European Network of
Transmission System Operators
for Electricity

REDISPATCH DOCUMENT
UML MODEL AND SCHEMA

2021-09-15
APPROVED DOCUMENT
VERSION 1.1

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Revision History

Version	Release	Date	Comments
0	1	2019-01-14	First draft of the document.
1	0	2019-02-12	Approved by MC.
1	1	2021-09-15	Updates in redispatch document XSD v6.1: An optional curveType attribute was added to Timeseries class. Approved by MC.

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Objective

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

The schema of the Redispatch_MarketDocument could be used in various business processes.

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

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

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

Redispatch_MarketDocument

2.1 Redispatch contextual model

2.1.1 Overview of the model

Figure 1 shows the model.

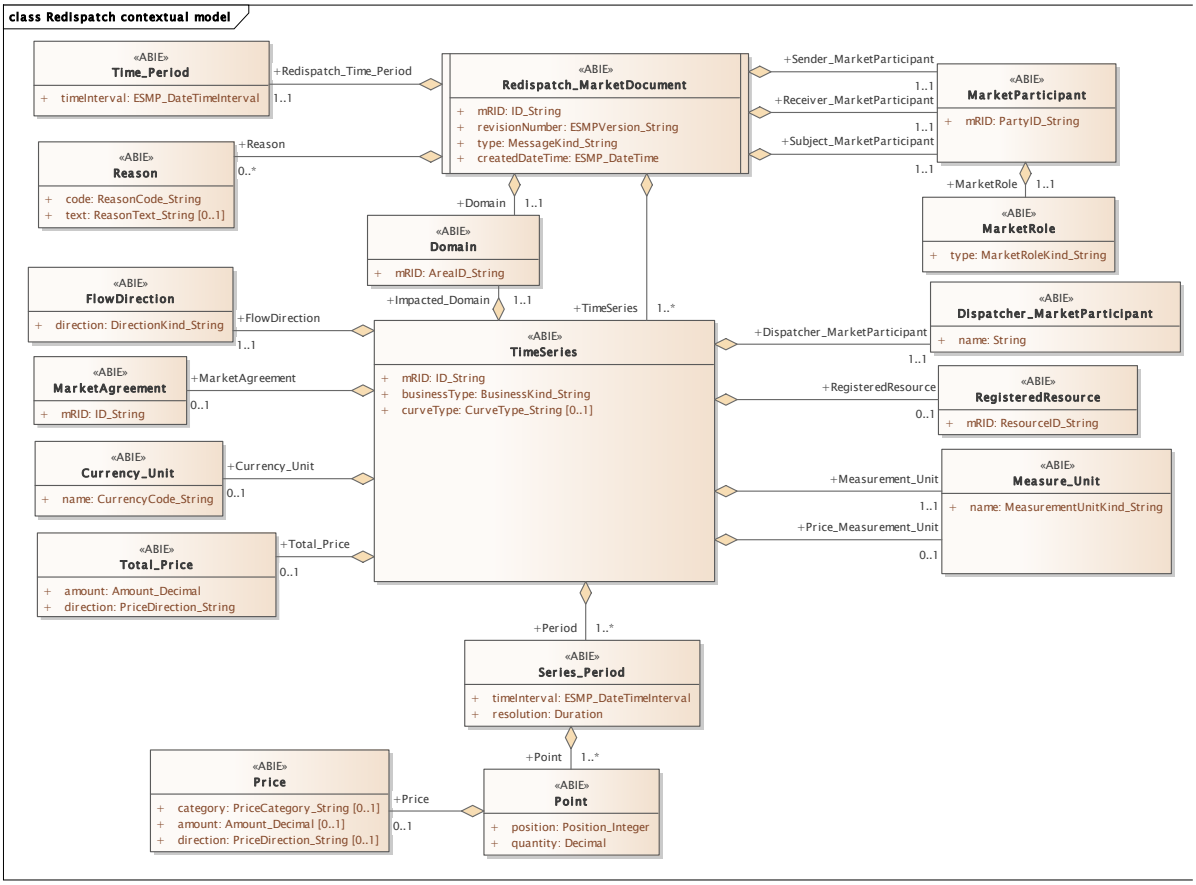

Figure 1 - Redispatch contextual model

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
Dispatcher_MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
Domain	TC57CIM::IEC62325::MarketManagement::Domain
FlowDirection	TC57CIM::IEC62325::MarketManagement::FlowDirection
MarketAgreement	TC57CIM::IEC62325::MarketManagement::MarketAgreement
MarketParticipant	TC57CIM::IEC62325::MarketCommon::MarketParticipant
MarketRole	TC57CIM::IEC62325::MarketCommon::MarketRole
Measure_Unit	TC57CIM::IEC62325::MarketManagement::Unit
Point	TC57CIM::IEC62325::MarketManagement::Point
Price	TC57CIM::IEC62325::MarketManagement::Price
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Redispatch_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
RegisteredResource	TC57CIM::IEC62325::MarketCommon::RegisteredResource
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
Time_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries
Total_Price	TC57CIM::IEC62325::MarketManagement::Price

2.2 Redispatch assembly model

2.2.1 Overview of the model

Figure 2 shows the model.

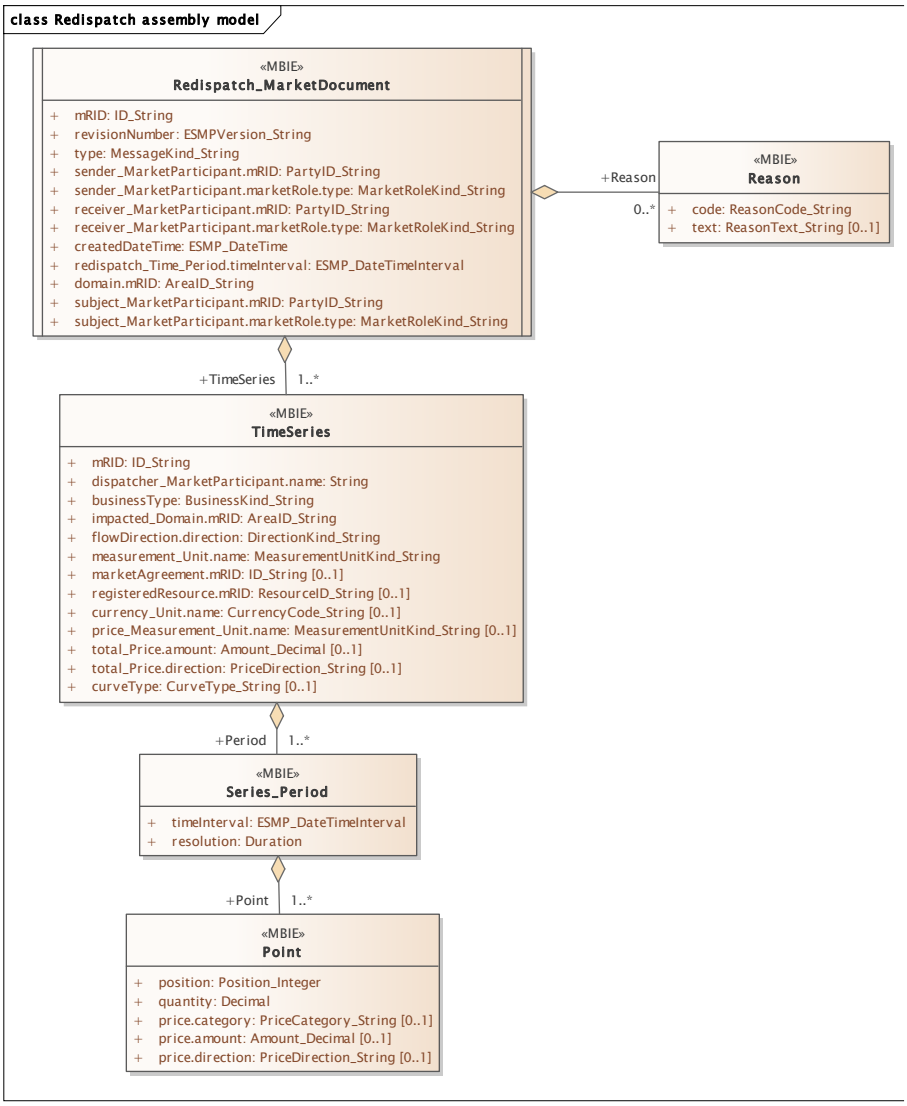

Figure 2 - Redispatch assembly model

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
Point	TC57CIM::IEC62325::MarketManagement::Point
Reason	TC57CIM::IEC62325::MarketManagement::Reason
Redispatch_MarketDocument	TC57CIM::IEC62325::MarketManagement::MarketDocument
Series_Period	TC57CIM::IEC62325::MarketManagement::Period
TimeSeries	TC57CIM::IEC62325::MarketManagement::TimeSeries

2.2.3 Detailed Redispatch assembly model

2.2.3.1 Redispatch_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 Redispatch_MarketDocument.

Table 3 - Attributes of Redispatch assembly model::Redispatch_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]	sender_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document owner.
4	[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.
5	[1..1]	receiver_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market. --- Document recipient.
6	[1..1]	receiver_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- Document recipient. --- The role associated with a MarketParticipant.
7	[1..1]	createdDateTime ESMP_DateTime	The date and time of the creation of the document.
8	[1..1]	redispatch_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 redispatch time interval.

Order	mult.	Attribute name / Attribute type	Description
9	[1..1]	domain.mRID AreaID_String	The unique identification of the domain. --- The identification of the domain that is covered in the schedule document. It is in general the market balance area that is the subject of the schedule plan.
10	[1..1]	subject_MarketParticipant.mRID PartyID_String	The identification of a party in the energy market.
11	[1..1]	subject_MarketParticipant.marketRole.type MarketRoleKind_String	The identification of the role played by a market player. --- --- The role associated with a MarketParticipant.

Table 4 shows all association ends of Redispatch_MarketDocument with other classes.

Table 4 - Association ends of Redispatch assembly model::Redispatch_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: Redispatch contextual model::Redispatch_MarketDocument.[] ----- Redispatch contextual model::TimeSeries.TimeSeries[1..*]
13	[0..*]	Reason Reason	Association Based On: Redispatch contextual model::Reason.Reason[0..*] ----- Redispatch contextual model::Redispatch_MarketDocument.[]

2.2.3.2 Point

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

Table 5 shows all attributes of Point.

Table 5 - Attributes of Redispatch 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]	price.category PriceCategory_String	The category of a price to be used in a price calculation. Note: the price category is mutually agreed between system operators.
3	[0..1]	price.amount Amount_Decimal	A number of monetary units specified in a unit of currency.
4	[0..1]	price.direction PriceDirection_String	The direction of a price payment (i.e. an impacted area system operator pays to internal market parties or inverse).

2.2.3.3 Reason

The motivation of an act.

Table 6 shows all attributes of Reason.

Table 6 - Attributes of Redispatch 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.

2.2.3.4 Series_Period

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

Table 7 shows all attributes of Series_Period.

Table 7 - Attributes of Redispatch 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.

Table 8 shows all association ends of Series_Period with other classes.

Table 8 - Association ends of Redispatch 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: Redispatch contextual model::Series_Period.[] --- Redispatch contextual model::Point.Point[1..*]

2.2.3.5 TimeSeries

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

Table 9 shows all attributes of TimeSeries.

137 **Table 9 - Attributes of Redispatch 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]	dispatcher_MarketParticipant.name String	The name is any free human readable and possibly non unique text naming the object. --- The identification of the party putting the product into the in area.
2	[1..1]	businessType BusinessKind_String	The identification of the nature of the time series.
3	[1..1]	impacted_Domain.mRID AreaID_String	The unique identification of the domain. --- The area where the product is being delivered.
4	[1..1]	flowDirection.direction DirectionKind_String	The coded identification of the direction of energy flow.
5	[1..1]	measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). --- The unit of measurement used for the quantities expressed within the time series.
6	[0..1]	marketAgreement.mRID ID_String	The unique identification of the agreement.
7	[0..1]	registeredResource.mRID ResourceID_String	The unique identification of a resource. --- The identification of a resource associated with a TimeSeries.
8	[0..1]	currency_Unit.name CurrencyCode_String	The identification of the formal code for a currency (ISO 4217).
9	[0..1]	price_Measurement_Unit.name MeasurementUnitKind_String	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20).
10	[0..1]	total_Price.amount Amount_Decimal	A number of monetary units specified in a unit of currency.
11	[0..1]	total_Price.direction PriceDirection_String	The direction of a price payment (i.e. an impacted area system operator pays to internal market parties or inverse).
12	[0..1]	curveType CurveType_String	The identification of the coded representation of the type of curve being described.

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139 Table 10 shows all association ends of TimeSeries with other classes.

140 **Table 10 - Association ends of Redispatch assembly model::TimeSeries with other**
141 **classes**

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

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2.2.4 Datatypes

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

- ESMP_DateTimeInterval compound
- Amount_Decimal datatype
- AreaID_String datatype, codelist CodingSchemeTypeList
- BusinessKind_String datatype, codelist BusinessTypeList
- CurrencyCode_String datatype, codelist CurrencyTypeList
- CurveType_String datatype, codelist CurveTypeList
- DirectionKind_String datatype, codelist DirectionTypeList
- ESMP_DateTime datatype
- ESMPVersion_String datatype
- ID_String datatype
- MarketRoleKind_String datatype, codelist RoleTypeList
- MeasurementUnitKind_String datatype, codelist UnitOfMeasureTypeList
- MessageKind_String datatype, codelist MessageTypeList
- PartyID_String datatype, codelist CodingSchemeTypeList
- Position_Integer datatype
- PriceCategory_String datatype, codelist PriceCategoryTypeList
- PriceDirection_String datatype, codelist PriceDirectionTypeList
- ReasonCode_String datatype, codelist ReasonCodeTypeList
- ReasonText_String datatype
- ResourceID_String datatype, codelist CodingSchemeTypeList
- YMDHM_DateTime datatype

2.2.5 Redispatch_MarketDocument XML schema structure

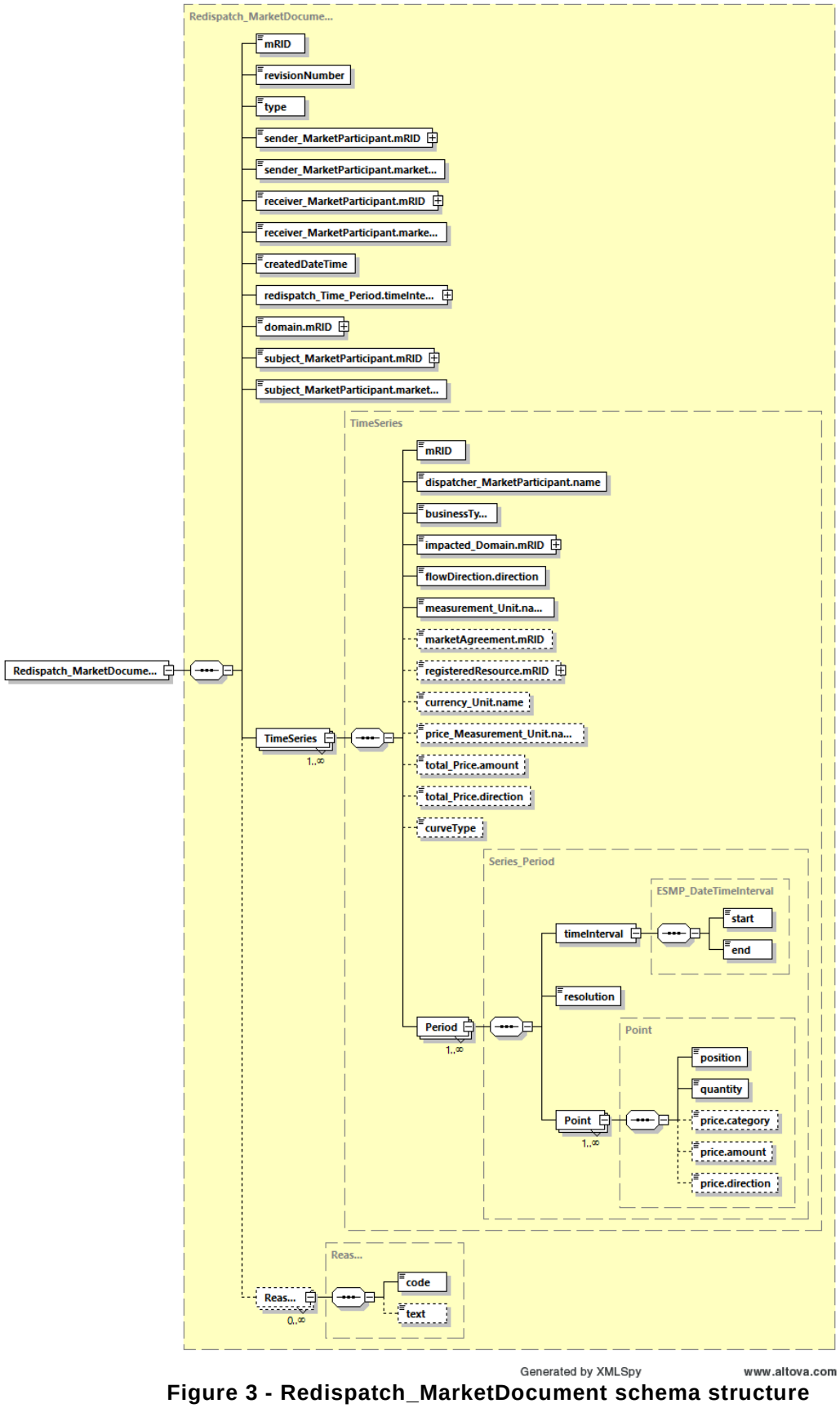

Figure 3 - Redispatch_MarketDocument schema structure

2.2.6 Redispatch_MarketDocument XML schema

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

urn:iec62325.351:tc57wg16:451-7:redispatchdocument:6:1

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
xmlns="urn:iec62325.351:tc57wg16:451-7:redispatchdocument:6:1"
xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
xmlns:cimp="http://www.iec.ch/cimprofile"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:iec62325.351:tc57wg16:451-7:redispatchdocument:6:1"
elementFormDefault="qualified" attributeFormDefault="unqualified">
	<xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
entsoe-eu-wgedi-codelists.xsd"/>
	<xs:element name="Redispatch_MarketDocument"
type="Redispatch_MarketDocument"/>
	<xs:simpleType name="Position_Integer"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Integer">
		<xs:restriction base="xs:integer">
			<xs:maxInclusive value="999999"/>
			<xs:minInclusive value="1"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="PriceCategory_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="ecl:PriceCategoryTypeList"/>
	</xs:simpleType>
	<xs:simpleType name="Amount_Decimal"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Decimal">
		<xs:restriction base="xs:decimal">
			<xs:totalDigits value="17"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="PriceDirection_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="ecl:PriceDirectionTypeList"/>
	</xs:simpleType>
	<xs:complexType name="Point"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Point">
		<xs:sequence>
			<xs:element name="position" type="Position_Integer"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#Point.position"/>
			<xs:element name="quantity" type="xs:decimal" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Point.quantity"/>
			<xs:element name="price.category" type="PriceCategory_String"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#Price.category"/>
			<xs:element name="price.amount" type="Amount_Decimal"
minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#Price.amount"/>
```

```
222                     <xs:element name="price.direction" type="PriceDirection_String"
223   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
224   schema-cim16#Price.direction"/>
225                 </xs:sequence>
226           </xs:complexType>
227           <xs:simpleType name="ReasonCode_String"
228   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
229                 <xs:restriction base="ecl:ReasonCodeTypeList"/>
230           </xs:simpleType>
231           <xs:simpleType name="ReasonText_String"
232   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
233                 <xs:restriction base="xs:string">
234                       <xs:maxLength value="512"/>
235                 </xs:restriction>
236           </xs:simpleType>
237           <xs:complexType name="Reason"
238   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Reason">
239                 <xs:sequence>
240                       <xs:element name="code" type="ReasonCode_String" minOccurs="1"
241   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
242   cim16#Reason.code"/>
243                       <xs:element name="text" type="ReasonText_String" minOccurs="0"
244   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
245   cim16#Reason.text"/>
246                 </xs:sequence>
247           </xs:complexType>
248           <xs:simpleType name="ID_String"
249   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
250                 <xs:restriction base="xs:string">
251                       <xs:maxLength value="60"/>
252                 </xs:restriction>
253           </xs:simpleType>
254           <xs:simpleType name="ESMPVersion_String"
255   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
256                 <xs:restriction base="xs:string">
257                       <xs:pattern value="[1-9]([0-9]){0,2}"/>
258                 </xs:restriction>
259           </xs:simpleType>
260           <xs:simpleType name="MessageKind_String"
261   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
262                 <xs:restriction base="ecl:MessageTypeList"/>
263           </xs:simpleType>
264           <xs:simpleType name="PartyID_String-base"
265   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
266                 <xs:restriction base="xs:string">
267                       <xs:maxLength value="16"/>
268                 </xs:restriction>
269           </xs:simpleType>
270           <xs:complexType name="PartyID_String"
271   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
272                 <xs:simpleContent>
273                       <xs:extension base="PartyID_String-base">
274                             <xs:attribute name="codingScheme"
275   type="ecl:CodingSchemeTypeList" use="required"/>
276                       </xs:extension>
277                 </xs:simpleContent>
```

```
278         </xs:complexType>
279         <xs:simpleType name="MarketRoleKind_String"
280   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
281               <xs:restriction base="ecl:RoleTypeList"/>
282         </xs:simpleType>
283         <xs:simpleType name="ESMP_DateTime"
284   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
285               <xs:restriction base="xs:dateTime">
286                     <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
287   9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
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296   9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
297               </xs:restriction>
298         </xs:simpleType>
299         <xs:simpleType name="AreaID_String-base"
300   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
301               <xs:restriction base="xs:string">
302                     <xs:maxLength value="18"/>
303               </xs:restriction>
304         </xs:simpleType>
305         <xs:complexType name="AreaID_String"
306   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
307               <xs:simpleContent>
308                     <xs:extension base="AreaID_String-base">
309                           <xs:attribute name="codingScheme"
310   type="ecl:CodingSchemeTypeList" use="required"/>
311                     </xs:extension>
312               </xs:simpleContent>
313         </xs:complexType>
314         <xs:simpleType name="YMDHM_DateTime"
315   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
316               <xs:restriction base="xs:string">
317                     <xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
318   9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
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325   9][2468][1235679]|[02468][048][02468][1235679]|[02468][1235679](0)[01235679]|[0246
326   8][1235679][2468][1235679]|[0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
327   9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
328               </xs:restriction>
329         </xs:simpleType>
330         <xs:complexType name="ESMP_DateTimeInterval"
331   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTimeInterval">
332               <xs:sequence>
```

```
333                     <xs:element name="start" type="YMDHM_DateTime" minOccurs="1"
334   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
335   cim16#DateTimeInterval.start"/>
336                     <xs:element name="end" type="YMDHM_DateTime" minOccurs="1"
337   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
338   cim16#DateTimeInterval.end"/>
339               </xs:sequence>
340         </xs:complexType>
341         <xs:complexType name="Redispatch_MarketDocument"
342   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
343               <xs:sequence>
344                     <xs:element name="mRID" type="ID_String" minOccurs="1"
345   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
346   cim16#IdentifiedObject.mRID"/>
347                     <xs:element name="revisionNumber" type="ESMPVersion_String"
348   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
349   schema-cim16#Document.revisionNumber"/>
350                     <xs:element name="type" type="MessageKind_String" minOccurs="1"
351   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
352   cim16#Document.type"/>
353                     <xs:element name="sender_MarketParticipant.mRID"
354   type="PartyID_String" minOccurs="1" maxOccurs="1"
355   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
356   cim16#IdentifiedObject.mRID"/>
357                     <xs:element name="sender_MarketParticipant.marketRole.type"
358   type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
359   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
360                     <xs:element name="receiver_MarketParticipant.mRID"
361   type="PartyID_String" minOccurs="1" maxOccurs="1"
362   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
363   cim16#IdentifiedObject.mRID"/>
364                     <xs:element name="receiver_MarketParticipant.marketRole.type"
365   type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
366   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
367                     <xs:element name="createdDateTime" type="ESMP_DateTime"
368   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
369   schema-cim16#Document.createdDateTime"/>
370                     <xs:element name="redispatch_Time_Period.timeInterval"
371   type="ESMP_DateTimeInterval" minOccurs="1" maxOccurs="1"
372   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
373   cim16#Period.timeInterval"/>
374                     <xs:element name="domain.mRID" type="AreaID_String"
375   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
376   schema-cim16#IdentifiedObject.mRID"/>
377                     <xs:element name="subject_MarketParticipant.mRID"
378   type="PartyID_String" minOccurs="1" maxOccurs="1"
379   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
380   cim16#IdentifiedObject.mRID"/>
381                     <xs:element name="subject_MarketParticipant.marketRole.type"
382   type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
383   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
384                     <xs:element name="TimeSeries" type="TimeSeries" minOccurs="1"
385   maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
386   cim16#MarketDocument.TimeSeries"/>
```

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387                     <xs:element name="Reason" type="Reason" minOccurs="0"
388   maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
389   cim16#MarketDocument.Reason"/>
390               </xs:sequence>
391         </xs:complexType>
392         <xs:complexType name="Series_Period"
393   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Period">
394               <xs:sequence>
395                     <xs:element name="timeInterval" type="ESMP_DateTimeInterval"
396   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
397   schema-cim16#Period.timeInterval"/>
398                     <xs:element name="resolution" type="xs:duration" minOccurs="1"
399   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
400   cim16#Period.resolution"/>
401                     <xs:element name="Point" type="Point" minOccurs="1"
402   maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
403   cim16#Period.Point"/>
404               </xs:sequence>
405         </xs:complexType>
406         <xs:simpleType name="BusinessKind_String"
407   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
408               <xs:restriction base="ecl:BusinessTypeList"/>
409         </xs:simpleType>
410         <xs:simpleType name="DirectionKind_String"
411   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
412               <xs:restriction base="ecl:DirectionTypeList"/>
413         </xs:simpleType>
414         <xs:simpleType name="MeasurementUnitKind_String"
415   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
416               <xs:restriction base="ecl:UnitOfMeasureTypeList"/>
417         </xs:simpleType>
418         <xs:simpleType name="ResourceID_String-base"
419   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
420               <xs:restriction base="xs:string">
421                     <xs:maxLength value="60"/>
422               </xs:restriction>
423         </xs:simpleType>
424         <xs:complexType name="ResourceID_String"
425   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
426               <xs:simpleContent>
427                     <xs:extension base="ResourceID_String-base">
428                           <xs:attribute name="codingScheme"
429   type="ecl:CodingSchemeTypeList" use="required"/>
430                     </xs:extension>
431               </xs:simpleContent>
432         </xs:complexType>
433         <xs:simpleType name="CurrencyCode_String"
434   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
435               <xs:restriction base="ecl:CurrencyTypeList"/>
436         </xs:simpleType>
437         <xs:simpleType name="CurveType_String"
438   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
439               <xs:restriction base="ecl:CurveTypeList"/>
440         </xs:simpleType>
441         <xs:complexType name="TimeSeries"
442   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#TimeSeries">
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443                 <xs:sequence>
444                       <xs:element name="mRID" type="ID_String" minOccurs="1"
445   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
446   cim16#IdentifiedObject.mRID"/>
447                       <xs:element name="dispatcher_MarketParticipant.name"
448   type="xs:string" minOccurs="1" maxOccurs="1"
449   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
450   cim16#IdentifiedObject.name"/>
451                       <xs:element name="businessType" type="BusinessKind_String"
452   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
453   schema-cim16#TimeSeries.businessType"/>
454                       <xs:element name="impacted_Domain.mRID" type="AreaID_String"
455   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
456   schema-cim16#IdentifiedObject.mRID"/>
457                       <xs:element name="flowDirection.direction"
458   type="DirectionKind_String" minOccurs="1" maxOccurs="1"
459   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
460   cim16#FlowDirection.direction"/>
461                       <xs:element name="measurement_Unit.name"
462   type="MeasurementUnitKind_String" minOccurs="1" maxOccurs="1"
463   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
464                       <xs:element name="marketAgreement.mRID" type="ID_String"
465   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
466   schema-cim16#IdentifiedObject.mRID"/>
467                       <xs:element name="registeredResource.mRID"
468   type="ResourceID_String" minOccurs="0" maxOccurs="1"
469   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
470   cim16#IdentifiedObject.mRID"/>
471                       <xs:element name="currency_Unit.name"
472   type="CurrencyCode_String" minOccurs="0" maxOccurs="1"
473   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
474                       <xs:element name="price_Measurement_Unit.name"
475   type="MeasurementUnitKind_String" minOccurs="0" maxOccurs="1"
476   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Unit.name"/>
477                       <xs:element name="total_Price.amount" type="Amount_Decimal"
478   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
479   schema-cim16#Price.amount"/>
480                       <xs:element name="total_Price.direction"
481   type="PriceDirection_String" minOccurs="0" maxOccurs="1"
482   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Price.direction"/>
483                       <xs:element name="curveType" type="CurveType_String"
484   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
485   schema-cim16#TimeSeries.curveType"/>
486                       <xs:element name="Period" type="Series_Period" minOccurs="1"
487   maxOccurs="unbounded" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
488   cim16#TimeSeries.Period"/>
489                 </xs:sequence>
490           </xs:complexType>
491   </xs:schema>
492
```