ENTSO-E Transparency Workshop

Data providers for the central information transparency platform

30 January 2014

2. Implementation guides, XSDs

Reliable Sustainable Connected

List of implementation guides

Commission Regulation No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets (12 articles).

1. Generation and load **(Articles 6, 8, 14, 16)**
2. Outage **(Articles 7, 10, 15)**
3. Balancing **(Article 17)**
4. Transmission **(Articles 9, 11, 12, 13)**
5. Configuration **(Production, consumption, transmission assets)**

Implementation guide structure

1 INTRODUCTION

2 OVERVIEW

2.1 PROCESS BREAKDOWN

3 PROCESSING SEQUENCE

4 MARKET DOCUMENT IMPLEMENTATION

4.1 CONTEXTUAL MODEL

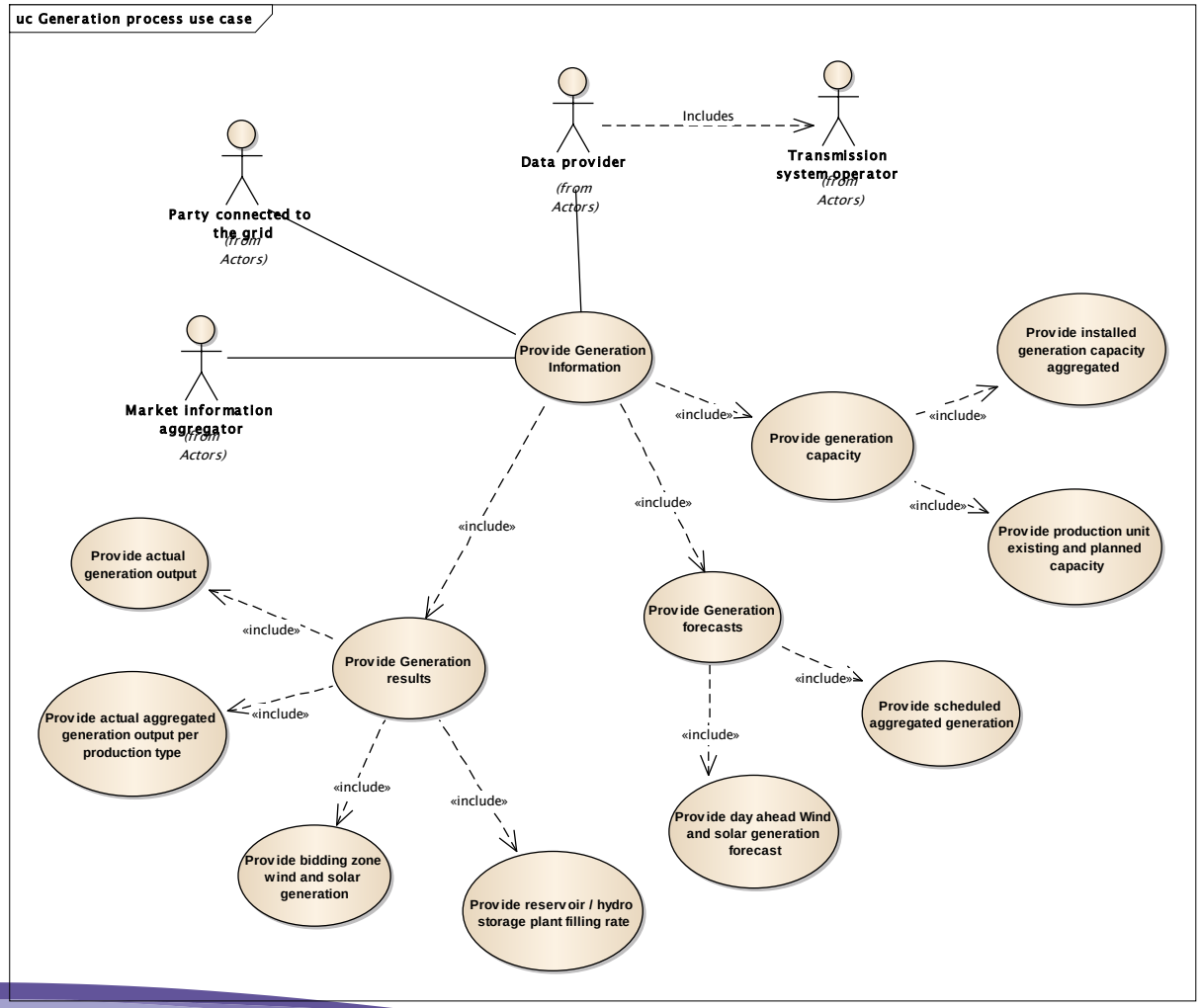
4.2 INFORMATION MODEL

4.3 RULES GOVERNING THE MARKET DOCUMENT

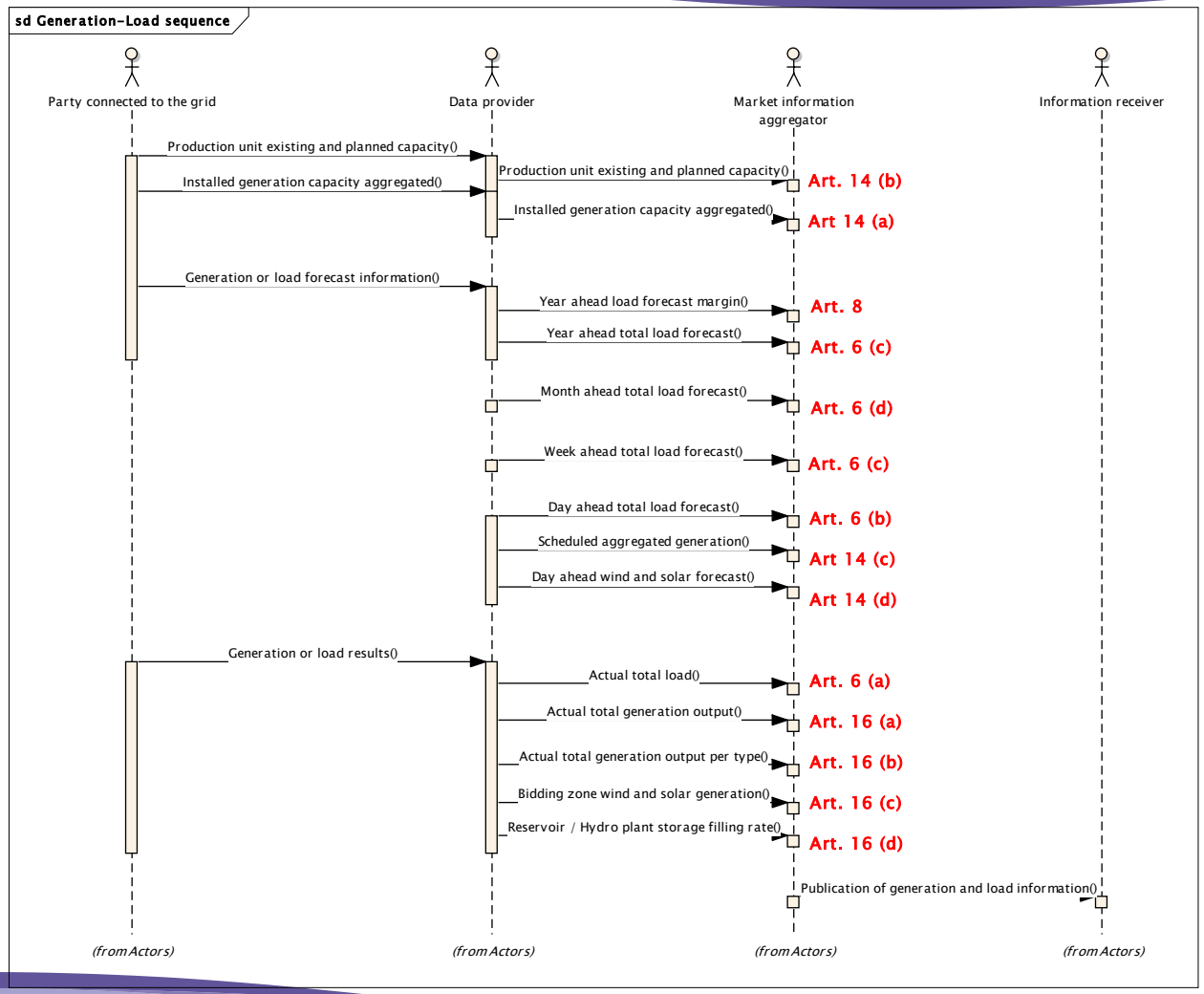
4.3.1 ATTRIBUTE DEPENDENCIES

4.4 MARKET DOCUMENT CLASS SPECIFICATION

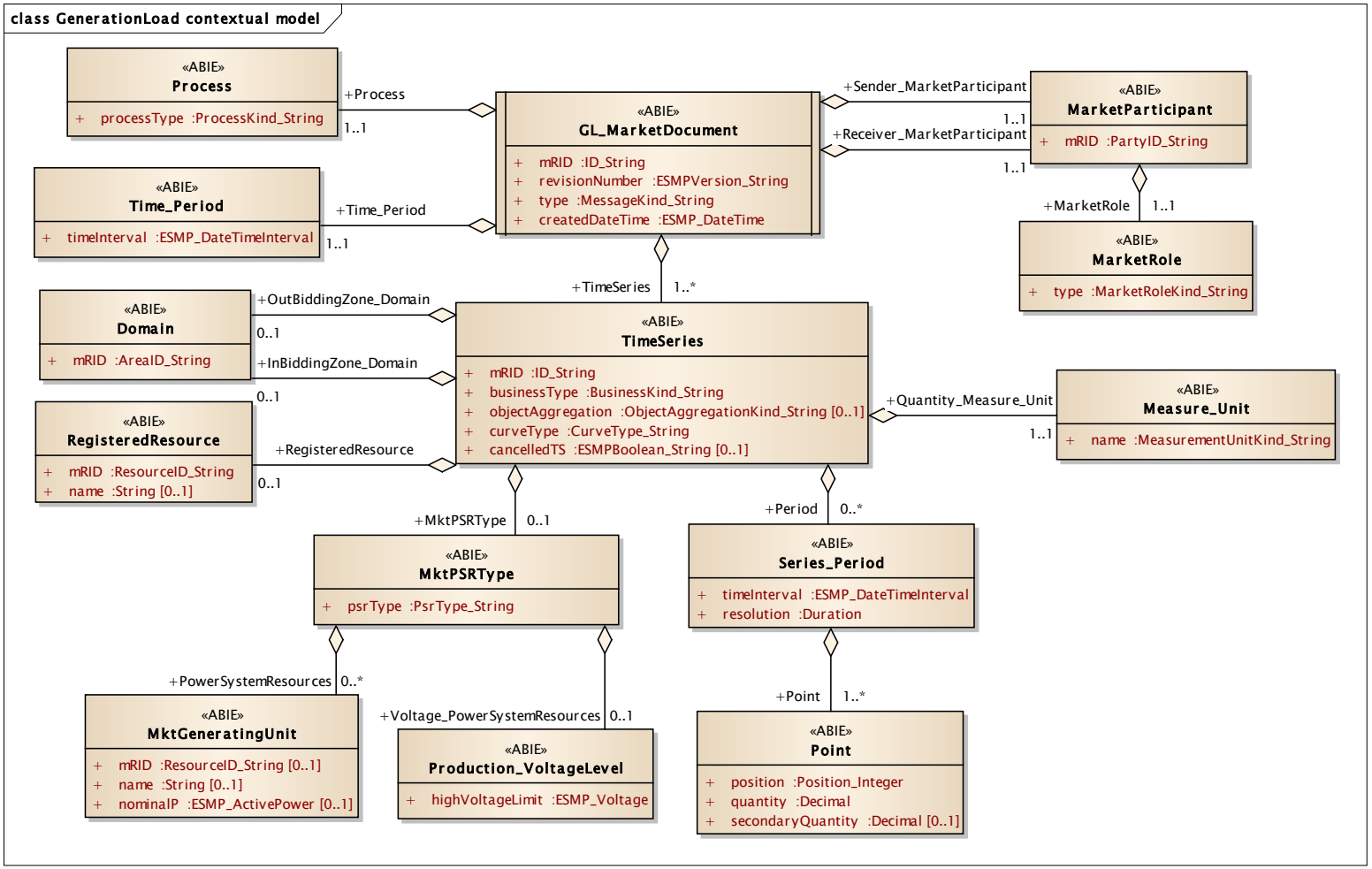
Process breakdown



Processing sequence

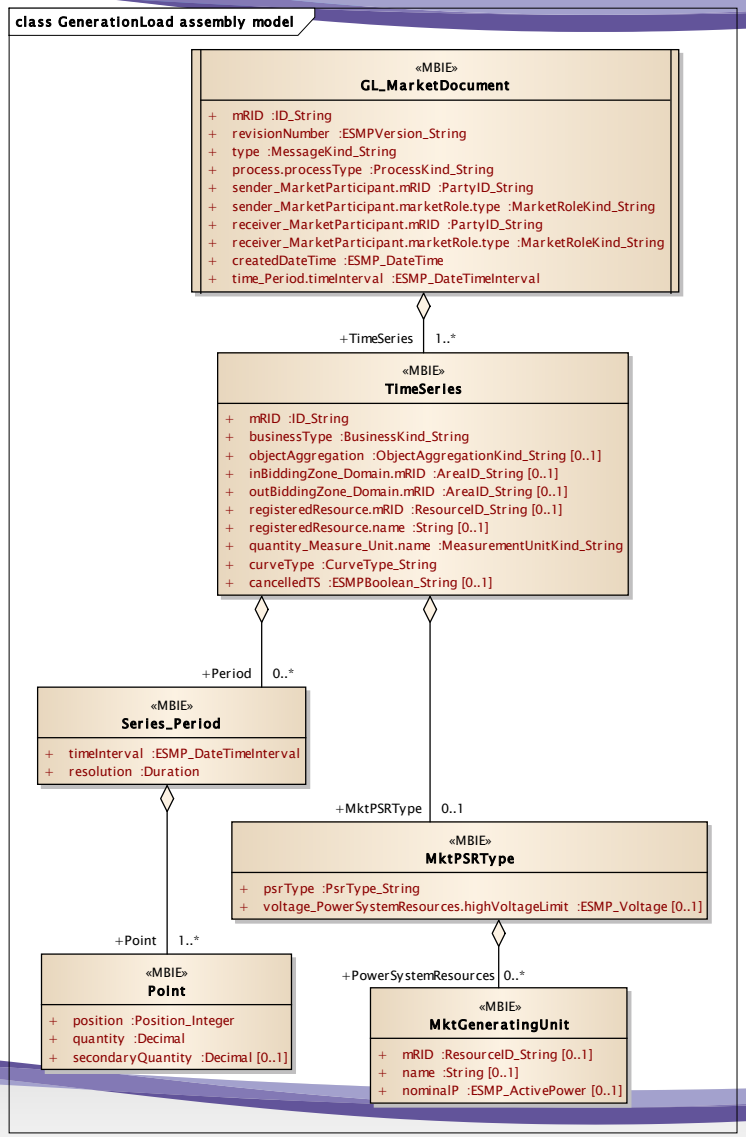


Contextual model
IEC 62325 – 451-6 based on IEC 62325-351



Assembly model – IEC 62325-6

Automatically generated from the Contextual model



Dependency table

Load dependency table						
	LOAD Process					
Article involved	Art. 6 (b) day-ahead total load forecast	Art. 6 (c) week-ahead total load forecast	Art. 6 (d) month-ahead total load forecast	Art. 6 (e) year-ahead total load forecast	Art. 6 (a) Actual Total Load	Art. 8 Year-ahead forecast margin
DocumentType (Type)	A65 – Total Load					A70 = Load forecast margin
ProcessType (process.processType)	A01 = Day ahead	A31 = Week ahead	A32 = Month ahead	A33 = Year ahead	A16 = Realised	A33 = Year ahead
BusinessType (businessType)	A04 = Consumption	A04 = Consumption A60 = Minimum possible A61 = Maximum possible	A04 = Consumption A60 = Minimum possible Note: This must be by week A61 = Maximum possible Note: This must be by week	A04 = Consumption A60 = Minimum possible Note: This must be by week A61 = Maximum possible Note: This must be by week	A04 = Consumption	A91 = Positive forecast margin (if installed capacity > load forecast) A92 = Negative forecast margin (if load forecast > installed capacity)
InBiddingZone_Domain	Not used	Not used	Not used	Not used	Not used	Not used
OutBiddingZone_Domain	Used	Used	Used	Used	Used	Used
MeasurementUnit (measurement_Unit.name)	MAW = Megawatts					
ObjectAggregation (objectAggregation)	A01 = Area					
ResourceObjectIdentification (registeredResource.mRID)	Not used				Not used	Not used
ResourceObjectType (mktPSRType.psrType)	Not used				Not used	Not used
ResourceObjectName (registeredResource.name)	Not used				Not used	Not used
Resolution (resolution)	PT60M PT30M PT15M	P1D PT60M PT30M PT15M	P7D PT60M PT30M PT15M	P7D PT60M PT30M PT15M	PT60M PT30M PT15M	P1Y

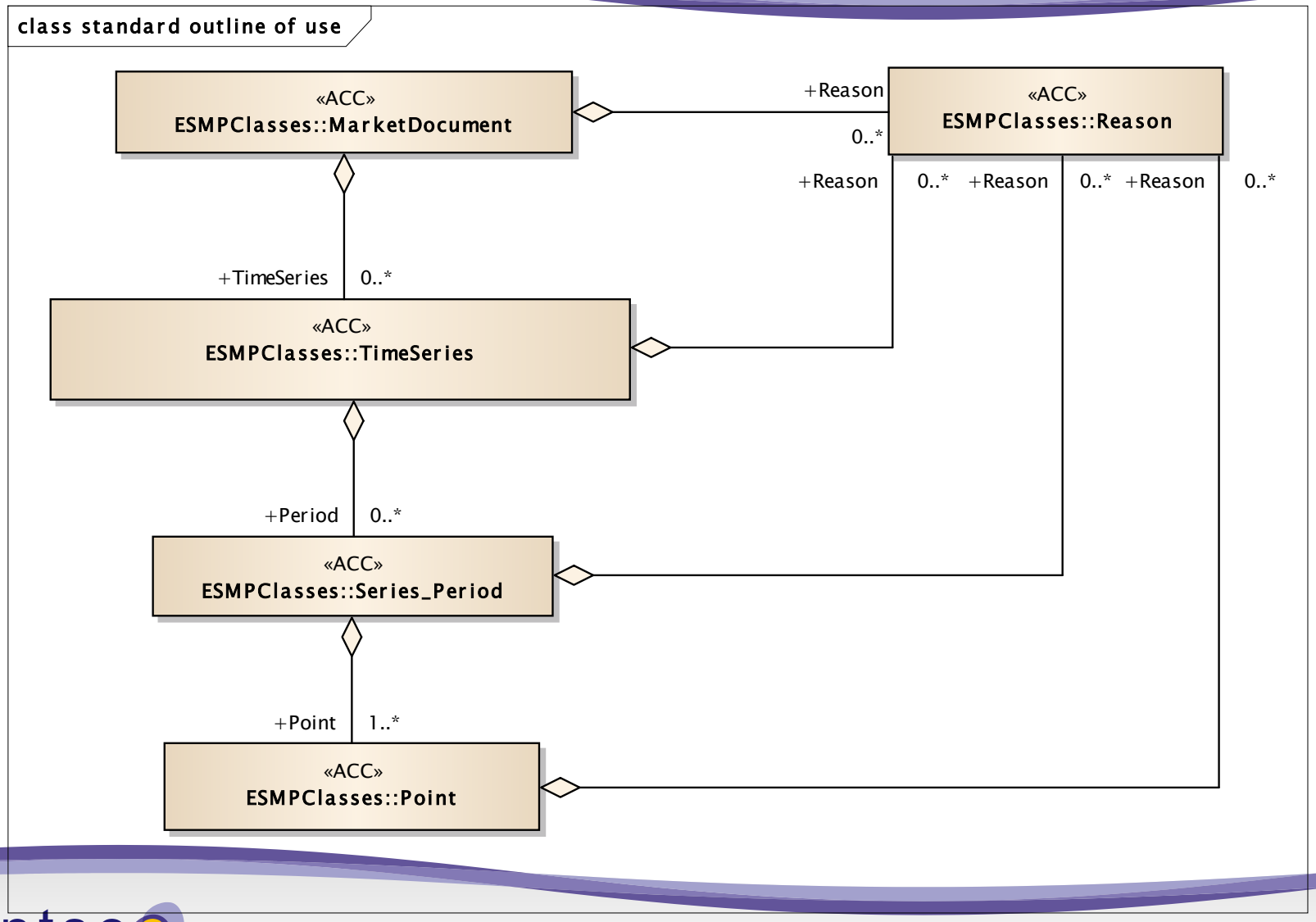
Class specification

1.1 GL MARKET DOCUMENT CLASS SPECIFICATION

1.1.1 MRID

ACTION	DESCRIPTION
Definition of element	Unique identification of the document being exchanged withi a business process flow.
Description	A Generation and Load Market Document for a given set c time series and a given Period Time Interval must have a unique identification assigned by the sender of the documen for all transmissions to the receiver. All additions, modifications, or suppressions for the time serie and Period Time Interval must use the same identification.
Size	The identification of a document may not exceed 35 alphanumeric characters.
Applicability	This information is mandatory.
Dependence requirements	None

XML SCHEMA – XSD Outline



Document and Schema version and release

ENTSO-E¶
GENERATION·AND·LOAD¶
TRANSPARENCY·PROCESS¶
IMPLEMENTATION·GUIDE¶

2014-01-17¶

¶
VERSION·3·RELEASE·0¶

```
<?xml version="1.0" encoding="utf-8"?>
<xs:schema
xmlns:cl="urn:entsoe.eu:wgedi:codelists"
xmlns:sawsdl="http://www.w3.org/ns/sawsdl"
xmlns="urn:entsoe.eu:wgedi:emfip:generationloadmarketdocument:3:0"
xmlns:cimp="http://www.iec.ch/cimprofile"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
targetNamespace="urn:entsoe.eu:wgedi:emfip:generationloadmarketdocument:3:0"
elementFormDefault="qualified" attributeFormDefault="unqualified">
```

MarketDocument header model

«MBIE»
MarketDocument

+ mRID :ID_String
+ revisionNumber :ESMPVersion_String
+ type :MessageKind_String
+ process.processType :ProcessKind_String
+ createdDateTime :ESMP_DateTime
+ sender_MarketParticipant.mRID :PartyID_String
+ sender_MarketParticipant.marketRole.type :MarketRoleKind_String
+ receiver_MarketParticipant.mRID :PartyID_String
+ receiver_MarketParticipant.marketRole.type :MarketRoleKind_String
+ period.timeInterval :ESMP_DateTimeInterval
+ docStatus :Action_Status [0..1]

MarketDocument header as XML instance

```
<?xml version="1.0" encoding="UTF-8"?>
<MarketDocument xmlns="urn:iec62325.351:tc57wg16:451-n:document:3:0">
    <mRID>aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa</mRID>
    <revisionNumber>1</revisionNumber>
    <type>A01</type>
    <process.processType>A01</process.processType>
    <sender_MarketParticipant.mRID
codingScheme="A01">aaaaaaaaaaaaaaaa</sender_MarketParticipant.mRID>
    <sender_MarketParticipant.marketRole.type>A01</sender_MarketParticipant.marketRole.type>
    <receiver_MarketParticipant.mRID
codingScheme="A01">aaaaaaaaaaaaaaaa</receiver_MarketParticipant.mRID>
    <receiver_MarketParticipant.marketRole.type>A01</receiver_MarketParticipant.marketRole.type>
    <createdDateTime>2014-01-09T12:00:00Z</createdDateTime>
    <docStatus>
        <value>A01</value>
    </docStatus>
    <period.timeInterval>
        <start>2014-01-01T00:00Z</start>
        <end>2014-01-01T23:00Z</end>
    </period.timeInterval>
```

TimeSeries model

«MBIE»

TimeSeries

+ mRID :ID_String
+ businessType :BusinessKind_String
+ objectAggregation :ObjectAggregationKind_String [0..1]
+ in_Domain.mRID :AreaID_String [0..1]
+ out_Domain.mRID :AreaID_String [0..1]
+ registeredResource.mRID :ResourceID_String [0..1]
+ registeredResource.name :String [0..1]
+ quantity_Measure_Unit.name :MeasurementUnitKind_String
+ curveType :CurveType_String
+ cancelledTS :ESMPBoolean_String [0..1]

TimeSeries as XML instance

```
<TimeSeries>
    <mRID>aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa</mRID>
    <businessType>A01</businessType>
    <objectAggregation>A01</objectAggregation>
    <in_Domain.mRID codingScheme="A01">aaaaaaaaaaaaaaaaaa</inBiddingZone_Domain.mRID>
    <out_Domain.mRID codingScheme="A01">aaaaaaaaaaaaaaaaaa</outBiddingZone_Domain.mRID>
    <registeredResource.mRID codingScheme="A01">aaaaaaaaaaaaaaaaaa</registeredResource.mRID>
    <registeredResource.name>String</registeredResource.name>
    <quantity_Measure_Unit.name>MWH</quantity_Measure_Unit.name>
    <curveType>A01</curveType>
    <cancelledTS>A01</cancelledTS>
```

Period and Point model

«MBIE»
Series_Period

+ timeInterval :ESMP_DateTimeInterval
+ resolution :Duration

«MBIE»
Point

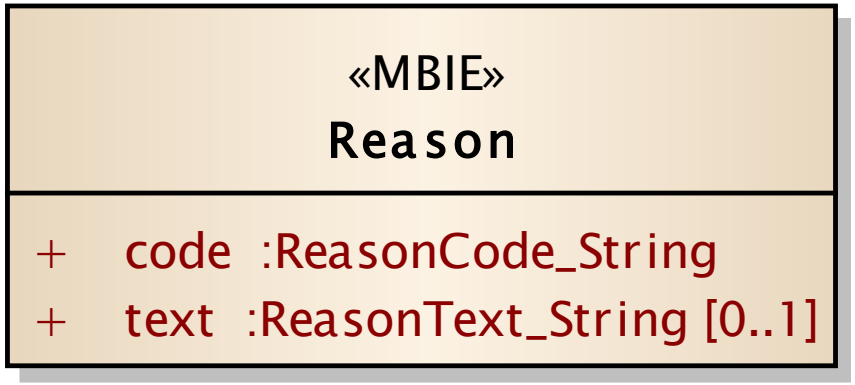
+ position :Position_Integer
+ quantity :Decimal
+ secondaryQuantity :Decimal [0..1]

Period and Point XML instance

```
<Period>
    <timeInterval>
        <start>2014-01-01T00:00Z</start>
        <end>2014-01-01T23:00Z</end>
    </timeInterval>
    <resolution>PT60M</resolution>
```

```
<Point>
    <position>1</position>
    <quantity>1000.0</quantity>
    <secondaryQuantity>500.0</secondaryQuantity>
</Point>
```

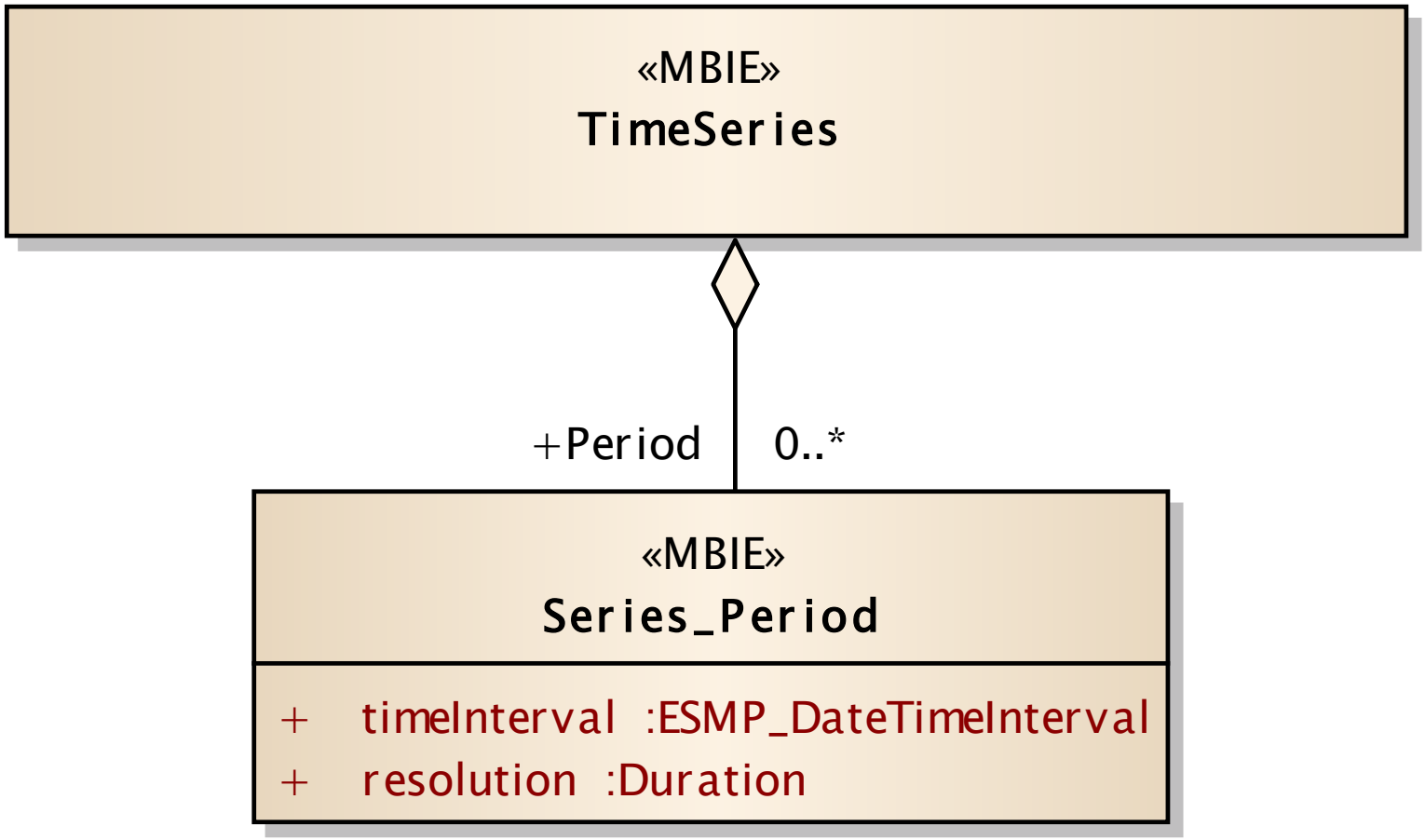
Reason model



Reason XML instance

```
<Reason>
    <code>A01</code>
    <text>aaaa
```

Relationships



Relationship XML instance

```
        <Period>
            <timeInterval>
                <start>2014-01-01T00:00Z</start>
                <end>2014-01-01T23:00Z</end>
            </timeInterval>
            <resolution>PT60M</resolution>
            <Point>
                <position>1</position>
                <quantity>10000.0</quantity>
            </Point>
            <Point>.......................
        </Period>
    </TimeSeries>
```

```
    <TimeSeries>
        <mRID>aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa</mRID>
        <businessType>A01</businessType>
        <quantity_Measure_Unit.name>MAW</quantity_Measure_Unit.name>
        <curveType>A01</curveType>
        <cancelledTS>A01</cancelledTS>
    </TimeSeries>
```

Dependencies - 1

class GenerationLoad assembly model

«MBIE»
TimeSeries

+ mRID :ID_String
+ businessType :BusinessKind_String
+ objectAggregation :ObjectAggregationKind_String [0..1]
+ inBiddingZone_Domain.mRID :AreaID_String [0..1]
+ outBiddingZone_Domain.mRID :AreaID_String [0..1]
+ registeredResource.mRID :ID_String [0..1]
+ registeredResource.name :String [0..1]
+ quantity_Measure_Unit.name :MeasurementUnitKind_String
+ curveType :CurveType_String
+ cancelledTS :ESMPBoolean_String [0..1]

Dependent attributes where [0..1]

Dependencies - 2

Load dependency table						
	LOAD Process					
Article involved	Art. 6 (b) day-ahead total load forecast	Art. 6 (c) week-ahead total load forecast	Art. 6 (d) month-ahead total load forecast	Art. 6 (e) year-ahead total load forecast	Art. 6 (a) Actual Total Load	Art. 8 Year-ahead forecast margin
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OutBiddingZone_Domain	Used	Used	Used	Used	Used	Used
MeasurementUnit (measurement_Unit.name)	MAW = Megawatts					
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ResourceObjectType (mktPSRType.psrType)	Not used				Not used	Not used
ResourceObjectName (registeredResource.name)	Not used				Not used	Not used
Resolution (resolution)	PT60M PT30M PT15M	P1D PT60M PT30M PT15M	P7D PT60M PT30M PT15M	P7D PT60M PT30M PT15M	PT60M PT30M PT15M	P1Y

Any questions?

ACKNOWLEDGEMENT DOCUMENT

IEC 62325-451-1 INTERNATIONAL STANDARD

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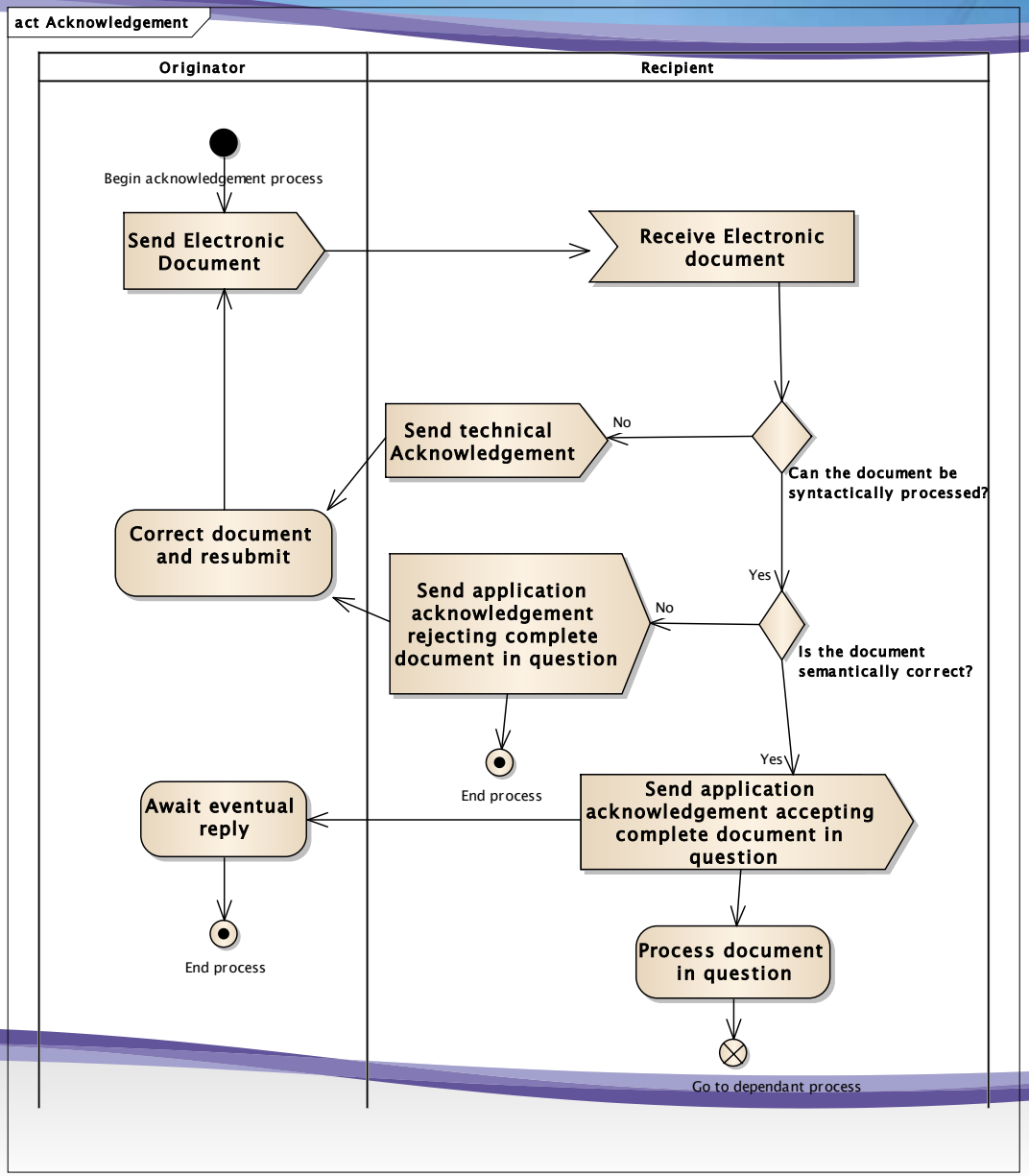
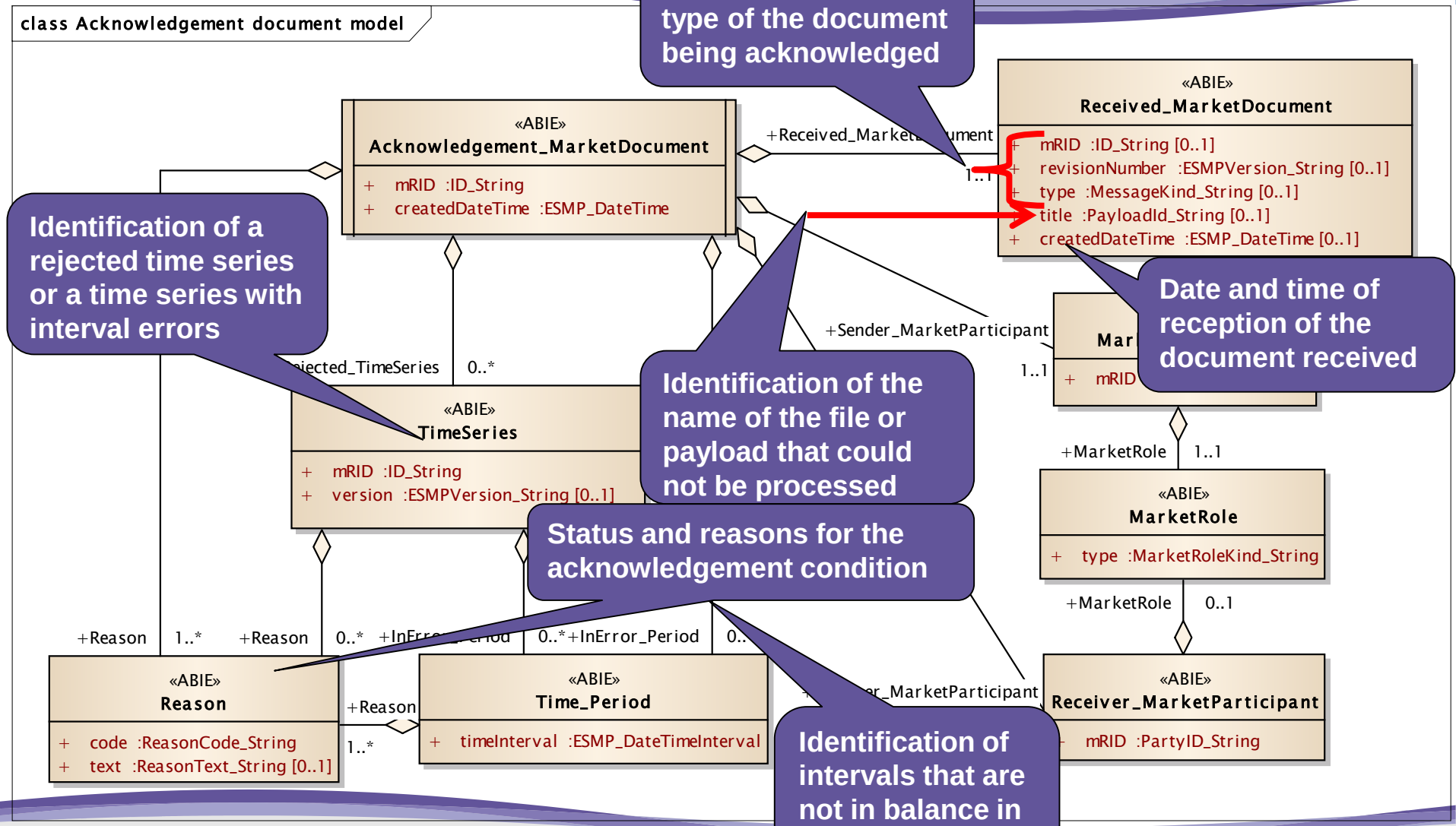
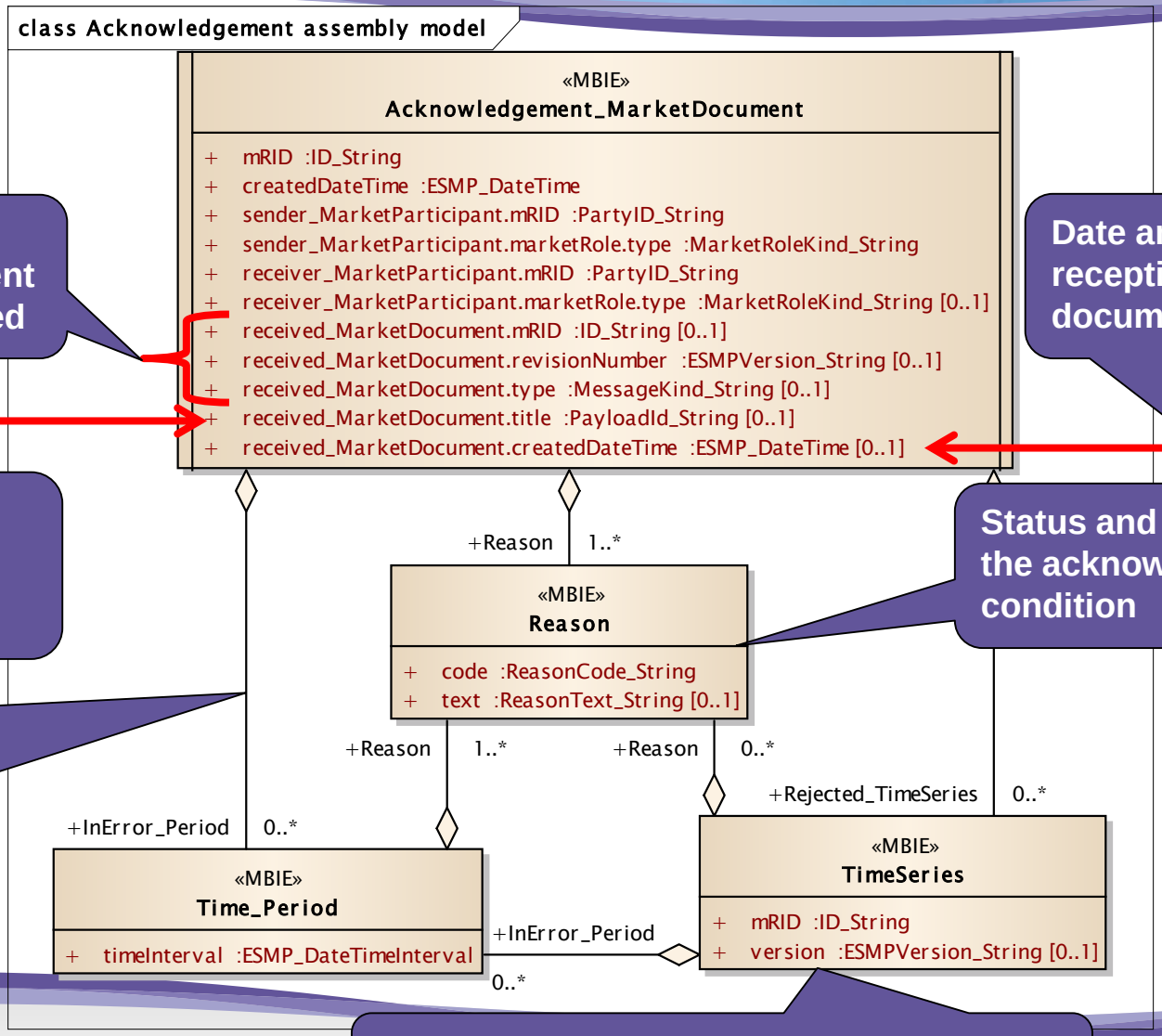
Acknowledgement Document information flow



Acknowledgement Document – Contextual model



Acknowledgement Document – Assembly model



Identification and type of the document being acknowledged

Date and time of reception of the document received

Identification of the name of the file or payload that could not be processed

Status and reasons for the acknowledgement condition

Identification of intervals that are not in balance in the case of a global position

Identification of a rejected time series or a time series with interval errors

Any questions?

PROBLEM STATEMENT DOCUMENT

IEC 62325-451-5 Committee Draft for Vote

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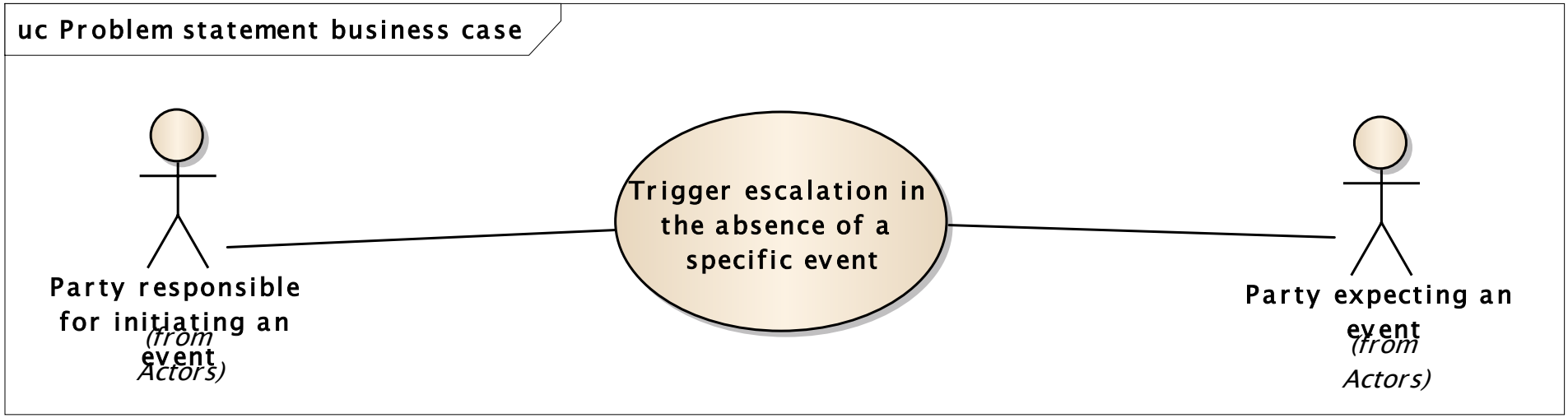
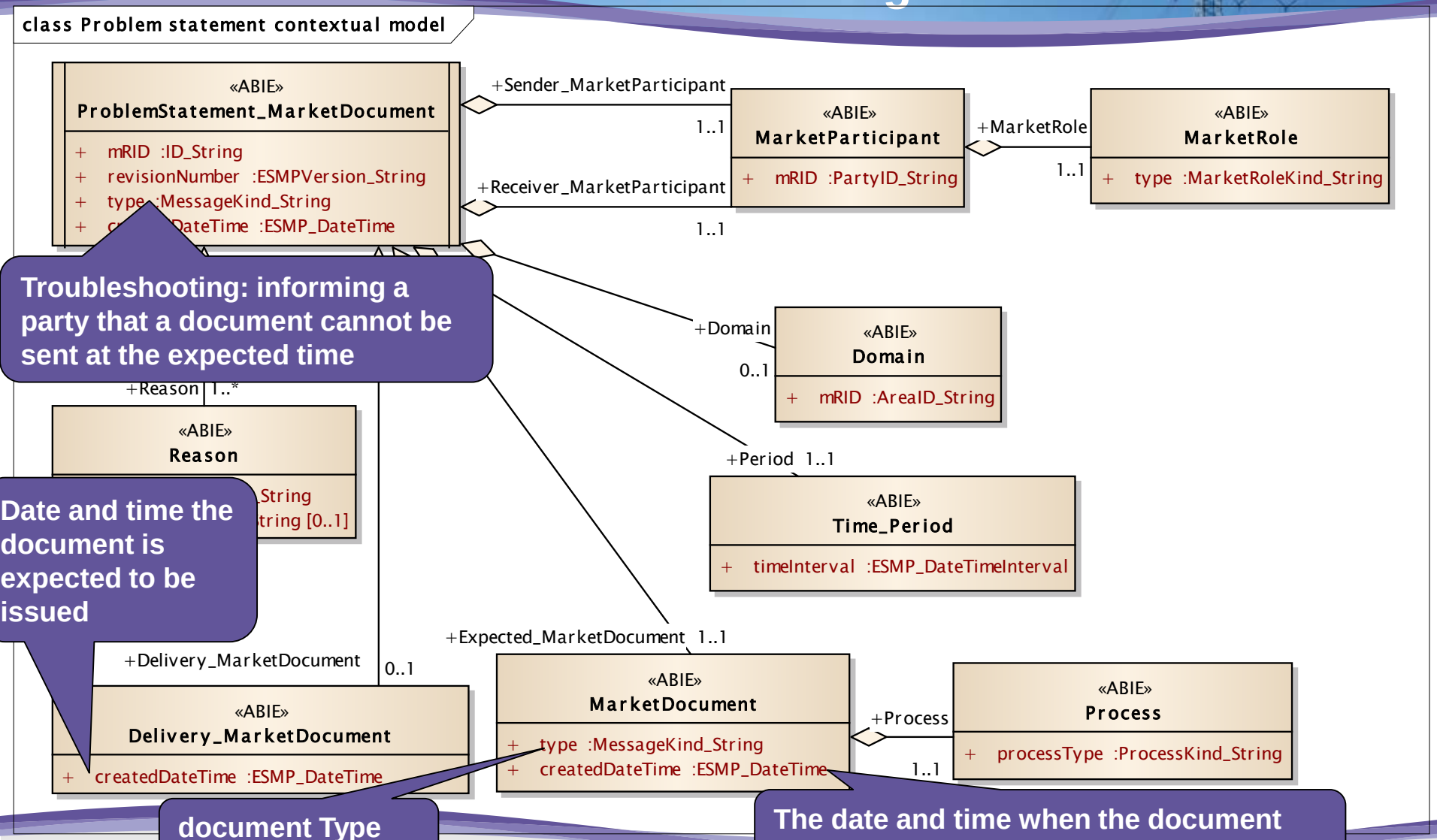
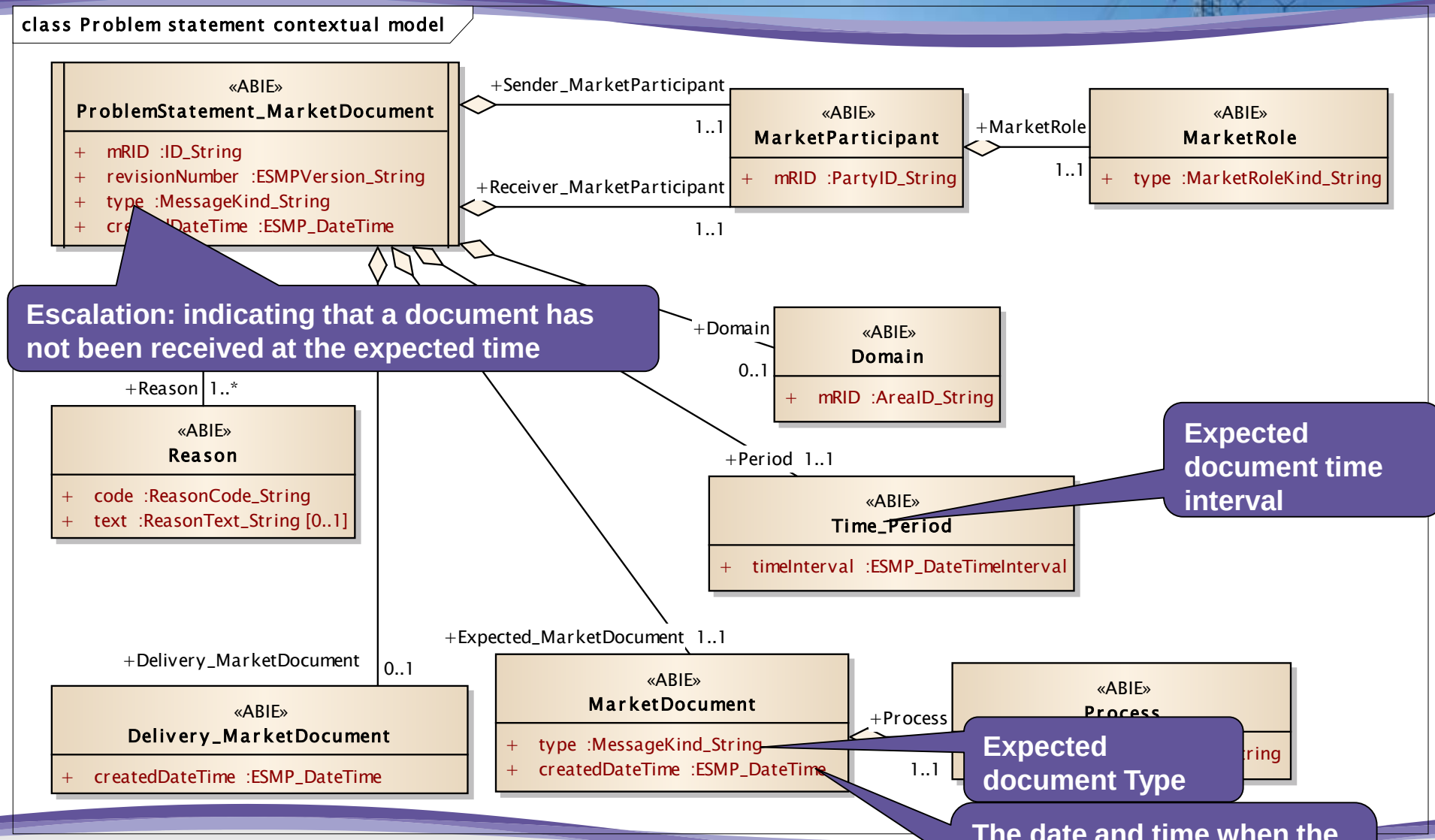
Problem Statement Document business case



Problem Statement Document contextual model Troubleshooting



Problem Statement Document contextual model Escalation



Problem Statement Document assembly model

Troubleshooting : informing a party that a document cannot be sent at the expected time

Escalation: indicating that a document has not been received at the expected time

Expected document time interval

document Type not issued

Expected document Type

Date and time the document is expected to be issued

The date and time when the document was expected to be issued or received

class Problem statement assembly model

«MBIE»
ProblemStatement_MarketDocument

- + mRID :ID_String
- + revisionNumber :ESMPVersion_String
- + type :MessageKind_String
- + sender_MarketParticipant.mRID :PartyID_String
- + sender_MarketParticipant.marketRole.type :MarketRoleKind_String
- + receiver_MarketParticipant.mRID :PartyID_String
- + receiver_MarketParticipant.marketRole.type :MarketRoleKind_String
- + createdDateTime :ESMP_DateTime
- + period.timeInterval :ESMP_DateTimeInterval
- + expected_MarketDocument.type :MessageKind_String
- + expected_MarketDocument.createdDateTime :ESMP_DateTime
- + expected_MarketDocument.process.processType :ProcessKind String
- + delivery_MarketDocument.createdDateTime :ESMP_DateTime [0
- + domain.mRID :AreaID_String [0..1]

+Reason 1..*

«MBIE»
Reason

- + code :ReasonCode_String
- + text :ReasonText_String [0..1]

Any questions?

END

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