



European Network of  
Transmission System Operators  
for Electricity

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# ANOMALY REPORT DOCUMENT UML MODEL AND SCHEMA

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2020-09-16  
APPROVED DOCUMENT  
VERSION 1.1

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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.
1	1	2020-09-16	Updates in Anomaly document v5.3: A new optional <code>processType</code> attribute is added to <code>AnomalyReport_MarketDocument</code> class. 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.

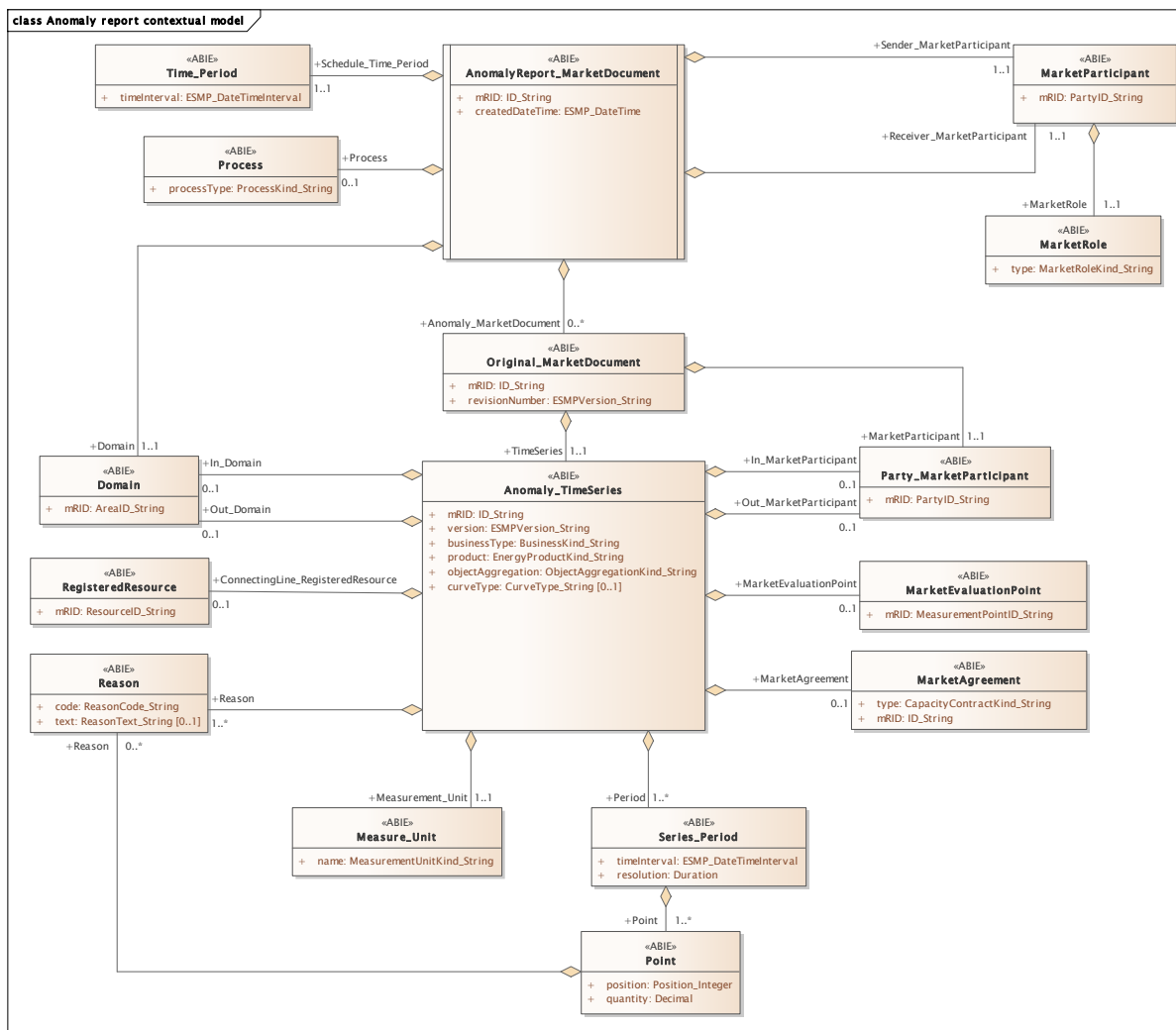
84

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

92 **2.1.2 IsBasedOn relationships from the European style market profile**

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

95

**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
Process	TC57CIM::IEC62325::MarketManagement::Process
Reason	TC57CIM::IEC62325::MarketManagement::Reason
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period

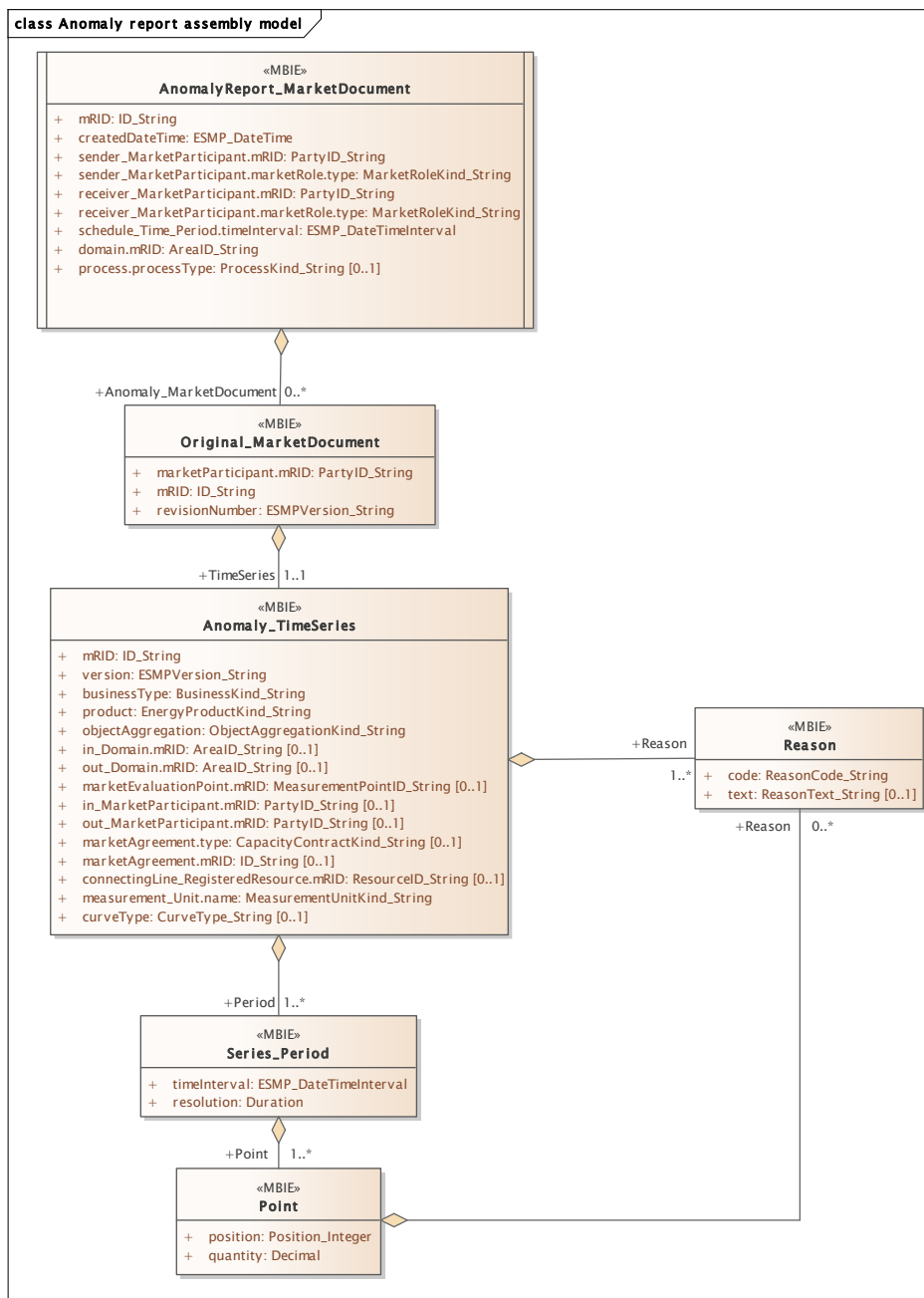
96

97

98 **2.2 Anomaly report assembly model**

99 **2.2.1 Overview of the model**

100 Figure 2 shows the model.



101

102

**Figure 2 - Anomaly report assembly model**



103

104 **2.2.2 IsBasedOn relationships from the European style market profile**

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

107 **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

108

109 **2.2.3 Detailed Anomaly report assembly model**

110 **2.2.3.1 AnomalyReport\_MarketDocument root class**

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

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

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

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

119 Table 3 shows all attributes of AnomalyReport\_MarketDocument.

120 **Table 3 - Attributes of Anomaly report assembly  
121 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.

Order	mult.	Attribute name / Attribute type	Description
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.
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.
8	[0..1]	process.processType ProcessKind_String	The identification of the nature of process that the document addresses. --- The Process associated with an electronic document header that is valid for the whole document.

122

123 Table 4 shows all association ends of AnomalyReport\_MarketDocument with other classes.

124

**Table 4 - Association ends of Anomaly report assembly model::AnomalyReport\_MarketDocument with other classes**

125

Order	mult.	Class name / Role	Description
9	[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.[]

126

### 127 2.2.3.2 Anomaly\_TimeSeries

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

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

130 Table 5 shows all attributes of Anomaly\_TimeSeries.

**131 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.

Order	mult.	Attribute name / Attribute type	Description
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.
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.

132

133 Table 6 shows all association ends of Anomaly\_TimeSeries with other classes.

134 **Table 6 - Association ends of Anomaly report assembly model::Anomaly\_TimeSeries**  
135 **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.[]

Order	mult.	Class name / Role	Description
16	[1..*]	Reason Reason	In an anomaly report, errors are detailed at the time series level to identify the anomalies that have occurred. Currently the following have been identified: - time series not matching; - crossborder capacity exceeded; - counterpart time series missing; - counterpart time series quantity differences. Association Based On: Anomaly report contextual model::Reason.Reason[1..*] ----- Anomaly report contextual model::Anomaly_TimeSeries.[]

136

### 137 2.2.3.3 Original\_MarketDocument

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

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

142 Table 7 shows all attributes of Original\_MarketDocument.

143 **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.

144

145 Table 8 shows all association ends of Original\_MarketDocument with other classes.

146 **Table 8 - Association ends of Anomaly report assembly  
147 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.[]

148

### 149 2.2.3.4 Point

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

151 Table 9 shows all attributes of Point.

152

**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.

153

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

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

155  
156

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.[]

157

### 158 2.2.3.5 Reason

159 The motivation of an act.

160 Table 11 shows all attributes of Reason.

**Table 11 - Attributes of Anomaly report assembly model::Reason**

161

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.

162

### 163 2.2.3.6 Series\_Period

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

165 Table 12 shows all attributes of Series\_Period.

**Table 12 - Attributes of Anomaly report assembly model::Series\_Period**

166

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.

167

168 Table 13 shows all association ends of Series\_Period with other classes.

169 **Table 13 - Association ends of Anomaly report assembly model::Series\_Period with**  
170 **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..*]

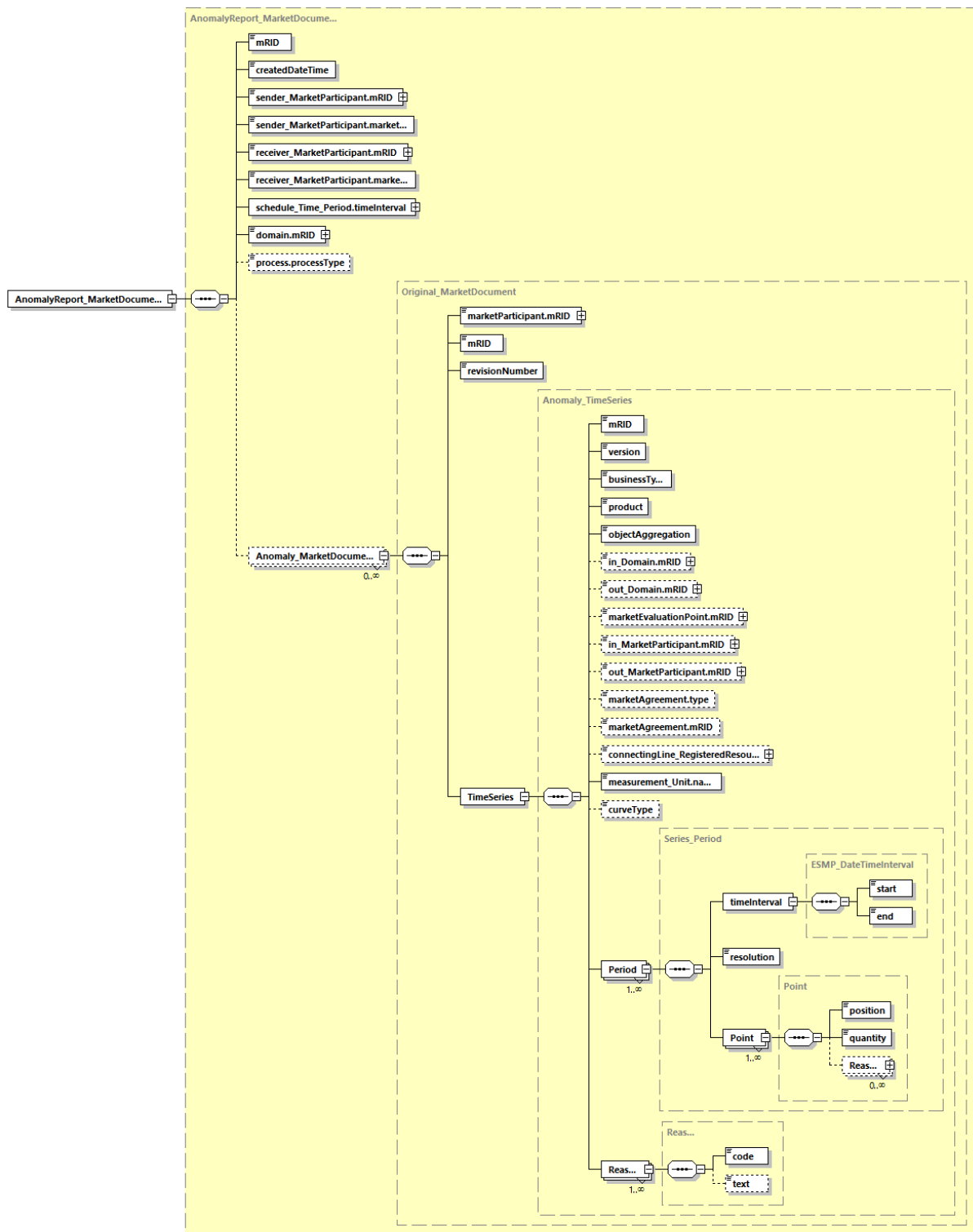
171

## 172 2.2.4 Datatypes

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

- 174 • ESMP\_DateTimeInterval compound
- 175 • ArealD\_String datatype, codelist CodingSchemeTypeList
- 176 • BusinessKind\_String datatype, codelist BusinessTypeList
- 177 • CapacityContractKind\_String datatype, codelist ContractTypeList
- 178 • CurveType\_String datatype, codelist CurveTypeList
- 179 • EnergyProductKind\_String datatype, codelist EnergyProductTypeList
- 180 • ESMP\_DateTime datatype
- 181 • ESMPVersion\_String datatype
- 182 • ID\_String datatype
- 183 • MarketRoleKind\_String datatype, codelist RoleTypeList
- 184 • MeasurementPointID\_String datatype, codelist CodingSchemeTypeList
- 185 • MeasurementUnitKind\_String datatype, codelist UnitOfMeasureTypeList
- 186 • ObjectAggregationKind\_String datatype, codelist ObjectAggregationTypeList
- 187 • PartyID\_String datatype, codelist CodingSchemeTypeList
- 188 • Position\_Integer datatype
- 189 • ProcessKind\_String datatype, codelist ProcessTypeList
- 190 • ReasonCode\_String datatype, codelist ReasonCodeTypeList
- 191 • ReasonText\_String datatype
- 192 • ResourceID\_String datatype, codelist CodingSchemeTypeList
- 193 • YMDHM\_DateTime datatype

194 2.2.5 AnomalyReport\_MarketDocument XML schema structure



Generated by XMLSpy www.altova.com

Figure 3 - AnomalyReport\_MarketDocument schema structure

195  
196

## 197 2.2.6 AnomalyReport\_MarketDocument XML schema

198

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

200 urn:iec62325.351:tc57wg16:451-2:anomalydocument:5:3

```
201 <?xml version="1.0" encoding="utf-8"?>
202 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
203 xmlns="urn:iec62325.351:tc57wg16:451-2:anomalydocument:5:3"
204 xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
205 xmlns:cimp="http://www.iec.ch/cimprofile"
206 xmlns:xs="http://www.w3.org/2001/XMLSchema"
207 targetNamespace="urn:iec62325.351:tc57wg16:451-2:anomalydocument:5:3"
208 elementFormDefault="qualified" attributeFormDefault="unqualified">
209   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
210 entsoe-eu-wgedi-codelists.xsd"/>
211   <xs:element name="AnomalyReport_MarketDocument"
212 type="AnomalyReport_MarketDocument"/>
213   <xs:simpleType name="ID_String"
214 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
215     <xs:restriction base="xs:string">
216       <xs:maxLength value="60"/>
217     </xs:restriction>
218   </xs:simpleType>
219   <xs:simpleType name="ESMPVersion_String"
220 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
221     <xs:restriction base="xs:string">
222       <xs:pattern value="[1-9]([0-9]){0,2}"/>
223     </xs:restriction>
224   </xs:simpleType>
225   <xs:simpleType name="BusinessKind_String"
226 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
227     <xs:restriction base="ecl:BusinessTypeList"/>
228   </xs:simpleType>
229   <xs:simpleType name="EnergyProductKind_String"
230 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
231     <xs:restriction base="ecl:EnergyProductTypeList"/>
232   </xs:simpleType>
233   <xs:simpleType name="ObjectAggregationKind_String"
234 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
235     <xs:restriction base="ecl:ObjectAggregationTypeList"/>
236   </xs:simpleType>
237   <xs:simpleType name="AreaID_String-base"
238 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
239     <xs:restriction base="xs:string">
240       <xs:maxLength value="18"/>
241     </xs:restriction>
242   </xs:simpleType>
243   <xs:complexType name="AreaID_String"
244 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
245     <xs:simpleContent>
246       <xs:extension base="AreaID_String-base">
247         <xs:attribute name="codingScheme"
248 type="ecl:CodingSchemeTypeList" use="required"/>
249       </xs:extension>
250     </xs:simpleContent>
251   </xs:complexType>
252   <xs:simpleType name="MeasurementPointID_String-base"
253 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
```



```

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

```

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

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372         <xs:restriction base="xs:dateTime">
373             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
374 9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
375 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
376 9])Z)|((([13579][26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][0
377 48]|02468][048][02468][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|
378 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
379 5][0-9]:[0-5][0-
380 9])Z)|((([13579][26][02468][1235679]|13579][01345789](0)[01235679]|13579][0134578
381 9][2468][1235679]|02468][048][02468][1235679]|02468][1235679](0)[01235679]|0246
382 8][1235679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
383 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
384         </xs:restriction>
385     </xs:simpleType>
386     <xs:simpleType name="MarketRoleKind_String"
387 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
388         <xs:restriction base="ecl:RoleTypeList"/>
389     </xs:simpleType>
390     <xs:simpleType name="ProcessKind_String"
391 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
392         <xs:restriction base="ecl:ProcessTypeList"/>
393     </xs:simpleType>
394     <xs:simpleType name="YMDHM_DateTime"
395 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
396         <xs:restriction base="xs:string">
397             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
398 9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
399 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-
400 9])Z)|((([13579][26][02468][048]|13579][01345789](0)[48]|13579][01345789][2468][0
401 48]|02468][048][02468][048]|02468][1235679](0)[48]|02468][1235679][2468][048]|
402 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
403 5][0-
404 9])Z)|((([13579][26][02468][1235679]|13579][01345789](0)[01235679]|13579][0134578
405 9][2468][1235679]|02468][048][02468][1235679]|02468][1235679](0)[01235679]|0246
406 8][1235679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
407 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
408         </xs:restriction>
409     </xs:simpleType>
410     <xs:complexType name="ESMP_DateTimeInterval"
411 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
412         <xs:sequence>
413             <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
414 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
415 cim16#DateTimeInterval.start"/>
416             <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
417 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
418 cim16#DateTimeInterval.end"/>
419         </xs:sequence>
420     </xs:complexType>
421     <xs:complexType name="AnomalyReport_MarketDocument"
422 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
423         <xs:sequence>
424             <xs:element name="mRID" type="ID_String" minOccurs="1"
425 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
426 cim16#IdentifiedObject.mRID"/>
427             <xs:element name="createdDateTime" type="ESMP_DateTime"
428 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
429 schema-cim16#Document.createdDateTime"/>
430             <xs:element name="sender_MarketParticipant.mRID"
431 type="PartyID_String" minOccurs="1" maxOccurs="1"

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432 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
433 cim16#IdentifiedObject.mRID"/>
434 <xs:element name="sender_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="receiver_MarketParticipant.mRID"
438 type="PartyID_String" minOccurs="1" maxOccurs="1"
439 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
440 cim16#IdentifiedObject.mRID"/>
441 <xs:element name="receiver_MarketParticipant.marketRole.type"
442 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
443 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
444 <xs:element name="schedule_Time_Period.timeInterval"
445 type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
446 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
447 cim16#Period.timeInterval"/>
448 <xs:element name="domain.mRID" type="AreaID_String"
449 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
450 schema-cim16#IdentifiedObject.mRID"/>
451 <xs:element name="process.processType"
452 type="ProcessKind_String" minOccurs="0" maxOccurs="1"
453 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
454 cim16#Process.processType"/>
455 <xs:element name="Anomaly_MarketDocument"
456 type="Original_MarketDocument" minOccurs="0" maxOccurs="unbounded"
457 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
458 cim16#MarketDocument.Anomaly_MarketDocument"/>
459 </xs:sequence>
460 </xs:complexType>
461 <xs:complexType name="Original_MarketDocument"
462 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
463 <xs:sequence>
464 <xs:element name="marketParticipant.mRID" type="PartyID_String"
465 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
466 schema-cim16#IdentifiedObject.mRID"/>
467 <xs:element name="mRID" type="ID_String" minOccurs="1"
468 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
469 cim16#IdentifiedObject.mRID"/>
470 <xs:element name="revisionNumber" type="ESMPVersion_String"
471 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
472 schema-cim16#Document.revisionNumber"/>
473 <xs:element name="TimeSeries" type="Anomaly_TimeSeries"
474 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
475 schema-cim16#MarketDocument.TimeSeries"/>
476 </xs:sequence>
477 </xs:complexType>
478 <xs:simpleType name="Position_Integer"
479 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
480 <xs:restriction base="xs:integer">
481 <xs:maxInclusive value="999999"/>
482 <xs:minInclusive value="1"/>
483 </xs:restriction>
484 </xs:simpleType>
485 <xs:complexType name="Point"
486 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
487 <xs:sequence>
488 <xs:element name="position" type="Position_Integer"
489 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
490 schema-cim16#Point.position"/>
```

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491         <xs:element name="quantity" type="xs:decimal" minOccurs="1"
492 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
493 cim16#Point.quantity"/>
494         <xs:element name="Reason" type="Reason" minOccurs="0"
495 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
496 cim16#Point.Reason"/>
497     </xs:sequence>
498 </xs:complexType>
499 <xs:simpleType name="ReasonCode_String"
500 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
501     <xs:restriction base="ecl:ReasonCodeTypeList"/>
502 </xs:simpleType>
503 <xs:simpleType name="ReasonText_String"
504 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
505     <xs:restriction base="xs:string">
506         <xs:maxLength value="512"/>
507     </xs:restriction>
508 </xs:simpleType>
509 <xs:complexType name="Reason"
510 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason">
511     <xs:sequence>
512         <xs:element name="code" type="ReasonCode_String" minOccurs="1"
513 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
514 cim16#Reason.code"/>
515         <xs:element name="text" type="ReasonText_String" minOccurs="0"
516 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
517 cim16#Reason.text"/>
518     </xs:sequence>
519 </xs:complexType>
520 <xs:complexType name="Series_Period"
521 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
522     <xs:sequence>
523         <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
524 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
525 schema-cim16#Period.timeInterval"/>
526         <xs:element name="resolution" type="xs:duration" minOccurs="1"
527 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
528 cim16#Period.resolution"/>
529         <xs:element name="Point" type="Point" minOccurs="1"
530 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
531 cim16#Period.Point"/>
532     </xs:sequence>
533 </xs:complexType>
534 </xs:schema>
535
```