



European Network of
Transmission System Operators
for Electricity

**PUBLICATION DOCUMENT
UML MODEL AND SCHEMA**

2019-03-28
APPROVED DOCUMENT
VERSION 1.2

2

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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

62

63 1 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.

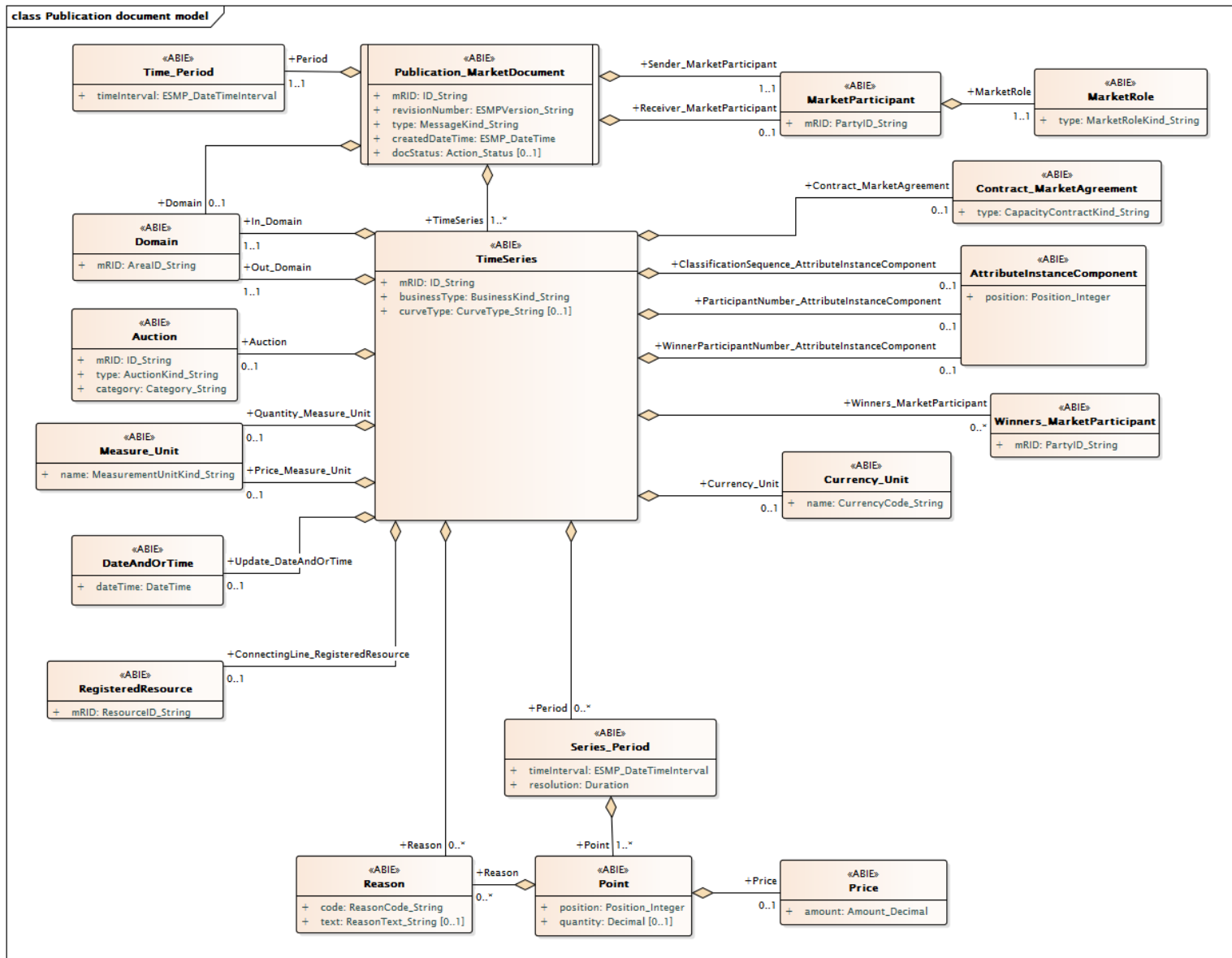
79

80 **2 Publication_MarketDocument**

81 **2.1 Publication contextual model**

82 **2.1.1 Overview of the model**

83 Figure 1 shows the model.



84

85

Figure 1 - Publication contextual model

86

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

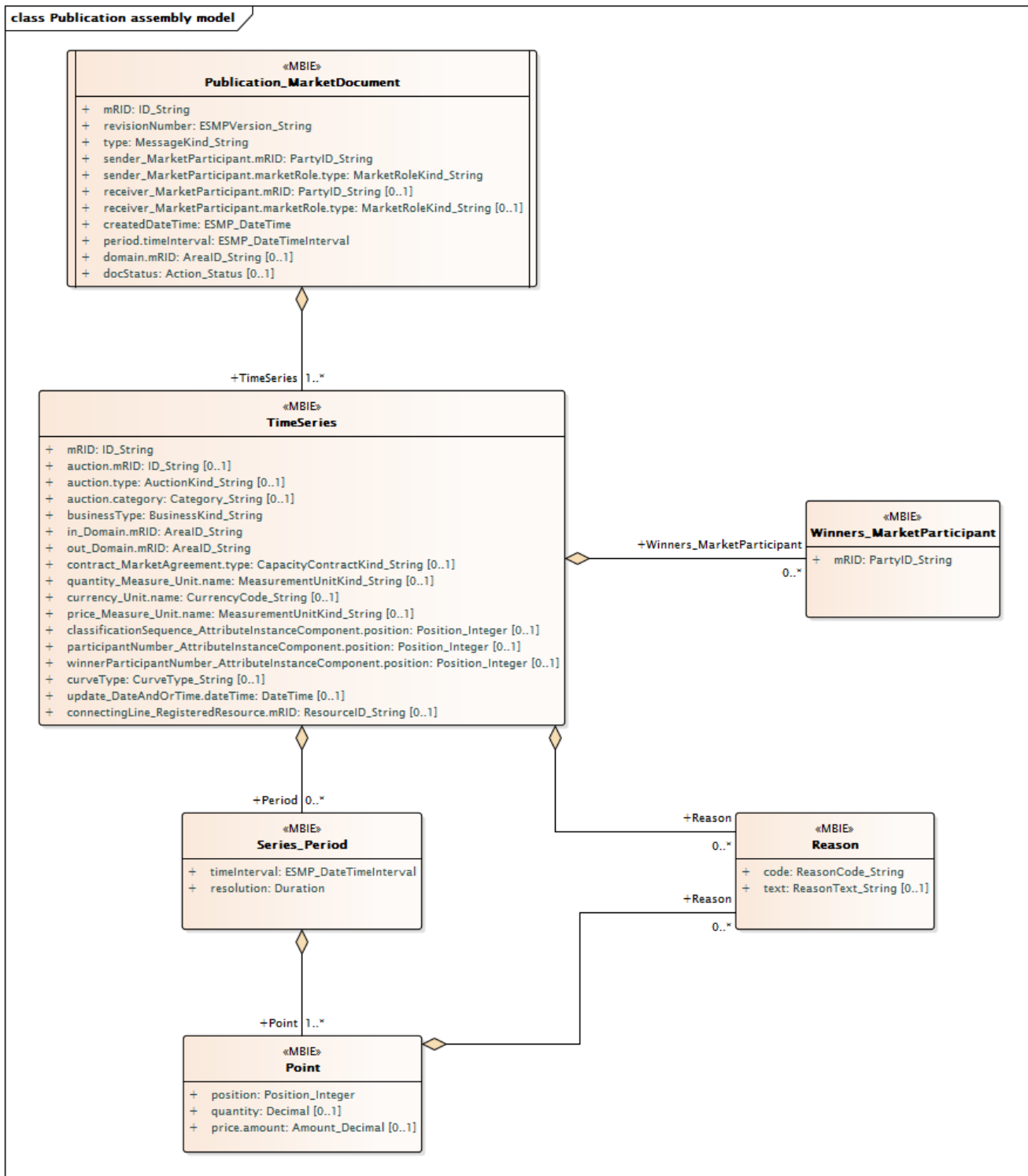
93

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_Measure_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_Measure_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:

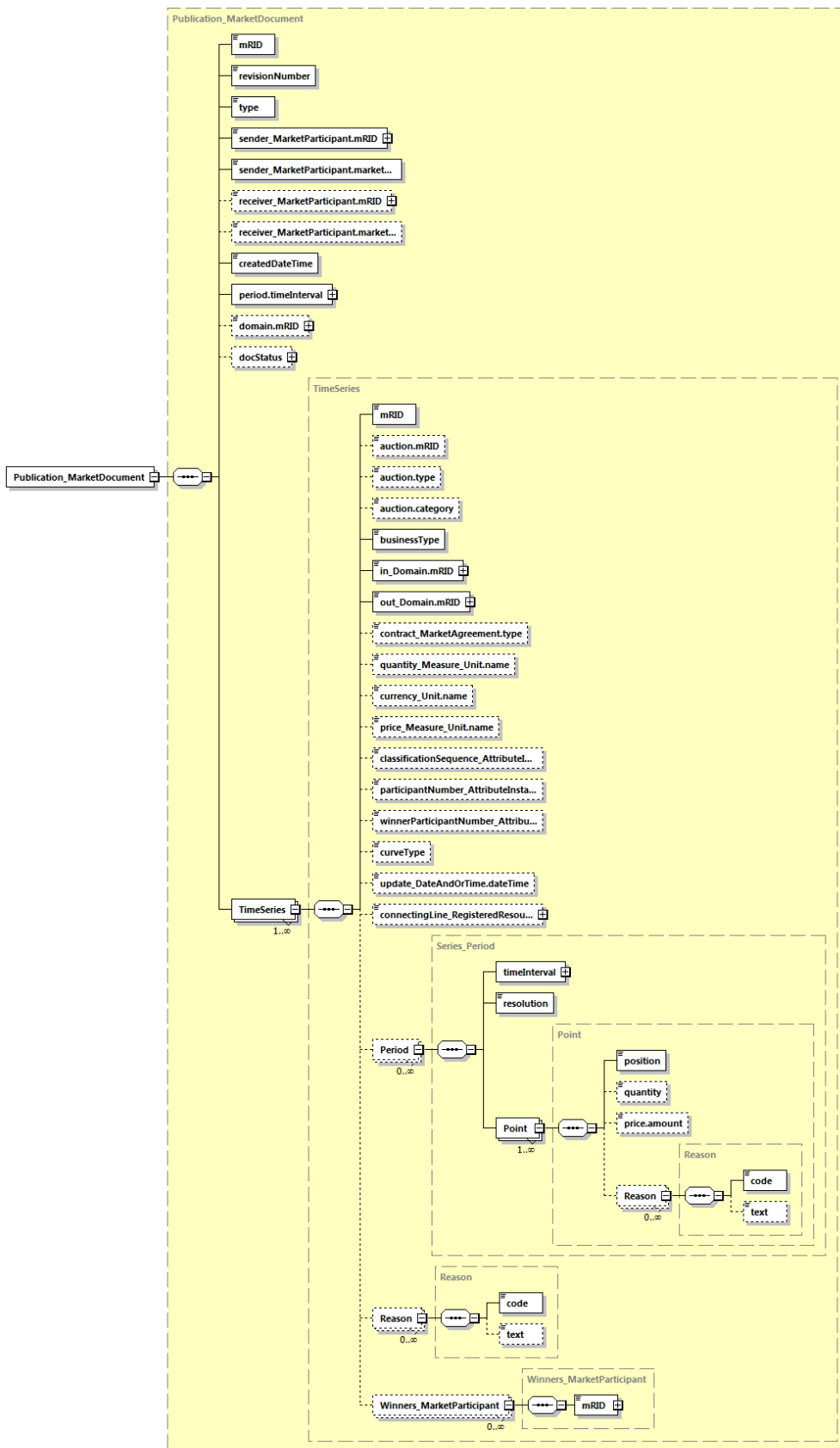
- 158 • Action_Status compound
- 159 • ESMP_DateTimeInterval compound
- 160 • Amount_Decimal datatype
- 161 • ArealD_String datatype, codelist CodingSchemeTypeList
- 162 • AuctionKind_String datatype, codelist AuctionTypeList
- 163 • BusinessKind_String datatype, codelist BusinessTypeList
- 164 • CapacityContractKind_String 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



Generated by XMLSpy www.altova.com

Figure 3 - Publication_MarketDocument schema structure

185
 186

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:7:3

```

191 <?xml version="1.0" encoding="utf-8"?>
192 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists" xmlns="urn:iec62325.351:tc57wg16:451-
193 3:publicationdocument:7:3" xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
194 xmlns:cimp="http://www.iec.ch/cimprofile" xmlns:xs="http://www.w3.org/2001/XMLSchema"
195 targetNamespace="urn:iec62325.351:tc57wg16:451-3:publicationdocument:7:3"
196 elementFormDefault="qualified" attributeFormDefault="unqualified">
197   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-entsoe-eu-wgedi-
198 codelists.xsd"/>
199   <xs:element name="Publication_MarketDocument" type="Publication_MarketDocument"/>
200   <xs:simpleType name="Position_Integer" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
201 schema-cim16#Integer">
202     <xs:restriction base="xs:integer">
203       <xs:maxInclusive value="999999"/>
204       <xs:minInclusive value="1"/>
205     </xs:restriction>
206   </xs:simpleType>
207   <xs:simpleType name="Amount_Decimal" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
208 cim16#Decimal">
209     <xs:restriction base="xs:decimal">
210       <xs:totalDigits value="17"/>
211     </xs:restriction>
212   </xs:simpleType>
213   <xs:complexType name="Point" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
214 cim16#Point">
215     <xs:sequence>
216       <xs:element name="position" type="Position_Integer" minOccurs="1"
217 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.position"/>
218       <xs:element name="quantity" type="xs:decimal" minOccurs="0" maxOccurs="1"
219 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.quantity"/>
220       <xs:element name="price.amount" type="Amount_Decimal" minOccurs="0"
221 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.amount"/>
222       <xs:element name="Reason" type="Reason" minOccurs="0" maxOccurs="unbounded"
223 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.Reason"/>
224     </xs:sequence>
225   </xs:complexType>
226   <xs:simpleType name="ID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
227 cim16#String">
228     <xs:restriction base="xs:string">
229       <xs:maxLength value="35"/>
230     </xs:restriction>
231   </xs:simpleType>
232   <xs:simpleType name="ESMPVersion_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
233 schema-cim16#String">
234     <xs:restriction base="xs:string">
235       <xs:pattern value="[1-9]([0-9]){0,2}"/>
236     </xs:restriction>
237   </xs:simpleType>
238   <xs:simpleType name="MessageKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
239 schema-cim16#String">
240     <xs:restriction base="ecl:MessageTypeList"/>
241   </xs:simpleType>
242   <xs:simpleType name="PartyID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
243 schema-cim16#String">
244     <xs:restriction base="xs:string">
245       <xs:maxLength value="16"/>
246     </xs:restriction>
247   </xs:simpleType>
248   <xs:complexType name="PartyID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
249 schema-cim16#String">
250     <xs:simpleContent>
251       <xs:extension base="PartyID_String-base">
252         <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
253 use="required"/>
254       </xs:extension>
255     </xs:simpleContent>
256   </xs:complexType>

```



```

257     <xs:simpleType name="MarketRoleKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
258 schema-cim16#String">
259         <xs:restriction base="ecl:RoleTypeList"/>
260     </xs:simpleType>
261     <xs:simpleType name="ESMP_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
262 cim16#DateTime">
263         <xs:restriction base="xs:dateTime">
264             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-9]|[12][0-
265 9]|3[01])|([0-9]{4})[\-](0[469])|(11))[\-](0[1-9]|[12][0-9]|30))T((01[0-9]|2[0-3]):[0-5][0-9]:[0-
266 5][0-
267 9])Z|(((13579)[26][02468][048]|13579)[01345789](0)[48]|13579)[01345789][2468][048]|02468][048][0246
268 8][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0[0-9][0-9][13579][26])[\-](02)[\-](0[1-
269 9]|1[0-9]|2[0-9])T((01[0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
270 9])Z|(((13579)[26][02468][1235679]|13579)[01345789](0)[01235679]|13579)[01345789][2468][1235679]|02
271 468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][1235679][2468][1235679]|0[0-9][0-
272 9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-9]|2[0-8])T((01[0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z"/>
273     </xs:restriction>
274 </xs:simpleType>
275     <xs:simpleType name="AreaID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
276 schema-cim16#String">
277         <xs:restriction base="xs:string">
278             <xs:maxLength value="18"/>
279         </xs:restriction>
280     </xs:simpleType>
281     <xs:complexType name="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
282 cim16#String">
283         <xs:simpleContent>
284             <xs:extension base="AreaID_String-base">
285                 <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
286 use="required"/>
287             </xs:extension>
288         </xs:simpleContent>
289     </xs:complexType>
290     <xs:simpleType name="Status_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
291 cim16#String">
292         <xs:restriction base="ecl:StatusTypeList"/>
293     </xs:simpleType>
294     <xs:complexType name="Action_Status" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
295 cim16#Status">
296         <xs:sequence>
297             <xs:element name="value" type="Status_String" minOccurs="1" maxOccurs="1"
298 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status.value"/>
299         </xs:sequence>
300     </xs:complexType>
301     <xs:simpleType name="YMDHM_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
302 cim16#DateTime">
303         <xs:restriction base="xs:string">
304             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-9]|[12][0-
305 9]|3[01])|([0-9]{4})[\-](0[469])|(11))[\-](0[1-9]|[12][0-9]|30))T((01[0-9]|2[0-3]):[0-5][0-
306 9])Z|(((13579)[26][02468][048]|13579)[01345789](0)[48]|13579)[01345789][2468][048]|02468][048][0246
307 8][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0[0-9][0-9][13579][26])[\-](02)[\-](0[1-
308 9]|1[0-9]|2[0-9])T((01[0-9]|2[0-3]):[0-5][0-
309 9])Z|(((13579)[26][02468][1235679]|13579)[01345789](0)[01235679]|13579)[01345789][2468][1235679]|02
310 468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][1235679][2468][1235679]|0[0-9][0-
311 9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-9]|2[0-8])T((01[0-9]|2[0-3]):[0-5][0-9])Z"/>
312     </xs:restriction>
313 </xs:simpleType>
314     <xs:complexType name="ESMP_DateTimeInterval"
315 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
316         <xs:sequence>
317             <xs:element name="start" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
318 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.start"/>
319             <xs:element name="end" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
320 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.end"/>
321         </xs:sequence>
322     </xs:complexType>
323     <xs:complexType name="Publication_MarketDocument"
324 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
325         <xs:sequence>
326             <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
327 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
328             <xs:element name="revisionNumber" type="ESMPVersion_String" minOccurs="1"
329 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
330 cim16#Document.revisionNumber"/>

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331         <xs:element name="type" type="MessageKind_String" minOccurs="1" maxOccurs="1"
332 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
333         <xs:element name="sender_MarketParticipant.mRID" type="PartyID_String"
334 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
335 cim16#IdentifiedObject.mRID"/>
336         <xs:element name="sender_MarketParticipant.marketRole.type"
337 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
338 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
339         <xs:element name="receiver_MarketParticipant.mRID" type="PartyID_String"
340 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
341 cim16#IdentifiedObject.mRID"/>
342         <xs:element name="receiver_MarketParticipant.marketRole.type"
343 type="MarketRoleKind_String" minOccurs="0" maxOccurs="1"
344 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
345         <xs:element name="createdDateTime" type="ESMP_DateTime" minOccurs="1"
346 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
347 cim16#Document.createdDateTime"/>
348         <xs:element name="period.timeInterval" type="ESMP_DateTimeInterval"
349 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
350 cim16#Period.timeInterval"/>
351         <xs:element name="domain.mRID" type="AreaID_String" minOccurs="0"
352 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
353         <xs:element name="docStatus" type="Action_Status" minOccurs="0" maxOccurs="1"
354 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.docStatus"/>
355         <xs:element name="TimeSeries" type="TimeSeries" minOccurs="1"
356 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
357 cim16#MarketDocument.TimeSeries"/>
358     </xs:sequence>
359 </xs:complexType>
360 <xs:simpleType name="ReasonCode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
361 schema-cim16#String">
362     <xs:restriction base="ecl:ReasonCodeTypeList"/>
363 </xs:simpleType>
364 <xs:simpleType name="ReasonText_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
365 schema-cim16#String">
366     <xs:restriction base="xs:string">
367         <xs:maxLength value="512"/>
368     </xs:restriction>
369 </xs:simpleType>
370 <xs:complexType name="Reason" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
371 cim16#Reason">
372     <xs:sequence>
373         <xs:element name="code" type="ReasonCode_String" minOccurs="1" maxOccurs="1"
374 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.code"/>
375         <xs:element name="text" type="ReasonText_String" minOccurs="0" maxOccurs="1"
376 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.text"/>
377     </xs:sequence>
378 </xs:complexType>
379 <xs:complexType name="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
380 cim16#Period">
381     <xs:sequence>
382         <xs:element name="timeInterval" type="ESMP_DateTimeInterval" minOccurs="1"
383 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval"/>
384         <xs:element name="resolution" type="xs:duration" minOccurs="1" maxOccurs="1"
385 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.resolution"/>
386         <xs:element name="Point" type="Point" minOccurs="1" maxOccurs="unbounded"
387 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.Point"/>
388     </xs:sequence>
389 </xs:complexType>
390 <xs:simpleType name="AuctionKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
391 schema-cim16#String">
392     <xs:restriction base="ecl:AuctionTypeList"/>
393 </xs:simpleType>
394 <xs:simpleType name="Category_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
395 schema-cim16#String">
396     <xs:restriction base="ecl:CategoryTypeList"/>
397 </xs:simpleType>
398 <xs:simpleType name="BusinessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
399 schema-cim16#String">
400     <xs:restriction base="ecl:BusinessTypeList"/>
401 </xs:simpleType>
402 <xs:simpleType name="CapacityContractKind_String"
403 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
404     <xs:restriction base="ecl:ContractTypeList"/>
405 </xs:simpleType>

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406         <xs:simpleType name="MeasurementUnitKind_String"
407 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
408             <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
409         </xs:simpleType>
410         <xs:simpleType name="CurrencyCode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
411 schema-cim16#String">
412             <xs:restriction base="ecl:CurrencyTypeList"/>
413         </xs:simpleType>
414         <xs:simpleType name="CurveType_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
415 schema-cim16#String">
416             <xs:restriction base="ecl:CurveTypeList"/>
417         </xs:simpleType>
418         <xs:simpleType name="ResourceID_String-base"
419 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
420             <xs:restriction base="xs:string">
421                 <xs:maxLength value="60"/>
422             </xs:restriction>
423         </xs:simpleType>
424         <xs:complexType name="ResourceID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
425 schema-cim16#String">
426             <xs:simpleContent>
427                 <xs:extension base="ResourceID_String-base">
428                     <xs:attribute name="codingScheme" type="ecl:CodingSchemeTypeList"
429 use="required"/>
430                 </xs:extension>
431             </xs:simpleContent>
432         </xs:complexType>
433         <xs:complexType name="TimeSeries" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
434 cim16#TimeSeries">
435             <xs:sequence>
436                 <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
437 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
438                 <xs:element name="auction.mRID" type="ID_String" minOccurs="0" maxOccurs="1"
439 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
440                 <xs:element name="auction.type" type="AuctionKind_String" minOccurs="0"
441 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Auction.type"/>
442                 <xs:element name="auction.category" type="Category_String" minOccurs="0"
443 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Auction.category"/>
444                 <xs:element name="businessType" type="BusinessKind_String" minOccurs="1"
445 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
446 cim16#TimeSeries.businessType"/>
447                 <xs:element name="in_Domain.mRID" type="AreaID_String" minOccurs="1"
448 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
449                 <xs:element name="out_Domain.mRID" type="AreaID_String" minOccurs="1"
450 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
451                 <xs:element name="contract_MarketAgreement.type"
452 type="CapacityContractKind_String" minOccurs="0" maxOccurs="1"
453 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
454                 <xs:element name="quantity_Measure_Unit.name"
455 type="MeasurementUnitKind_String" minOccurs="0" maxOccurs="1"
456 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
457                 <xs:element name="currency_Unit.name" type="CurrencyCode_String" minOccurs="0"
458 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
459                 <xs:element name="price_Measure_Unit.name" type="MeasurementUnitKind_String"
460 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
461 cim16#Unit.name"/>
462                 <xs:element name="classificationSequence_AttributeInstanceComponent.position"
463 type="Position_Integer" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
464 schema-cim16#AttributeInstanceComponent.position"/>
465                 <xs:element name="participantNumber_AttributeInstanceComponent.position"
466 type="Position_Integer" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
467 schema-cim16#AttributeInstanceComponent.position"/>
468                 <xs:element name="winnerParticipantNumber_AttributeInstanceComponent.position"
469 type="Position_Integer" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
470 schema-cim16#AttributeInstanceComponent.position"/>
471                 <xs:element name="curveType" type="CurveType_String" minOccurs="0"
472 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.curveType"/>
473                 <xs:element name="update_DateAndOrTime.dateTime" type="xs:dateTime"
474 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
475 cim16#DateAndOrTime.dateTime"/>
476                 <xs:element name="connectingLine_RegisteredResource.mRID"
477 type="ResourceID_String" minOccurs="0" maxOccurs="1"
478 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>

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479         <xs:element name="Period" type="Series_Period" minOccurs="0"
480 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
481 cim16#TimeSeries.Period"/>
482         <xs:element name="Reason" type="Reason" minOccurs="0" maxOccurs="unbounded"
483 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.Reason"/>
484         <xs:element name="Winners_MarketParticipant" type="Winners_MarketParticipant"
485 minOccurs="0" maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
486 cim16#TimeSeries.Winners_MarketParticipant"/>
487     </xs:sequence>
488 </xs:complexType>
489 <xs:complexType name="Winners_MarketParticipant"
490 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketParticipant">
491     <xs:sequence>
492         <xs:element name="mRID" type="PartyID_String" minOccurs="1" maxOccurs="1"
493 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
494     </xs:sequence>
495 </xs:complexType>
496 </xs:schema>
```