



European Network of  
Transmission System Operators  
for Electricity

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# PUBLICATION DOCUMENT UML MODEL AND SCHEMA

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2022-02-01  
APPROVED DOCUMENT  
VERSION 1.3

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61

## Revision History

Version	Release	Date	Comments
0	1	2017-01-27	First drafting of the document.
1	0	2017-01-30	Version to be submitted to Market Committee following WG EDI meeting in March 2017.
1	1	2018-05-02	EMFIP 46. Added docStatus attribute with cardinality 0..1 to the document header Approved document by MC
1	2	2019-03-28	EMFIP 53. Added a Update_DateAndOrTime attribute with cardinality 0..1 to the Timeseries and EMFIP 55. Added a ConnectingLine_RegisteredResource attribute with cardinality 0..1 to the Timeseries Approved by MC
1	3	2022-02-01	Updates in publication document XSD v7.4 <ul style="list-style-type: none"> <li>Quantity_Measure_Unit.name &amp; Price_Measure_Unit.name attributes were renamed to Quantity_Measurement_Unit.name &amp; Price_Measurement_Unit.name to be compliant with the ESMP.</li> <li>mRID of Document, Series and Timeseries (ID_String type) was enlarged from 35 to 60 characters.</li> </ul> Approved by MC.

62

## 63 **Objective**

64 The purpose of this document is to provide the contextual and assembly UML models and the  
65 schema of the Publication\_MarketDocument.

66 The schema of the Publication\_MarketDocument could be used in various business processes.

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

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

- 71 • Description of the business process;
- 72 • Use case of the business process;
- 73 • Sequence diagrams of the business process;
- 74 • List of the schema (XSD) to be used in the business process and versions of the  
75 schema;
- 76 • For each schema, dependency tables providing the necessary information for the  
77 generation of the XML instances, i.e. when the optional attributes are to be used, which  
78 codes from which ENTSO-E codelist are to be used.

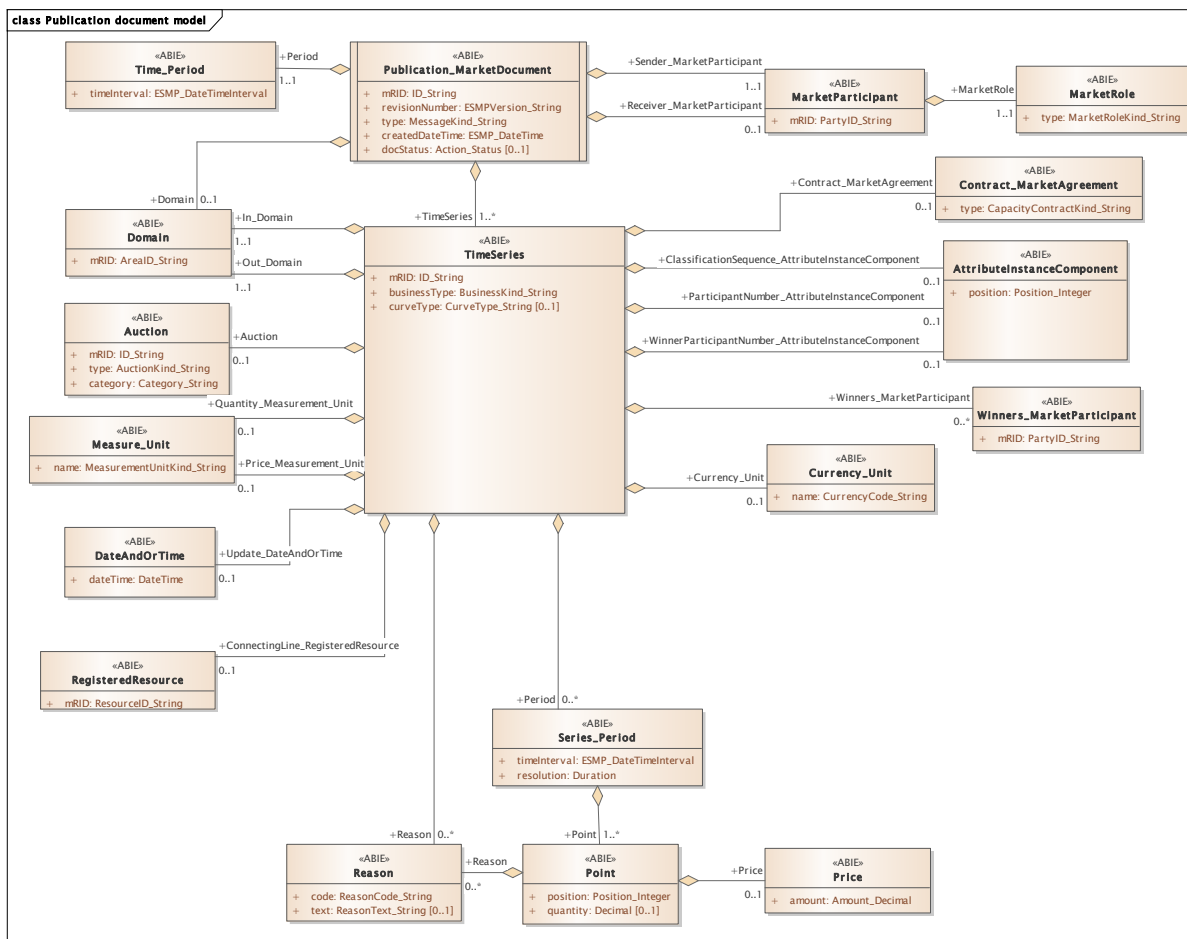
79

80 **Publication\_MarketDocument**

81 **2.1 Publication contextual model**

82 **2.1.1 Overview of the model**

83 Figure 1 shows the model.



84

85

86

**Figure 1 - Publication contextual model**

87

88 **2.1.2 IsBasedOn relationships from the European style market profile**

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

91

**Table 1 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
AttributeInstanceComponent	TC57CIM::IEC62325::MarketManagement::AttributeInstanceComponent
Auction	TC57CIM::IEC62325::MarketManagement::Auction
Contract_MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
Currency_Unit	TC57CIM::IEC62325::MarketManagement::Unit
DateAndOrTime	TC57CIM::IEC62325::MarketManagement::DateAndOrTime
Domain	TC57CIM::IEC62325::MarketManagement::Domain
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Point	TC57CIM::IEC62325::MarketManagement::Point
Price	TC57CIM::IEC62325::MarketManagement::Price
Publication_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Reason	TC57CIM::IEC62325::MarketManagement::Reason
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Winners_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant

92

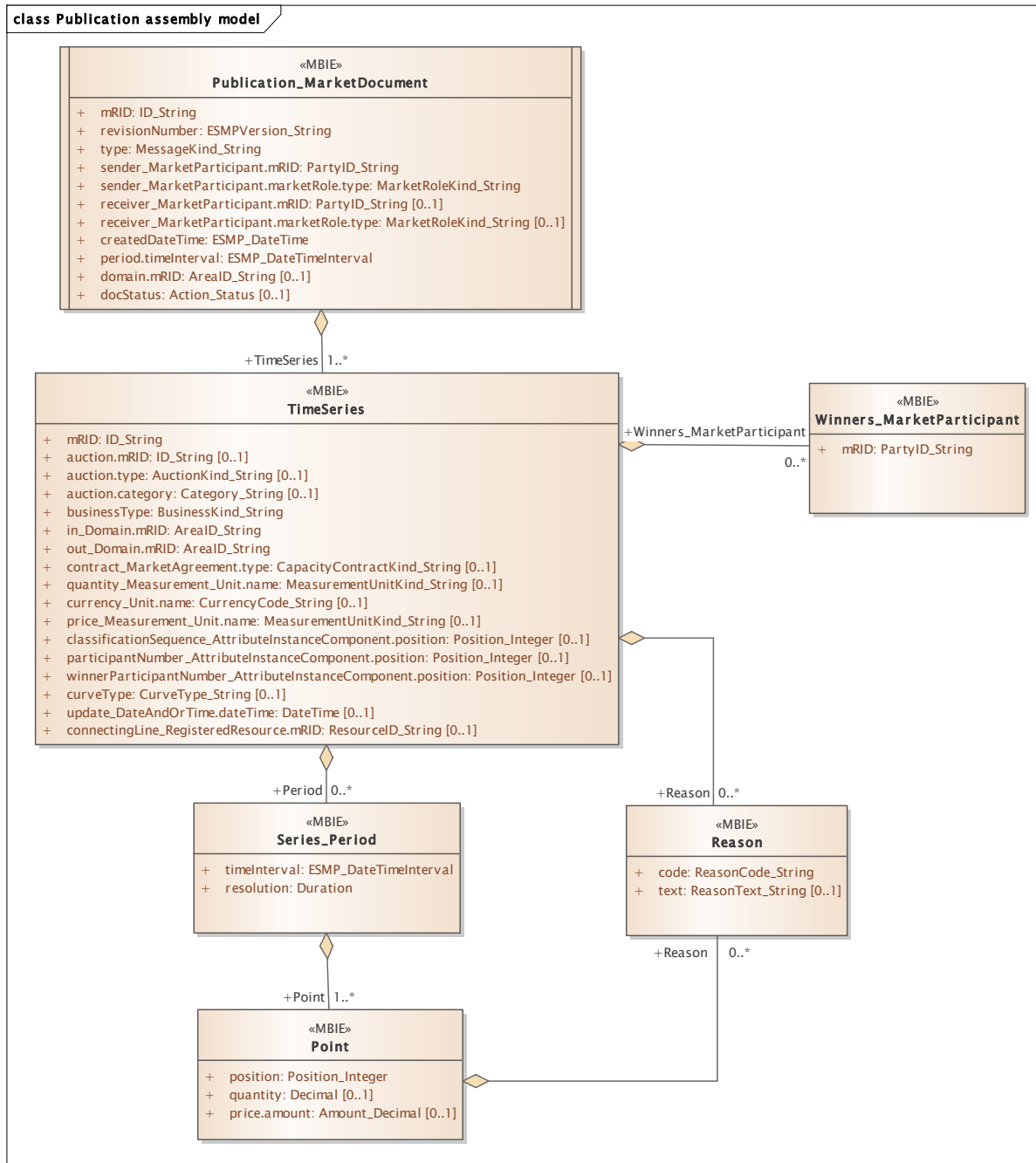
93

94

95 **2.2 Publication assembly model**

96 **2.2.1 Overview of the model**

97 Figure 2 shows the model.



98

99

**Figure 2 - Publication assembly model**

100



101

102 **2.2.2 IsBasedOn relationships from the European style market profile**

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

105

**Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Point	TC57CIM::IEC62325::MarketManagement::Point
Publication_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Winners_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant

106

107 **2.2.3 Detailed Publication assembly model**

108 **2.2.3.1 Publication\_MarketDocument root class**

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

111 A publication document is issued by the transmission capacity allocator at the end of a specific  
112 auctioning cycle or by the system operator once the NTC values have been agreed.

113 Table 3 shows all attributes of Publication\_MarketDocument.

114

**Table 3 - Attributes of Publication assembly model::Publication\_MarketDocument**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	The unique identification of the document being exchanged within a business process flow.
1	[1..1]	revisionNumber ESMPVersion_String	The identification of the version that distinguishes one evolution of a document from another.
2	[1..1]	type MessageKind_String	The coded type of a document. The document type describes the principal characteristic of the document.
3	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document owner.
4	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document owner.
5	[0..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document recipient.
6	[0..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document recipient.
7	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
8	[1..1]	period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. --- The beginning and ending date and time of the period that the publication document is covering.

Order	mult.	Attribute name / Attribute type	Description
9	[0..1]	domain.mRID AreaID_String	The unique identification of the domain. --- The domain covered within the publication document
10	[0..1]	docStatus Action_Status	The identification of the condition or position of the document with regard to its standing.

115

116 Table 4 shows all association ends of Publication\_MarketDocument with other classes.

117 **Table 4 - Association ends of Publication assembly**  
118 **model::Publication\_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
11	[1..*]	TimeSeries TimeSeries	Association Based On: Publication contextual model::TimeSeries.TimeSeries[1..*] ----- Publication contextual model::Publication_MarketDocument.[]

119

### 120 2.2.3.2 Point

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

122 Table 5 shows all attributes of Point.

123 **Table 5 - Attributes of Publication assembly model::Point**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	position Position_Integer	A sequential value representing the relative position within a given time interval.
1	[0..1]	quantity Decimal	The quantity auctioned for the interval in question. The principal quantity identified for a point.
2	[0..1]	price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The price expressed per currency per unit of price measure. 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. A price may be negative in cases where it is providing the difference between in and out area market prices. The price is mandatory in the case of capacity auctions and shall not be provided in the case of rule based allocations depending on local market rules.

124

125 Table 6 shows all association ends of Point with other classes.

126 **Table 6 - Association ends of Publication assembly model::Point with other classes**

Order	mult.	Class name / Role	Description
3	[0..*]	Reason Reason	Association Based On: Publication contextual model::Reason.Reason[0..*] ----- Publication contextual model::Point.[]

127

### 128 2.2.3.3 Reason

129 The motivation of an act.

130 Table 7 shows all attributes of Reason.

131 **Table 7 - Attributes of Publication assembly model::Reason**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	code ReasonCode_String	The motivation of an act in coded form.
1	[0..1]	text ReasonText_String	The textual explanation corresponding to the reason code.

132

133 **2.2.3.4 Series\_Period**

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

135 Table 8 shows all attributes of Series\_Period.

136 **Table 8 - Attributes of Publication assembly model::Series\_Period**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	timeInterval ESMP_DateTimeInterval	The start and end time of the period.
1	[1..1]	resolution Duration	The definition of the number of units of time that compose an individual step within a period.

137

138 Table 9 shows all association ends of Series\_Period with other classes.

139 **Table 9 - Association ends of Publication assembly model::Series\_Period with other**  
140 **classes**

Order	mult.	Class name / Role	Description
2	[1..*]	Point Point	Association Based On: Publication contextual model::Point.Point[1..*] ----- Publication contextual model::Series_Period.[]

141

142 **2.2.3.5 TimeSeries**

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

144 Table 10 shows all attributes of TimeSeries.

145 **Table 10 - Attributes of Publication assembly model::TimeSeries**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series.
1	[0..1]	auction.mRID ID_String	The unique identification of the auction. --- A unique identification of the set of specifications that clearly defines the allocation process to which the time series is addressed.

Order	mult.	Attribute name / Attribute type	Description
2	[0..1]	auction.type AuctionKind_String	The kind of the auction (e.g. implicit, explicit, ...). --- A unique identification of the set of specifications that clearly defines the allocation process to which the time series is addressed.
3	[0..1]	auction.category Category_String	The product category of an auction. --- A unique identification of the set of specifications that clearly defines the allocation process to which the time series is addressed.
4	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.
5	[1..1]	in_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the energy is to be put.
6	[1..1]	out_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the energy is coming from.
7	[0..1]	contract_MarketAgreement.type CapacityContractKind_String	The specification of the kind of the agreement, e.g. long term, daily contract. --- 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. The significance of this type is dependent on the in area and out area specific coded working methods.
8	[0..1]	quantity_Measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure in which the quantities in the times eries are expressed., e.g. MAW.
9	[0..1]	currency_Unit.name CurrencyCode_String	The identification of the formal code for a currency (ISO 4217). --- The currency in which the monetary amount is expressed.
10	[0..1]	price_Measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure in which the price in the time series is expressed per unit of currency (MW per unit, MWh per unit, etc.).
11	[0..1]	classificationSequence_AttributeInstanceComponent.position Position_Integer	A sequential value representing a relative sequence number. --- The sequence of a time series within a given auction category and contract type. A classification sequence is only provided in the case where there are several auctions in the same category and contract type.

Order	mult.	Attribute name / Attribute type	Description
12	[0..1]	participantNumber_AttributeInstanceComponent.position Position_Integer	A sequential value representing a relative sequence number. --- The number of parties that participated in the auction. It is only provided if the auction rules permit it.
13	[0..1]	winnerParticipantNumber_AttributeInstanceComponent.position Position_Integer	A sequential value representing a relative sequence number. --- The number of parties that had successful bids in the auction. This information is only provided if the auction rules permit it.
14	[0..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
15	[0..1]	update_DateAndOrTime.dateTime DateTime	Date and time as per ISO 8601 YYYY-MM-DDThh:mm:ss.sssZ. --- A date and/or time associated with a TimeSeries.
16	[0..1]	connectingLine_RegisteredResource.mRID ResourceID_String	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.

146

147 Table 11 shows all association ends of TimeSeries with other classes.

148 **Table 11 - Association ends of Publication assembly model::TimeSeries with other**  
149 **classes**

Order	mult.	Class name / Role	Description
17	[0..*]	Series_Period Period	Association Based On: Publication contextual model::Series_Period.Period[0..*] ----- Publication contextual model::TimeSeries.[]
18	[0..*]	Reason Reason	Association Based On: Publication contextual model::Reason.Reason[0..*] ----- Publication contextual model::TimeSeries.[]

Order	mult.	Class name / Role	Description
19	[0..*]	Winners_MarketParticipant Winners_MarketParticipant	The identification of the market participants who get something at the auction. Association Based On: Publication contextual model::Winners_MarketParticipant.Winners_MarketParticipant[0..*] ----- Publication contextual model::TimeSeries.[]

150

### 151 2.2.3.6 Winners\_MarketParticipant

152 The identification of the party participating in energy market business processes.

153 Table 12 shows all attributes of Winners\_MarketParticipant.

154 **Table 12 - Attributes of Publication assembly model::Winners\_MarketParticipant**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID PartyID_String	The identification of a party in the energy market.

155

### 156 2.2.4 Datatypes

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

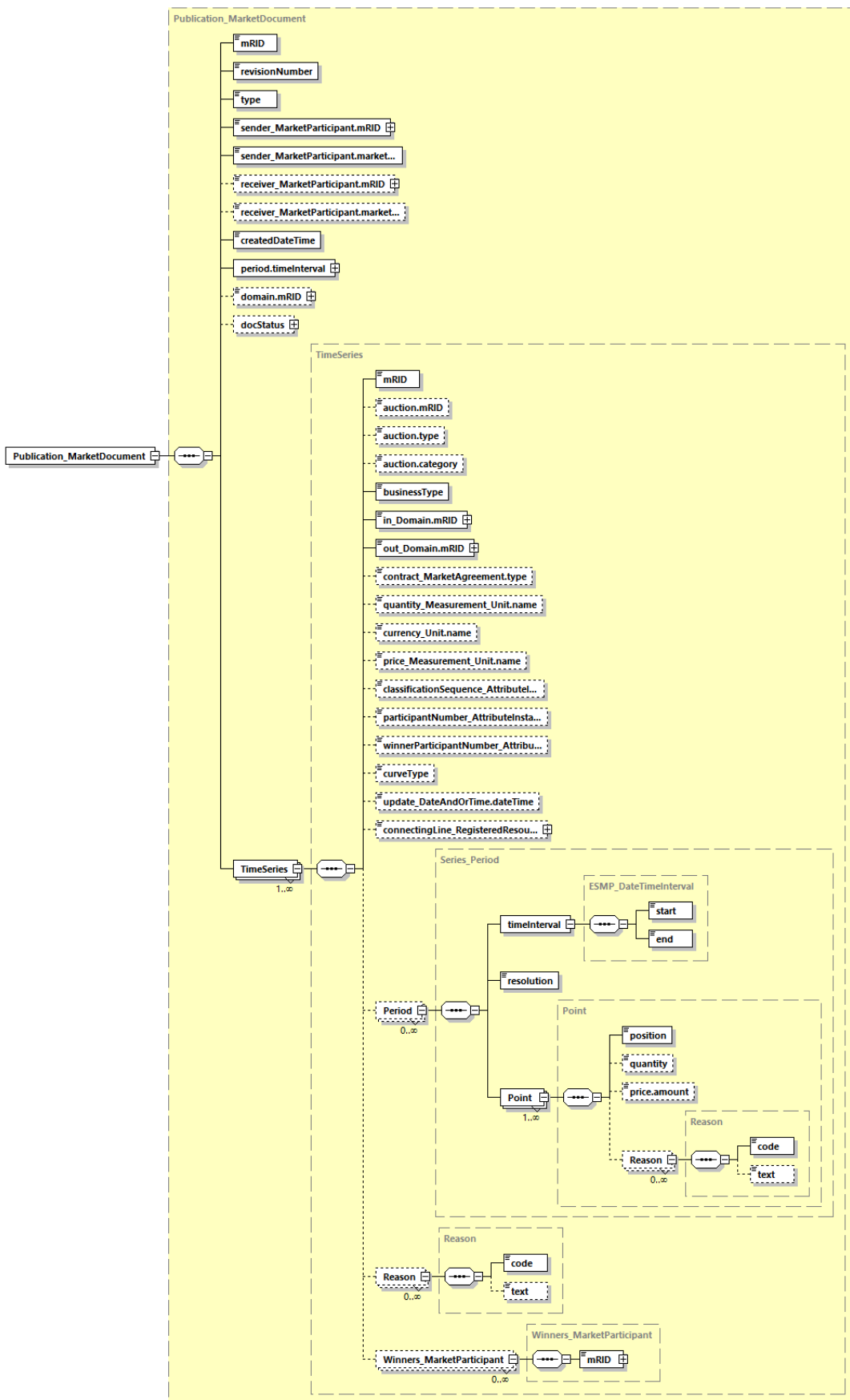
- 158 • Action\_Status compound
- 159 • ESMP\_DateTimeInterval compound
- 160 • Amount\_Decimal datatype
- 161 • ArealD\_String datatype, codelist CodingSchemeTypeList
- 162 • AuctionKind\_String datatype, codelist AuctionTypeList
- 163 • BusinessKind\_String datatype, codelist BusinessTypeList
- 164 • CapacityContractKind\_String datatype, codelist ContractTypeList
- 165 • Category\_String datatype, codelist CategoryTypeList
- 166 • CurrencyCode\_String datatype, codelist CurrencyTypeList
- 167 • CurveType\_String datatype, codelist CurveTypeList
- 168 • ESMP\_DateTime datatype
- 169 • ESMPVersion\_String datatype
- 170 • ID\_String datatype
- 171 • MarketRoleKind\_String datatype, codelist RoleTypeList
- 172 • MeasurementUnitKind\_String datatype, codelist UnitOfMeasureTypeList
- 173 • MessageKind\_String datatype, codelist MessageTypeList
- 174 • PartyID\_String datatype, codelist CodingSchemeTypeList
- 175 • Position\_Integer datatype
- 176 • ReasonCode\_String datatype, codelist ReasonCodeTypeList
- 177 • ReasonText\_String datatype
- 178 • ResourceID\_String datatype, codelist CodingSchemeTypeList
- 179 • Status\_String datatype, codelist StatusTypeList
- 180 • YMDHM\_DateTime datatype

181

182

183 2.2.5 Publication\_MarketDocument XML schema structure

184



185  
 186

Generated by XMLSpy www.altova.com

Figure 3 - Publication\_MarketDocument schema structure

## 187 2.2.6 Publication\_MarketDocument XML schema

188

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

190 urn:iec62325.351:tc57wg16:451-3:publicationdocument:7:4

```

191 <?xml version="1.0" encoding="utf-8"?>
192 <xs:schema xmlns:ec1="urn:entsoe.eu:wgedi:codelists"
193 xmlns="urn:iec62325.351:tc57wg16:451-3:publicationdocument:7:4"
194 xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
195 xmlns:cimp="http://www.iec.ch/cimprofile"
196 xmlns:xs="http://www.w3.org/2001/XMLSchema"
197 targetNamespace="urn:iec62325.351:tc57wg16:451-3:publicationdocument:7:4"
198 elementFormDefault="qualified" attributeFormDefault="unqualified">
199   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
200 entsoe-eu-wgedi-codelists.xsd"/>
201   <xs:element name="Publication_MarketDocument"
202 type="Publication_MarketDocument"/>
203   <xs:simpleType name="Position_Integer"
204 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
205     <xs:restriction base="xs:integer">
206       <xs:maxInclusive value="999999"/>
207       <xs:minInclusive value="1"/>
208     </xs:restriction>
209   </xs:simpleType>
210   <xs:simpleType name="Amount_Decimal"
211 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Decimal">
212     <xs:restriction base="xs:decimal">
213       <xs:totalDigits value="17"/>
214     </xs:restriction>
215   </xs:simpleType>
216   <xs:complexType name="Point"
217 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
218     <xs:sequence>
219       <xs:element name="position" type="Position_Integer"
220 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
221 schema-cim16#Point.position"/>
222       <xs:element name="quantity" type="xs:decimal" minOccurs="0"
223 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
224 cim16#Point.quantity"/>
225       <xs:element name="price.amount" type="Amount_Decimal"
226 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
227 schema-cim16#Price.amount"/>
228       <xs:element name="Reason" type="Reason" minOccurs="0"
229 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
230 cim16#Point.Reason"/>
231     </xs:sequence>
232   </xs:complexType>
233   <xs:simpleType name="ID_String"
234 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
235     <xs:restriction base="xs:string">
236       <xs:maxLength value="60"/>
237     </xs:restriction>
238   </xs:simpleType>
239   <xs:simpleType name="ESMPVersion_String"
240 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
241     <xs:restriction base="xs:string">
242       <xs:pattern value="[1-9]([0-9]){0,2}"/>
243     </xs:restriction>

```



```

244     </xs:simpleType>
245     <xs:simpleType name="MessageKind_String"
246     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
247         <xs:restriction base="ecl:MessageTypeList"/>
248     </xs:simpleType>
249     <xs:simpleType name="PartyID_String-base"
250     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
251         <xs:restriction base="xs:string">
252             <xs:maxLength value="16"/>
253         </xs:restriction>
254     </xs:simpleType>
255     <xs:complexType name="PartyID_String"
256     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
257         <xs:simpleContent>
258             <xs:extension base="PartyID_String-base">
259                 <xs:attribute name="codingScheme"
260                 type="ecl:CodingSchemeTypeList" use="required"/>
261             </xs:extension>
262         </xs:simpleContent>
263     </xs:complexType>
264     <xs:simpleType name="MarketRoleKind_String"
265     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
266         <xs:restriction base="ecl:RoleTypeList"/>
267     </xs:simpleType>
268     <xs:simpleType name="ESMP_DateTime"
269     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
270         <xs:restriction base="xs:dateTime">
271             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
272 9]|[12][0-9]|3[01]))|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
273 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
274 9])Z)|(((13579)[26][02468][048]|13579[01345789](0)[48]|13579[01345789][2468][0
275 48]|02468[048][02468][048]|02468[1235679](0)[48]|02468[1235679][2468][048]|
276 0-9[0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
277 5][0-9]:[0-5][0-
278 9])Z)|(((13579)[26][02468][1235679]|13579[01345789](0)[01235679]|13579[0134578
279 9][2468][1235679]|02468[048][02468][1235679]|02468[1235679](0)[01235679]|0246
280 8[1235679][2468][1235679]|0-9[0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
281 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
282         </xs:restriction>
283     </xs:simpleType>
284     <xs:simpleType name="AreaID_String-base"
285     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
286         <xs:restriction base="xs:string">
287             <xs:maxLength value="18"/>
288         </xs:restriction>
289     </xs:simpleType>
290     <xs:complexType name="AreaID_String"
291     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
292         <xs:simpleContent>
293             <xs:extension base="AreaID_String-base">
294                 <xs:attribute name="codingScheme"
295                 type="ecl:CodingSchemeTypeList" use="required"/>
296             </xs:extension>
297         </xs:simpleContent>
298     </xs:complexType>
299     <xs:simpleType name="Status_String"
300     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
301         <xs:restriction base="ecl:StatusTypeList"/>
302     </xs:simpleType>

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303     <xs:complexType name="Action_Status"
304 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status">
305     <xs:sequence>
306         <xs:element name="value" type="Status_String" minOccurs="1"
307 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
308 cim16#Status.value"/>
309     </xs:sequence>
310 </xs:complexType>
311 <xs:simpleType name="YMDHM_DateTime"
312 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
313     <xs:restriction base="xs:string">
314         <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
315 9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
316 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-
317 9])Z)|((([13579][26][02468][048]|([13579][01345789](0)[48]|([13579][01345789][2468][0
318 48]|([02468][048][02468][048]|([02468][1235679](0)[48]|([02468][1235679][2468][048]|([
319 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
320 5][0-
321 9])Z)|((([13579][26][02468][1235679]|([13579][01345789](0)[01235679]|([13579][0134578
322 9][2468][1235679]|([02468][048][02468][1235679]|([02468][1235679](0)[01235679]|([0246
323 8][1235679][2468][1235679]|([0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
324 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9])Z)"/>
325     </xs:restriction>
326 </xs:simpleType>
327 <xs:complexType name="ESMP_DateTimeInterval"
328 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
329     <xs:sequence>
330         <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
331 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
332 cim16#DateTimeInterval.start"/>
333         <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
334 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
335 cim16#DateTimeInterval.end"/>
336     </xs:sequence>
337 </xs:complexType>
338 <xs:complexType name="Publication_MarketDocument"
339 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
340     <xs:sequence>
341         <xs:element name="mRID" type="ID_String" minOccurs="1"
342 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
343 cim16#IdentifiedObject.mRID"/>
344         <xs:element name="revisionNumber" type="ESMPVersion_String"
345 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
346 schema-cim16#Document.revisionNumber"/>
347         <xs:element name="type" type="MessageKind_String" minOccurs="1"
348 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
349 cim16#Document.type"/>
350         <xs:element name="sender_MarketParticipant.mRID"
351 type="PartyID_String" minOccurs="1" maxOccurs="1"
352 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
353 cim16#IdentifiedObject.mRID"/>
354         <xs:element name="sender_MarketParticipant.marketRole.type"
355 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
356 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
357         <xs:element name="receiver_MarketParticipant.mRID"
358 type="PartyID_String" minOccurs="0" maxOccurs="1"
359 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
360 cim16#IdentifiedObject.mRID"/>
    
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361         <xs:element name="receiver_MarketParticipant.marketRole.type"
362 type="MarketRoleKind_String" minOccurs="0" maxOccurs="1"
363 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
364         <xs:element name="createdDateTime" type="ESMP_DateTime"
365 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
366 schema-cim16#Document.createdDateTime"/>
367         <xs:element name="period.timeInterval"
368 type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
369 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
370 cim16#Period.timeInterval"/>
371         <xs:element name="domain.mRID" type="AreaID_String"
372 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
373 schema-cim16#IdentifiedObject.mRID"/>
374         <xs:element name="docStatus" type="Action_Status" minOccurs="0"
375 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
376 cim16#Document.docStatus"/>
377         <xs:element name="TimeSeries" type="TimeSeries" minOccurs="1"
378 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
379 cim16#MarketDocument.TimeSeries"/>
380     </xs:sequence>
381 </xs:complexType>
382 <xs:simpleType name="ReasonCode_String"
383 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
384     <xs:restriction base="ecl:ReasonCodeTypeList"/>
385 </xs:simpleType>
386 <xs:simpleType name="ReasonText_String"
387 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
388     <xs:restriction base="xs:string">
389         <xs:maxLength value="512"/>
390     </xs:restriction>
391 </xs:simpleType>
392 <xs:complexType name="Reason"
393 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason">
394     <xs:sequence>
395         <xs:element name="code" type="ReasonCode_String" minOccurs="1"
396 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
397 cim16#Reason.code"/>
398         <xs:element name="text" type="ReasonText_String" minOccurs="0"
399 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
400 cim16#Reason.text"/>
401     </xs:sequence>
402 </xs:complexType>
403 <xs:complexType name="Series_Period"
404 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
405     <xs:sequence>
406         <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
407 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
408 schema-cim16#Period.timeInterval"/>
409         <xs:element name="resolution" type="xs:duration" minOccurs="1"
410 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
411 cim16#Period.resolution"/>
412         <xs:element name="Point" type="Point" minOccurs="1"
413 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
414 cim16#Period.Point"/>
415     </xs:sequence>
416 </xs:complexType>
417 <xs:simpleType name="AuctionKind_String"
418 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
419     <xs:restriction base="ecl:AuctionTypeList"/>
420 </xs:simpleType>

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421     <xs:simpleType name="Category_String"
422 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
423     <xs:restriction base="ecl:CategoryTypeList"/>
424     </xs:simpleType>
425     <xs:simpleType name="BusinessKind_String"
426 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
427     <xs:restriction base="ecl:BusinessTypeList"/>
428     </xs:simpleType>
429     <xs:simpleType name="CapacityContractKind_String"
430 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
431     <xs:restriction base="ecl:ContractTypeList"/>
432     </xs:simpleType>
433     <xs:simpleType name="MeasurementUnitKind_String"
434 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
435     <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
436     </xs:simpleType>
437     <xs:simpleType name="CurrencyCode_String"
438 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
439     <xs:restriction base="ecl:CurrencyTypeList"/>
440     </xs:simpleType>
441     <xs:simpleType name="CurveType_String"
442 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
443     <xs:restriction base="ecl:CurveTypeList"/>
444     </xs:simpleType>
445     <xs:simpleType name="ResourceID_String-base"
446 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
447     <xs:restriction base="xs:string">
448         <xs:maxLength value="60"/>
449     </xs:restriction>
450     </xs:simpleType>
451     <xs:complexType name="ResourceID_String"
452 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
453     <xs:simpleContent>
454         <xs:extension base="ResourceID_String-base">
455             <xs:attribute name="codingScheme"
456 type="ecl:CodingSchemeTypeList" use="required"/>
457         </xs:extension>
458     </xs:simpleContent>
459     </xs:complexType>
460     <xs:complexType name="TimeSeries"
461 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
462     <xs:sequence>
463         <xs:element name="mRID" type="ID_String" minOccurs="1"
464 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
465 cim16#IdentifiedObject.mRID"/>
466         <xs:element name="auction.mRID" type="ID_String" minOccurs="0"
467 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
468 cim16#IdentifiedObject.mRID"/>
469         <xs:element name="auction.type" type="AuctionKind_String"
470 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
471 schema-cim16#Auction.type"/>
472         <xs:element name="auction.category" type="Category_String"
473 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
474 schema-cim16#Auction.category"/>
475         <xs:element name="businessType" type="BusinessKind_String"
476 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
477 schema-cim16#TimeSeries.businessType"/>
478         <xs:element name="in_Domain.mRID" type="AreaID_String"
479 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
480 schema-cim16#IdentifiedObject.mRID"/>

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481         <xs:element name="out_Domain.mRID" type="AreaID_String"
482 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
483 schema-cim16#IdentifiedObject.mRID"/>
484         <xs:element name="contract_MarketAgreement.type"
485 type="CapacityContractKind_String" minOccurs="0" maxOccurs="1"
486 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
487         <xs:element name="quantity_Measurement_Unit.name"
488 type="MeasurementUnitKind_String" minOccurs="0" maxOccurs="1"
489 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
490         <xs:element name="currency_Unit.name"
491 type="CurrencyCode_String" minOccurs="0" maxOccurs="1"
492 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
493         <xs:element name="price_Measurement_Unit.name"
494 type="MeasurementUnitKind_String" minOccurs="0" maxOccurs="1"
495 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
496         <xs:element
497 name="classificationSequence_AttributeInstanceComponent.position"
498 type="Position_Integer" minOccurs="0" maxOccurs="1"
499 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
500 cim16#AttributeInstanceComponent.position"/>
501         <xs:element
502 name="participantNumber_AttributeInstanceComponent.position"
503 type="Position_Integer" minOccurs="0" maxOccurs="1"
504 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
505 cim16#AttributeInstanceComponent.position"/>
506         <xs:element
507 name="winnerParticipantNumber_AttributeInstanceComponent.position"
508 type="Position_Integer" minOccurs="0" maxOccurs="1"
509 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
510 cim16#AttributeInstanceComponent.position"/>
511         <xs:element name="curveType" type="CurveType_String"
512 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
513 schema-cim16#TimeSeries.curveType"/>
514         <xs:element name="update_DateAndOrTime.dateTime"
515 type="xs:dateTime" minOccurs="0" maxOccurs="1"
516 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
517 cim16#DateAndOrTime.dateTime"/>
518         <xs:element name="connectingLine_RegisteredResource.mRID"
519 type="ResourceID_String" minOccurs="0" maxOccurs="1"
520 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
521 cim16#IdentifiedObject.mRID"/>
522         <xs:element name="Period" type="Series_Period" minOccurs="0"
523 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
524 cim16#TimeSeries.Period"/>
525         <xs:element name="Reason" type="Reason" minOccurs="0"
526 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
527 cim16#TimeSeries.Reason"/>
528         <xs:element name="Winners_MarketParticipant"
529 type="Winners_MarketParticipant" minOccurs="0" maxOccurs="unbounded"
530 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
531 cim16#TimeSeries.Winners_MarketParticipant"/>
532     </xs:sequence>
533 </xs:complexType>
534 <xs:complexType name="Winners_MarketParticipant"
535 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
536 cim16#MarketParticipant">
537     <xs:sequence>
538         <xs:element name="mRID" type="PartyID_String" minOccurs="1"
539 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
540 cim16#IdentifiedObject.mRID"/>

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541         </xs:sequence>  
542     </xs:complexType>  
543 </xs:schema>  
544
```