



European Network of
Transmission System Operators
for Electricity

**REMEDIAL ACTION SETTLEMENT
DOCUMENT
UML MODEL AND SCHEMA**

2023-04-18
AGREED DOCUMENT
VERSION 1.2

2

Table of Contents

3	1. Objective	5
4	2. RASettlement_MarketDocument	6
5	2.1. RASettlement contextual model	6
6	2.1.1. Overview of the model	6
7	2.1.2. IsBasedOn relationships from the European style market	
8	profile	7
9	2.2. RASettlement assembly model.....	8
10	2.2.1. Overview of the model	8
11	2.2.2. IsBasedOn relationships from the European style market	
12	profile	9
13	2.2.3. Detailed RASettlement assembly model.....	9
14	2.2.3.1. RASettlement_MarketDocument root class.....	9
15	2.2.3.2. Point	11
16	2.2.3.3. Series_Period	11
17	2.2.3.4. TimeSeries	11
18	2.2.4. Datatypes	13
19	2.2.5. RASettlement_MarketDocument XML schema structure.....	14
20	2.2.6. RASettlement_MarketDocument XML schema	15
21	List of figures	
22	Figure 1 - RASettlement contextual model	6
23	Figure 2 - RASettlement assembly model	8
24	Figure 3 - RASettlement_MarketDocument schema structure.....	14
25	List of tables	
26	Table 1 - IsBasedOn dependency	7
27	Table 2 - IsBasedOn dependency	9
28	Table 3 - Attributes of RASettlement assembly model::RASettlement_MarketDocument	9
29	Table 4 - Association ends of RASettlement assembly	
30	model::RASettlement_MarketDocument with other classes	10
31	Table 5 - Attributes of RASettlement assembly model::Point	11
32	Table 6 - Attributes of RASettlement assembly model::Series_Period	11
33	Table 7 - Association ends of RASettlement assembly model::Series_Period with other	
34	classes	11
35	Table 8 - Attributes of RASettlement assembly model::TimeSeries	12
36	Table 9 - Association ends of RASettlement assembly model::TimeSeries with other	
37	classes	12
38		

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56

Revision History

Version	Release	Date	Comments
1	0	2022-09-21	Approved by SOC
1	1	2022-10-18	Updates in schema 'urn:iec62325.351:tc57wg16:451-n:rasettlementdocument:1:1': price.amount attribute is split in two mandatory attributes. One for credit price amount and another one for debit price amount. Agreed by CIM EG.
1	2	2023-04-18	Updates in schema 'urn:iec62325.351:tc57wg16:451-n:rasettlementdocument:1:2': New optional marketProduct.marketProductType attribute in the TimeSeries class. Agreed by CIM WG.

57

58 **1. Objective**

59 The purpose of this document is to provide the contextual and assembly UML models and the
60 schema of the RASettlement_MarketDocument.

61 The schema of the RASettlement_MarketDocument could be used in various business
62 processes.

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

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

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

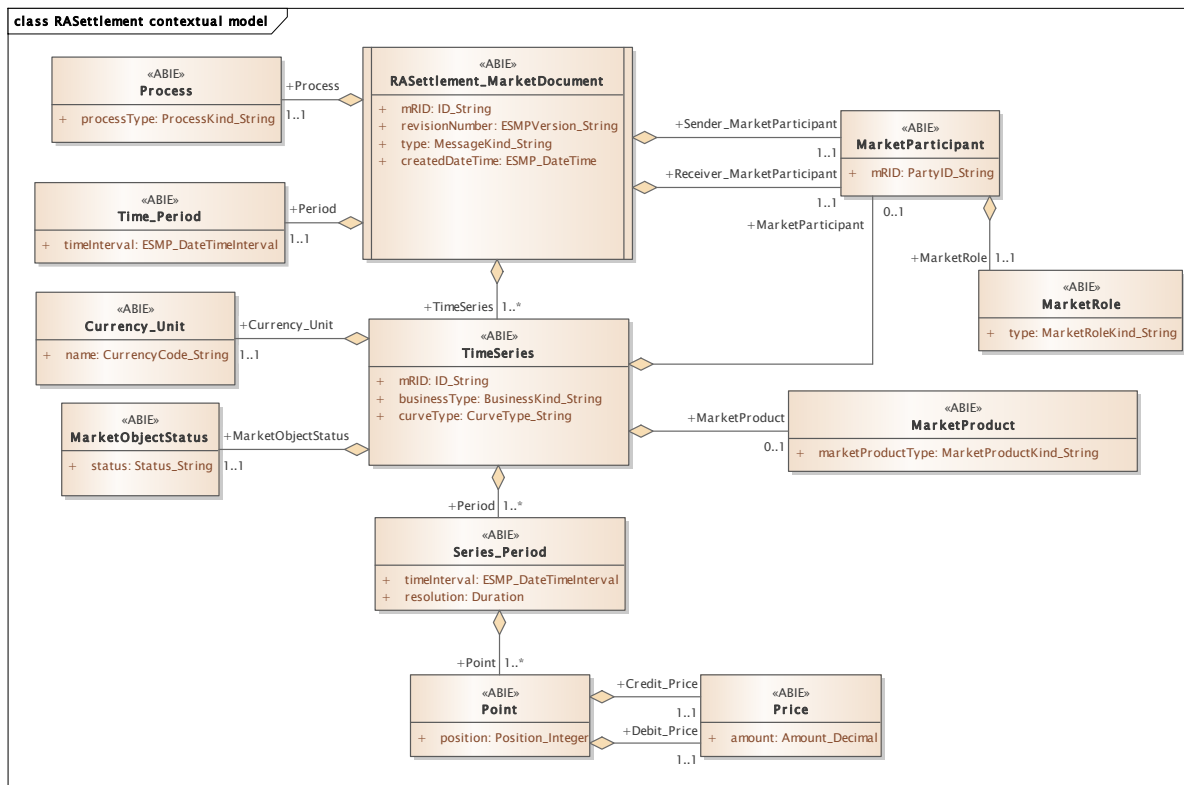
75

76 **2. RASettlement_MarketDocument**

77 **2.1. RASettlement contextual model**

78 **2.1.1. Overview of the model**

79 Figure 1 shows the model.



80

81

Figure 1 - RASettlement contextual model

82

83

84 **2.1.2. IsBasedOn relationships from the European style market profile**

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

87

Table 1 - IsBasedOn dependency

Name	Complete IsBasedOn Path
Currency_Unit	TC57CIM::IEC62325::MarketManagement::Unit
MarketObjectStatus	TC57CIM::IEC62325::MarketManagement::MarketObjectStatus
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketProduct	TC57CIM::IEC62325::MarketCommon::MarketProduct
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Point	TC57CIM::IEC62325::MarketManagement::Point
Price	TC57CIM::IEC62325::MarketManagement::Price
Process	TC57CIM::IEC62325::MarketManagement::Process
RASettlement_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

88

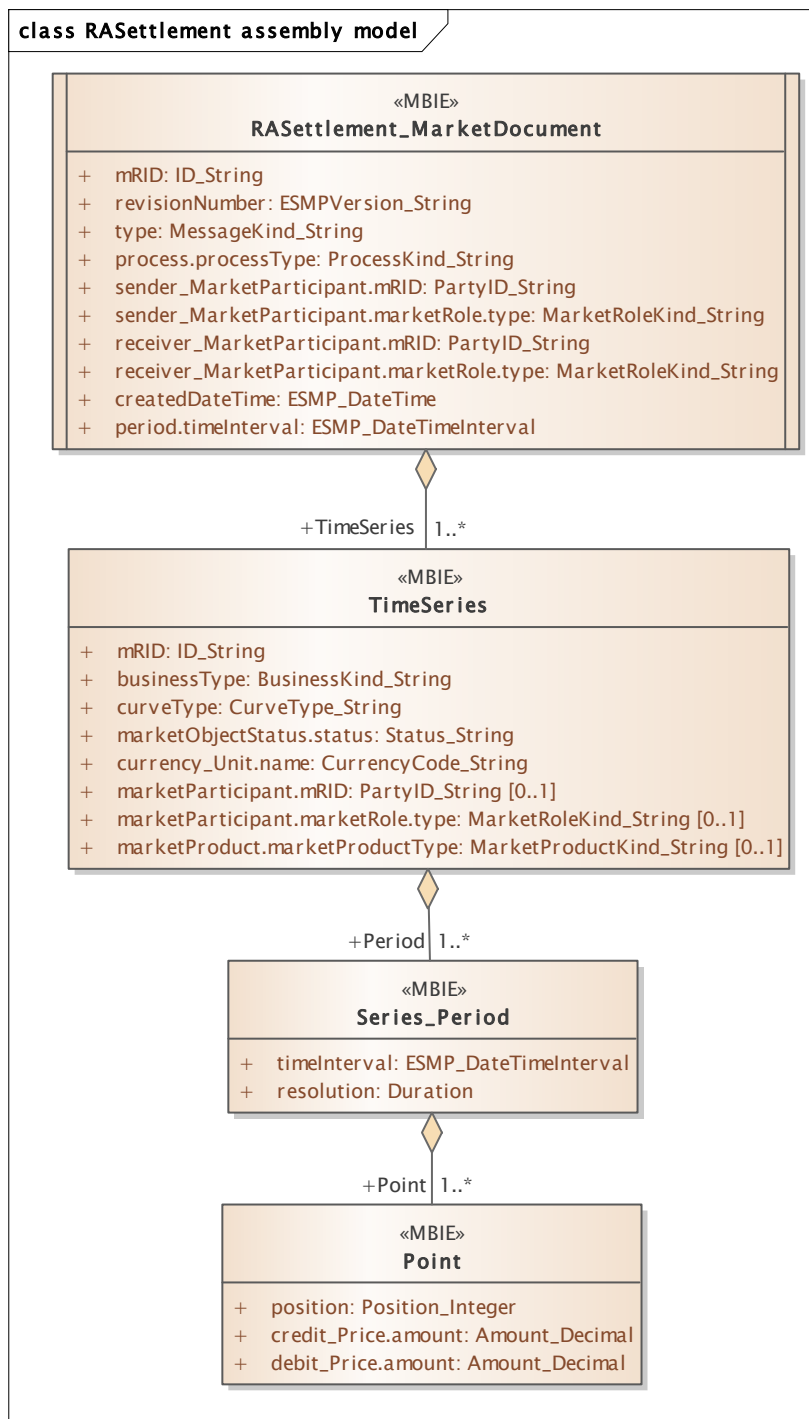
89

90

91 **2.2. RASettlement assembly model**

92 **2.2.1. Overview of the model**

93 Figure 2 shows the model.



94

95

Figure 2 - RASettlement assembly model

96 **2.2.2. IsBasedOn relationships from the European style market profile**

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

99 **Table 2 - IsBasedOn dependency**

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

100

101 **2.2.3. Detailed RASettlement assembly model**

102 **2.2.3.1. RASettlement_MarketDocument root class**

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

105 Table 3 shows all attributes of RASettlement_MarketDocument.

106 **Table 3 - Attributes of RASettlement assembly model::RASettlement_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. In the ESMP context, the "model authority" is defined as a party (originator of the exchange) that provides an identification in the context of a business exchange such as document 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.
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.

Order	mult.	Attribute name / Attribute type	Description
4	[1..1]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. 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 MarketParticipant associated with an electronic document header.
5	[1..1]	sender_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.
6	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. 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 MarketParticipant associated with an electronic document header.
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.
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.

107

108 Table 4 shows all association ends of RASettlement_MarketDocument with other classes.

109

110

Table 4 - Association ends of RASettlement assembly model::RASettlement_MarketDocument with other classes

Order	mult.	Class name / Role	Description
10	[1..*]	TimeSeries TimeSeries	The time series that is associated with an electronic document. Association Based On: RASettlement contextual model::TimeSeries.TimeSeries[1..*] ----- RASettlement contextual model::RASettlement_MarketDocument.[]

111

112 **2.2.3.2. Point**

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

114 Table 5 shows all attributes of Point.

115 **Table 5 - Attributes of RASettlement 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]	credit_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The Price information associated with a given Point.
2	[1..1]	debit_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency. --- The Price information associated with a given Point.

116

117 **2.2.3.3. Series_Period**

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

119 Table 6 shows all attributes of Series_Period.

120 **Table 6 - Attributes of RASettlement 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.

121

122 Table 7 shows all association ends of Series_Period with other classes.

123 **Table 7 - Association ends of RASettlement assembly model::Series_Period with other classes**

124

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: RASettlement contextual model::Point.Point[1..*] ----- RASettlement contextual model::Series_Period.[]

125

126 **2.2.3.4. TimeSeries**

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

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

130 Table 8 shows all attributes of TimeSeries.

131

Table 8 - Attributes of RASettlement assembly model::TimeSeries

Order	mult.	Attribute name / Attribute type	Description
0	[1..1]	mRID ID_String	A unique identification of the time series. In the ESMP context, the "model authority" is defined as a party (originator of the exchange) that provides a unique identification in the context of a business exchange such as time series identification, bid 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.
1	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.
2	[1..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.
3	[1..1]	marketObjectStatus.status Status_String	The coded condition or position of an object with regard to its standing. --- The status of an object associated with a TimeSeries.
4	[1..1]	currency_Unit.name CurrencyCode_String	The identification of the formal code for a currency (ISO 4217). --- The currency associated with a TimeSeries.
5	[0..1]	marketParticipant.mRID PartyID_String	The identification of a party in the energy market. 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 market participant associated with a TimeSeries.
6	[0..1]	marketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- The identification of a market participant associated with a TimeSeries. --- The role associated with a MarketParticipant.
7	[0..1]	marketProduct.marketProductType MarketProductKind_String	The Type of product on a market view

132

133 Table 9 shows all association ends of TimeSeries with other classes.

134 **Table 9 - Association ends of RASettlement assembly model::TimeSeries with other**
135 **classes**

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

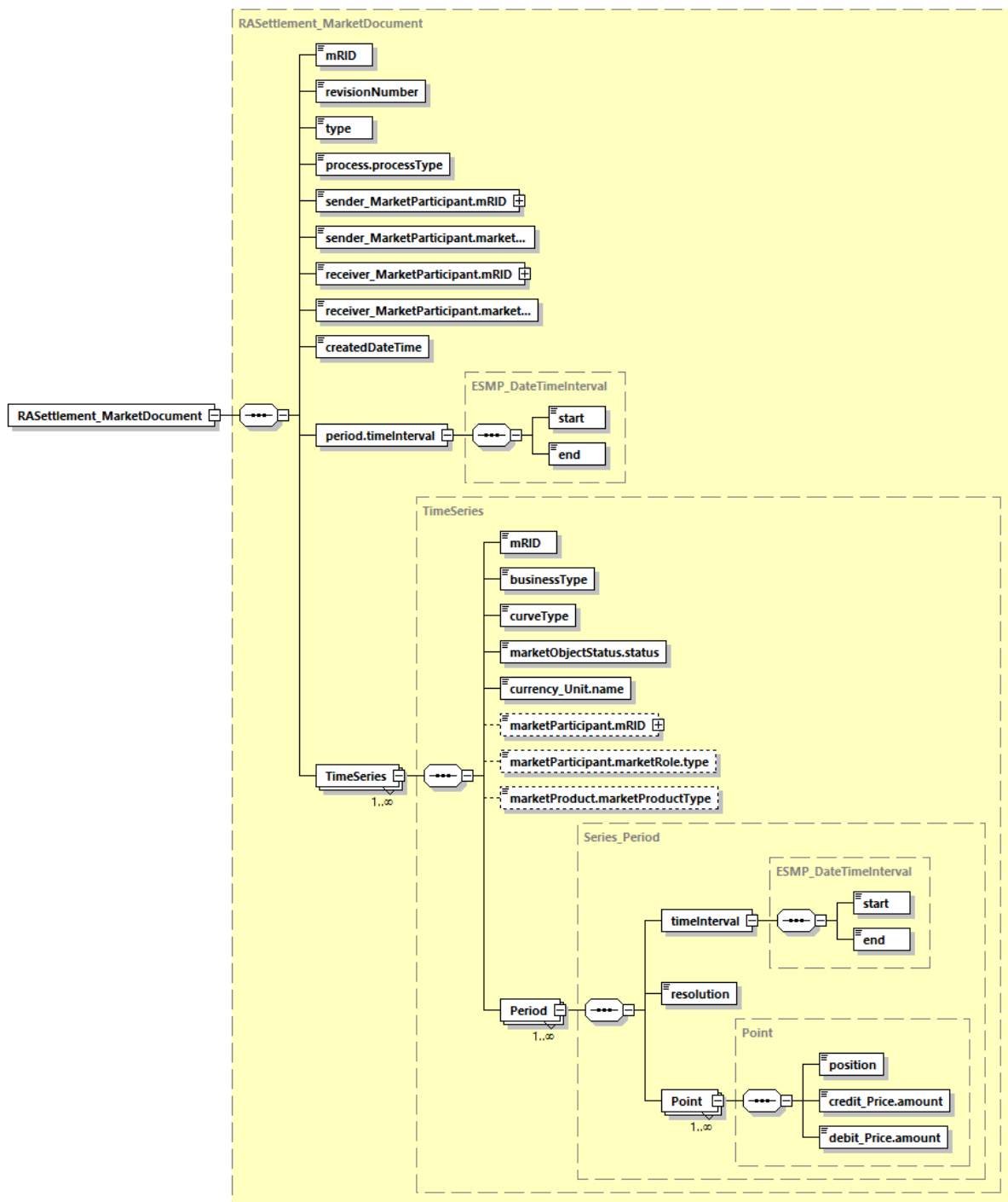
136

137 **2.2.4. Datatypes**

138 The list of datatypes used for the RASettlement assembly model is as follows:

- 139 • ESMP_DateTimeInterval compound
- 140 • Amount_Decimal datatype
- 141 • BusinessKind_String datatype, codelist BusinessTypeList
- 142 • CurrencyCode_String datatype, codelist CurrencyTypeList
- 143 • CurveType_String datatype, codelist CurveTypeList
- 144 • ESMP_DateTime datatype
- 145 • ESMPVersion_String datatype
- 146 • ID_String datatype
- 147 • MarketProductKind_String datatype, codelist MarketProductTypeList
- 148 • MarketRoleKind_String datatype, codelist RoleTypeList
- 149 • MessageKind_String datatype, codelist MessageTypeList
- 150 • PartyID_String datatype, codelist CodingSchemeTypeList
- 151 • Position_Integer datatype
- 152 • ProcessKind_String datatype, codelist ProcessTypeList
- 153 • Status_String datatype, codelist StatusTypeList
- 154 • YMDHM_DateTime datatype
- 155

156 2.2.5. RASettlement_MarketDocument XML schema structure



157
158

Generated by XMLSpy www.altova.com
Figure 3 - RASettlement_MarketDocument schema structure

159 2.2.6. RASettlement _MarketDocument XML schema

160

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

162 urn:iec62325.351:tc57wg16:451-n:rasettlementdocument:1:2

```

163 <?xml version="1.0" encoding="utf-8"?>
164 <xs:schema xmlns:ec1="urn:entsoe.eu:wgedi:codelists"
165 xmlns="urn:iec62325.351:tc57wg16:451-n:rasettlementdocument:1:2"
166 xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
167 xmlns:cimp="http://www.iec.ch/cimprofile"
168 xmlns:xs="http://www.w3.org/2001/XMLSchema"
169 targetNamespace="urn:iec62325.351:tc57wg16:451-n:rasettlementdocument:1:2"
170 elementFormDefault="qualified" attributeFormDefault="unqualified">
171   <xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
172 entsoe-eu-wgedi-codelists.xsd"/>
173   <xs:element name="RASettlement_MarketDocument"
174 type="RASettlement_MarketDocument"/>
175   <xs:simpleType name="Position_Integer"
176 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
177     <xs:restriction base="xs:integer">
178       <xs:maxInclusive value="999999"/>
179       <xs:minInclusive value="1"/>
180     </xs:restriction>
181   </xs:simpleType>
182   <xs:simpleType name="Amount_Decimal"
183 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Decimal">
184     <xs:restriction base="xs:decimal">
185       <xs:totalDigits value="17"/>
186     </xs:restriction>
187   </xs:simpleType>
188   <xs:complexType name="Point"
189 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
190     <xs:sequence>
191       <xs:element name="position" type="Position_Integer"
192 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
193 schema-cim16#Point.position"/>
194       <xs:element name="credit_Price.amount" type="Amount_Decimal"
195 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
196 schema-cim16#Price.amount"/>
197       <xs:element name="debit_Price.amount" type="Amount_Decimal"
198 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
199 schema-cim16#Price.amount"/>
200     </xs:sequence>
201   </xs:complexType>
202   <xs:simpleType name="ID_String"
203 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
204     <xs:restriction base="xs:string">
205       <xs:maxLength value="60"/>
206     </xs:restriction>
207   </xs:simpleType>
208   <xs:simpleType name="ESMPVersion_String"
209 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
210     <xs:restriction base="xs:string">
211       <xs:pattern value="[1-9]([0-9]){0,2}"/>

```

```

212         </xs:restriction>
213     </xs:simpleType>
214     <xs:simpleType name="MessageKind_String"
215 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
216         <xs:restriction base="ecl:MessageTypeList"/>
217     </xs:simpleType>
218     <xs:simpleType name="ProcessKind_String"
219 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
220         <xs:restriction base="ecl:ProcessTypeList"/>
221     </xs:simpleType>
222     <xs:simpleType name="PartyID_String-base"
223 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
224         <xs:restriction base="xs:string">
225             <xs:maxLength value="16"/>
226         </xs:restriction>
227     </xs:simpleType>
228     <xs:complexType name="PartyID_String"
229 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
230         <xs:simpleContent>
231             <xs:extension base="PartyID_String-base">
232                 <xs:attribute name="codingScheme"
233 type="ecl:CodingSchemeTypeList" use="required"/>
234             </xs:extension>
235         </xs:simpleContent>
236     </xs:complexType>
237     <xs:simpleType name="MarketRoleKind_String"
238 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
239         <xs:restriction base="ecl:RoleTypeList"/>
240     </xs:simpleType>
241     <xs:simpleType name="ESMP_DateTime"
242 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
243         <xs:restriction base="xs:dateTime">
244             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-
245 9]|12)[0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
246 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
247 9])Z)|(((13579)[26][02468][048]|13579[01345789](0)[48]|13579[01345789][2468][0
248 48]|02468[048][02468][048]|02468[1235679](0)[48]|02468[1235679][2468][048]|
249 0-9[0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
250 5][0-9]:[0-5][0-
251 9])Z)|(((13579)[26][02468][1235679]|13579[01345789](0)[01235679]|13579[0134578
252 9][2468][1235679]|02468[048][02468][1235679]|02468[1235679](0)[01235679]|0246
253 8[1235679][2468][1235679]|0-9[0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
254 9]|2[0-8])T((([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
255         </xs:restriction>
256     </xs:simpleType>
257     <xs:simpleType name="YMDHM_DateTime"
258 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
259         <xs:restriction base="xs:string">
260             <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02]))[\-](0[1-
261 9]|12)[0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|12)[0-
262 9]|30))T((([01][0-9]|2[0-3]):[0-5][0-
263 9])Z)|(((13579)[26][02468][048]|13579[01345789](0)[48]|13579[01345789][2468][0
264 48]|02468[048][02468][048]|02468[1235679](0)[48]|02468[1235679][2468][048]|
265 0-9[0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T((([01][0-9]|2[0-3]):[0-
266 5][0-
267 9])Z)|(((13579)[26][02468][1235679]|13579[01345789](0)[01235679]|13579[0134578

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268 9][2468][1235679] |[02468][048][02468][1235679] |[02468][1235679](0)[01235679] |[0246
269 8][1235679][2468][1235679] |[0-9][0-9][13579][01345789])(\-(02)(\-(0[1-9]|1[0-
270 9]|2[0-8]))T((([01][0-9]|2[0-3]):[0-5][0-9])Z)"/>
271     </xs:restriction>
272   </xs:simpleType>
273   <xs:complexType name="ESMP_DateTimeInterval"
274 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
275     <xs:sequence>
276       <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
277 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
278 cim16#DateTimeInterval.start"/>
279       <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
280 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
281 cim16#DateTimeInterval.end"/>
282     </xs:sequence>
283   </xs:complexType>
284   <xs:complexType name="RASettlement_MarketDocument"
285 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
286     <xs:sequence>
287       <xs:element name="mRID" type="ID_String" minOccurs="1"
288 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
289 cim16#IdentifiedObject.mRID"/>
290       <xs:element name="revisionNumber" type="ESMPVersion_String"
291 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
292 schema-cim16#Document.revisionNumber"/>
293       <xs:element name="type" type="MessageKind_String" minOccurs="1"
294 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
295 cim16#Document.type"/>
296       <xs:element name="process.processType"
297 type="ProcessKind_String" minOccurs="1" maxOccurs="1"
298 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
299 cim16#Process.processType"/>
300       <xs:element name="sender_MarketParticipant.mRID"
301 type="PartyID_String" minOccurs="1" maxOccurs="1"
302 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
303 cim16#IdentifiedObject.mRID"/>
304       <xs:element name="sender_MarketParticipant.marketRole.type"
305 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
306 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
307       <xs:element name="receiver_MarketParticipant.mRID"
308 type="PartyID_String" minOccurs="1" maxOccurs="1"
309 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
310 cim16#IdentifiedObject.mRID"/>
311       <xs:element name="receiver_MarketParticipant.marketRole.type"
312 type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
313 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
314       <xs:element name="createdDateTime" type="ESMP_DateTime"
315 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
316 schema-cim16#Document.createdDateTime"/>
317       <xs:element name="period.timeInterval"
318 type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
319 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
320 cim16#Period.timeInterval"/>
321       <xs:element name="TimeSeries" type="TimeSeries" minOccurs="1"
322 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
323 cim16#MarketDocument.TimeSeries"/>

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324         </xs:sequence>
325     </xs:complexType>
326     <xs:complexType name="Series_Period"
327 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
328         <xs:sequence>
329             <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
330 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
331 schema-cim16#Period.timeInterval"/>
332             <xs:element name="resolution" type="xs:duration" minOccurs="1"
333 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
334 cim16#Period.resolution"/>
335             <xs:element name="Point" type="Point" minOccurs="1"
336 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
337 cim16#Period.Point"/>
338         </xs:sequence>
339     </xs:complexType>
340     <xs:simpleType name="BusinessKind_String"
341 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
342         <xs:restriction base="ecl:BusinessTypeList"/>
343     </xs:simpleType>
344     <xs:simpleType name="CurveType_String"
345 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
346         <xs:restriction base="ecl:CurveTypeList"/>
347     </xs:simpleType>
348     <xs:simpleType name="Status_String"
349 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
350         <xs:restriction base="ecl:StatusTypeList"/>
351     </xs:simpleType>
352     <xs:simpleType name="CurrencyCode_String"
353 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
354         <xs:restriction base="ecl:CurrencyTypeList"/>
355     </xs:simpleType>
356     <xs:simpleType name="MarketProductKind_String"
357 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
358         <xs:restriction base="ecl:MarketProductTypeList"/>
359     </xs:simpleType>
360     <xs:complexType name="TimeSeries"
361 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
362         <xs:sequence>
363             <xs:element name="mRID" type="ID_String" minOccurs="1"
364 maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
365 cim16#IdentifiedObject.mRID"/>
366             <xs:element name="businessType" type="BusinessKind_String"
367 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
368 schema-cim16#TimeSeries.businessType"/>
369             <xs:element name="curveType" type="CurveType_String"
370 minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
371 schema-cim16#TimeSeries.curveType"/>
372             <xs:element name="marketObjectStatus.status"
373 type="Status_String" minOccurs="1" maxOccurs="1"
374 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
375 cim16#MarketObjectStatus.status"/>
376             <xs:element name="currency_Unit.name"
377 type="CurrencyCode_String" minOccurs="1" maxOccurs="1"
378 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>

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379         <xs:element name="marketParticipant.mRID" type="PartyID_String"
380 minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
381 schema-cim16#IdentifiedObject.mRID"/>
382         <xs:element name="marketParticipant.marketRole.type"
383 type="MarketRoleKind_String" minOccurs="0" maxOccurs="1"
384 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
385         <xs:element name="marketProduct.marketProductType"
386 type="MarketProductKind_String" minOccurs="0" maxOccurs="1"
387 sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
388 cim16#MarketProduct.marketProductType"/>
389         <xs:element name="Period" type="Series_Period" minOccurs="1"
390 maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
391 cim16#TimeSeries.Period"/>
392     </xs:sequence>
393 </xs:complexType>
394 </xs:schema>
395
```