European Network of
Transmission System Operators
for Electricity

# AREA CONFIGURATION DOCUMENT UML MODEL AND SCHEMA

2019-12-11

APPROVED DOCUMENT
VERSION 1.2

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- SHALL NOT: This phrase, or the phrase “MUST NOT”, means that the definition is an absolute prohibition of the specification.
- SHOULD: This word, or the adjective “RECOMMENDED”, means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
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# Revision History

| Version | Release | Date | Paragraph | Comments |
|---|---|---|---|---|
| 0 | 1 | 2019-07-10 | | First draft of the Area Configuration Implementation guide. |
| 0 | 2 | 2019-07-11 | | Second draft of the Area Configuration Implementation guide. |
| 0 | 3 | 2019-08-28 | | Third draft of the Area Configuration Implementation guide. |
| 1 | 0 | 2019-09-10 | | Approved by MC. |
| 1 | 1 | 2019-10-18 | | Changes in v1.1 of the area configuration document<br>• Added a Registered Resource attribute at BorderConnection_Series.<br>• mRID of BorderConnection_Series becomes optional<br>• Becomes UML document and schema as process is part of CCC IG |
| 1 | 2 | 2019-12-11 | | The IG becomes a document UML and Schema. All the Coordinated Capacity Calculation related content was transferred into the Coordinated Capacity Calculation Implementation Guide.<br>Approved by MC. |



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# 1 Introduction

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

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

Especially, the area configuration is already used by the Nordic TSOs in the coordinated capacity calculation to communicate the bidding zone configuration. It is also used to share the bidding zone and metering grid area relations and master data for settlement.

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.



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# 2 Area Configuration contextual and assembly models

## 2.1 Area Configuration contextual model

### 2.1.1 Overview of the model

Figure 1 shows the model.

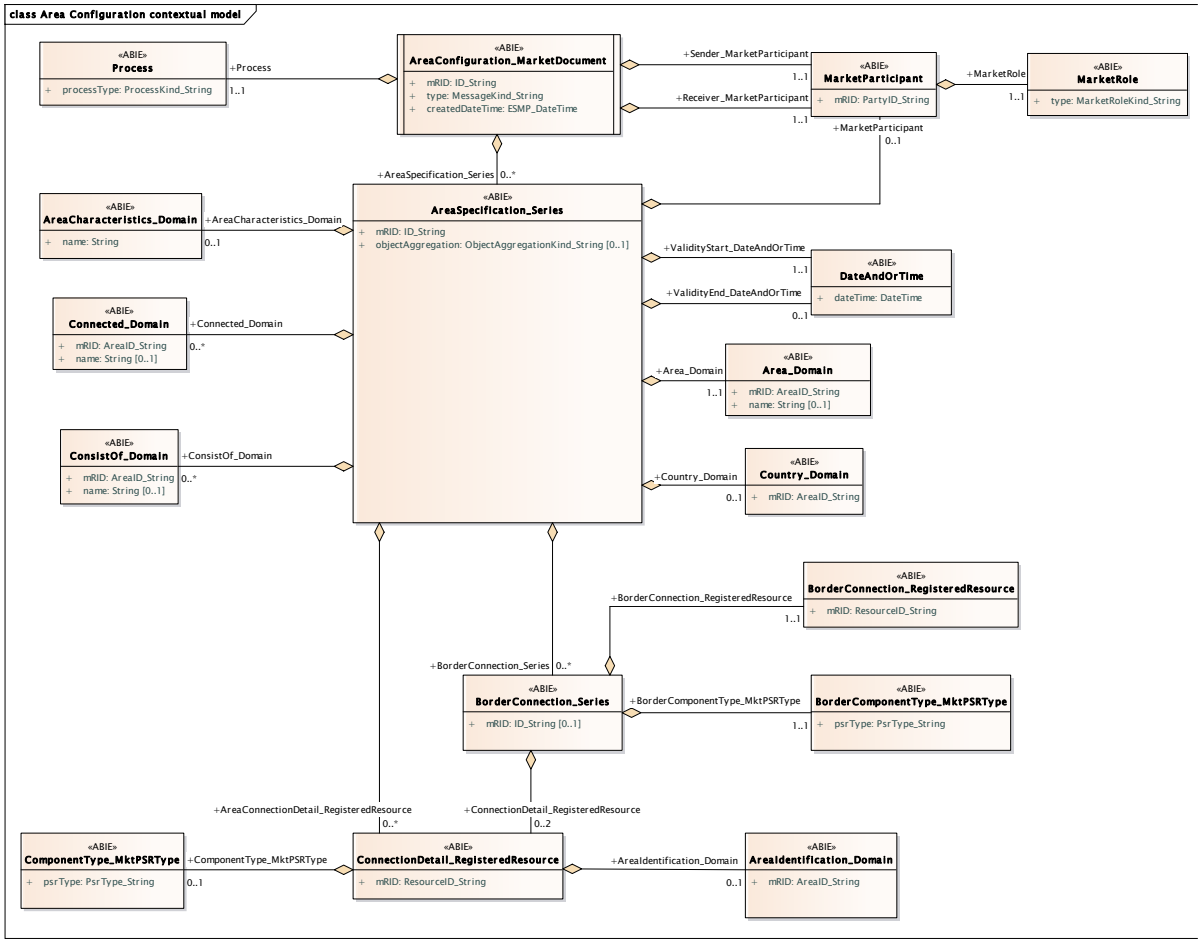


**Figure 1 - Area Configuration contextual model**

### 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 |
|---|---|
| Area_Domain | TC57CIM::IEC62325::MarketManagement::Domain |
| AreaCharacteristics_Domain | TC57CIM::IEC62325::MarketManagement::Domain |
| AreaConfiguration_MarketDocument | TC57CIM::IEC62325::MarketManagement::MarketDocument |
| AreaIdentification_Domain | TC57CIM::IEC62325::MarketManagement::Domain |
| AreaSpecification_Series | TC57CIM::IEC62325::MarketManagement::Series |
| BorderComponentType_MktPSRType | TC57CIM::IEC62325::MarketManagement::MktPSRType |
| BorderConnection_RegisteredResource | TC57CIM::IEC62325::MarketCommon::RegisteredResource |
| BorderConnection_Series | TC57CIM::IEC62325::MarketManagement::Series |
| ComponentType_MktPSRType | TC57CIM::IEC62325::MarketManagement::MktPSRType |
| Connected_Domain | TC57CIM::IEC62325::MarketManagement::Domain |
| ConnectionDetail_RegisteredResource | TC57CIM::IEC62325::MarketCommon::RegisteredResource |
| ConsistOf_Domain | TC57CIM::IEC62325::MarketManagement::Domain |
| Country_Domain | TC57CIM::IEC62325::MarketManagement::Domain |
| DateAndOrTime | TC57CIM::IEC62325::MarketManagement::DateAndOrTime |
| MarketParticipant | TC57CIM::IEC62325::MarketCommon::MarketParticipant |
| MarketRole | TC57CIM::IEC62325::MarketCommon::MarketRole |
| Process | TC57CIM::IEC62325::MarketManagement::Process |



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## 2.2 Area Configuration assembly model

### 2.2.1 Overview of the model

Figure 2 shows the model.

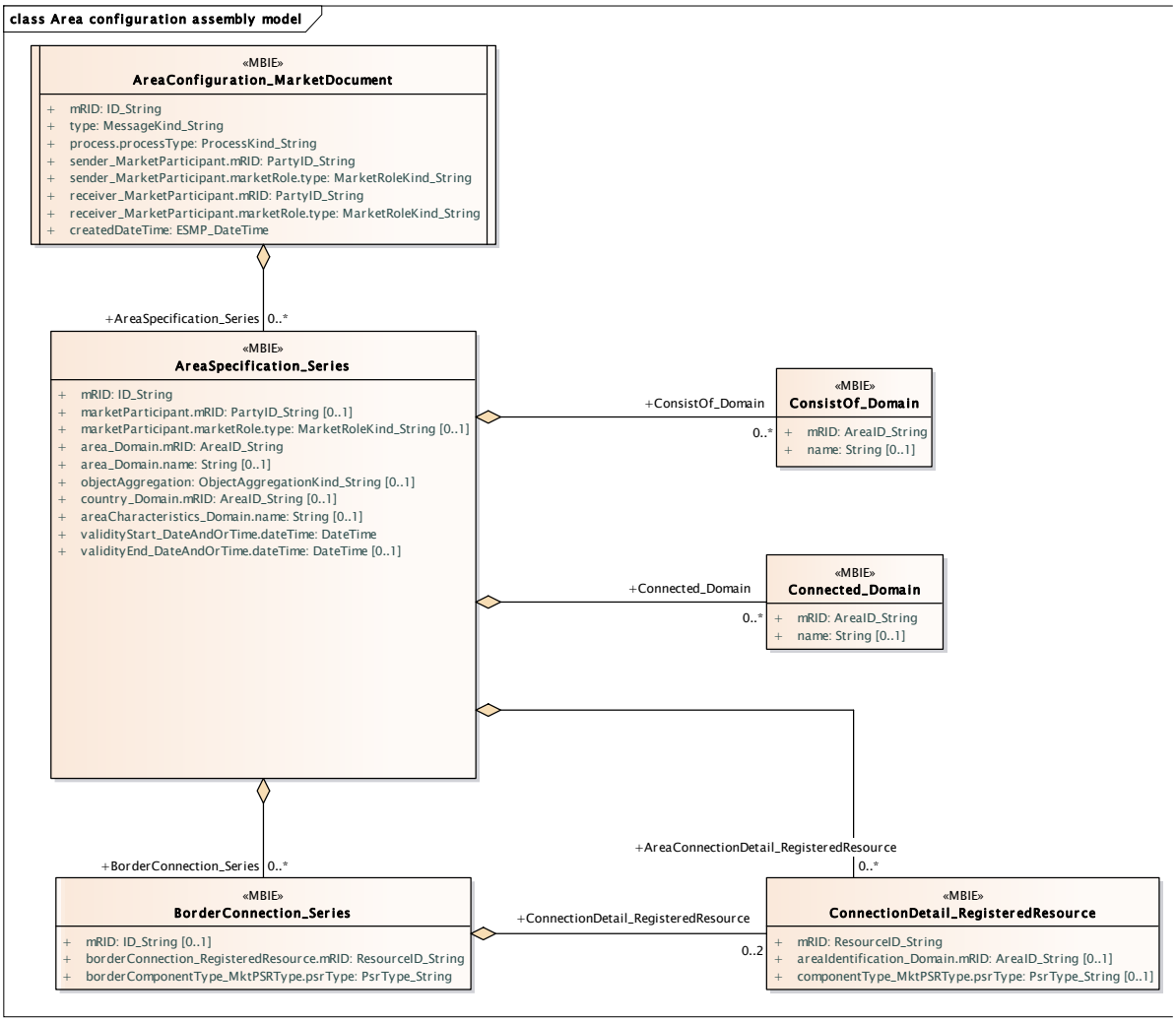


**Figure 2 - Area Configuration assembly model**

### 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 |
|---|---|
| AreaConfiguration_MarketDocument | TC57CIM::IEC62325::MarketManagement::MarketDocument |
| AreaSpecification_Series | TC57CIM::IEC62325::MarketManagement::Series |
| BorderConnection_Series | TC57CIM::IEC62325::MarketManagement::Series |
| Connected_Domain | TC57CIM::IEC62325::MarketManagement::Domain |
| ConnectionDetail_RegisteredResource | TC57CIM::IEC62325::MarketCommon::RegisteredResource |
| ConsistOf_Domain | TC57CIM::IEC62325::MarketManagement::Domain |



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### 2.2.3 Detailed Area Configuration assembly model

#### 2.2.3.1 AreaConfiguration_MarketDocument root class

An electronic document containing the information necessary to satisfy the requirements of the configuration management business process.

The Configuration_MarketDocument is used to transmit the information necessary to permit the validation of production units, transmission assets and consumption units when market information is provided by the data providers to the market information aggregator for publication.

The Configuration_MarketDocument is also used to transmit modifications or deactivations that evolve the initial configuration information over time.

Table 3 shows all attributes of AreaConfiguration_MarketDocument.

**Table 3 - Attributes of Area Configuration assembly model::AreaConfiguration_MarketDocument**

| Order | mult. | Attribute name / Attribute type | Description |
|---|---|---|---|
| 0 | [1..1] | mRID<br>ID_String | Unique identification of the configuration document being exchanged within a given business process flow. |
| 1 | [1..1] | type<br>MessageKind_String | The coded type of a document. The document type describes the principal characteristic of the document. |
| 2 | [1..1] | process.processType<br>ProcessKind_String | The identification of the nature of process that the document addresses.<br>--- The Process associated with an electronic document header that is valid for the whole document. |
| 3 | [1..1] | sender_MarketParticipant.mRID<br>PartyID_String | The identification of a party in the energy market.<br>--- The MarketParticipant associated with an electronic document header. |
| 4 | [1..1] | sender_MarketParticipant.marketRole.type<br>MarketRoleKind_String | The identification of the role played by a market player.<br>--- The MarketParticipant associated with an electronic document header.<br>--- The role associated with a MarketParticipant. |
| 5 | [1..1] | receiver_MarketParticipant.mRID<br>PartyID_String | The identification of a party in the energy market.<br>--- The MarketParticipant associated with an electronic document header. |
| 6 | [1..1] | receiver_MarketParticipant.marketRole.type<br>MarketRoleKind_String | The identification of the role played by a market player.<br>--- The MarketParticipant associated with an electronic document header.<br>--- The role associated with a MarketParticipant. |
| 7 | [1..1] | createdDateTime<br>ESMP_DateTime | The date and time of the creation of the document. |

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

**Table 4 - Association ends of Area Configuration assembly model::AreaConfiguration_MarketDocument with other classes**

| Order | mult. | Class name / Role | Description |
|---|---|---|---|
| 8 | [0..*] | AreaSpecification_Series<br>AreaSpecification_Series | The time series that is associated with an electronic document.<br>Association Based On:<br>Area Configuration contextual<br>model::AreaSpecification_Series.AreaSpecification_Series[0..*]<br>-----<br>Area Configuration contextual model::AreaConfiguration_MarketDocument.[] |



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138 ### 2.2.3.2 AreaSpecification_Series

139 A set of similar physical or conceptual objects defined for the same period or point of time.

140 Table 5 shows all attributes of AreaSpecification_Series.

141 **Table 5 - Attributes of Area Configuration assembly model::AreaSpecification_Series**

| Order | mult. | Attribute name / Attribute type | Description |
|---|---|---|---|
| 0 | [1..1] | mRID<br>ID_String | A unique identification of the time series.<br>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, ...<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. |
| 1 | [0..1] | marketParticipant.mRID<br>PartyID_String | The identification of a party in the energy market.<br>--- The identification of a market participant associated with a TimeSeries. |
| 2 | [0..1] | marketParticipant.marketRole.type<br>MarketRoleKind_String | The identification of the role played by a market player.<br>--- The identification of a market participant associated with a TimeSeries.<br>--- The role associated with a MarketParticipant. |
| 3 | [1..1] | area_Domain.mRID<br>AreaID_String | The unique identification of the domain.<br>--- The domain associated with a TimeSeries. |
| 4 | [0..1] | area_Domain.name<br>String | The name is any free human readable and possibly non unique text naming the object.<br>--- The domain associated with a TimeSeries. |
| 5 | [0..1] | objectAggregation<br>ObjectAggregationKind_String | The identification of the domain that is the common denominator used to aggregate a time series. |
| 6 | [0..1] | country_Domain.mRID<br>AreaID_String | The unique identification of the domain.<br>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.<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.<br>--- The domain associated with a TimeSeries. |
| 7 | [0..1] | areaCharacteristics_Domain.name<br>String | The name is any free human readable and possibly non unique text naming the object.<br>--- The domain associated with a TimeSeries. |
| 8 | [1..1] | validityStart_DateAndOrTime.dateTime<br>DateTime | Date and time as per ISO 8601 YYYY-MM-DDThh:mm:ss.sssZ.<br>--- A date and/or time associated with a TimeSeries. |
| 9 | [0..1] | validityEnd_DateAndOrTime.dateTime<br>DateTime | Date and time as per ISO 8601 YYYY-MM-DDThh:mm:ss.sssZ.<br>--- A date and/or time associated with a TimeSeries. |

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143 Table 6 shows all association ends of AreaSpecification_Series with other classes.



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144 **Table 6 - Association ends of Area Configuration assembly**
145 **model::AreaSpecification_Series with other classes**

| Order | mult. | Class name / Role | Description |
|---|---|---|---|
| 10 | [0..*] | ConsistOf_Domain<br>ConsistOf_Domain | The domain associated with a TimeSeries.<br>Association Based On:<br>Area Configuration contextual model::ConsistOf_Domain.ConsistOf_Domain[0..*]<br>-----<br>Area Configuration contextual model::AreaSpecification_Series.[] |
| 11 | [0..*] | Connected_Domain<br>Connected_Domain | The domain associated with a TimeSeries.<br>Association Based On:<br>Area Configuration contextual model::Connected_Domain.Connected_Domain[0..*]<br>-----<br>Area Configuration contextual model::AreaSpecification_Series.[] |
| 12 | [0..*] | BorderConnection_Series<br>BorderConnection_Series | Association Based On:<br>Area Configuration contextual model::BorderConnection_Series.BorderConnection_Series[0..*]<br>-----<br>Area Configuration contextual model::AreaSpecification_Series.[] |
| 13 | [0..*] | ConnectionDetail_RegisteredResource<br>AreaConnectionDetail_RegisteredResource | The identification of a resource associated with a TimeSeries.<br>Association Based On:<br>Area Configuration contextual model::ConnectionDetail_RegisteredResource.AreaConnectionDetail_RegisteredResource[0..*]<br>-----<br>Area Configuration contextual model::AreaSpecification_Series.[] |

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147 ### 2.2.3.3 BorderConnection_Series

148 A set of similar physical or conceptual objects defined for the same period or point of time.

149 Table 7 shows all attributes of BorderConnection_Series.

150 **Table 7 - Attributes of Area Configuration assembly model::BorderConnection_Series**

| Order | mult. | Attribute name / Attribute type | Description |
|---|---|---|---|
| 0 | [0..1] | mRID<br>ID_String | A unique identification of the time series.<br>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, ...<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. |



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| Order | mult. | Attribute name / Attribute type | Description |
|---|---|---|---|
| 1 | [1..1] | borderConnection_RegisteredResource.mRID<br>ResourceID_String | The unique identification of a resource.<br>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.<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.<br>--- The identification of a resource associated with a TimeSeries. |
| 2 | [1..1] | borderComponentType_MktPSRType.psrType<br>PsrType_String | The coded type of a power system resource.<br>--- The identification of the type of resource associated with a TimeSeries. |

151

152 Table 8 shows all association ends of BorderConnection_Series with other classes.

153 **Table 8 - Association ends of Area Configuration assembly**
154 **model::BorderConnection_Series with other classes**

| Order | mult. | Class name / Role | Description |
|---|---|---|---|
| 3 | [0..2] | ConnectionDetail_RegisteredResource<br>ConnectionDetail_RegisteredResource | The identification of a resource associated with a TimeSeries.<br>Association Based On:<br>Area Configuration contextual model::ConnectionDetail_RegisteredResource.ConnectionDetail_RegisteredResource[0..2]<br>-----<br>Area Configuration contextual model::BorderConnection_Series.[] |

155

156 ### 2.2.3.4 Connected_Domain

157 A domain covering a number of related objects, such as market balance area, grid area, borders
158 etc.

159 Table 9 shows all attributes of Connected_Domain.

160 **Table 9 - Attributes of Area Configuration assembly model::Connected_Domain**

| Order | mult. | Attribute name / Attribute type | Description |
|---|---|---|---|
| 0 | [1..1] | mRID<br>AreaID_String | The unique identification of the domain.<br>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.<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. |
| 1 | [0..1] | name<br>String | The name is any free human readable and possibly non unique text naming the object. |

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### 2.2.3.5 ConnectionDetail_RegisteredResource

A resource that is registered through the market participant registration system. Examples include generating unit, load, and non-physical generator or load.

Table 10 shows all attributes of ConnectionDetail_RegisteredResource.

**Table 10 - Attributes of Area Configuration assembly model::ConnectionDetail_RegisteredResource**

| Order | mult. | Attribute name / Attribute type | Description |
|---|---|---|---|
| 0 | [1..1] | mRID<br>ResourceID_String | The unique identification of a resource.<br>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.<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. |
| 1 | [0..1] | areaIdentification_Domain.mRID<br>AreaID_String | The unique identification of the domain.<br>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.<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements.<br>--- The identification of the domain linked by the registered resource. |
| 2 | [0..1] | componentType_MktPSRType.psrType<br>PsrType_String | The coded type of a power system resource.<br>--- The identification of the type of resource associated with this RegisteredResource. |

### 2.2.3.6 ConsistOf_Domain

A domain covering a number of related objects, such as market balance area, grid area, borders etc.

Table 11 shows all attributes of ConsistOf_Domain.

**Table 11 - Attributes of Area Configuration assembly model::ConsistOf_Domain**

| Order | mult. | Attribute name / Attribute type | Description |
|---|---|---|---|
| 0 | [1..1] | mRID<br>AreaID_String | The unique identification of the domain.<br>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.<br>Master resource identifier issued by a model authority. The mRID is globally unique within an exchange context.<br>Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.<br>For CIMXML data files in RDF syntax, the mRID is mapped to rdf:ID or rdf:about attributes that identify CIM object elements. |
| 1 | [0..1] | name<br>String | The name is any free human readable and possibly non unique text naming the object. |

### 2.2.4 Datatypes

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

- AreaID_String datatype, codelist CodingSchemeTypeList
- ESMP_DateTime datatype
- ID_String datatype
- MarketRoleKind_String datatype, codelist RoleTypeList
- MessageKind_String datatype, codelist MessageTypeList
- ObjectAggregationKind_String datatype, codelist ObjectAggregationTypeList
- PartyID_String datatype, codelist CodingSchemeTypeList
- ProcessKind_String datatype, codelist ProcessTypeList
- PsrType_String datatype, codelist AssetTypeList
- ResourceID_String datatype, codelist CodingSchemeTypeList



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### 2.2.5 Area Configuration_MarketDocument schema structure

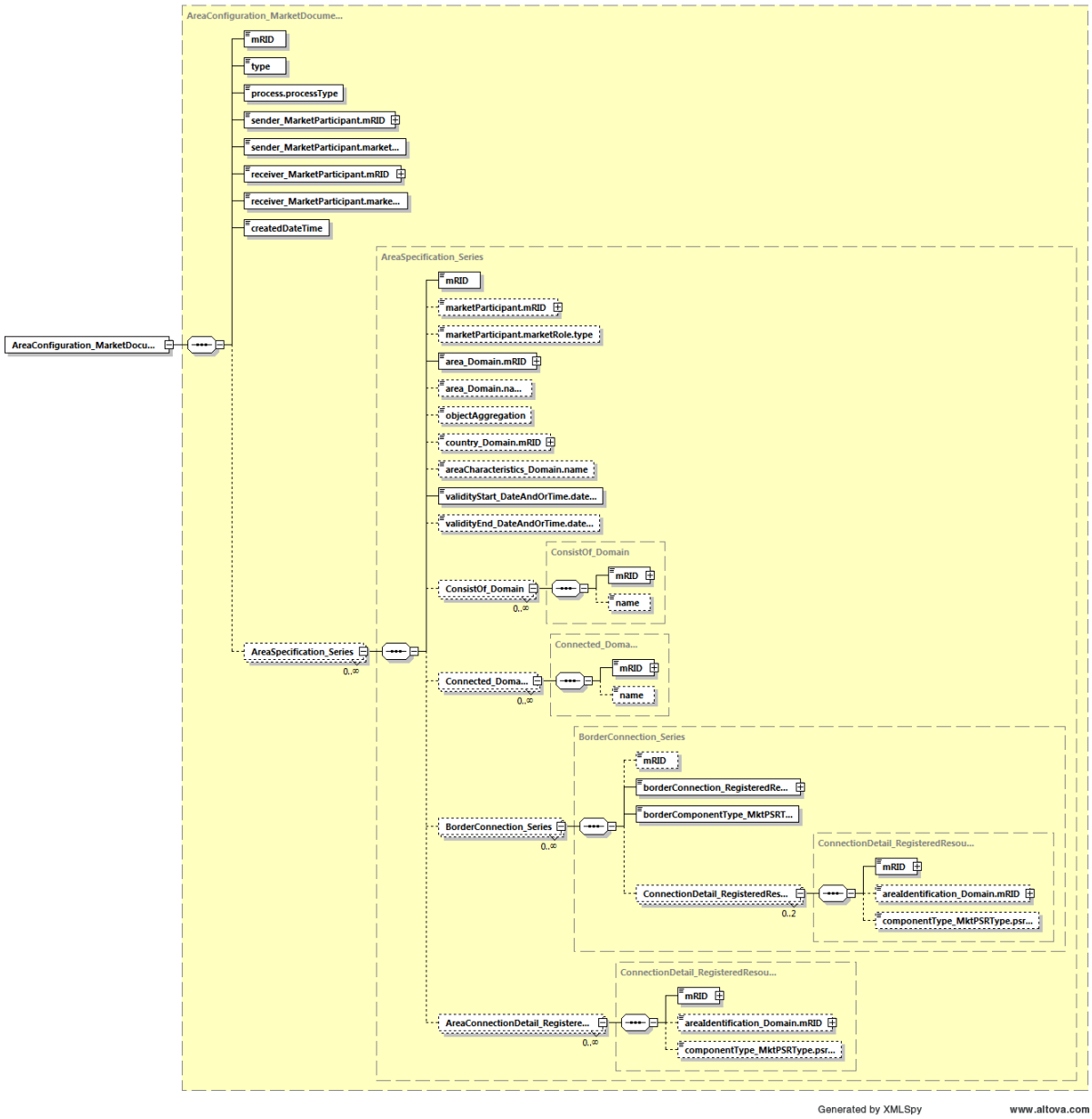


**Figure 3 - AreaConfiguration_MarketDocument schema structure**

### 2.2.6 Area Configuration_MarketDocument XML schema

The XSD file to be used with this implementation guide is:

urn:iec62325.351:tc57wg16:451-n:areaconfigurationdocument:1:1

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema xmlns:ecl="urn:entsoe.eu:wgedi:codelists"
xmlns="urn:iec62325.351:tc57wg16:451-n:areaconfigurationdocument:1:1"
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-n:areaconfigurationdocument:1:1"
elementFormDefault="qualified" attributeFormDefault="unqualified">
	<xs:import namespace="urn:entsoe.eu:wgedi:codelists" schemaLocation="urn-
entsoe-eu-wgedi-codelists.xsd"/>
	<xs:element name="AreaConfiguration_MarketDocument"
type="AreaConfiguration_MarketDocument"/>
	<xs:simpleType name="ID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="xs:string">
			<xs:maxLength value="60"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:simpleType name="MessageKind_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="ecl:MessageTypeList"/>
	</xs:simpleType>
	<xs:simpleType name="ProcessKind_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="ecl:ProcessTypeList"/>
	</xs:simpleType>
	<xs:simpleType name="PartyID_String-base"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="xs:string">
			<xs:maxLength value="16"/>
		</xs:restriction>
	</xs:simpleType>
	<xs:complexType name="PartyID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:simpleContent>
			<xs:extension base="PartyID_String-base">
				<xs:attribute name="codingScheme"
type="ecl:CodingSchemeTypeList" use="required"/>
			</xs:extension>
		</xs:simpleContent>
	</xs:complexType>
	<xs:simpleType name="MarketRoleKind_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
		<xs:restriction base="ecl:RoleTypeList"/>
	</xs:simpleType>
	<xs:simpleType name="ESMP_DateTime"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#DateTime">
		<xs:restriction base="xs:dateTime">
			<xs:pattern value="((([0-9]{4})[\-](0[13578]|1[02])[\-](0[1-
9]|[12][0-9]|3[01])|([0-9]{4})[\-]((0[469])|(11))[\-](0[1-9]|[12][0-
9]|30))T(([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-
9])Z)|(([13579][26][02468][048]|[13579][01345789](0)[48]|[13579][01345789][2468][0
48]|[02468][048][02468][048]|[02468][1235679](0)[48]|[02468][1235679][2468][048]|[
0-9][0-9][13579][26])[\-](02)[\-](0[1-9]|1[0-9]|2[0-9])T(([01][0-9]|2[0-3]):[0-
5][0-9]:[0-5][0-
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9][2468][1235679]|[02468][048][02468][1235679]|[02468][1235679](0)[01235679]|[0246
8][1235679][2468][1235679]|[0-9][0-9][13579][01345789])[\-](02)[\-](0[1-9]|1[0-
9]|2[0-8])T(([01][0-9]|2[0-3]):[0-5][0-9]:[0-5][0-9])Z)"/>
            </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="AreaConfiguration_MarketDocument"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketDocument">
            <xs:sequence>
                  <xs:element name="mRID" type="ID_String" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#IdentifiedObject.mRID"/>
                  <xs:element name="type" type="MessageKind_String" minOccurs="1"
maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Document.type"/>
                  <xs:element name="process.processType"
type="ProcessKind_String" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#Process.processType"/>
                  <xs:element name="sender_MarketParticipant.mRID"
type="PartyID_String" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#IdentifiedObject.mRID"/>
                  <xs:element name="sender_MarketParticipant.marketRole.type"
type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
                  <xs:element name="receiver_MarketParticipant.mRID"
type="PartyID_String" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#IdentifiedObject.mRID"/>
                  <xs:element name="receiver_MarketParticipant.marketRole.type"
type="MarketRoleKind_String" minOccurs="1" maxOccurs="1"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
                  <xs:element name="createdDateTime" type="ESMP_DateTime"
minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
schema-cim16#Document.createdDateTime"/>
                  <xs:element name="AreaSpecification_Series"
type="AreaSpecification_Series" minOccurs="0" maxOccurs="unbounded"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
cim16#MarketDocument.AreaSpecification_Series"/>
            </xs:sequence>
      </xs:complexType>
      <xs:simpleType name="AreaID_String-base"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
            <xs:restriction base="xs:string">
                  <xs:maxLength value="18"/>
            </xs:restriction>
      </xs:simpleType>
      <xs:complexType name="AreaID_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
            <xs:simpleContent>
                  <xs:extension base="AreaID_String-base">
                        <xs:attribute name="codingScheme"
type="ecl:CodingSchemeTypeList" use="required"/>
                  </xs:extension>
            </xs:simpleContent>
      </xs:complexType>
      <xs:simpleType name="ObjectAggregationKind_String"
sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
            <xs:restriction base="ecl:ObjectAggregationTypeList"/>
```

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310         </xs:simpleType>
311         <xs:complexType name="AreaSpecification_Series"
312   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Series">
313               <xs:sequence>
314                     <xs:element name="mRID" type="ID_String" minOccurs="1"
315   maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
316   cim16#IdentifiedObject.mRID"/>
317                     <xs:element name="marketParticipant.mRID" type="PartyID_String"
318   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
319   schema-cim16#IdentifiedObject.mRID"/>
320                     <xs:element name="marketParticipant.marketRole.type"
321   type="MarketRoleKind_String" minOccurs="0" maxOccurs="1"
322   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#MarketRole.type"/>
323                     <xs:element name="area_Domain.mRID" type="AreaID_String"
324   minOccurs="1" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
325   schema-cim16#IdentifiedObject.mRID"/>
326                     <xs:element name="area_Domain.name" type="xs:string"
327   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
328   schema-cim16#IdentifiedObject.name"/>
329                     <xs:element name="objectAggregation"
330   type="ObjectAggregationKind_String" minOccurs="0" maxOccurs="1"
331   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
332   cim16#TimeSeries.objectAggregation"/>
333                     <xs:element name="country_Domain.mRID" type="AreaID_String"
334   minOccurs="0" maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-
335   schema-cim16#IdentifiedObject.mRID"/>
336                     <xs:element name="areaCharacteristics_Domain.name"
337   type="xs:string" minOccurs="0" maxOccurs="1"
338   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
339   cim16#IdentifiedObject.name"/>
340                     <xs:element name="validityStart_DateAndOrTime.dateTime"
341   type="xs:dateTime" minOccurs="1" maxOccurs="1"
342   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
343   cim16#DateAndOrTime.dateTime"/>
344                     <xs:element name="validityEnd_DateAndOrTime.dateTime"
345   type="xs:dateTime" minOccurs="0" maxOccurs="1"
346   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
347   cim16#DateAndOrTime.dateTime"/>
348                     <xs:element name="ConsistOf_Domain" type="ConsistOf_Domain"
349   minOccurs="0" maxOccurs="unbounded"
350   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
351   cim16#Series.ConsistOf_Domain"/>
352                     <xs:element name="Connected_Domain" type="Connected_Domain"
353   minOccurs="0" maxOccurs="unbounded"
354   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
355   cim16#Series.Connected_Domain"/>
356                     <xs:element name="BorderConnection_Series"
357   type="BorderConnection_Series" minOccurs="0" maxOccurs="unbounded"
358   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
359   cim16#Series.BorderConnection_Series"/>
360                     <xs:element name="AreaConnectionDetail_RegisteredResource"
361   type="ConnectionDetail_RegisteredResource" minOccurs="0" maxOccurs="unbounded"
362   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
363   cim16#Series.AreaConnectionDetail_RegisteredResource"/>
364               </xs:sequence>
365         </xs:complexType>
366         <xs:simpleType name="ResourceID_String-base"
367   sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
368               <xs:restriction base="xs:string">
369                     <xs:maxLength value="60"/>
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370                 </xs:restriction>
371           </xs:simpleType>
372           <xs:complexType name="ResourceID_String"
373     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
374                 <xs:simpleContent>
375                       <xs:extension base="ResourceID_String-base">
376                             <xs:attribute name="codingScheme"
377     type="ecl:CodingSchemeTypeList" use="required"/>
378                       </xs:extension>
379                 </xs:simpleContent>
380           </xs:complexType>
381           <xs:simpleType name="PsrType_String"
382     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#String">
383                 <xs:restriction base="ecl:AssetTypeList"/>
384           </xs:simpleType>
385           <xs:complexType name="BorderConnection_Series"
386     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Series">
387                 <xs:sequence>
388                       <xs:element name="mRID" type="ID_String" minOccurs="0"
389     maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
390     cim16#IdentifiedObject.mRID"/>
391                       <xs:element name="borderConnection_RegisteredResource.mRID"
392     type="ResourceID_String" minOccurs="1" maxOccurs="1"
393     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
394     cim16#IdentifiedObject.mRID"/>
395                       <xs:element name="borderComponentType_MktPSRType.psrType"
396     type="PsrType_String" minOccurs="1" maxOccurs="1"
397     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
398     cim16#MktPSRType.psrType"/>
399                       <xs:element name="ConnectionDetail_RegisteredResource"
400     type="ConnectionDetail_RegisteredResource" minOccurs="0" maxOccurs="2"
401     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
402     cim16#Series.ConnectionDetail_RegisteredResource"/>
403                 </xs:sequence>
404           </xs:complexType>
405           <xs:complexType name="Connected_Domain"
406     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Domain">
407                 <xs:sequence>
408                       <xs:element name="mRID" type="AreaID_String" minOccurs="1"
409     maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
410     cim16#IdentifiedObject.mRID"/>
411                       <xs:element name="name" type="xs:string" minOccurs="0"
412     maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
413     cim16#IdentifiedObject.name"/>
414                 </xs:sequence>
415           </xs:complexType>
416           <xs:complexType name="ConnectionDetail_RegisteredResource"
417     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
418     cim16#RegisteredResource">
419                 <xs:sequence>
420                       <xs:element name="mRID" type="ResourceID_String" minOccurs="1"
421     maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
422     cim16#IdentifiedObject.mRID"/>
423                       <xs:element name="areaIdentification_Domain.mRID"
424     type="AreaID_String" minOccurs="0" maxOccurs="1"
425     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
426     cim16#IdentifiedObject.mRID"/>
427                       <xs:element name="componentType_MktPSRType.psrType"
428     type="PsrType_String" minOccurs="0" maxOccurs="1"
```



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429     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
430     cim16#MktPSRType.psrType"/>
431                 </xs:sequence>
432           </xs:complexType>
433           <xs:complexType name="ConsistOf_Domain"
434     sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-cim16#Domain">
435                 <xs:sequence>
436                       <xs:element name="mRID" type="AreaID_String" minOccurs="1"
437     maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
438     cim16#IdentifiedObject.mRID"/>
439                       <xs:element name="name" type="xs:string" minOccurs="0"
440     maxOccurs="1" sawsdl:modelReference="http://iec.ch/TC57/2013/CIM-schema-
441     cim16#IdentifiedObject.name"/>
442                 </xs:sequence>
443           </xs:complexType>
444     </xs:schema>
```



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