



European Network of  
Transmission System Operators  
for Electricity

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**RESOURCE SCHEDULE ANOMALY  
DOCUMENT  
UML MODEL AND SCHEMA**

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2019-02-12  
APPROVED DOCUMENT  
VERSION 1.0

2

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## Revision History

Version	Release	Date	Comments
0	1	2019-01-14	First draft of the document.
1	0	2019-02-12	Approved by MC.

67

## 68 1 Objective

69 The purpose of this document is to provide the contextual and assembly UML models and the  
70 schema of the ResourceScheduleAnomaly\_MarketDocument.

71 The schema of the ResourceScheduleAnomaly\_MarketDocument could be used in various  
72 business processes.

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

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

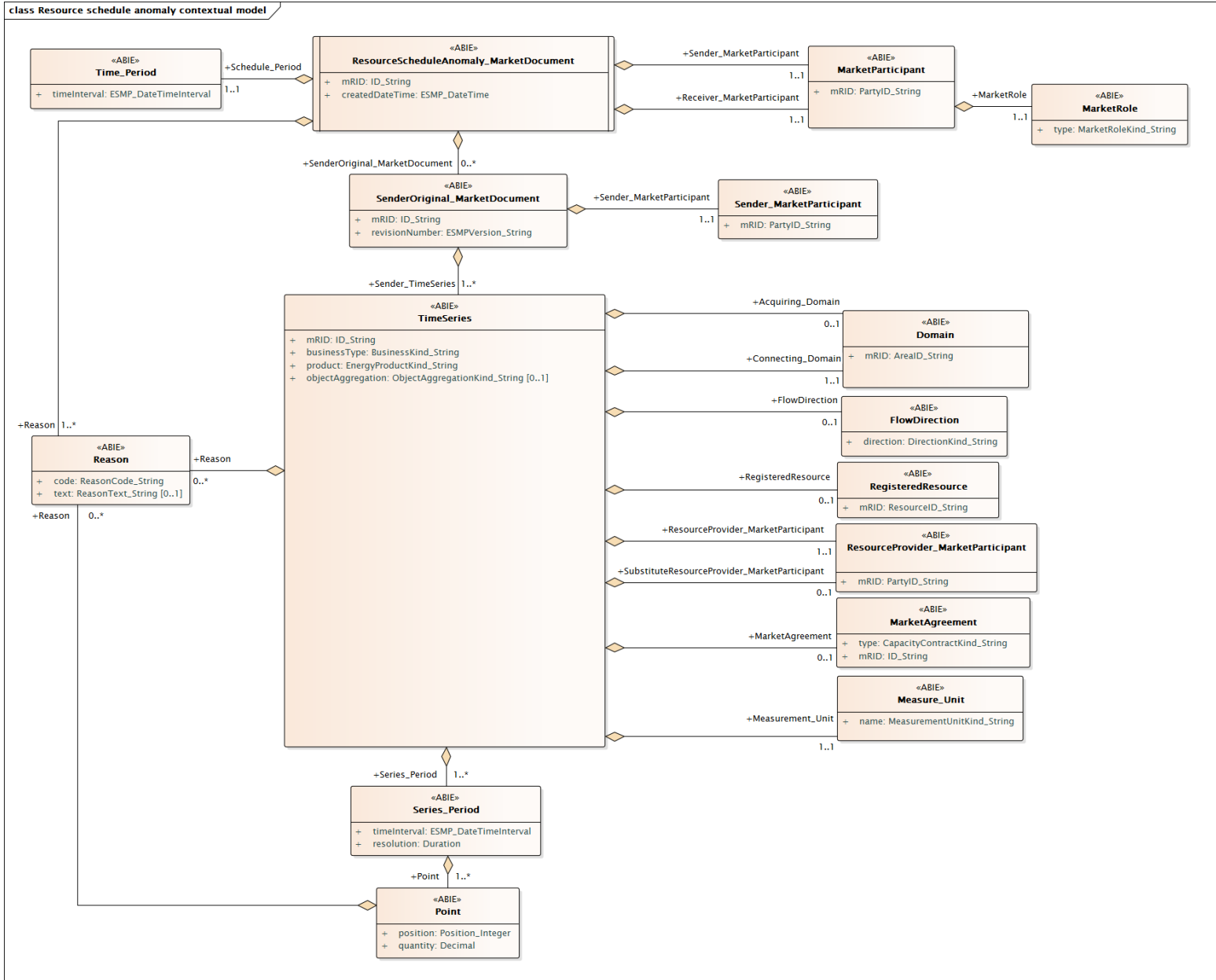
- 77 • Description of the business process;
- 78 • Use case of the business process;
- 79 • Sequence diagrams of the business process;
- 80 • List of the schema (XSD) to be used in the business process and versions of the  
81 schema;
- 82 • For each schema, dependency tables providing the necessary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

85

86 **2 ResourceScheduleAnomaly\_MarketDocument**

87 **2.1.1 Overview of the model**

88 Figure 1 shows the model.



89

90

**Figure 1 - Resource schedule anomaly contextual model**

91

92

93 **2.1.2 IsBasedOn relationships from the European style market profile**

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

96

**Table 1 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Domain	TC57CIM::IEC62325::MarketManagement::Domain
FlowDirection	TC57CIM::IEC62325::MarketManagement::FlowDirection
MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
ResourceProvider_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
ResourceScheduleAnomaly_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Sender_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
SenderOriginal_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

97

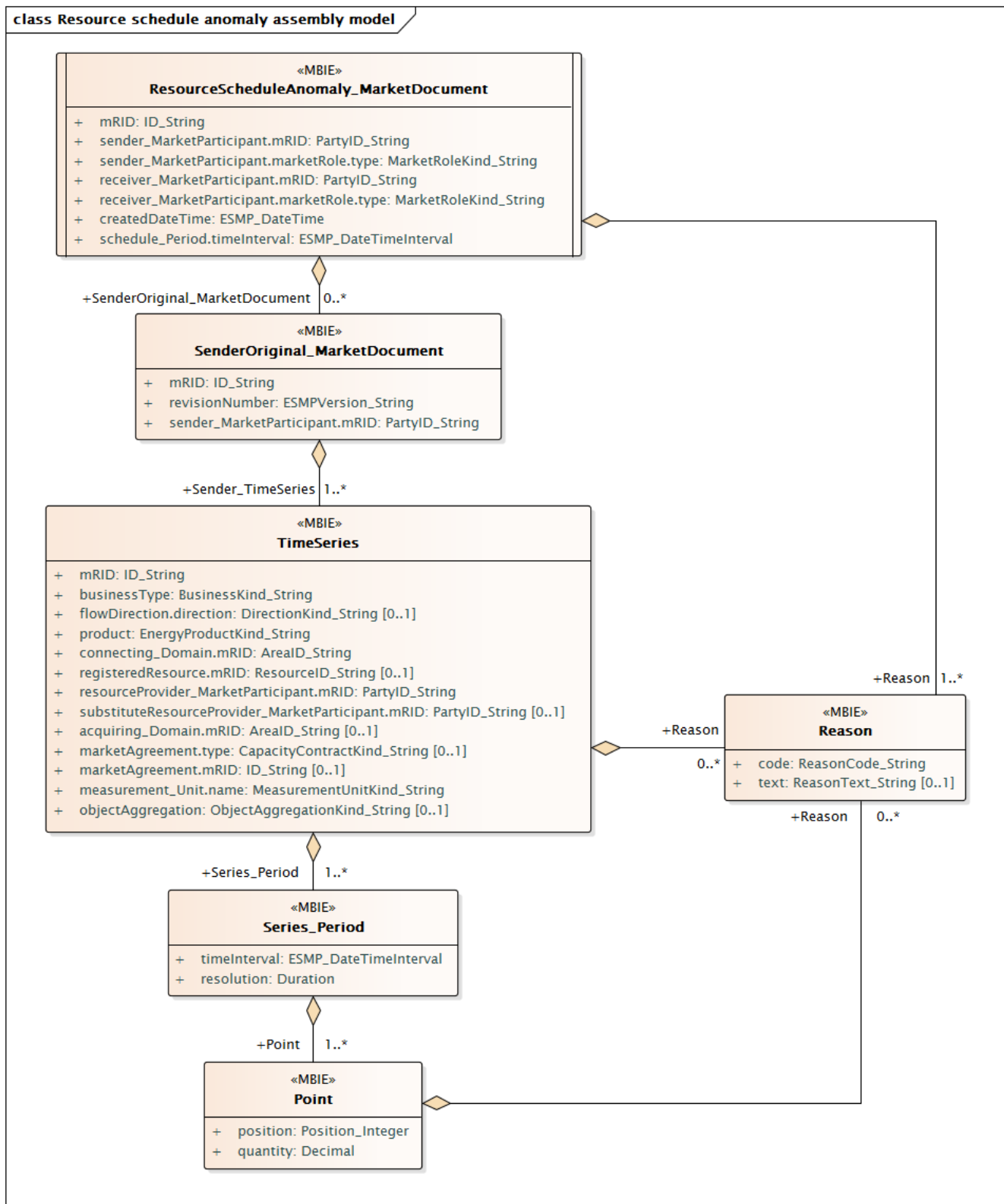
98



99 2.2 Resource schedule anomaly assembly model

100 2.2.1 Overview of the model

101 Figure 2 shows the model.



102

103

104

Figure 2 - Resource schedule anomaly assembly model

105

106 **2.2.2 IsBasedOn relationships from the European style market profile**

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

109

**Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
ResourceScheduleAnomaly_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
SenderOriginal_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

110

111 **2.2.3 Detailed Resource schedule anomaly assembly model**

112 **2.2.3.1 ResourceScheduleAnomaly\_MarketDocument root class**

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

115 Table 3 shows all attributes of ResourceScheduleAnomaly\_MarketDocument.

116

**Table 3 - Attributes of Resource schedule anomaly assembly  
model::ResourceScheduleAnomaly\_MarketDocument**

117

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]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document owner.
2	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The document owner. --- The role associated with a MarketParticipant.
3	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document recipient.
4	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The document recipient. --- The role associated with a MarketParticipant.
5	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
6	[1..1]	schedule_Period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval.

118

119 Table 4 shows all association ends of ResourceScheduleAnomaly\_MarketDocument with other  
120 classes.

121  
122

**Table 4 - Association ends of Resource schedule anomaly assembly model::ResourceScheduleAnomaly\_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
7	[0..*]	SenderOriginal_MarketDocument SenderOriginal_MarketDocument	Association Based On: Resource schedule anomaly contextual model::SenderOriginal_MarketDocument.SenderOriginal_MarketDocument[0..*] ----- Resource schedule anomaly contextual model::ResourceScheduleAnomaly_MarketDocument.[]
8	[1..*]	Reason Reason	Association Based On: Resource schedule anomaly contextual model::Reason.Reason[1..*] ----- Resource schedule anomaly contextual model::ResourceScheduleAnomaly_MarketDocument.[]

123

### 124 2.2.3.2 Point

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

126 Table 5 shows all attributes of Point.

127 **Table 5 - Attributes of Resource schedule anomaly 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	[1..1]	quantity Decimal	The principal quantity identified for a point.

128

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

130 **Table 6 - Association ends of Resource schedule anomaly assembly model::Point with other classes**

131

Order	mult.	Class name / Role	Description
2	[0..*]	Reason Reason	The Reason information associated with a Point providing motivation information. Association Based On: Resource schedule anomaly contextual model::Point.[] ----- Resource schedule anomaly contextual model::Reason.Reason[0..*]

132

### 133 2.2.3.3 Reason

134 The motivation of an act.

135 Table 7 shows all attributes of Reason.

136 **Table 7 - Attributes of Resource schedule anomaly 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.

137

138 **2.2.3.4 SenderOriginal\_MarketDocument**

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

141 Table 8 shows all attributes of SenderOriginal\_MarketDocument.

142 **Table 8 - Attributes of Resource schedule anomaly assembly**  
143 **model::SenderOriginal\_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]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market.

144

145 Table 9 shows all association ends of SenderOriginal\_MarketDocument with other classes.

146 **Table 9 - Association ends of Resource schedule anomaly assembly**  
147 **model::SenderOriginal\_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
3	[1..*]	TimeSeries Sender_TimeSeries	Association Based On: Resource schedule anomaly contextual model::TimeSeries.Sender_TimeSeries[1..*] ----- Resource schedule anomaly contextual model::SenderOriginal_MarketDocument.[]

148

149 **2.2.3.5 Series\_Period**

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

151 Table 10 shows all attributes of Series\_Period.

152 **Table 10 - Attributes of Resource schedule anomaly 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.

153

154 Table 11 shows all association ends of Series\_Period with other classes.

155 **Table 11 - Association ends of Resource schedule anomaly assembly**  
156 **model::Series\_Period with other classes**

Order	mult.	Class name / Role	Description
2	[1..*]	Point Point	The Point information associated with a given Series_Period.within a TimeSeries. Association Based On: Resource schedule anomaly contextual model::Series_Period.[] ----- Resource schedule anomaly contextual model::Point.Point[1..*]

157

### 158 2.2.3.6 TimeSeries

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

160 Table 12 shows all attributes of TimeSeries.

161 **Table 12 - Attributes of Resource schedule anomaly assembly model::TimeSeries**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series.
1	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.
2	[0..1]	flowDirection.direction DirectionKind_String	The coded identification of the direction of energy flow. --- The flow direction associated with a TimeSeries.
3	[1..1]	product EnergyProductKind_String	The identification of the nature of an energy product such as power, energy, reactive power, etc.
4	[1..1]	connecting_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain associated with a TimeSeries.
5	[0..1]	registeredResource.mRID ResourceID_String	The unique identification of a resource.
6	[1..1]	resourceProvider_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of a market participant associated with a TimeSeries.
7	[0..1]	substituteResourceProvider_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market.
8	[0..1]	acquiring_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain associated with a TimeSeries.
9	[0..1]	marketAgreement.type CapacityContractKind_String	The specification of the kind of the agreement, e.g. long term, daily contract. --- The identification of an agreement associated with a TimeSeries.
10	[0..1]	marketAgreement.mRID ID_String	The unique identification of the agreement. --- The identification of an agreement associated with a TimeSeries.
11	[1..1]	measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in a TimeSeries.

Order	mult.	Attribute name / Attribute type	Description
12	[0..1]	objectAggregation ObjectAggregationKind_String	The identification of the domain that is the common denominator used to aggregate a time series.

162

163 Table 13 shows all association ends of TimeSeries with other classes.

164 **Table 13 - Association ends of Resource schedule anomaly assembly**  
165 **model::TimeSeries with other classes**

Order	mult.	Class name / Role	Description
13	[1..*]	Series_Period Series_Period	The time interval and resolution for a period associated with a TimeSeries. Association Based On: Resource schedule anomaly contextual model::TimeSeries.[] ----- Resource schedule anomaly contextual model::Series_Period.Series_Period[1..*]
14	[0..*]	Reason Reason	Association Based On: Resource schedule anomaly contextual model::Reason.Reason[0..*] ----- Resource schedule anomaly contextual model::TimeSeries.[]

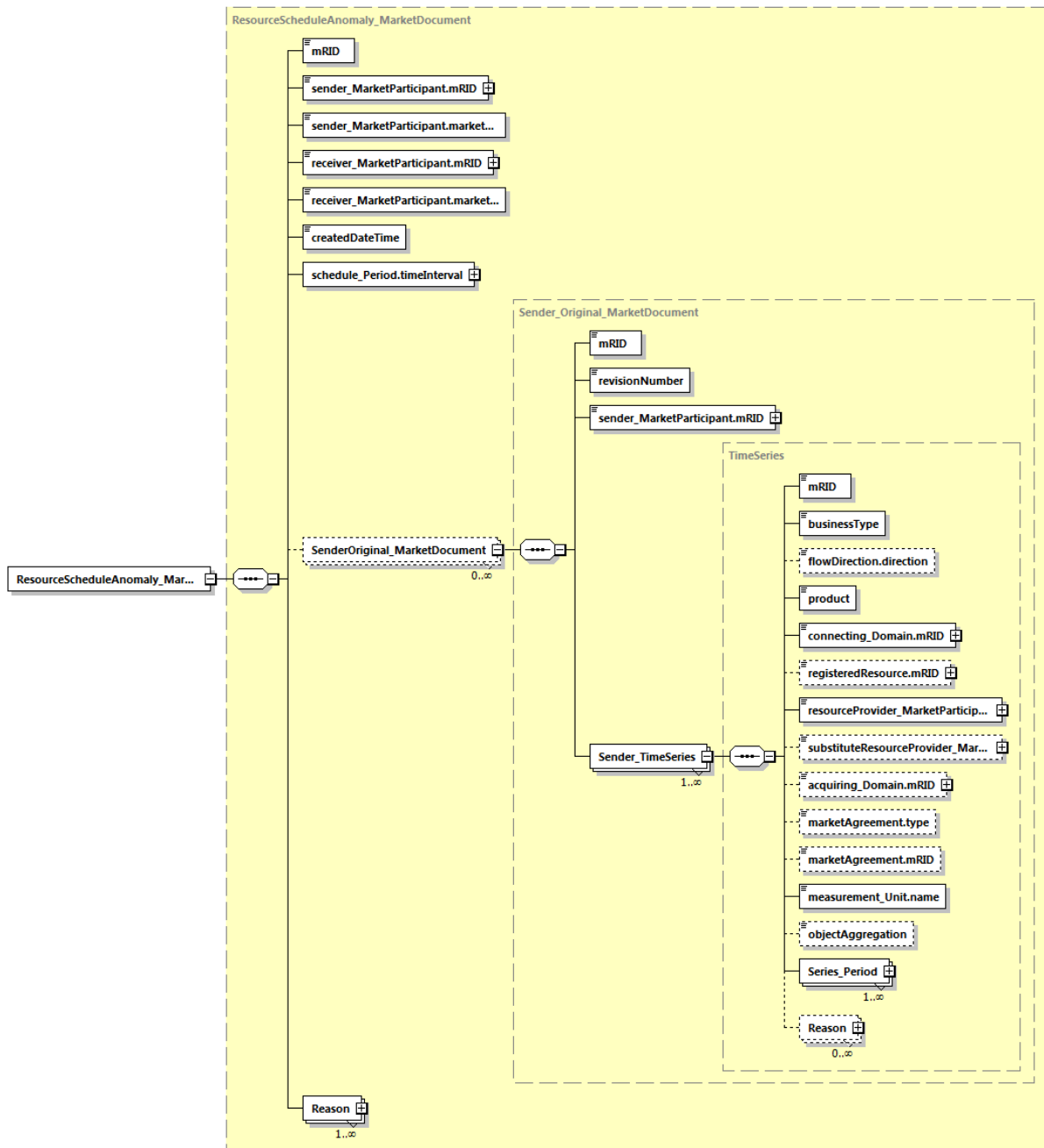
166

#### 167 2.2.4 Datatypes

168 The list of datatypes used for the Resource schedule anomaly assembly model is as follows:

- 169
- 170 • ESMP\_DateTimeInterval compound
  - 171 • ArealD\_String datatype, codelist CodingSchemeTypeList
  - 172 • BusinessKind\_String datatype, codelist BusinessTypeList
  - 173 • CapacityContractKind\_String datatype, codelist ContractTypeList
  - 174 • DirectionKind\_String datatype, codelist DirectionTypeList
  - 175 • EnergyProductKind\_String datatype, codelist EnergyProductTypeList
  - 176 • ESMP\_DateTime datatype
  - 177 • ESMPVersion\_String datatype
  - 178 • ID\_String datatype
  - 179 • MarketRoleKind\_String datatype, codelist RoleTypeList
  - 180 • MeasurementUnitKind\_String datatype, codelist UnitOfMeasureTypeList
  - 181 • ObjectAggregationKind\_String datatype, codelist ObjectAggregationTypeList
  - 182 • PartyID\_String datatype, codelist CodingSchemeTypeList
  - 183 • Position\_Integer datatype
  - 184 • ReasonCode\_String datatype, codelist ReasonCodeTypeList
  - 185 • ReasonText\_String datatype
  - 186 • ResourceID\_String datatype, codelist CodingSchemeTypeList
  - 187 • YMDHM\_DateTime datatype
  - 188 •

189 2.2.5 ResourceScheduleAnomaly\_MarketDocument XML schema structure



Generated by XMLSpy [www.altova.com](http://www.altova.com)

190  
191

Figure 3 - ResourceScheduleAnomaly\_MarketDocument schema structure

## 192 2.2.6 ResourceScheduleAnomaly\_MarketDocument XML schema

193

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

195 urn:iec62325.351:tc57wg16:451-7:resourcescheduleanomalydocument:6:0

```
196 <?xml version="1.0" encoding="utf-8"?>
197 <xs:schema xmlns:cl="urn:entsoe.eu:wgedi:codelists" xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
198 xmlns="urn:iec62325.351:tc57wg16:451-7:resourcescheduleanomalydocument:6:0"
199 xmlns:cimp="http://www.iec.ch/cimprofile" xmlns:xs="http://www.w3.org/2001/XMLSchema"
200 targetNamespace="urn:iec62325.351:tc57wg16:451-7:resourcescheduleanomalydocument:6:0"
201 elementFormDefault="qualified" attributeFormDefault="unqualified">
202   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-entsoe-eu-wgedi-
203 codelists.xsd"/>
204   <xs:element name="ResourceScheduleAnomaly_MarketDocument"
205 type="ResourceScheduleAnomaly_MarketDocument"/>
206   <xs:simpleType name="Position_Integer" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
207 schema-cim16#Integer">
208     <xs:restriction base="xs:integer">
209       <xs:maxInclusive value="999999"/>
210       <xs:minInclusive value="1"/>
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="1" maxOccurs="1"
219 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.quantity"/>
220       <xs:element name="Reason" type="Reason" minOccurs="0" maxOccurs="unbounded"
221 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point.Reason"/>
222     </xs:sequence>
223   </xs:complexType>
224   <xs:simpleType name="ReasonCode_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
225 schema-cim16#String">
226     <xs:restriction base="cl:ReasonCodeTypeList"/>
227   </xs:simpleType>
228   <xs:simpleType name="ReasonText_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
229 schema-cim16#String">
230     <xs:restriction base="xs:string">
231       <xs:maxLength value="512"/>
232     </xs:restriction>
233   </xs:simpleType>
234   <xs:complexType name="Reason" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
235 cim16#Reason">
236     <xs:sequence>
237       <xs:element name="code" type="ReasonCode_String" minOccurs="1" maxOccurs="1"
238 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.code"/>
239       <xs:element name="text" type="ReasonText_String" minOccurs="0" maxOccurs="1"
240 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason.text"/>
241     </xs:sequence>
242   </xs:complexType>
243   <xs:simpleType name="ID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
244 cim16#String">
245     <xs:restriction base="xs:string">
246       <xs:maxLength value="35"/>
247     </xs:restriction>
248   </xs:simpleType>
249   <xs:simpleType name="PartyID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
250 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" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
256 schema-cim16#String">
257     <xs:simpleContent>
258       <xs:extension base="PartyID_String-base">
259         <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
260 use="required"/>
261       </xs:extension>
262     </xs:simpleContent>
```



```

263         </xs:complexType>
264         <xs:simpleType name="MarketRoleKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
265 schema-cim16#String">
266             <xs:restriction base="cl:RoleTypeList"/>
267         </xs:simpleType>
268         <xs:simpleType name="ESMP_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
269 cim16#DateTime">
270             <xs:restriction base="xs:dateTime">
271                 <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-9]|[12][0-
272 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-
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274 9])Z)|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]|02468][048][0246
275 8][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|0[0-9][0-9][13579][26])[\-](02)[\-](0[1-
276 9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
277 9])Z)|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][2468][1235679]|02
278 468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][1235679][2468][1235679]|0[0-9][0-
279 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)"/>
280             </xs:restriction>
281         </xs:simpleType>
282         <xs:simpleType name="YMDHM_DateTime" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
283 cim16#DateTime">
284             <xs:restriction base="xs:string">
285                 <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-9]|[12][0-
286 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-
287 9])Z)|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][048]|02468][048][0246
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289 9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-5][0-
290 9])Z)|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][01345789][2468][1235679]|02
291 468][048][02468][1235679]|02468][1235679](0)[01235679]|02468][1235679][2468][1235679]|0[0-9][0-
292 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)"/>
293             </xs:restriction>
294         </xs:simpleType>
295         <xs:complexType name="ESMP_DateTimeInterval"
296 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
297             <xs:sequence>
298                 <xs:element name="start" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
299 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.start"/>
300                 <xs:element name="end" type="YMDHM_DateTime" minOccurs="1" maxOccurs="1"
301 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval.end"/>
302             </xs:sequence>
303         </xs:complexType>
304         <xs:complexType name="ResourceScheduleAnomaly_MarketDocument"
305 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
306             <xs:sequence>
307                 <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
308 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
309                 <xs:element name="sender_MarketParticipant.mRID" type="PartyID_String"
310 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
311 cim16#IdentifiedObject.mRID"/>
312                 <xs:element name="sender_MarketParticipant.marketRole.type"
313 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
314 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
315                 <xs:element name="receiver_MarketParticipant.mRID" type="PartyID_String"
316 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
317 cim16#IdentifiedObject.mRID"/>
318                 <xs:element name="receiver_MarketParticipant.marketRole.type"
319 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
320 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
321                 <xs:element name="createdDateTime" type="ESMP_DateTime" minOccurs="1"
322 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
323 cim16#Document.createdDateTime"/>
324                 <xs:element name="schedule_Period.timeInterval" type="ESMP_DateTimeInterval"
325 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
326 cim16#Period.timeInterval"/>
327                 <xs:element name="SenderOriginal_MarketDocument"
328 type="Sender_Original_MarketDocument" minOccurs="0" maxOccurs="unbounded"
329 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
330 cim16#MarketDocument.SenderOriginal_MarketDocument"/>
331                 <xs:element name="Reason" type="Reason" minOccurs="1" maxOccurs="unbounded"
332 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument.Reason"/>
333             </xs:sequence>
334         </xs:complexType>
335         <xs:simpleType name="ESMPVersion_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
336 schema-cim16#String">
337             <xs:restriction base="xs:string">
    
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338         <xs:pattern value="[1-9]([0-9]){0,2}"/>
339     </xs:restriction>
340 </xs:simpleType>
341 <xs:complexType name="Sender_Original_MarketDocument"
342 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
343     <xs:sequence>
344         <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
345 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
346         <xs:element name="revisionNumber" type="ESMPVersion_String" minOccurs="1"
347 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
348 cim16#Document.revisionNumber"/>
349         <xs:element name="sender_MarketParticipant.mRID" type="PartyID_String"
350 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
351 cim16#IdentifiedObject.mRID"/>
352         <xs:element name="Sender_TimeSeries" type="TimeSeries" minOccurs="1"
353 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
354 cim16#MarketDocument.Sender_TimeSeries"/>
355     </xs:sequence>
356 </xs:complexType>
357 <xs:complexType name="Series_Period" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
358 cim16#Period">
359     <xs:sequence>
360         <xs:element name="timeInterval" type="ESMP_DateTimeInterval" minOccurs="1"
361 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.timeInterval"/>
362         <xs:element name="resolution" type="xs:duration" minOccurs="1" maxOccurs="1"
363 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.resolution"/>
364         <xs:element name="Point" type="Point" minOccurs="1" maxOccurs="unbounded"
365 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period.Point"/>
366     </xs:sequence>
367 </xs:complexType>
368 <xs:simpleType name="BusinessKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
369 schema-cim16#String">
370     <xs:restriction base="cl:BusinessTypeList"/>
371 </xs:simpleType>
372 <xs:simpleType name="DirectionKind_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
373 schema-cim16#String">
374     <xs:restriction base="cl:DirectionTypeList"/>
375 </xs:simpleType>
376 <xs:simpleType name="EnergyProductKind_String"
377 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
378     <xs:restriction base="cl:EnergyProductTypeList"/>
379 </xs:simpleType>
380 <xs:simpleType name="AreaID_String-base" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
381 schema-cim16#String">
382     <xs:restriction base="xs:string">
383         <xs:maxLength value="18"/>
384     </xs:restriction>
385 </xs:simpleType>
386 <xs:complexType name="AreaID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
387 cim16#String">
388     <xs:simpleContent>
389         <xs:extension base="AreaID_String-base">
390             <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
391 use="required"/>
392         </xs:extension>
393     </xs:simpleContent>
394 </xs:complexType>
395 <xs:simpleType name="ResourceID_String-base"
396 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
397     <xs:restriction base="xs:string">
398         <xs:maxLength value="18"/>
399     </xs:restriction>
400 </xs:simpleType>
401 <xs:complexType name="ResourceID_String" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
402 schema-cim16#String">
403     <xs:simpleContent>
404         <xs:extension base="ResourceID_String-base">
405             <xs:attribute name="codingScheme" type="cl:CodingSchemeTypeList"
406 use="required"/>
407         </xs:extension>
408     </xs:simpleContent>
409 </xs:complexType>
410 <xs:simpleType name="CapacityContractKind_String"
411 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
412     <xs:restriction base="cl:ContractTypeList"/>

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413         </xs:simpleType>
414         <xs:simpleType name="MeasurementUnitKind_String"
415 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
416             <xs:restriction base="cl:UnitOfMeasureTypelist"/>
417         </xs:simpleType>
418         <xs:simpleType name="ObjectAggregationKind_String"
419 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
420             <xs:restriction base="cl:ObjectAggregationTypelist"/>
421         </xs:simpleType>
422         <xs:complexType name="TimeSeries" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
423 cim16#TimeSeries">
424             <xs:sequence>
425                 <xs:element name="mRID" type="ID_String" minOccurs="1" maxOccurs="1"
426 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
427                 <xs:element name="businessType" type="BusinessKind_String" minOccurs="1"
428 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
429 cim16#TimeSeries.businessType"/>
430                 <xs:element name="flowDirection.direction" type="DirectionKind_String"
431 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
432 cim16#FlowDirection.direction"/>
433                 <xs:element name="product" type="EnergyProductKind_String" minOccurs="1"
434 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.product"/>
435                 <xs:element name="connecting_Domain.mRID" type="AreaID_String" minOccurs="1"
436 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
437                 <xs:element name="registeredResource.mRID" type="ResourceID_String"
438 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
439 cim16#IdentifiedObject.mRID"/>
440                 <xs:element name="resourceProvider_MarketParticipant.mRID"
441 type="PartyID_String" minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
442 schema-cim16#IdentifiedObject.mRID"/>
443                 <xs:element name="substituteResourceProvider_MarketParticipant.mRID"
444 type="PartyID_String" minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
445 schema-cim16#IdentifiedObject.mRID"/>
446                 <xs:element name="acquiring_Domain.mRID" type="AreaID_String" minOccurs="0"
447 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
448                 <xs:element name="marketAgreement.type" type="CapacityContractKind_String"
449 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
450 cim16#Document.type"/>
451                 <xs:element name="marketAgreement.mRID" type="ID_String" minOccurs="0"
452 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#IdentifiedObject.mRID"/>
453                 <xs:element name="measurement_Unit.name" type="MeasurementUnitKind_String"
454 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
455 cim16#Unit.name"/>
456                 <xs:element name="objectAggregation" type="ObjectAggregationKind_String"
457 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
458 cim16#TimeSeries.objectAggregation"/>
459                 <xs:element name="Series_Period" type="Series_Period" minOccurs="1"
460 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
461 cim16#TimeSeries.Series_Period"/>
462                 <xs:element name="Reason" type="Reason" minOccurs="0" maxOccurs="unbounded"
463 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries.Reason"/>
464             </xs:sequence>
465         </xs:complexType>
466 </xs:schema>
```