



European Network of
Transmission System Operators
for Electricity

ANOMALY REPORT DOCUMENT UML MODEL AND SCHEMA

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APPROVED DOCUMENT
VERSION 1.0

2

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Revision History

Version	Release	Date	Comments
0	1	2019-07-10	First draft of the document.
0	2	2019-07-18	Second draft of the document. This new version has into account the comments provided by ESMP subgroup members. Example reason codes and their descriptions have been removed from this document.
1	0	2019-09-10	Updates in Anomaly document v5.2: Optional <code>connectingLine_RegisteredResource</code> attribute added to the <code>Anomaly_TimeSeries</code> class. <code>mRID</code> of Document, Series and Timeseries (ID_String type) was enlarged from 35 to 60 characters. Approved by MC.

66

67 1 Objective

68 The purpose of this document is to provide the contextual and assembly UML models and the
69 schema of the AnomalyReport_MarketDocument.

70 The schema of the AnomalyReport_MarketDocument could be used in various business
71 processes.

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

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

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

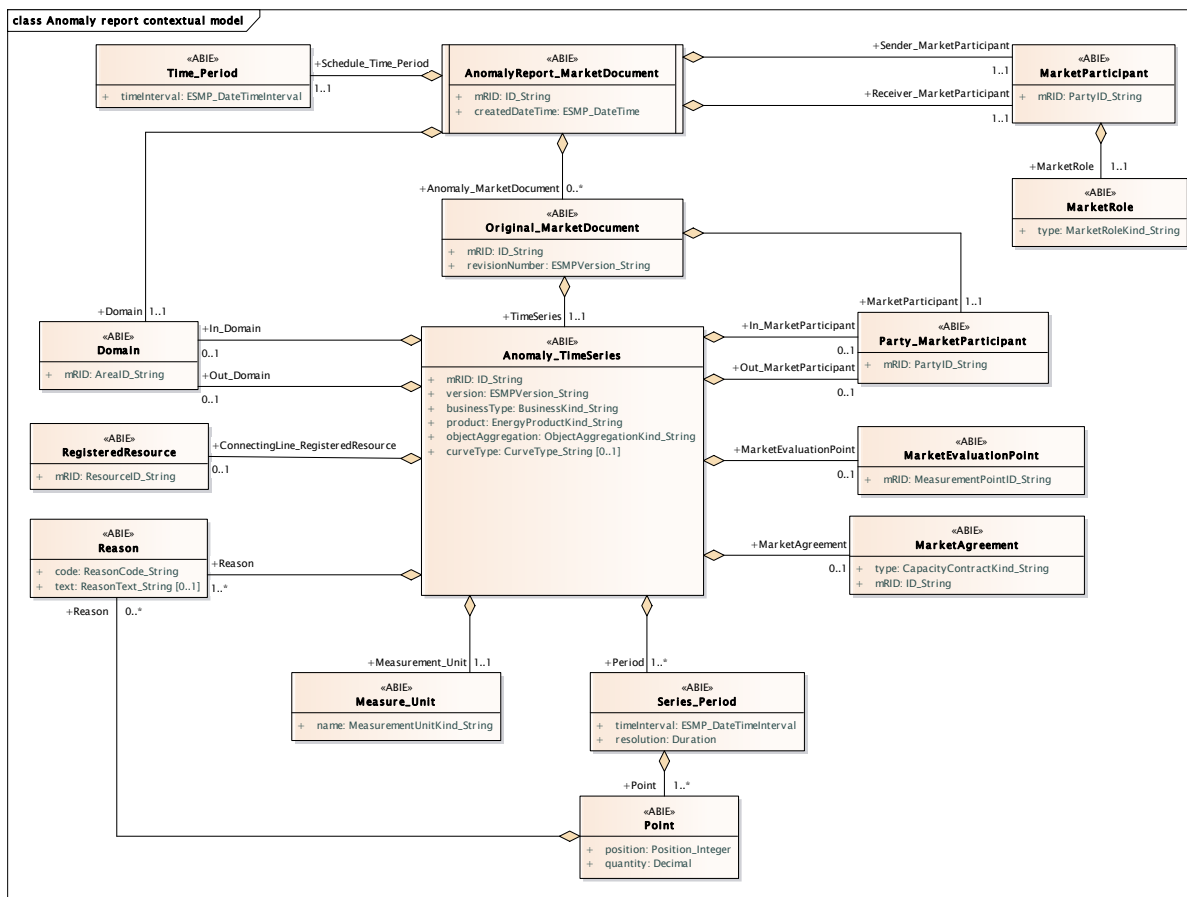
84

85 **2 AnomalyReport_MarketDocument**

86 **2.1 Anomaly report contextual model**

87 **2.1.1 Overview of the model**

88 Figure 1 shows the model.



89

90

Figure 1 - Anomaly report contextual model

91 **2.1.2 IsBasedOn relationships from the European style market profile**

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

94 **Table 1 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Anomaly_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
AnomalyReport_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Domain	TC57CIM::IEC62325::MarketManagement::Domain
MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
MarketEvaluationPoint	TC57CIM::IEC62325::MarketManagement::MarketEvaluationPoint
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Original_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Party_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period

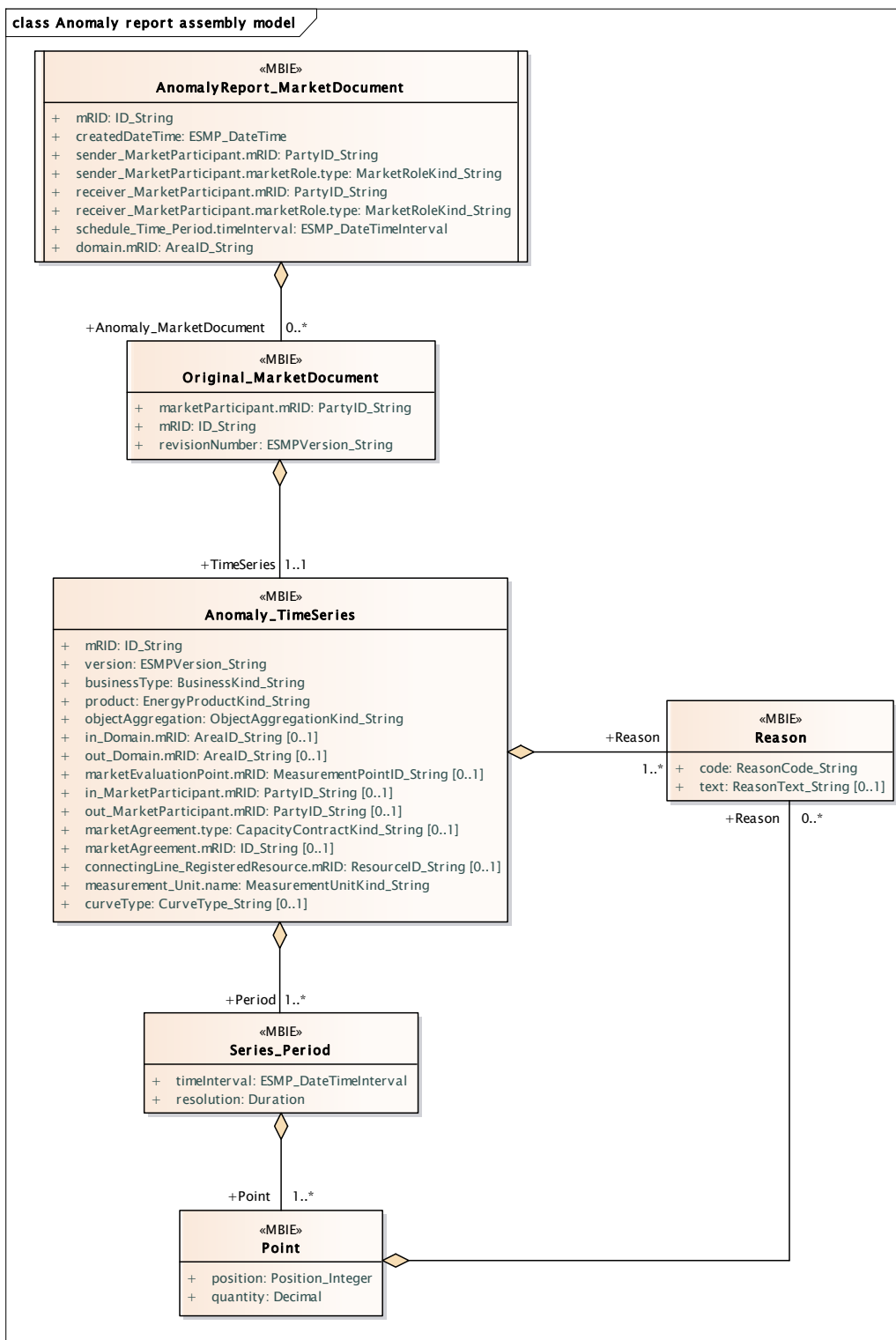
95

96

97 **2.2 Anomaly report assembly model**

98 **2.2.1 Overview of the model**

99 Figure 2 shows the model.



100

101

Figure 2 - Anomaly report assembly model

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
Anomaly_TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
AnomalyReport_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Original_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period

106

107 **2.2.3 Detailed Anomaly report assembly model**

108 **2.2.3.1 AnomalyReport_MarketDocument root class**

109 An anomaly report is generated as soon as all the information necessary to balance a time
110 series of a party becomes available.

111 If there are any anomalies discovered during this phase, an anomaly report is sent to all involved
112 parties.

113 The anomaly contains only the time series that have been identified as being in error for the
114 party in question.

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

117 Table 3 shows all attributes of AnomalyReport_MarketDocument.

118 **Table 3 - Attributes of Anomaly report assembly
119 model::AnomalyReport_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]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
2	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document owner.
3	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document owner. --- The role associated with a MarketParticipant.
4	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document recipient.
5	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document recipient. --- The role associated with a MarketParticipant.
6	[1..1]	schedule_Time_Period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. --- This information provides the start and end date and time of the schedule period for which the anomaly report is being generated.

Order	mult.	Attribute name / Attribute type	Description
7	[1..1]	domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the domain that is covered in the schedule document for which the anomaly report is generated.

120

121 Table 4 shows all association ends of AnomalyReport_MarketDocument with other classes.

122 **Table 4 - Association ends of Anomaly report assembly**
123 **model::AnomalyReport_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
8	[0..*]	Original_MarketDocument Anomaly_MarketDocument	The set of information from the Original_MarketDocument sent by the party related to the TimeSeries stated as in error. Association Based On: Anomaly report contextual model::Original_MarketDocument.Anomaly_MarketDocument[0..*] ----- Anomaly report contextual model::AnomalyReport_MarketDocument.[]

124

125 2.2.3.2 Anomaly_TimeSeries

126 The time series from the original document containing where an error was detected.

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

128 Table 5 shows all attributes of Anomaly_TimeSeries.

129 **Table 5 - Attributes of Anomaly report assembly model::Anomaly_TimeSeries**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series.
1	[1..1]	version ESMPVersion_String	The identification of the version of the time series.
2	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.
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]	objectAggregation ObjectAggregationKind_String	The identification of the domain that is the common denominator used to aggregate a time series.
5	[0..1]	in_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the product is being delivered. The domain associated with a TimeSeries.
6	[0..1]	out_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the product is being extracted. The domain associated with a TimeSeries.
7	[0..1]	marketEvaluationPoint.mRID MeasurementPointID_String	A unique identification of the measurement point. --- The identification of the location where one or more products are metered. The identification of a measurement point associated with a TimeSeries.

Order	mult.	Attribute name / Attribute type	Description
8	[0..1]	in_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of the party putting the product into the in area. The identification of a market participant associated with a TimeSeries.
9	[0..1]	out_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of the party taking the product out of the out area. The identification of a market participant associated with a TimeSeries.
10	[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 for the allocation of capacity to a party.
11	[0..1]	marketAgreement.mRID ID_String	The unique identification of the agreement. --- The identification of an agreement for the allocation of capacity to a party.
12	[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.
13	[1..1]	measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measurement used for the quantities expressed within the time series.
14	[0..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.

130

131 Table 6 shows all association ends of Anomaly_TimeSeries with other classes.

132 **Table 6 - Association ends of Anomaly report assembly model::Anomaly_TimeSeries**
133 **with other classes**

Order	mult.	Class name / Role	Description
15	[1..*]	Series_Period Period	The time interval and resolution for a period associated with a TimeSeries. Association Based On: Anomaly report contextual model::Series_Period.Period[1..*] ----- Anomaly report contextual model::Anomaly_TimeSeries.[]
16	[1..*]	Reason Reason	In an anomaly report, errors are detailed at the time series level to identify the anomalies that have occurred. Association Based On: Anomaly report contextual model::Reason.Reason[1..*] ----- Anomaly report contextual model::Anomaly_TimeSeries.[]

134

135 **2.2.3.3 Original_MarketDocument**

136 The document issued by one of the parties where errors have been detected. All the attributes
137 are the ones of this party's original time series.

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

140 Table 7 shows all attributes of Original_MarketDocument.

141 **Table 7 - Attributes of Anomaly report assembly model::Original_MarketDocument**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	marketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The identification of the party who sent the "Original_MarketDocument".
1	[1..1]	mRID ID_String	The unique identification of the document being exchanged within a business process flow.
2	[1..1]	revisionNumber ESMPVersion_String	The identification of the version that distinguishes one evolution of a document from another.

142

143 Table 8 shows all association ends of Original_MarketDocument with other classes.

144 **Table 8 - Association ends of Anomaly report assembly
145 model::Original_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
3	[1..1]	Anomaly_TimeSeries TimeSeries	The TimeSeries of the Original_MarketDocument stated as in error. Association Based On: Anomaly report contextual model::Anomaly_TimeSeries.TimeSeries[1..1] ----- Anomaly report contextual model::Original_MarketDocument.[]

146

147 **2.2.3.4 Point**

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

149 Table 9 shows all attributes of Point.

150 **Table 9 - Attributes of Anomaly report 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.

151

152 Table 10 shows all association ends of Point with other classes.

153 **Table 10 - Association ends of Anomaly report assembly model::Point with other**
154 **classes**

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

155

156 **2.2.3.5 Reason**

157 The motivation of an act.

158 Table 11 shows all attributes of Reason.

159 **Table 11 - Attributes of Anomaly report 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.

160

161 **2.2.3.6 Series_Period**

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

163 Table 12 shows all attributes of Series_Period.

164 **Table 12 - Attributes of Anomaly report 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.

165

166 Table 13 shows all association ends of Series_Period with other classes.

167 **Table 13 - Association ends of Anomaly report assembly model::Series_Period with**
168 **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: Anomaly report contextual model::Series_Period.[] ----- Anomaly report contextual model::Point.Point[1..*]

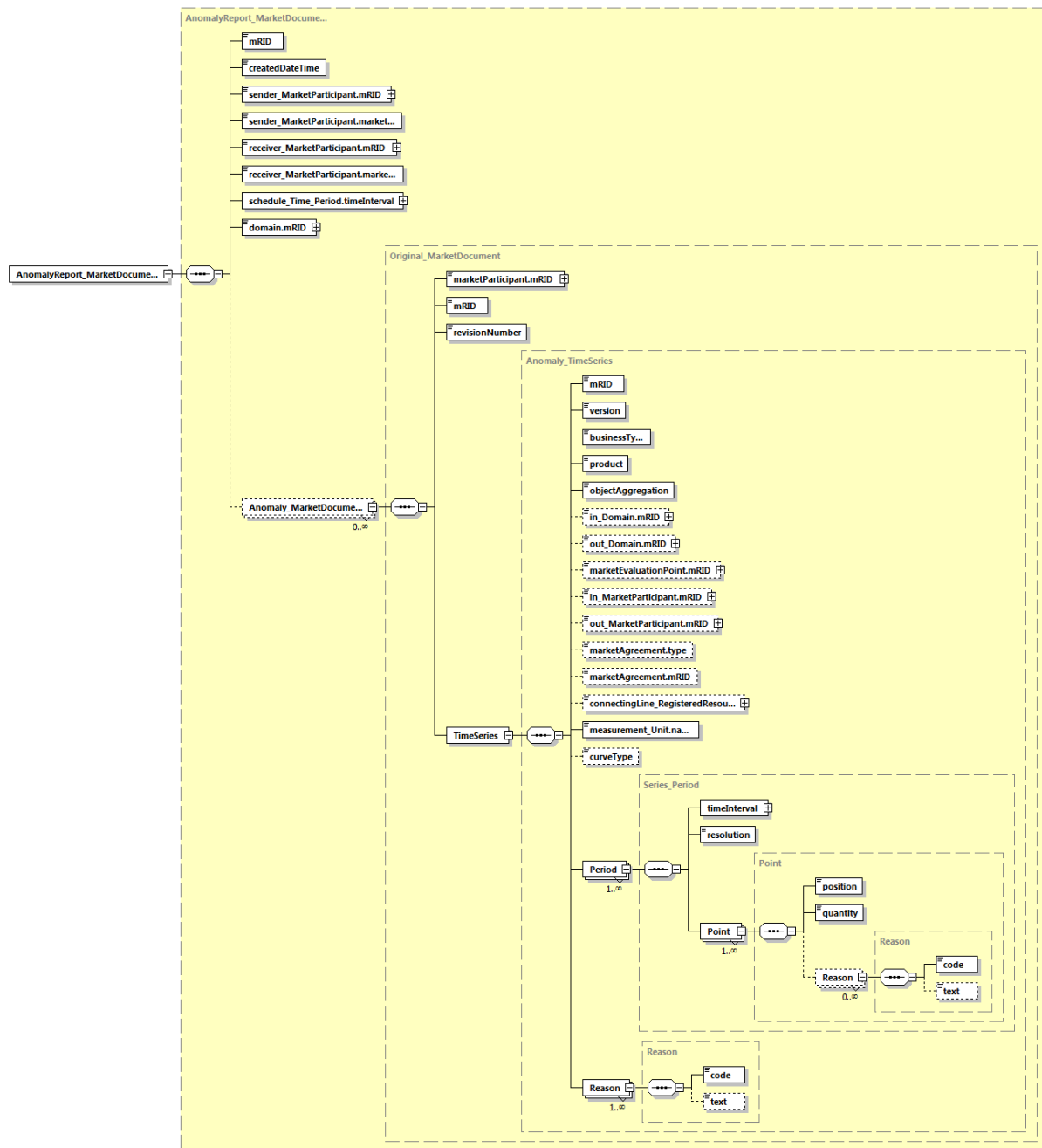
169

170 **2.2.4 Datatypes**

171 The list of datatypes used for the Anomaly report assembly model is as follows:

- 172 • ESMP_DateTimeInterval compound
- 173 • AreaID_String datatype, codelist CodingSchemeTypeList
- 174 • BusinessKind_String datatype, codelist BusinessTypeList
- 175 • CapacityContractKind_String datatype, codelist ContractTypeList
- 176 • CurveType_String datatype, codelist CurveTypeList
- 177 • EnergyProductKind_String datatype, codelist EnergyProductTypeList
- 178 • ESMP_DateTime datatype
- 179 • ESMPVersion_String datatype
- 180 • ID_String datatype
- 181 • MarketRoleKind_String datatype, codelist RoleTypeList
- 182 • MeasurementPointID_String datatype, codelist CodingSchemeTypeList
- 183 • MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- 184 • ObjectAggregationKind_String datatype, codelist ObjectAggregationTypeList
- 185 • PartyID_String datatype, codelist CodingSchemeTypeList
- 186 • Position_Integer datatype
- 187 • ReasonCode_String datatype, codelist ReasonCodeTypeList
- 188 • ReasonText_String datatype
- 189 • ResourceID_String datatype, codelist CodingSchemeTypeList
- 190 • YMDHM_DateTime datatype

191 2.2.5 AnomalyReport_MarketDocument XML schema structure



Generated by XMLSpy www.altova.com

Figure 3 - AnomalyReport_MarketDocument schema structure

192
193

194 **2.2.6 AnomalyReport_MarketDocument XML schema**

195

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

197 urn:iec62325.351:tc57wg16:451-2:anomalydocument:5:2

```

198 <?xml version="1.0" encoding="utf-8"?>
199 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
200 xmlns="urn:iec62325.351:tc57wg16:451-2:anomalydocument:5:2"
201 xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
202 xmlns:cimp="http://www.iec.ch/cimprofile"
203 xmlns:xs="http://www.w3.org/2001/XMLSchema"
204 targetNamespace="urn:iec62325.351:tc57wg16:451-2:anomalydocument:5:2"
205 elementFormDefault="qualified" attributeFormDefault="unqualified">
206   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
207 entsoe-eu-wgedi-codelists.xsd"/>
208   <xs:element name="AnomalyReport_MarketDocument"
209 type="AnomalyReport_MarketDocument"/>
210   <xs:simpleType name="ID_String"
211 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
212     <xs:restriction base="xs:string">
213       <xs:maxLength value="60"/>
214     </xs:restriction>
215   </xs:simpleType>
216   <xs:simpleType name="ESMPVersion_String"
217 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
218     <xs:restriction base="xs:string">
219       <xs:pattern value="[1-9]([0-9]){0,2}"/>
220     </xs:restriction>
221   </xs:simpleType>
222   <xs:simpleType name="BusinessKind_String"
223 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
224     <xs:restriction base="ecl:BusinessTypeList"/>
225   </xs:simpleType>
226   <xs:simpleType name="EnergyProductKind_String"
227 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
228     <xs:restriction base="ecl:EnergyProductTypeList"/>
229   </xs:simpleType>
230   <xs:simpleType name="ObjectAggregationKind_String"
231 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
232     <xs:restriction base="ecl:ObjectAggregationTypeList"/>
233   </xs:simpleType>
234   <xs:simpleType name="AreaID_String-base"
235 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
236     <xs:restriction base="xs:string">
237       <xs:maxLength value="18"/>
238     </xs:restriction>
239   </xs:simpleType>
240   <xs:complexType name="AreaID_String"
241 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
242     <xs:simpleContent>
243       <xs:extension base="AreaID_String-base">
244         <xs:attribute name="codingScheme"
245 type="ecl:CodingSchemeTypeList" use="required"/>
246       </xs:extension>
247     </xs:simpleContent>
248   </xs:complexType>
249   <xs:simpleType name="MeasurementPointID_String-base"
250 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">

```



```

251         <xs:restriction base="xs:string">
252             <xs:maxLength value="35"/>
253         </xs:restriction>
254     </xs:simpleType>
255     <xs:complexType name="MeasurementPointID_String"
256 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
257         <xs:simpleContent>
258             <xs:extension base="MeasurementPointID_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="PartyID_String-base"
265 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
266         <xs:restriction base="xs:string">
267             <xs:maxLength value="16"/>
268         </xs:restriction>
269     </xs:simpleType>
270     <xs:complexType name="PartyID_String"
271 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
272         <xs:simpleContent>
273             <xs:extension base="PartyID_String-base">
274                 <xs:attribute name="codingScheme"
275 type="ecl:CodingSchemeTypeList" use="required"/>
276             </xs:extension>
277         </xs:simpleContent>
278     </xs:complexType>
279     <xs:simpleType name="CapacityContractKind_String"
280 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
281         <xs:restriction base="ecl:ContractTypeList"/>
282     </xs:simpleType>
283     <xs:simpleType name="ResourceID_String-base"
284 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
285         <xs:restriction base="xs:string">
286             <xs:maxLength value="60"/>
287         </xs:restriction>
288     </xs:simpleType>
289     <xs:complexType name="ResourceID_String"
290 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
291         <xs:simpleContent>
292             <xs:extension base="ResourceID_String-base">
293                 <xs:attribute name="codingScheme"
294 type="ecl:CodingSchemeTypeList" use="required"/>
295             </xs:extension>
296         </xs:simpleContent>
297     </xs:complexType>
298     <xs:simpleType name="MeasurementUnitKind_String"
299 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
300         <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
301     </xs:simpleType>
302     <xs:simpleType name="CurveType_String"
303 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
304         <xs:restriction base="ecl:CurveTypeList"/>
305     </xs:simpleType>
306     <xs:complexType name="Anomaly_TimeSeries"
307 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
308         <xs:sequence>

```

```

309         <xs:element name="mRID" type="ID_String" minOccurs="1"
310 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
311 cim16#IdentifiedObject.mRID"/>
312         <xs:element name="version" type="ESMPVersion_String"
313 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
314 schema-cim16#TimeSeries.version"/>
315         <xs:element name="businessType" type="BusinessKind_String"
316 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
317 schema-cim16#TimeSeries.businessType"/>
318         <xs:element name="product" type="EnergyProductKind_String"
319 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
320 schema-cim16#TimeSeries.product"/>
321         <xs:element name="objectAggregation"
322 type="ObjectAggregationKind_String" minOccurs="1" maxOccurs="1"
323 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
324 cim16#TimeSeries.objectAggregation"/>
325         <xs:element name="in_Domain.mRID" type="AreaID_String"
326 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
327 schema-cim16#IdentifiedObject.mRID"/>
328         <xs:element name="out_Domain.mRID" type="AreaID_String"
329 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
330 schema-cim16#IdentifiedObject.mRID"/>
331         <xs:element name="marketEvaluationPoint.mRID"
332 type="MeasurementPointID_String" minOccurs="0" maxOccurs="1"
333 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
334 cim16#IdentifiedObject.mRID"/>
335         <xs:element name="in_MarketParticipant.mRID"
336 type="PartyID_String" minOccurs="0" maxOccurs="1"
337 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
338 cim16#IdentifiedObject.mRID"/>
339         <xs:element name="out_MarketParticipant.mRID"
340 type="PartyID_String" minOccurs="0" maxOccurs="1"
341 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
342 cim16#IdentifiedObject.mRID"/>
343         <xs:element name="marketAgreement.type"
344 type="CapacityContractKind_String" minOccurs="0" maxOccurs="1"
345 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Document.type"/>
346         <xs:element name="marketAgreement.mRID" type="ID_String"
347 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
348 schema-cim16#IdentifiedObject.mRID"/>
349         <xs:element name="connectingLine_RegisteredResource.mRID"
350 type="ResourceID_String" minOccurs="0" maxOccurs="1"
351 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
352 cim16#IdentifiedObject.mRID"/>
353         <xs:element name="measurement_Unit.name"
354 type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
355 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
356         <xs:element name="curveType" type="CurveType_String"
357 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
358 schema-cim16#TimeSeries.curveType"/>
359         <xs:element name="Period" type="Series_Period" minOccurs="1"
360 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
361 cim16#TimeSeries.Period"/>
362         <xs:element name="Reason" type="Reason" minOccurs="1"
363 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
364 cim16#TimeSeries.Reason"/>
365     </xs:sequence>
366 </xs:complexType>
367 <xs:simpleType name="ESMP_DateTime"
368 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">

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369         <xs:restriction base="xs:dateTime">
370             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
371 9]|12)[0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
372 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
373 9])Z)|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][0
374 48]|02468][048][02468][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|[
375 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
376 5][0-9]:[0-5][0-
377 9])Z)|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][0134578
378 9][2468][1235679]|02468][048][02468][1235679]|02468][1235679](0)[01235679]|0246
379 8][1235679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
380 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
381         </xs:restriction>
382     </xs:simpleType>
383     <xs:simpleType name="MarketRoleKind_String"
384 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
385         <xs:restriction base="ecl:RoleTypeList"/>
386     </xs:simpleType>
387     <xs:simpleType name="YMDHM_DateTime"
388 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
389         <xs:restriction base="xs:string">
390             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
391 9]|12)[0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
392 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-
393 9])Z)|(((13579)[26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][0
394 48]|02468][048][02468][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|[
395 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
396 5][0-
397 9])Z)|(((13579)[26][02468][1235679]|13579][01345789](0)[01235679]|13579][0134578
398 9][2468][1235679]|02468][048][02468][1235679]|02468][1235679](0)[01235679]|0246
399 8][1235679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
400 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9])Z)"/>
401         </xs:restriction>
402     </xs:simpleType>
403     <xs:complexType name="ESMP_DateTimeInterval"
404 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
405         <xs:sequence>
406             <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
407 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
408 cim16#DateTimeInterval.start"/>
409             <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
410 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
411 cim16#DateTimeInterval.end"/>
412         </xs:sequence>
413     </xs:complexType>
414     <xs:complexType name="AnomalyReport_MarketDocument"
415 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
416         <xs:sequence>
417             <xs:element name="mRID" type="ID_String" minOccurs="1"
418 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
419 cim16#IdentifiedObject.mRID"/>
420             <xs:element name="createdDateTime" type="ESMP_DateTime"
421 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
422 schema-cim16#Document.createdDateTime"/>
423             <xs:element name="sender_MarketParticipant.mRID"
424 type="PartyID_String" minOccurs="1" maxOccurs="1"
425 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
426 cim16#IdentifiedObject.mRID"/>
    
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427         <xs:element name="sender_MarketParticipant.marketRole.type"  
428 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"  
429 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>  
430         <xs:element name="receiver_MarketParticipant.mRID"  
431 type="PartyID_String" minOccurs="1" maxOccurs="1"  
432 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
433 cim16#IdentifiedObject.mRID"/>  
434         <xs:element name="receiver_MarketParticipant.marketRole.type"  
435 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"  
436 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>  
437         <xs:element name="schedule_Time_Period.timeInterval"  
438 type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"  
439 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
440 cim16#Period.timeInterval"/>  
441         <xs:element name="domain.mRID" type="AreaID_String"  
442 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
443 schema-cim16#IdentifiedObject.mRID"/>  
444         <xs:element name="Anomaly_MarketDocument"  
445 type="Original_MarketDocument" minOccurs="0" maxOccurs="unbounded"  
446 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
447 cim16#MarketDocument.Anomaly_MarketDocument"/>  
448     </xs:sequence>  
449 </xs:complexType>  
450 <xs:complexType name="Original_MarketDocument"  
451 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">  
452     <xs:sequence>  
453         <xs:element name="marketParticipant.mRID" type="PartyID_String"  
454 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
455 schema-cim16#IdentifiedObject.mRID"/>  
456         <xs:element name="mRID" type="ID_String" minOccurs="1"  
457 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
458 cim16#IdentifiedObject.mRID"/>  
459         <xs:element name="revisionNumber" type="ESMPVersion_String"  
460 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
461 schema-cim16#Document.revisionNumber"/>  
462         <xs:element name="TimeSeries" type="Anomaly_TimeSeries"  
463 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
464 schema-cim16#MarketDocument.TimeSeries"/>  
465     </xs:sequence>  
466 </xs:complexType>  
467 <xs:simpleType name="Position_Integer"  
468 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">  
469     <xs:restriction base="xs:integer">  
470         <xs:maxInclusive value="999999"/>  
471         <xs:minInclusive value="1"/>  
472     </xs:restriction>  
473 </xs:simpleType>  
474 <xs:complexType name="Point"  
475 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">  
476     <xs:sequence>  
477         <xs:element name="position" type="Position_Integer"  
478 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-  
479 schema-cim16#Point.position"/>  
480         <xs:element name="quantity" type="xs:decimal" minOccurs="1"  
481 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
482 cim16#Point.quantity"/>  
483         <xs:element name="Reason" type="Reason" minOccurs="0"  
484 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-  
485 cim16#Point.Reason"/>  
486     </xs:sequence>
```

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487     </xs:complexType>
488     <xs:simpleType name="ReasonCode_String"
489 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
490         <xs:restriction base="ecl:ReasonCodeTypeList"/>
491     </xs:simpleType>
492     <xs:simpleType name="ReasonText_String"
493 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
494         <xs:restriction base="xs:string">
495             <xs:maxLength value="512"/>
496         </xs:restriction>
497     </xs:simpleType>
498     <xs:complexType name="Reason"
499 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason">
500         <xs:sequence>
501             <xs:element name="code" type="ReasonCode_String" minOccurs="1"
502 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
503 cim16#Reason.code"/>
504             <xs:element name="text" type="ReasonText_String" minOccurs="0"
505 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
506 cim16#Reason.text"/>
507         </xs:sequence>
508     </xs:complexType>
509     <xs:complexType name="Series_Period"
510 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
511         <xs:sequence>
512             <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
513 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
514 schema-cim16#Period.timeInterval"/>
515             <xs:element name="resolution" type="xs:duration" minOccurs="1"
516 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
517 cim16#Period.resolution"/>
518             <xs:element name="Point" type="Point" minOccurs="1"
519 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
520 cim16#Period.Point"/>
521         </xs:sequence>
522     </xs:complexType>
523 </xs:schema>
```