:implicitauctiondocument:7:1

```xml
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
    xmlns:entsoe="urn:entsoe.eu-wgedi-codelists"
    targetNamespace="urn:iec62325.351:tc57wg16:451-3:implicitauctiondocument:7:1"
    elementFormDefault="qualified" attributeFormDefault="unqualified">
  <xs:import namespace="urn:entsoe.eu-wgedi-codelists" schemaLocation="urn-entsoe-eu-wgedi-codelists.xsd"/>
  <xs:element name="ImplicitAuctionResult_MarketDocument" type="ImplicitAuctionResult_MarketDocument"/>
  <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:pattern value="[1-9]\[[0-9]\]{0,2}"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="MessageKind_String">
    <xs:restriction base="ecl:MessageTypeInfoList"/>
  </xs:simpleType>
  <xs:simpleType name="PartyID_String-string">
    <xs:restriction base="xs:string">
      <xs:maxLength value="16"/>
    </xs:restriction>
  </xs:simpleType>
  <xs:simpleType name="MarketRoleKind_String">
    <xs:restriction base="ecl:RoleTypeList"/>
  </xs:simpleType>
  <xs:simpleType name="ESMP_DateTime">
    <xs:restriction base="xs:dateTime">
      <xs:pattern value="((0[1-9])|([\-])[0-9][3-9]\d\d]|(((0\d)|[1-2]\d)[0-9]\d]|(0[1-9]|1[0-2]\d)[0-3](0[0-9]|0-30))+((19[0-9]\d|200[0-9]|20[1-2]\d)\d{2})"/>
    </xs:restriction>
  </xs:simpleType>
</xs:schema>
```
ENTSO-E Implicit auction result – UML model and schema
VERSION 1.1
European Network of Transmission System Operators for Electricity

```xml
  231 9])Z|(([13579][26][0246][048]|([13579][01345789][0][48]|([13579][01345789][2468][0]
  232 48]|([0246][048]|([0246][048]|([0246][1235679][0][48]|([0246][1235679][2468][048])
  233 [0-9][0-9][13579][26]|(-[0-2]|-[0-1-9][1-0-9][2-0-9])T((([01][0-9]|2[0-3]):[0-5]
  234 [0-5]|2[0-5]|0-5])Z|([13579][26][0246][1235679][13579][01345789][0][1235679][13579][0134578
  235 9][2468][1235679]|([0246][048]|([0246][048]|([0246][1235679]|([0246][1235679]|([01235679]|([0246
  236 8][1235679][2468]|([0-9][0-9][13579][01345789]|\-))(02)|\-)(0[1-9][1-0-9][2-0-9]|2[0-8])T((([01][0-9]
  237 |2[0-3]):[0-5][0-9]|0-5][0-9][9])Z")/>

  239 </xs:restriction>
  240 </xs:simpleType>
  241 <xs:complexType name="AreaID_String">
  242   <xs:simpleContent>
  243     <xs:extension base="AreaID_String">
  244       <xs:attribute name="areaID">
  245       <xs:restriction base="AreaID_String">
  246         <xs:minOccurs value="1"/>
  247         <xs:maxOccurs value="1"/>
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  249       </xs:restriction>
  250     </xs:extension>
  251   </xs:simpleContent>
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<xs:complexType name="CurveType_String">
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E Implicit auction result

ENTSO-E Implicit auction result – UML model and schema

VERSION 1.1

European Network of Transmission System Operators for Electricity

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