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European Network of
Transmission System Operators
for Electricity

FINANCIAL SETTLEMENT REPORT DOCUMENT UML MODEL AND SCHEMA

2020-11-04
APPROVED DOCUMENT
VERSION 1.0

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61 **provided at cim@entsoe.eu**

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Revision History

Version	Release	Date	Comments
0	1	2020-09-21	First draft of the document.
0	2	2020-10-15	Comments from CIM EG were considered.
1	0	2020-11-04	Approved by MC.

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64 1   Objective

65 The purpose of this document is to provide the contextual and assembly UML models and the
66 schema of the FinancialSettlementReport_MarketDocument.

67 The schema of the FinancialSettlementReport _MarketDocument could be used in various
68 business processes.

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

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

73   • Description of the business process;

74   • Use case of the business process;

75   • Sequence diagrams of the business process;

76   • List of the schema (XSD) to be used in the business process and versions of the
77   schema;

78   • For each schema, dependency tables providing the necessary information for the
79   generation of the XML instances, i.e. when the optional attributes are to be used, which
80   codes from which ENTSO-E codelist are to be used.

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82 **2 FinancialSettlementReport_MarketDocument**

83 2.1 **Financial Settlement Report contextual model**

84 **2.1.1 Overview of the model**

85 Figure 1 shows the model.
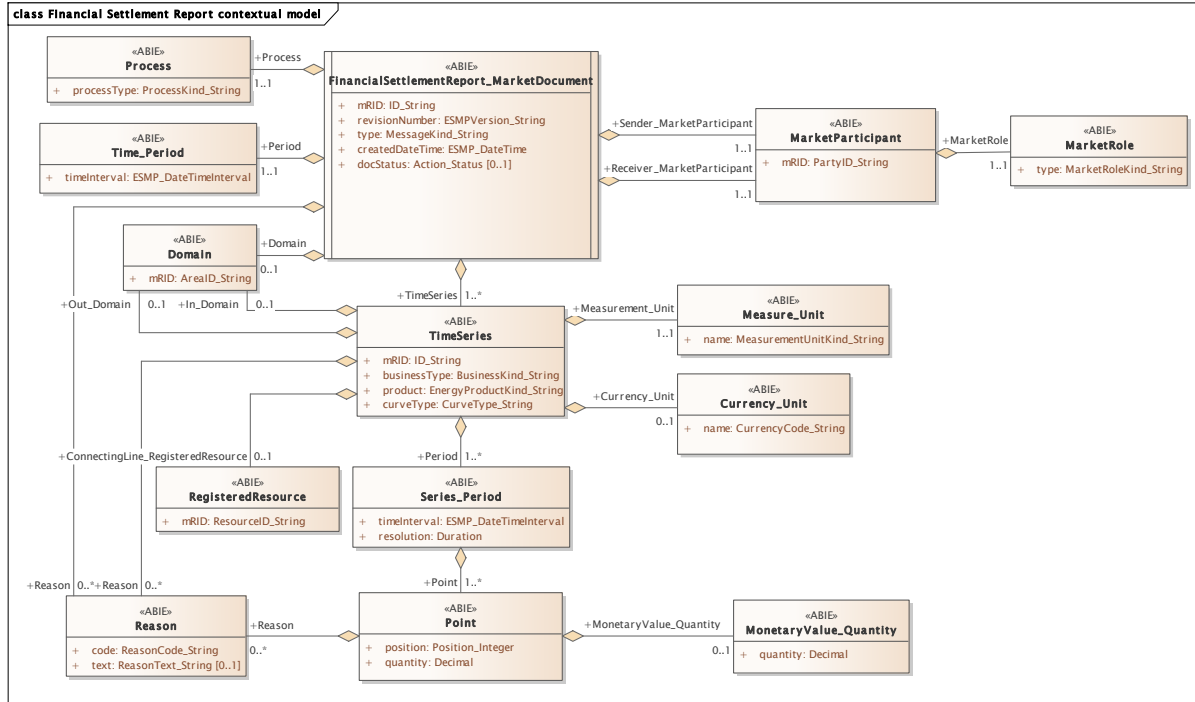
86

87 **Figure 1 - Financial Settlement Report contextual model**

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88

2.1.2 IsBasedOn relationships from the European style market profile

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

Table 1 - IsBasedOn dependency

Name	Complete IsBasedOn Path
Currency_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Domain	TC57CIM::IEC62325::MarketManagement::Domain
FinancialSettlementReport_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MonetaryValue_Quantity	TC57CIM::IEC62325::MarketManagement::Quantity
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
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

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94

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2.2 Financial Settlement Report assembly model

2.2.1 Overview of the model

98 Figure 2 shows the model.

99

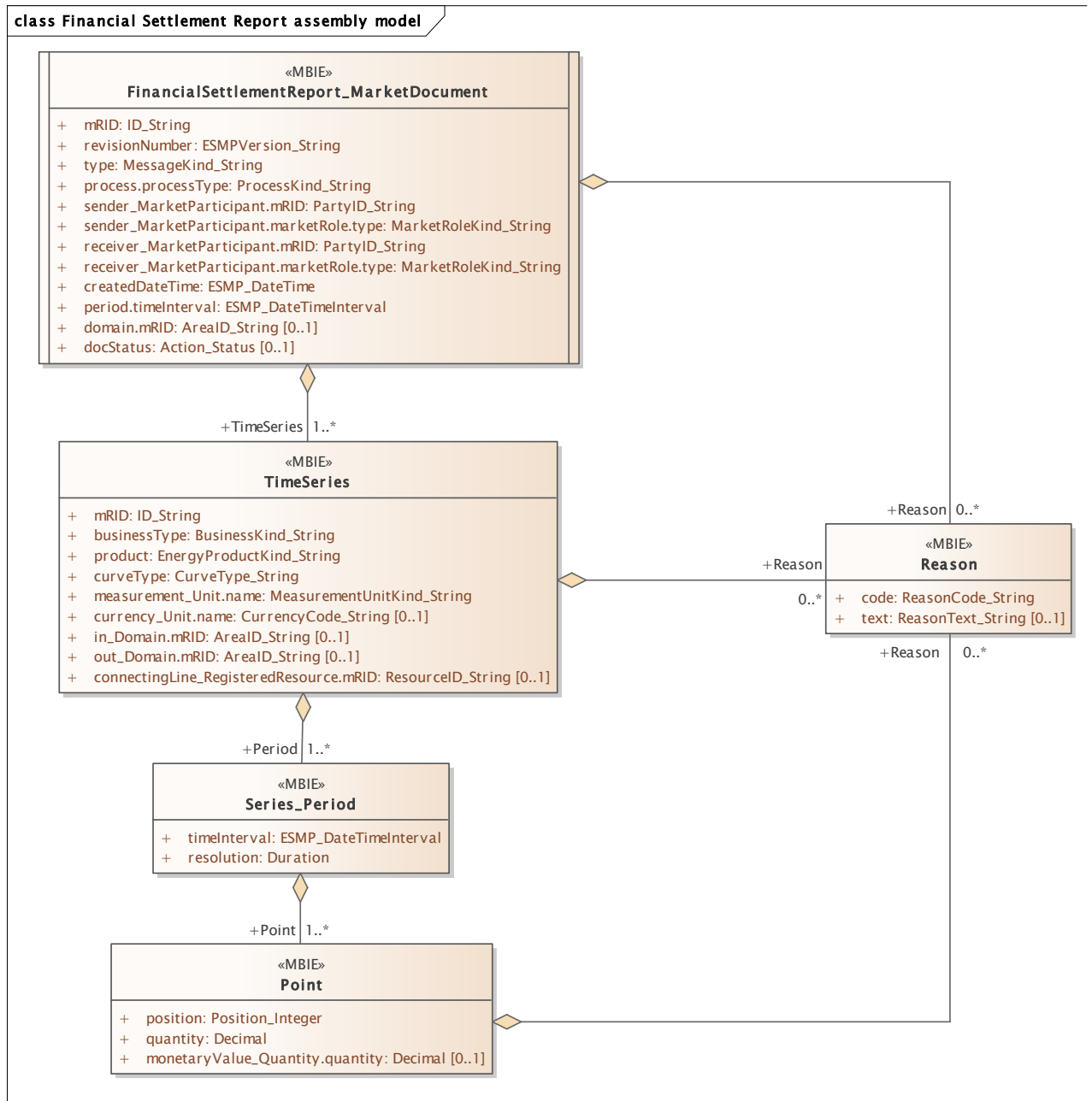**Figure 2 - Financial Settlement Report assembly model**

101

2.2.2 IsBasedOn relationships from the European style market profile

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

Table 2 - IsBasedOn dependency

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

106

2.2.3 Detailed Financial Settlement Report assembly model

2.2.3.1 FinancialSettlementReport_MarketDocument root class

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

Table 3 shows all attributes of FinancialSettlementReport_MarketDocument.

Table 3 - Attributes of Financial Settlement Report assembly model::FinancialSettlementReport_MarketDocument

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

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Order	mult.	Attribute name / Attribute type	Description
9	[1..1]	period.timeInterval ESMP_DateTimeInterval	The start and end date and time for a given interval. --- The time interval that is associated with an electronic document and which is valid for the whole document.
10	[0..1]	domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the domain that is covered in the financial settlement report document..
11	[0..1]	docStatus Action_Status	The identification of the condition or position of the document with regard to its standing.

114

115 Table 4 shows all association ends of FinancialSettlementReport_MarketDocument with other
116 classes.

117 **Table 4 - Association ends of Financial Settlement Report assembly**
118 **model::FinancialSettlementReport_MarketDocument with other classes**

Order	mult.	Class name / Role	Description
12	[1..*]	TimeSeries TimeSeries	The time series that is associated with an electronic document. Association Based On: Financial Settlement Report contextual model::TimeSeries.TimeSeries[1..*] ----- Financial Settlement Report contextual model::FinancialSettlementReport_MarketDocument.[]
13	[0..*]	Reason Reason	The Reason associated with the electronic document header providing different motivations for the creation of the document. Association Based On: Financial Settlement Report contextual model::Reason.Reason[0..*] ----- Financial Settlement Report contextual model::FinancialSettlementReport_MarketDocument.[]

119

2.2.3.2   Point

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

122 Table 5 shows all attributes of Point.

123 **Table 5 - Attributes of Financial Settlement 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.
2	[0..1]	monetaryValue_Quantity.quantity Decimal	The quantity value. The association role provides the information about what is expressed. --- The Quantity information associated with a given Point.

124

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

126
127 **Table 6 - Association ends of Financial Settlement Report assembly model::Point with other classes**

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

128

129 **2.2.3.3   Reason**

130 The motivation of an act.

131 Table 7 shows all attributes of Reason.

132 **Table 7 - Attributes of Financial Settlement 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.

133

134 **2.2.3.4   Series_Period**

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

136 Table 8 shows all attributes of Series_Period.

137 **Table 8 - Attributes of Financial Settlement 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.

138

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

140
141 **Table 9 - Association ends of Financial Settlement Report 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: Financial Settlement Report contextual model::Point.Point[1..*] ----- Financial Settlement Report contextual model::Series_Period.[]

142

143 **2.2.3.5   TimeSeries**

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

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145 In the ESMP profile, the TimeSeries provides not only time-ordered quantities but also time-
146 ordered information.

147 Table 10 shows all attributes of TimeSeries.

148 **Table 10 - Attributes of Financial Settlement Report 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	[1..1]	product EnergyProductKind_String	The identification of the nature of an energy product such as power, energy, reactive power, etc.
3	[1..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
4	[1..1]	measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measure associated with the quantities in a TimeSeries.
5	[0..1]	currency_Unit.name CurrencyCode_String	The identification of the formal code for a currency (ISO 4217). --- The currency associated with a TimeSeries.
6	[0..1]	in_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the product is being delivered.
7	[0..1]	out_Domain.mRID AreaID_String	The unique identification of the domain. --- The domain where the product is being extracted.
8	[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.

149

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

151 **Table 11 - Association ends of Financial Settlement Report assembly**
152 **model::TimeSeries with other classes**

Order	mult.	Class name / Role	Description
9	[1..*]	Series_Period Period	The time interval and resolution for a period associated with a TimeSeries. Association Based On: Financial Settlement Report contextual model::Series_Period.Period[1..*] ----- Financial Settlement Report contextual model::TimeSeries.[]

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Order	mult.	Class name / Role	Description
10	[0..*]	Reason Reason	The reason information associated with a TimeSeries providing motivation information. Association Based On: Financial Settlement Report contextual model::Reason.Reason[0..*] ----- Financial Settlement Report contextual model::TimeSeries.[]

153

2.2.4 Datatypes

155 The list of datatypes used for the Financial Settlement Report assembly model is as follows:

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

178

179 **2.2.5 FinancialSettlementReport_MarketDocument XML schema structure**
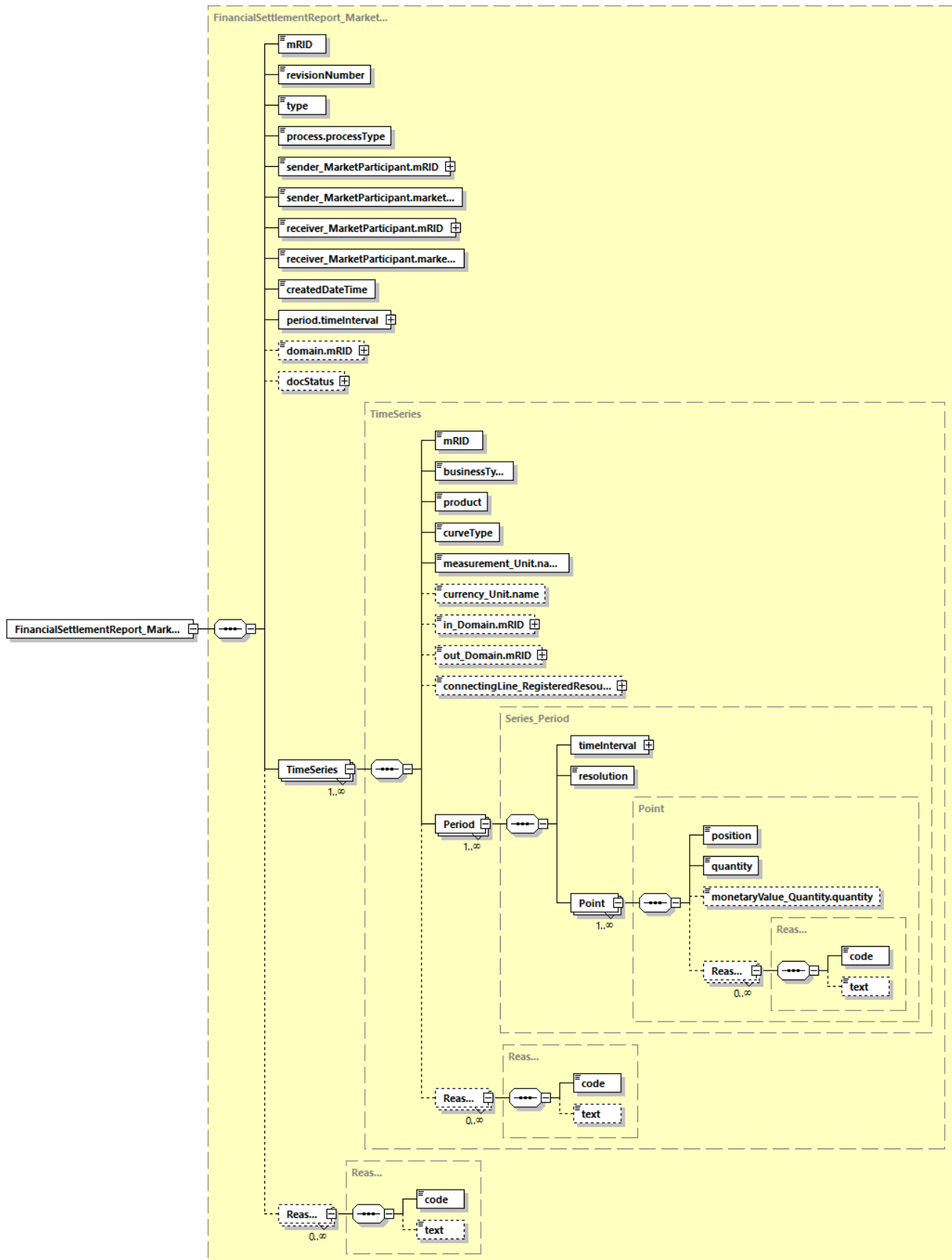
180
181 **Figure 3 – Financial SettlementReport_MarketDocument schema structure**

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182 **2.2.6   FinancialSettlementReport_MarketDocument XML schema**

183

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

185   urn:iec62325.351:tc57wg16:451-6:financialsettlementreportdocument:1:0

```
186   <?xml version="1.0" encoding="utf-8"?>
187   <xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
188   xmlns="urn:iec62325.351:tc57wg16:451-6:financialsettlementreportdocument:1:0"
189   xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
190   xmlns:cimp="http://www.iec.ch/cimprofile"
191   xmlns:xs="http://www.w3.org/2001/XMLSchema"
192   targetNamespace="urn:iec62325.351:tc57wg16:451-
193   6:financialsettlementreportdocument:1:0" elementFormDefault="qualified"
194   attributeFormDefault="unqualified">
195       <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
196   entsoe-eu-wgedi-codelists.xsd"/>
197       <xs:element name="FinancialSettlementReport_MarketDocument"
198   type="FinancialSettlementReport_MarketDocument"/>
199       <xs:simpleType name="ID_String"
200   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
201           <xs:restriction base="xs:string">
202               <xs:maxLength value="60"/>
203           </xs:restriction>
204       </xs:simpleType>
205       <xs:simpleType name="ESMPVersion_String"
206   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
207           <xs:restriction base="xs:string">
208               <xs:pattern value="[1-9]([0-9]){0,2}"/>
209           </xs:restriction>
210       </xs:simpleType>
211       <xs:simpleType name="MessageKind_String"
212   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
213           <xs:restriction base="ecl:MessageTypeList"/>
214       </xs:simpleType>
215       <xs:simpleType name="ProcessKind_String"
216   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
217           <xs:restriction base="ecl:ProcessTypeList"/>
218       </xs:simpleType>
219       <xs:simpleType name="PartyID_String-base"
220   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
221           <xs:restriction base="xs:string">
222               <xs:maxLength value="16"/>
223           </xs:restriction>
224       </xs:simpleType>
225       <xs:complexType name="PartyID_String"
226   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
227           <xs:simpleContent>
228               <xs:extension base="PartyID_String-base">
229                   <xs:attribute name="codingScheme"
230   type="ecl:CodingSchemeTypeList" use="required"/>
231               </xs:extension>
232           </xs:simpleContent>
233       </xs:complexType>
234       <xs:simpleType name="MarketRoleKind_String"
235   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
236           <xs:restriction base="ecl:RoleTypeList"/>
237       </xs:simpleType>
```

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```
238            <xs:simpleType name="ESMP_DateTime"
239    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
240                <xs:restriction base="xs:dateTime">
241                    <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
242    9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
243    9]|30))T(([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
244    9])Z)|((([13579][26][02468][048]|[13579][01345789](0)[48]|[13579][01345789][2468][0
245    48]|[02468][048][02468][048]|[02468][1235679](0)[48]|[02468][1235679][2468][048]|[
246    0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T(([01][0-9]|2[0-3]):[0-
247    5][0-9]:[0-5][0-
248    9])Z)|(([13579][26][02468][1235679]|[13579][01345789](0)[01235679]|[13579][0134578
249    9][2468][1235679]|[02468][048][02468][1235679]|[02468][1235679](0)[01235679]|[0246
250    8][1235679][2468][1235679]|[0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
251    9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
252                </xs:restriction>
253            </xs:simpleType>
254            <xs:simpleType name="AreaID_String-base"
255    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
256                <xs:restriction base="xs:string">
257                    <xs:maxLength value="18"/>
258                </xs:restriction>
259            </xs:simpleType>
260            <xs:complexType name="AreaID_String"
261    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
262                <xs:simpleContent>
263                    <xs:extension base="AreaID_String-base">
264                        <xs:attribute name="codingScheme"
265    type="ecl:CodingSchemeTypeList" use="required"/>
266                    </xs:extension>
267                </xs:simpleContent>
268            </xs:complexType>
269            <xs:simpleType name="Status_String"
270    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
271                <xs:restriction base="ecl:StatusTypeList"/>
272            </xs:simpleType>
273            <xs:complexType name="Action_Status"
274    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Status">
275                <xs:sequence>
276                    <xs:element name="value" type="Status_String" minOccurs="1"
277    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
278    cim16#Status.value"/>
279                </xs:sequence>
280            </xs:complexType>
281            <xs:simpleType name="YMDHM_DateTime"
282    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
283                <xs:restriction base="xs:string">
284                    <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
285    9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
286    9]|30))T(([01][0-9]|2[0-3]):[0-5][0-
287    9])Z)|((([13579][26][02468][048]|[13579][01345789](0)[48]|[13579][01345789][2468][0
288    48]|[02468][048][02468][048]|[02468][1235679](0)[48]|[02468][1235679][2468][048]|[
289    0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T(([01][0-9]|2[0-3]):[0-
290    5][0-
291    9])Z)|(([13579][26][02468][1235679]|[13579][01345789](0)[01235679]|[13579][0134578
292    9][2468][1235679]|[02468][048][02468][1235679]|[02468][1235679](0)[01235679]|[0246
293    8][1235679][2468][1235679]|[0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
294    9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9])Z)"/>
295                </xs:restriction>
296            </xs:simpleType>
```

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```
297         <xs:complexType name="ESMP_DateTimeInterval"
298    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
299             <xs:sequence>
300                 <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
301    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
302    cim16#DateTimeInterval.start"/>
303                 <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
304    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
305    cim16#DateTimeInterval.end"/>
306             </xs:sequence>
307         </xs:complexType>
308         <xs:complexType name="FinancialSettlementReport_MarketDocument"
309    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
310             <xs:sequence>
311                 <xs:element name="mRID" type="ID_String" minOccurs="1"
312    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
313    cim16#IdentifiedObject.mRID"/>
314                 <xs:element name="revisionNumber" type="ESMPVersion_String"
315    minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
316    schema-cim16#Document.revisionNumber"/>
317                 <xs:element name="type" type="MessageKind_String" minOccurs="1"
318    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
319    cim16#Document.type"/>
320                 <xs:element name="process.processType"
321    type="ProcessKind_String" minOccurs="1" maxOccurs="1"
322    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
323    cim16#Process.processType"/>
324                 <xs:element name="sender_MarketParticipant.mRID"
325    type="PartyID_String" minOccurs="1" maxOccurs="1"
326    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
327    cim16#IdentifiedObject.mRID"/>
328                 <xs:element name="sender_MarketParticipant.marketRole.type"
329    type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
330    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
331                 <xs:element name="receiver_MarketParticipant.mRID"
332    type="PartyID_String" minOccurs="1" maxOccurs="1"
333    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
334    cim16#IdentifiedObject.mRID"/>
335                 <xs:element name="receiver_MarketParticipant.marketRole.type"
336    type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
337    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
338                 <xs:element name="createdDateTime" type="ESMP_DateTime"
339    minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
340    schema-cim16#Document.createdDateTime"/>
341                 <xs:element name="period.timeInterval"
342    type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
343    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
344    cim16#Period.timeInterval"/>
345                 <xs:element name="domain.mRID" type="AreaID_String"
346    minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
347    schema-cim16#IdentifiedObject.mRID"/>
348                 <xs:element name="docStatus" type="Action_Status" minOccurs="0"
349    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
350    cim16#Document.docStatus"/>
351                 <xs:element name="TimeSeries" type="TimeSeries" minOccurs="1"
352    maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
353    cim16#MarketDocument.TimeSeries"/>
354                 <xs:element name="Reason" type="Reason" minOccurs="0"
355    maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
356    cim16#MarketDocument.Reason"/>
```

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357                    </xs:sequence>
358            </xs:complexType>
359            <xs:simpleType name="Position_Integer"
360    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
361                    <xs:restriction base="xs:integer">
362                            <xs:maxInclusive value="999999"/>
363                            <xs:minInclusive value="1"/>
364                    </xs:restriction>
365            </xs:simpleType>
366            <xs:complexType name="Point"
367    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
368                    <xs:sequence>
369                            <xs:element name="position" type="Position_Integer"
370    minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
371    schema-cim16#Point.position"/>
372                            <xs:element name="quantity" type="xs:decimal" minOccurs="1"
373    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
374    cim16#Point.quantity"/>
375                            <xs:element name="monetaryValue_Quantity.quantity"
376    type="xs:decimal" minOccurs="0" maxOccurs="1"
377    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
378    cim16#Quantity.quantity"/>
379                            <xs:element name="Reason" type="Reason" minOccurs="0"
380    maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
381    cim16#Point.Reason"/>
382                    </xs:sequence>
383            </xs:complexType>
384            <xs:simpleType name="ReasonCode_String"
385    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
386                    <xs:restriction base="ecl:ReasonCodeTypeList"/>
387            </xs:simpleType>
388            <xs:simpleType name="ReasonText_String"
389    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
390                    <xs:restriction base="xs:string">
391                            <xs:maxLength value="512"/>
392                    </xs:restriction>
393            </xs:simpleType>
394            <xs:complexType name="Reason"
395    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason">
396                    <xs:sequence>
397                            <xs:element name="code" type="ReasonCode_String" minOccurs="1"
398    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
399    cim16#Reason.code"/>
400                            <xs:element name="text" type="ReasonText_String" minOccurs="0"
401    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
402    cim16#Reason.text"/>
403                    </xs:sequence>
404            </xs:complexType>
405            <xs:complexType name="Series_Period"
406    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
407                    <xs:sequence>
408                            <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
409    minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
410    schema-cim16#Period.timeInterval"/>
411                            <xs:element name="resolution" type="xs:duration" minOccurs="1"
412    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
413    cim16#Period.resolution"/>
414                            <xs:element name="Point" type="Point" minOccurs="1"
415    maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
416    cim16#Period.Point"/>
```

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417                </xs:sequence>
418            </xs:complexType>
419            <xs:simpleType name="BusinessKind_String"
420    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
421                <xs:restriction base="ecl:BusinessTypeList"/>
422            </xs:simpleType>
423            <xs:simpleType name="EnergyProductKind_String"
424    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
425                <xs:restriction base="ecl:EnergyProductTypeList"/>
426            </xs:simpleType>
427            <xs:simpleType name="CurveType_String"
428    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
429                <xs:restriction base="ecl:CurveTypeList"/>
430            </xs:simpleType>
431            <xs:simpleType name="MeasurementUnitKind_String"
432    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
433                <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
434            </xs:simpleType>
435            <xs:simpleType name="CurrencyCode_String"
436    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
437                <xs:restriction base="ecl:CurrencyTypeList"/>
438            </xs:simpleType>
439            <xs:simpleType name="ResourceID_String-base"
440    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
441                <xs:restriction base="xs:string">
442                    <xs:maxLength value="60"/>
443                </xs:restriction>
444            </xs:simpleType>
445            <xs:complexType name="ResourceID_String"
446    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
447                <xs:simpleContent>
448                    <xs:extension base="ResourceID_String-base">
449                        <xs:attribute name="codingScheme"
450    type="ecl:CodingSchemeTypeList" use="required"/>
451                    </xs:extension>
452                </xs:simpleContent>
453            </xs:complexType>
454            <xs:complexType name="TimeSeries"
455    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
456                <xs:sequence>
457                    <xs:element name="mRID" type="ID_String" minOccurs="1"
458    maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
459    cim16#IdentifiedObject.mRID"/>
460                    <xs:element name="businessType" type="BusinessKind_String"
461    minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
462    schema-cim16#TimeSeries.businessType"/>
463                    <xs:element name="product" type="EnergyProductKind_String"
464    minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
465    schema-cim16#TimeSeries.product"/>
466                    <xs:element name="curveType" type="CurveType_String"
467    minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
468    schema-cim16#TimeSeries.curveType"/>
469                    <xs:element name="measurement_Unit.name"
470    type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
471    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
472                    <xs:element name="currency_Unit.name"
473    type="CurrencyCode_String" minOccurs="0" maxOccurs="1"
474    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
```

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475                    <xs:element name="in_Domain.mRID" type="AreaID_String"
476    minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
477    schema-cim16#IdentifiedObject.mRID"/>
478                    <xs:element name="out_Domain.mRID" type="AreaID_String"
479    minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
480    schema-cim16#IdentifiedObject.mRID"/>
481                    <xs:element name="connectingLine_RegisteredResource.mRID"
482    type="ResourceID_String" minOccurs="0" maxOccurs="1"
483    sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
484    cim16#IdentifiedObject.mRID"/>
485                    <xs:element name="Period" type="Series_Period" minOccurs="1"
486    maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
487    cim16#TimeSeries.Period"/>
488                    <xs:element name="Reason" type="Reason" minOccurs="0"
489    maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
490    cim16#TimeSeries.Reason"/>
491                </xs:sequence>
492        </xs:complexType>
493    </xs:schema>
494
```