



European Network of
Transmission System Operators
for Electricity

UNAVAILABILITY DOCUMENT UML MODEL AND SCHEMA

2022-02-01
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2

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Revision History

Version	Release	Date	Comments
0	0	2017-01-27	First drafting of the document.
1	0	2017-01-30	Version to be submitted to Market Committee following WG EDI meeting in March 2017.
1	1	2022-02-01	XSD version 4.1: <ul style="list-style-type: none"> • Quantity_Measure_Unit.name attribute was renamed to Quantity_Measurement_Unit.name to be compliant with the ESMP. • mRID of Document, Series and Timeseries (ID_String type) was enlarged from 35 to 60 characters. Approved by MC.

60

61 **Objective**

62 The purpose of this document is to provide the contextual and assembly UML models and the
63 schema of the Unavailability_MarketDocument.

64 The schema of the Unavailability_MarketDocument could be used in various business
65 processes.

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

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

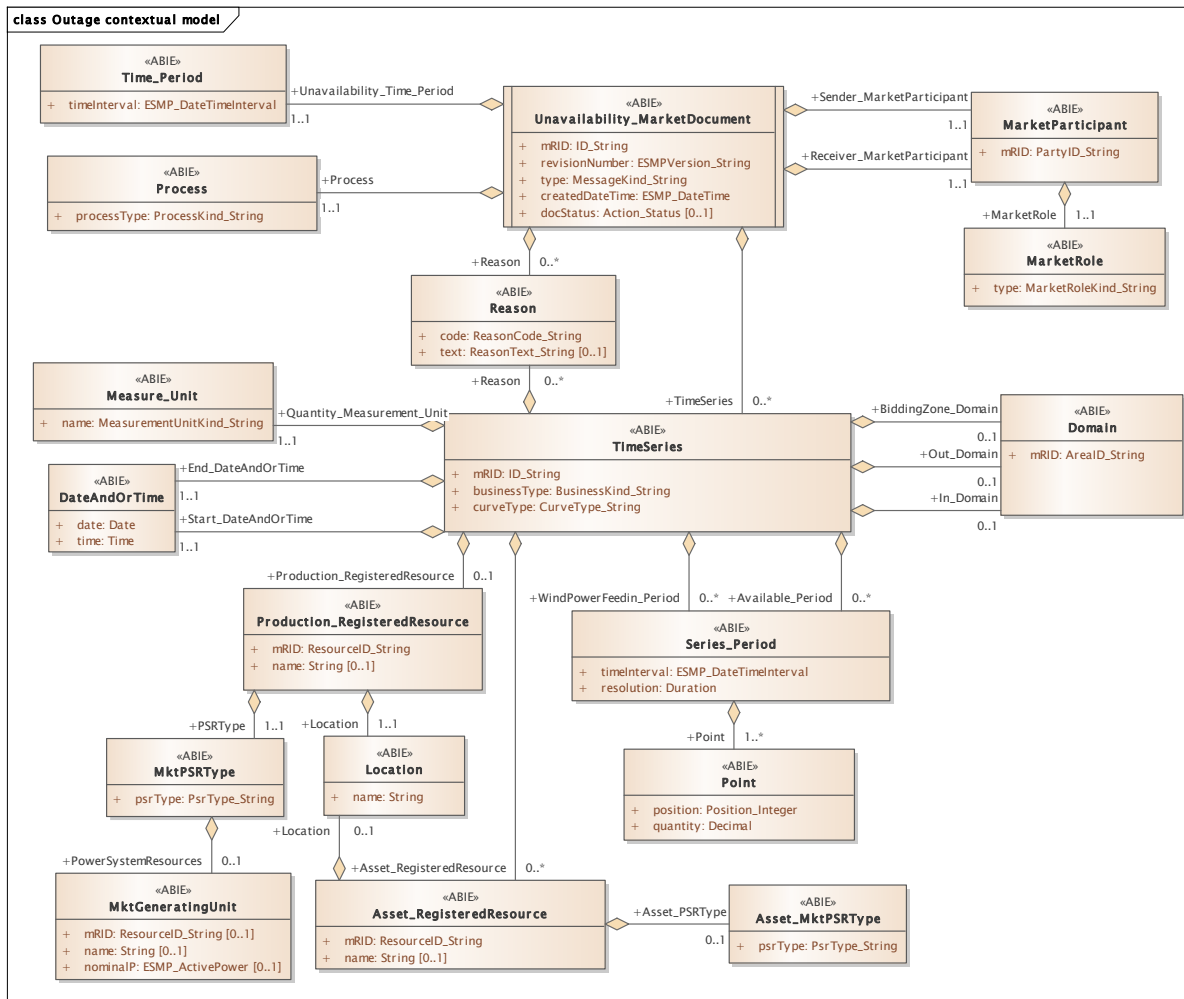
- 70 • Description of the business process;
- 71 • Use case of the business process;
- 72 • Sequence diagrams of the business process;
- 73 • List of the schema (XSD) to be used in the business process and versions of the
74 schema;
- 75 • For each schema, dependency tables providing the necessary information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

78 **Unavailability_MarketDocument**

79 **2.1 Outage contextual model**

80 **2.1.1 Overview of the model**

81 Figure 1 shows the model.



82

83

Figure 1 - Outage contextual model

84

85

86 **2.1.2 IsBasedOn relationships from the European style market profile**

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

89

Table 1 - IsBasedOn dependency

Name	Complete IsBasedOn Path
Asset_MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Asset_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
DateAndOrTime	TC57CIM::IEC62325::MarketManagement::DateAndOrTime
Domain	TC57CIM::IEC62325::MarketManagement::Domain
Location	TC57CIM::IEC61968::Common::Location
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MktGeneratingUnit	TC57CIM::IEC62325::MarketCommon::MktGeneratingUnit
MktPSRType	TC57CIM::IEC62325::MarketManagement::MktPSRType
Point	TC57CIM::IEC62325::MarketManagement::Point
Process	TC57CIM::IEC62325::MarketManagement::Process
Production_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Unavailability_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument

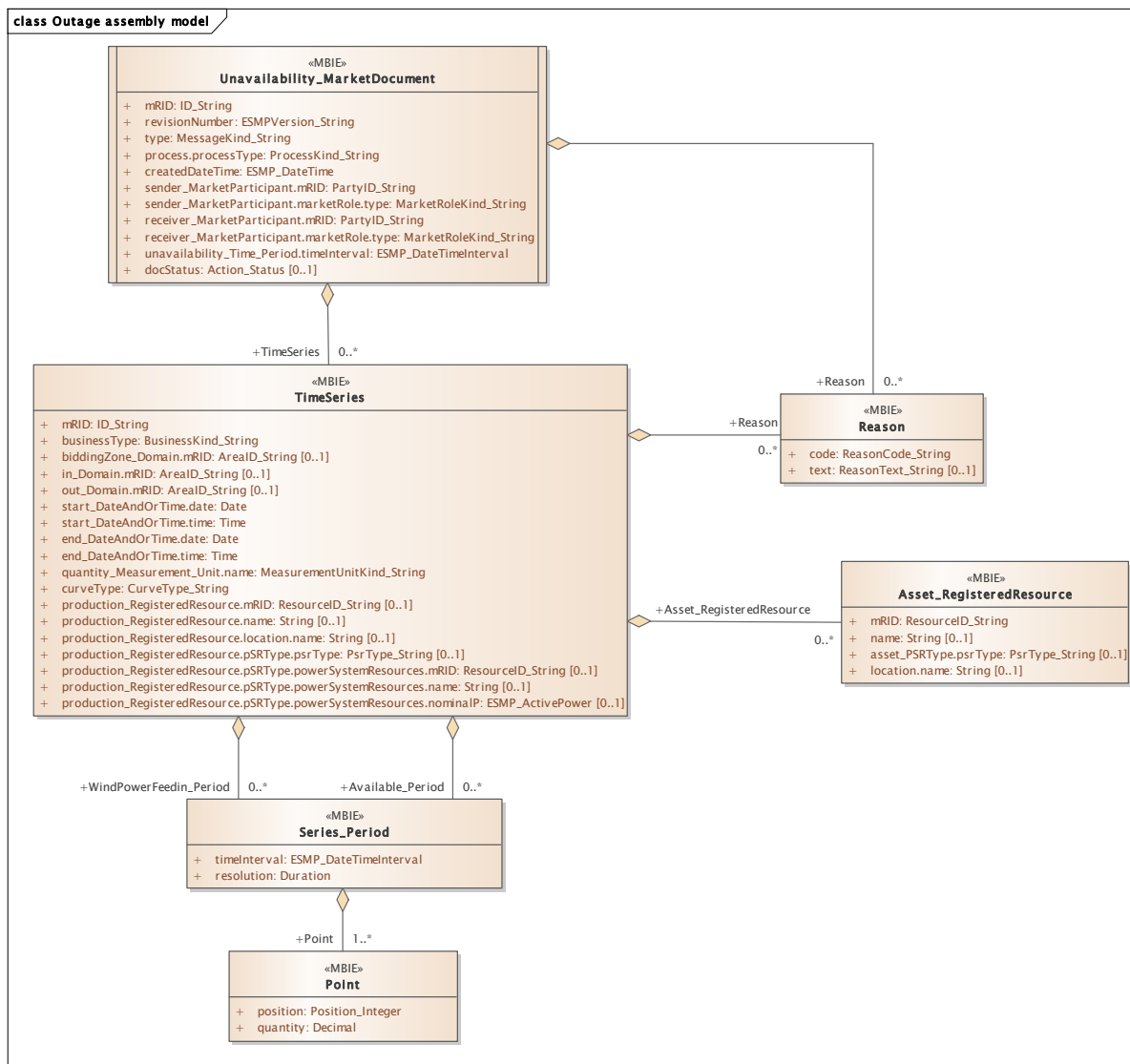
90

91

92 **2.2 Outage assembly model**

93 **2.2.1 Overview of the model**

94 Figure 2 shows the model.



95

96

Figure 2 - Outage assembly model

97

98

99 **2.2.2 IsBasedOn relationships from the European style market profile**

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

102 **Table 2 - IsBasedOn dependency**

Name	Complete IsBasedOn Path
Asset_RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Unavailability_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument

103

104 **2.2.3 Detailed Outage assembly model**

105 **2.2.3.1 Unavailability_MarketDocument root class**

106 An electronic document containing the information necessary to satisfy the business process
107 concerning the provisional planned maintenance of assets and production and consumption
108 resource objects as well as the punctual change of availability of the same equipment.

109 Table 3 shows all attributes of Unavailability_MarketDocument.

110 **Table 3 - Attributes of Outage assembly model::Unavailability_MarketDocument**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	Unique identification of the document being exchanged within a business process flow. This identifies a given unavailability document.
1	[1..1]	revisionNumber ESMPVersion_String	Identification of the version that distinguishes one evolution of a document from another.
2	[1..1]	type MessageKind_String	The coded type of a document. The document type describes the principal characteristic of the document.
3	[1..1]	process.processType ProcessKind_String	The identification of the nature of process that the document addresses.
4	[1..1]	createdDateTime ESMP_DateTime	Identification of the date and time of the creation of the document.
5	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document owner.
6	[1..1]	sender_MarketParticipant.marketRole.type MarketRoleKind_String	Identification of the role played by a market player. --- The document owner. --- The role associated with a MarketParticipant.
7	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- The document recipient.
8	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	Identification of the role played by a market player. --- The document recipient. --- The role associated with a MarketParticipant.

Order	mult.	Attribute name / Attribute type	Description
9	[1..1]	unavailability_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 time interval covering the whole unavailability document.
10	[0..1]	docStatus Action_Status	Identification of the condition or position of the document with regard to its standing. It is used to identify an unavailability document that has been withdrawn or cancelled.

111

112 Table 4 shows all association ends of Unavailability_MarketDocument with other classes.

113 **Table 4 - Association ends of Outage assembly model::Unavailability_MarketDocument**
114 **with other classes**

Order	mult.	Class name / Role	Description
11	[0..*]	TimeSeries TimeSeries	The time series that is associated with an electronic document. Association Based On: Outage contextual model::Unavailability_MarketDocument.[] ----- Outage contextual model::TimeSeries.TimeSeries[0..*]
12	[0..*]	Reason Reason	The Reason associated with the electronic document header providing the reason for the unavailability. Association Based On: Outage contextual model::Unavailability_MarketDocument.[] ----- Outage contextual model::Reason.Reason[0..*]

115

116 2.2.3.2 Asset_RegisteredResource

117 An asset that is registered through the market participant registration system.

118 Table 5 shows all attributes of Asset_RegisteredResource.

119 **Table 5 - Attributes of Outage assembly model::Asset_RegisteredResource**

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ResourceID_String	The unique identification of an asset.
1	[0..1]	name String	The name of an asset.
2	[0..1]	asset_PSRType.psrType PsrType_String	The coded type of an asset. --- The classification for the asset..
3	[0..1]	location.name String	The name is any free human readable and possibly non unique text naming the object. --- The name of the location of the asset.

120

121 2.2.3.3 Point

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

123 Table 6 shows all attributes of Point.

124

Table 6 - Attributes of Outage 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	Principal quantity identified for a point. This information defines the available, installed, wind power feed in or specific point quantities of an unavailability that is taken from or put into the area for the position within the interval period.

125

2.2.3.4 Reason

The motivation of an act.

Table 7 shows all attributes of Reason.

129

Table 7 - Attributes of Outage 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.

130

2.2.3.5 Series_Period

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

The Series_Period class provides for a given unavailability the market time unit information for:

- available capacity in the Available_Period class, the available consumption capacity, generation capacity or production unit capacity, or the impact on cross border capacity.
- or wind power feeding capacity in the WindPowerFeedin_Period class, the off shore wind power feed in capacity to the transmission infrastructure

Table 8 shows all attributes of Series_Period.

139

Table 8 - Attributes of Outage 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.

140

Table 9 shows all association ends of Series_Period with other classes.

141

142 **Table 9 - Association ends of Outage assembly 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: Outage contextual model::Series_Period.[] ----- Outage contextual model::Point.Point[1..*]

143

144 **2.2.3.6 TimeSeries**

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

146 A time series should exist to describe a specific piece of an unavailability situation. It conveys
147 the data related to the unavailability. For consumption or production / generating unit
148 unavailability it identifies the unavailable capacity during the event. For transmission asset
149 unavailability it identifies the impact on cross zonal capacity per direction.

150 Table 10 shows all attributes of TimeSeries.

151 **Table 10 - Attributes of Outage 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]	biddingZone_Domain.mRID AreaID_String	The unique identification of the domain. --- The bidding domain associated with a TimeSeries. The identification of the bidding zone for which the unavailability information is being provided.
3	[0..1]	in_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain where energy is going associated with a TimeSeries.
4	[0..1]	out_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain where energy is coming from associated with a TimeSeries.
5	[1..1]	start_DateAndOrTime.date Date	Date as "yyyy-mm-dd", which conforms with ISO 8601. --- A start date and/or time associated with a TimeSeries. This identifies the date and/or time of the start of the unavailability being described in the time series.

Order	mult.	Attribute name / Attribute type	Description
6	[1..1]	start_DateAndOrTime.time Time	Time as "hh:mm:ss.sssZ", which conforms with ISO 8601. --- A start date and/or time associated with a TimeSeries. This identifies the date and/or time of the start of the unavailability being described in the time series.
7	[1..1]	end_DateAndOrTime.date Date	Date as "yyyy-mm-dd", which conforms with ISO 8601. --- An end date and/or time associated with a TimeSeries. This identifies the date and/or time of the end of the unavailability being described in the time series.
8	[1..1]	end_DateAndOrTime.time Time	Time as "hh:mm:ss.sssZ", which conforms with ISO 8601. --- An end date and/or time associated with a TimeSeries. This identifies the date and/or time of the end of the unavailability being described in the time series.
9	[1..1]	quantity_Measurement_Unit.name MeasurementUnitKind_String	Identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in a TimeSeries.
10	[1..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
11	[0..1]	production_RegisteredResource.mRID ResourceID_String	The unique identification of a production unit resource. --- Characteristics of a production unit affected by the unavailability.
12	[0..1]	production_RegisteredResource.name String	The name is any free human readable and possibly non unique text naming the production unit. --- Characteristics of a production unit affected by the unavailability.

Order	mult.	Attribute name / Attribute type	Description
13	[0..1]	production_RegisteredResource.location.name String	The name is any free human readable and possibly non unique text naming the object. --- Characteristics of a production unit affected by the unavailability. --- The identification of the location of the production unit.
14	[0..1]	production_RegisteredResource.pSRType.psrType PsrType_String	The coded type of a power system resource. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit.
15	[0..1]	production_RegisteredResource.pSRType.powerSystemResources.mRID ResourceID_String	The unique identification of a generation unit. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit. --- The generation unit dependent on a given type.
16	[0..1]	production_RegisteredResource.pSRType.powerSystemResources.name String	The name of the generation unit. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit. --- The generation unit dependent on a given type.
17	[0..1]	production_RegisteredResource.pSRType.powerSystemResources.nominalP ESMP_ActivePower	The nominal power of the object in question. --- Characteristics of a production unit affected by the unavailability. --- The classification for this production unit. --- The generation unit dependent on a given type.

152

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

154 **Table 11 - Association ends of Outage assembly model::TimeSeries with other classes**

Order	mult.	Class name / Role	Description
18	[0..*]	Asset_RegisteredResource Asset_RegisteredResource	The identification of an asset. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Asset_RegisteredResource.Asset_RegisteredResource[0..*]
19	[0..*]	Series_Period Available_Period	The time interval and resolution of available capacity for a period associated with a TimeSeries. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Series_Period.Available_Period[0..*]

Order	mult.	Class name / Role	Description
20	[0..*]	Series_Period WindPowerFeedin_Period	The time interval and resolution for a period associated with windpower feedin. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Series_Period.WindPowerFeedin_Period[0..*]
21	[0..*]	Reason Reason	The reason information associated with a TimeSeries providing motivation information. Association Based On: Outage contextual model::TimeSeries.[] ----- Outage contextual model::Reason.Reason[0..*]

155

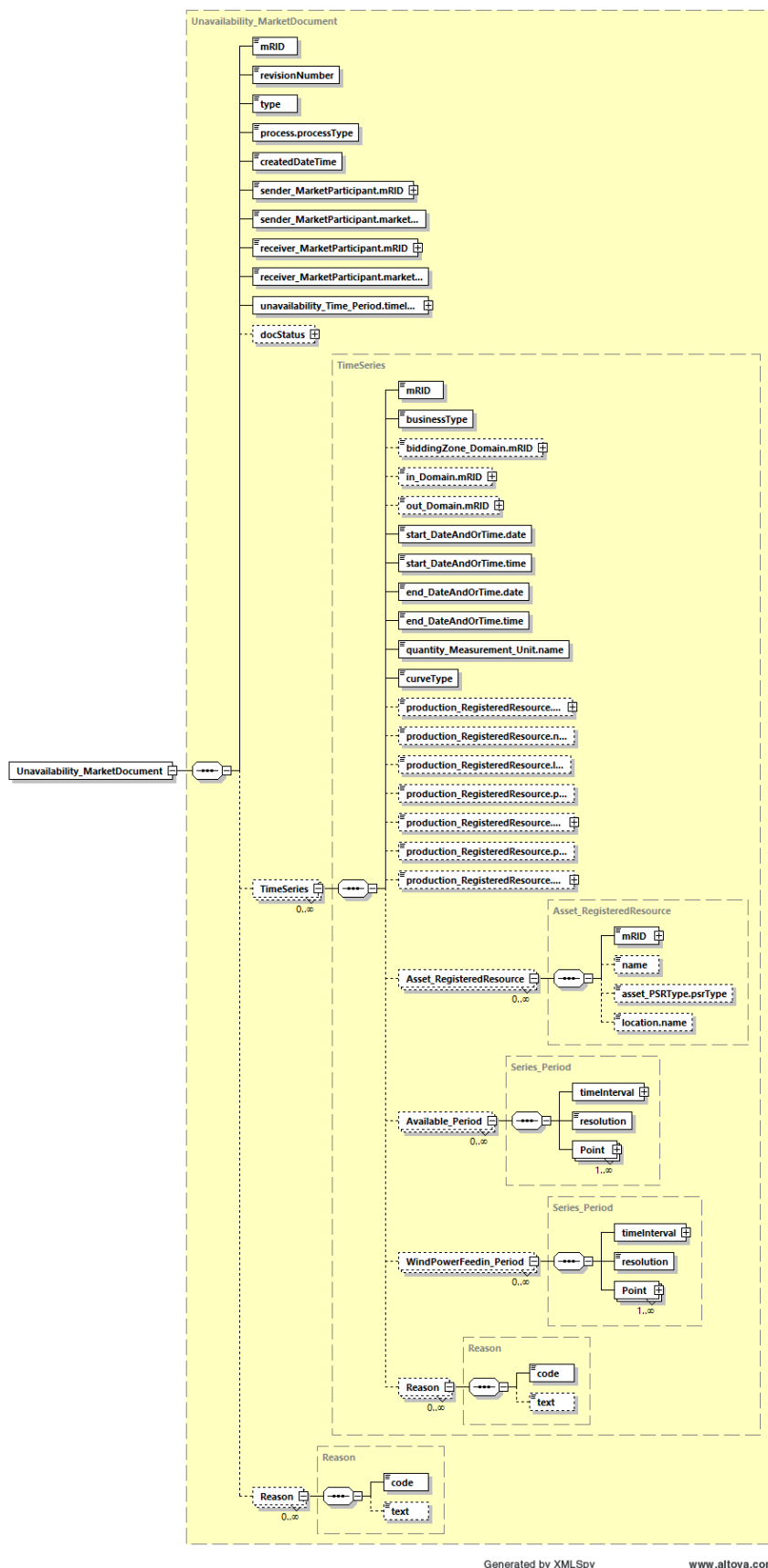
156 2.2.4 Datatypes

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

- 158 • Action_Status compound
- 159 • ESMP_DateTimeInterval compound
- 160 • AreaID_String datatype, codelist CodingSchemeTypeList
- 161 • BusinessKind_String datatype, codelist BusinessTypeList
- 162 • CurveType_String datatype, codelist CurveTypeList
- 163 • ESMP_ActivePower datatype
- 164 • ESMP_DateTime datatype
- 165 • ESMPVersion_String datatype
- 166 • ID_String datatype
- 167 • MarketRoleKind_String datatype, codelist RoleTypeList
- 168 • MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- 169 • MessageKind_String datatype, codelist MessageTypeList
- 170 • PartyID_String datatype, codelist CodingSchemeTypeList
- 171 • Position_Integer datatype
- 172 • ProcessKind_String datatype, codelist ProcessTypeList
- 173 • PsrType_String datatype, codelist AssetTypeList
- 174 • ReasonCode_String datatype, codelist ReasonCodeTypeList
- 175 • ReasonText_String datatype
- 176 • ResourceID_String datatype, codelist CodingSchemeTypeList
- 177 • Status_String datatype, codelist StatusTypeList
- 178 • UnitSymbol datatype, codelist UnitSymbol
- 179 • YMDHM_DateTime datatype

180 **2.2.5 Unavailability_MarketDocument XML schema structure**

181 Figure 3 provides the structure of the schema.



182

183

Figure 3 - Unavailability_MarketDocument schema structure

184

185 2.2.6 Unavailability_MarketDocument XML schema

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

187 urn:iec62325.351:tc57wg16:451-6:outagedocument:4:1

```

188 <?xml version="1.0" encoding="utf-8"?>
189 <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
190 xmlns="urn:iec62325.351:tc57wg16:451-6:outagedocument:4:1"
191 xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
192 xmlns:cimp="http://www.iec.ch/cimprofile"
193 xmlns:xs="http://www.w3.org/2001/XMLSchema"
194 targetNamespace="urn:iec62325.351:tc57wg16:451-6:outagedocument:4:1"
195 elementFormDefault="qualified" attributeFormDefault="unqualified">
196   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
197 entsoe-eu-wgedi-codelists.xsd"/>
198   <xs:element name="Unavailability_MarketDocument"
199 type="Unavailability_MarketDocument"/>
200   <xs:simpleType name="ResourceID_String-base"
201 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
202     <xs:restriction base="xs:string">
203       <xs:maxLength value="60"/>
204     </xs:restriction>
205   </xs:simpleType>
206   <xs:complexType name="ResourceID_String"
207 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
208     <xs:simpleContent>
209       <xs:extension base="ResourceID_String-base">
210         <xs:attribute name="codingScheme"
211 type="ecl:CodingSchemeTypeList" use="required"/>
212       </xs:extension>
213     </xs:simpleContent>
214   </xs:complexType>
215   <xs:simpleType name="PsrType_String"
216 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
217     <xs:restriction base="ecl:AssetTypeList"/>
218   </xs:simpleType>
219   <xs:complexType name="Asset_RegisteredResource"
220 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
221 cim16#RegisteredResource">
222     <xs:sequence>
223       <xs:element name="mRID" type="ResourceID_String" minOccurs="1"
224 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
225 cim16#IdentifiedObject.mRID"/>
226       <xs:element name="name" type="xs:string" minOccurs="0"
227 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
228 cim16#IdentifiedObject.name"/>
229       <xs:element name="asset_PSRType.psrType" type="PsrType_String"
230 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
231 schema-cim16#MktPSRType.psrType"/>
232       <xs:element name="location.name" type="xs:string" minOccurs="0"
233 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
234 cim16#IdentifiedObject.name"/>
235     </xs:sequence>
236   </xs:complexType>
237   <xs:simpleType name="Position_Integer"
238 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
239     <xs:restriction base="xs:integer">
240       <xs:maxInclusive value="999999"/>

```

```

241         <xs:minInclusive value="1"/>
242     </xs:restriction>
243 </xs:simpleType>
244 <xs:complexType name="Point"
245 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
246     <xs:sequence>
247         <xs:element name="position" type="Position_Integer"
248 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
249 schema-cim16#Point.position"/>
250         <xs:element name="quantity" type="xs:decimal" minOccurs="1"
251 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
252 cim16#Point.quantity"/>
253     </xs:sequence>
254 </xs:complexType>
255 <xs:simpleType name="ReasonCode_String"
256 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
257     <xs:restriction base="ecl:ReasonCodeTypeList"/>
258 </xs:simpleType>
259 <xs:simpleType name="ReasonText_String"
260 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
261     <xs:restriction base="xs:string">
262         <xs:maxLength value="512"/>
263     </xs:restriction>
264 </xs:simpleType>
265 <xs:complexType name="Reason"
266 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason">
267     <xs:sequence>
268         <xs:element name="code" type="ReasonCode_String" minOccurs="1"
269 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
270 cim16#Reason.code"/>
271         <xs:element name="text" type="ReasonText_String" minOccurs="0"
272 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
273 cim16#Reason.text"/>
274     </xs:sequence>
275 </xs:complexType>
276 <xs:simpleType name="YMDHM_DateTime"
277 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
278     <xs:restriction base="xs:string">
279         <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
280 9]|12)[0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
281 9]|30))T(([01][0-9]|2[0-3]):[0-5][0-
282 9])Z)|(((13579)[26][02468][048]|13579)[01345789](0)[48]|13579)[01345789][2468][0
283 48]|02468)[048][02468][048]|02468)[1235679](0)[48]|02468)[1235679][2468][048]|
284 0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T(([01][0-9]|2[0-3]):[0-
285 5][0-
286 9])Z)|(((13579)[26][02468][1235679]|13579)[01345789](0)[01235679]|13579)[0134578
287 9][2468][1235679]|02468)[048][02468][1235679]|02468)[1235679](0)[01235679]|0246
288 8)[1235679][2468][1235679]|0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
289 9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9])Z"/>
290     </xs:restriction>
291 </xs:simpleType>
292 <xs:complexType name="ESMP_DateTimeInterval"
293 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
294     <xs:sequence>
295         <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
296 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
297 cim16#DateTimeInterval.start"/>
298         <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
299 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
300 cim16#DateTimeInterval.end"/>

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301         </xs:sequence>
302     </xs:complexType>
303     <xs:complexType name="Series_Period"
304 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
305         <xs:sequence>
306             <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
307 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
308 schema-cim16#Period.timeInterval"/>
309             <xs:element name="resolution" type="xs:duration" minOccurs="1"
310 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
311 cim16#Period.resolution"/>
312             <xs:element name="Point" type="Point" minOccurs="1"
313 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
314 cim16#Period.Point"/>
315         </xs:sequence>
316     </xs:complexType>
317     <xs:simpleType name="ID_String"
318 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
319         <xs:restriction base="xs:string">
320             <xs:maxLength value="60"/>
321         </xs:restriction>
322     </xs:simpleType>
323     <xs:simpleType name="BusinessKind_String"
324 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
325         <xs:restriction base="ecl:BusinessTypeList"/>
326     </xs:simpleType>
327     <xs:simpleType name="AreaID_String-base"
328 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
329         <xs:restriction base="xs:string">
330             <xs:maxLength value="18"/>
331         </xs:restriction>
332     </xs:simpleType>
333     <xs:complexType name="AreaID_String"
334 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
335         <xs:simpleContent>
336             <xs:extension base="AreaID_String-base">
337                 <xs:attribute name="codingScheme"
338 type="ecl:CodingSchemeTypeList" use="required"/>
339             </xs:extension>
340         </xs:simpleContent>
341     </xs:complexType>
342     <xs:simpleType name="MeasurementUnitKind_String"
343 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
344         <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
345     </xs:simpleType>
346     <xs:simpleType name="CurveType_String"
347 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
348         <xs:restriction base="ecl:CurveTypeList"/>
349     </xs:simpleType>
350     <xs:simpleType name="ESMP_ActivePower-base"
351 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#ActivePower">
352         <xs:restriction base="xs:float">
353             <xs:pattern value="([0-9]*\.\?[0-9]*)"/>
354         </xs:restriction>
355     </xs:simpleType>
356     <xs:complexType name="ESMP_ActivePower"
357 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#ActivePower">
358         <xs:simpleContent>
359             <xs:extension base="ESMP_ActivePower-base">

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360         <xs:attribute name="unit" type="ecl:UnitSymbol"
361 use="required" fixed="MAW"/>
362         </xs:extension>
363     </xs:simpleContent>
364 </xs:complexType>
365 <xs:complexType name="TimeSeries"
366 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
367     <xs:sequence>
368         <xs:element name="mRID" type="ID_String" minOccurs="1"
369 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
370 cim16#IdentifiedObject.mRID"/>
371         <xs:element name="businessType" type="BusinessKind_String"
372 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
373 schema-cim16#TimeSeries.businessType"/>
374         <xs:element name="biddingZone_Domain.mRID" type="AreaID_String"
375 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
376 schema-cim16#IdentifiedObject.mRID"/>
377         <xs:element name="in_Domain.mRID" type="AreaID_String"
378 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
379 schema-cim16#IdentifiedObject.mRID"/>
380         <xs:element name="out_Domain.mRID" type="AreaID_String"
381 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
382 schema-cim16#IdentifiedObject.mRID"/>
383         <xs:element name="start_DateAndOrTime.date" type="xs:date"
384 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
385 schema-cim16#DateAndOrTime.date"/>
386         <xs:element name="start_DateAndOrTime.time" type="xs:time"
387 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
388 schema-cim16#DateAndOrTime.time"/>
389         <xs:element name="end_DateAndOrTime.date" type="xs:date"
390 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
391 schema-cim16#DateAndOrTime.date"/>
392         <xs:element name="end_DateAndOrTime.time" type="xs:time"
393 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
394 schema-cim16#DateAndOrTime.time"/>
395         <xs:element name="quantity_Measurement_Unit.name"
396 type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
397 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
398         <xs:element name="curveType" type="CurveType_String"
399 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
400 schema-cim16#TimeSeries.curveType"/>
401         <xs:element name="production_RegisteredResource.mRID"
402 type="ResourceID_String" minOccurs="0" maxOccurs="1"
403 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
404 cim16#IdentifiedObject.mRID"/>
405         <xs:element name="production_RegisteredResource.name"
406 type="xs:string" minOccurs="0" maxOccurs="1"
407 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
408 cim16#IdentifiedObject.name"/>
409         <xs:element name="production_RegisteredResource.location.name"
410 type="xs:string" minOccurs="0" maxOccurs="1"
411 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
412 cim16#IdentifiedObject.name"/>
413         <xs:element
414 name="production_RegisteredResource.pSRType.psrType" type="PsrType_String"
415 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
416 schema-cim16#MktPSRType.psrType"/>
417         <xs:element
418 name="production_RegisteredResource.pSRType.powerSystemResources.mRID"
419 type="ResourceID_String" minOccurs="0" maxOccurs="1"

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420 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
421 cim16#IdentifiedObject.mRID"/>
422     <xs:element
423 name="production_RegisteredResource.pSRType.powerSystemResources.name"
424 type="xs:string" minOccurs="0" maxOccurs="1"
425 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
426 cim16#IdentifiedObject.name"/>
427     <xs:element
428 name="production_RegisteredResource.pSRType.powerSystemResources.nominalP"
429 type="ESMP_ActivePower" minOccurs="0" maxOccurs="1"
430 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
431 cim16#GeneratingUnit.nominalP"/>
432     <xs:element name="Asset_RegisteredResource"
433 type="Asset_RegisteredResource" minOccurs="0" maxOccurs="unbounded"
434 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
435 cim16#TimeSeries.Asset_RegisteredResource"/>
436     <xs:element name="Available_Period" type="Series_Period"
437 minOccurs="0" maxOccurs="unbounded"
438 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
439 cim16#TimeSeries.Available_Period"/>
440     <xs:element name="WindPowerFeedin_Period" type="Series_Period"
441 minOccurs="0" maxOccurs="unbounded"
442 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
443 cim16#TimeSeries.WindPowerFeedin_Period"/>
444     <xs:element name="Reason" type="Reason" minOccurs="0"
445 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
446 cim16#TimeSeries.Reason"/>
447 </xs:sequence>
448 </xs:complexType>
449 <xs:simpleType name="ESMPVersion_String"
450 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
451     <xs:restriction base="xs:string">
452         <xs:pattern value="[1-9]([0-9]){0,2}"/>
453     </xs:restriction>
454 </xs:simpleType>
455 <xs:simpleType name="MessageKind_String"
456 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
457     <xs:restriction base="ecl:MessageTypeList"/>
458 </xs:simpleType>
459 <xs:simpleType name="ProcessKind_String"
460 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
461     <xs:restriction base="ecl:ProcessTypeList"/>
462 </xs:simpleType>
463 <xs:simpleType name="ESMP_DateTime"
464 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
465     <xs:restriction base="xs:dateTime">
466         <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-
467 9]|12|[0-9]|3[01]))|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12|[0-
468 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
469 9])Z)|(((13579)[26][02468][048]|13579[01345789](0)[48]|13579[01345789][2468][0
470 48]|02468[048][02468][048]|02468[1235679](0)[48]|02468[1235679][2468][048]|
471 0-9|[0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
472 5][0-9]:[0-5][0-
473 9])Z)|(((13579)[26][02468][1235679]|13579[01345789](0)[01235679]|13579[0134578
474 9][2468][1235679]|02468[048][02468][1235679]|02468[1235679](0)[01235679]|0246
475 8[1235679][2468][1235679]|0-9|[0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
476 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
477     </xs:restriction>
478 </xs:simpleType>

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479     <xs:simpleType name="PartyID_String-base"
480 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
481     <xs:restriction base="xs:string">
482     <xs:maxLength value="16"/>
483     </xs:restriction>
484     </xs:simpleType>
485     <xs:complexType name="PartyID_String"
486 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
487     <xs:simpleContent>
488     <xs:extension base="PartyID_String-base">
489     <xs:attribute name="codingScheme"
490 type="ecl:CodingSchemeTypeList" use="required"/>
491     </xs:extension>
492     </xs:simpleContent>
493     </xs:complexType>
494     <xs:simpleType name="MarketRoleKind_String"
495 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
496     <xs:restriction base="ecl:RoleTypeList"/>
497     </xs:simpleType>
498     <xs:simpleType name="Status_String"
499 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
500     <xs:restriction base="ecl:StatusTypeList"/>
501     </xs:simpleType>
502     <xs:complexType name="Action_Status"
503 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status">
504     <xs:sequence>
505     <xs:element name="value" type="Status_String" minOccurs="1"
506 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
507 cim16#Status.value"/>
508     </xs:sequence>
509     </xs:complexType>
510     <xs:complexType name="Unavailability_MarketDocument"
511 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
512     <xs:sequence>
513     <xs:element name="mRID" type="ID_String" minOccurs="1"
514 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
515 cim16#IdentifiedObject.mRID"/>
516     <xs:element name="revisionNumber" type="ESMPVersion_String"
517 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
518 schema-cim16#Document.revisionNumber"/>
519     <xs:element name="type" type="MessageKind_String" minOccurs="1"
520 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
521 cim16#Document.type"/>
522     <xs:element name="process.processType"
523 type="ProcessKind_String" minOccurs="1" maxOccurs="1"
524 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
525 cim16#Process.processType"/>
526     <xs:element name="createdDateTime" type="ESMP_DateTime"
527 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
528 schema-cim16#Document.createdDateTime"/>
529     <xs:element name="sender_MarketParticipant.mRID"
530 type="PartyID_String" minOccurs="1" maxOccurs="1"
531 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
532 cim16#IdentifiedObject.mRID"/>
533     <xs:element name="sender_MarketParticipant.marketRole.type"
534 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
535 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
536     <xs:element name="receiver_MarketParticipant.mRID"
537 type="PartyID_String" minOccurs="1" maxOccurs="1"

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538 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
539 cim16#IdentifiedObject.mRID"/>
540     <xs:element name="receiver_MarketParticipant.marketRole.type"
541 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
542 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
543     <xs:element name="unavailability_Time_Period.timeInterval"
544 type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
545 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
546 cim16#Period.timeInterval"/>
547     <xs:element name="docStatus" type="Action_Status" minOccurs="0"
548 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
549 cim16#Document.docStatus"/>
550     <xs:element name="TimeSeries" type="TimeSeries" minOccurs="0"
551 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
552 cim16#MarketDocument.TimeSeries"/>
553     <xs:element name="Reason" type="Reason" minOccurs="0"
554 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
555 cim16#MarketDocument.Reason"/>
556     </xs:sequence>
557 </xs:complexType>
558 </xs:schema>
559
```