BRS

(Business Requirement Specification)

Nordic operational system

A market model for data exchange

Business process:	Nordic operational system
Version:	1.7.B
Status:	Approved by NMEG
Date:	January 12th, 2024

Content

1 Introduction

1.1 Background

Today the Nordic TSOs exchange documents based on several different formats and standards, such as Ediel (DELFOR/MSCONS), NOIS XML documents based on ENTSO-E IGs, CIM IGs and Excel documents. In addition, the Nordic TSOs have communications towards other European countries, such as Germany, the Netherlands and Poland, using even more standards, such as NorNed xml and ENTSO-E standards.

For efficiency reasons the four Nordic TSOs have set up the NMEG (Nordic Market Expert Group) for migration of the document exchanges towards one common document standard, and later maintenance of the Nordic document exchanges. The aim is to define document exchange models that can be used for all document exchanges between the actors in the Nordic energy market, Nordic TSOs and Market Operators.

This document is a *Business Requirement Specification* (BRS) detailing the document exchanges related to operation of the Nordic energy market. The focus of the document is the business aspects of the document exchanges and the basis for the document is the ENTSO-E ERRP Implementation Guide [1], together with the ebIX®, EFET and ENTSO-E Harmonised role model [2].

1.2 Nordic Energy Domain Model

A Nordic Energy Market Domain model, giving an overall overview of the structure and processes used in the Nordic Energy market, can be found at [12].

1.3 Project organisation

The document is written by NMEG (Nordic Market Expert Group), see www.ediel.org.

1.4 References

[1] ENTSO-E Electronic Data Interchange (EDI) Library
- Implementation Guides
- CIM XML schemas
- MADES specifications
- Etc.

[2] The Harmonised Role Model, ENTSO-E, ebIX® and EFET
[3] UN/CEFACT Unified Modelling Methodology (UMM)
[4] UN/CEFACT XML Naming and Design Rules (NDR)
[5] ebIX Modelling methodology and process models (EMD), see http://www.ebix.org/
[6] Ediel Implementation guides, see http://www.ediel.org/
[7] Ediel Common Nordic XML rules and recommendations, see http://www.ediel.org/
[8] Ediel BRS for the Nordic TSO Determine transfer capacity model, see http://www.ediel.org/
[9] Ediel BRS for the Nordic TSO Scheduling and Ancillary Services Process, see http://www.ediel.org/
[10] Ediel BRS for the Nordic Trading System, see http://www.ediel.org/
[11] Ediel BRS for the Nordic Balance Settlement and BRS for the Nordic Balance Settlement between NBS and TSOs/Market Operators, see http://www.ediel.org/
[12] Nordic Energy Market Domain Model, see http://www.ediel.org/
[13] Agreement regarding operation of the interconnected Nordic power system (System Operation Agreement) http://www.entsoe.eu/fileadmin/user_upload/_library/publications/nordic/operations/060613_entsoe_nordic_SystemOperationAgreement_EN.pdf
[14] NBM Implementation Guides, see https://nordic-balancing.pages.fifty.eu/information/index.html.

1.5 Terms and notations

The term *document* is used instead of *message* when this is applicable. However, when referencing ENTSO-E document names, the ENTSO-E name will be used, e.g., message, report, or document.

Documents are described by a class diagram showing the full set of attributes in the related xml schema. In addition, the usage of the document is described by one or more tables detailing the usage of each attribute. Optional attributes from the class diagram, not used in the specific data exchange, are omitted from the table. In addition the cardinalities, e.g., [0..1], may be stricter in the detailed descriptions than in the original ENTSO-E documents.

Some abbreviations used:

ACE OL	Area Control Error Open Loop
aFRR	Automatic frequency restoration reserve
BRP	Balance Responsible Party
BSP	Balancing Service Provider
DATCR	Direct Activated Tertiary Control Reserve
FCR-D	Frequency Containment Reserves for Disturbances
FCR-N	Frequency Containment Reserves for Normal operation
FRR	Frequency Restoration Reserve
mFRR	Manual Frequency Restoration Reserve
MOL	Merit Order List
NBM	Nordic Balancing Model
SATCR	Schedule Activated Tertiary Control Reserve

1.6 Change log

Ver/rel/rev	Changed by	Date	Changes
1.7.B	Ove Nesvik	20240112	• Editorial corrections.
1.7.A	Ove Nesvik	20230626	• Addition of NBM Measure processes and NBM Measurement Data Market Document. • Changed the sequence of the processes described in chapter 2 to Measure, Situational Awareness, Activate and Report. • Added a data exchange (document) from System Operator to Market Operator; “4.0 Activated or deactivated bids” • Update the documents to be exchanged in chapter “2.3 Overview of information exchange between market actors”. • Updated the definitions from the harmonised role model in chapter “4 Harmonised roles and domains used in Nordic operational system”. • Removed the old ENTSO-E version (non-cim) of the ERRP Activation Document. • Update chapter “5.2.3 Attribute usage: ERRP Activation Market Document”

			• Addition of clarifying text.

1.6.A	Ove Nesvik	20220628	• Addition of the new UseCase "Situational awareness" as part of the UseCase Operate.
			• Addition of "Merit Order List", "ESS Schedule (ACE OL Limits)" and "ACE OL Point value" documents, including update of Attribute usage.
			• Replaced Resource Provider by Balancing Service Provider.
			• Removed the role Market Operator from the Activate UseCase.
			• Correction of spelling and addition of clarifying text, such as:
			  ○ Update of references and related links.
			  ○ Addition of abbreviations in chapter "1.5 Terms and notations".

1.5.A	Ove Nesvik	20210702	• Replace the code "**Z69** Metered frequency" with "**C57** Metered frequency" Added reporting of FCR and FRR. Using Enterprise Architect instead of MagicDraw artefacts. Update to latest Harmonised Role Model
1.4.A	Ove Nesvik	20200831	• Removal of Document Type **Z15** • Removal of Process Type code **A29** and **A30** • Addition of role code "**A46** Balancing Service Provider" in all documents

1.3.A	Ove Nesvik	20200604	• Replaced Process Type **A30** with **A47** in Balancing Market Document
			• Addition of **A46** Balancing Service Provider in all documents
			• Addition of new Process Type Codes for ERRP Activation document (CIM version):
			  A47 Manual frequency restoration reserve (to replace A30)
			  A51 Automatic frequency restoration reserve (to replace A29)
			• The following Process Type Codes for ERRP Activation document (CIM version) are marked for deprecation: **A29**, **A30.**
			• Correction of spelling errors.
			• Addition of Balancing Market Document (IEC/CIM 62325-451-6 Balancing Market Document Ed. 2.1), see chapter 5.2.1.
			• Added Price Report to the MOL Responsible in the sequence diagram in chapter 2.3 (new arrow 29)
			• Added MOL Responsible to the UseCase diagram and the activity diagram in chapter 3.2.
			• Addition of clarifying text and correction of spelling errors.
			• Updated roles and domains to version 2019-01 of the HRM [2].

1.2.A	Ove Nesvik	20180618	• Update of cardinalities for ERRP Activation Document (ENTSO-E version). • Addition of ERRP Activation Document (CIM version).

			• Addition of process area “Report”. • Addition of Metered frequency (**Z69**) and **Hz** in the Publication Document. • Addition of clarifying text and correction of spelling errors.
1.1.D	Ove Nesvik	20170704	Addition of cardinalities in the attribute tables.
1.1.C	Ove Nesvik	20170704	• Textual corrections: removed Nord Pool and eSett logos on the front page. • Addition of Reason code “A95 Complementary information” together with Reason Text.

1.1.B	Ove Nesvik	20170213	• Textual corrections:
			  ○ Updated logos on the front page.
			  ○ Replaced Nord Pool and NPS with Market Operator.
			  ○ Replaced Elspot with Day-ahead.
			  ○ Replaced Elbas with Intraday.
			  ○ Updated NTC and NEG member list.
			• 2.3 Overview of information exchange between market actors (sequence diagram):
			  ○ Addition of “Price report” from Market Operator to Reconciliation Responsible.
			• NEG ECAN Publication Document:
			  ○ Addition of “A38 Reconciliation Responsible” as Receiver Role.

1.1.A	Ove Nesvik	20161018	• NEG ECAN Publication Document:
			  ○ Addition of Business Type “B23 Consumption imbalance price”.
			• ERRP Activation Document:
			  ○ Addition of Document Type “A36, Deactivation document”.
			  ○ Addition of Business Type “A12 Secondary control”.
			  ○ Update related dependency matrix.
			• Textual corrections.

1.0.A	Ove Nesvik	20151118	First official version.

2 Overview of the Nordic energy market domain

2.1 Operate in the overall context (Domain model)

The Domain model describes the core business process areas needed to have a well-functioning energy market. The model is important for having a common and agreed understanding on how the energy market works as a basis for development of common methods for exchange of information.

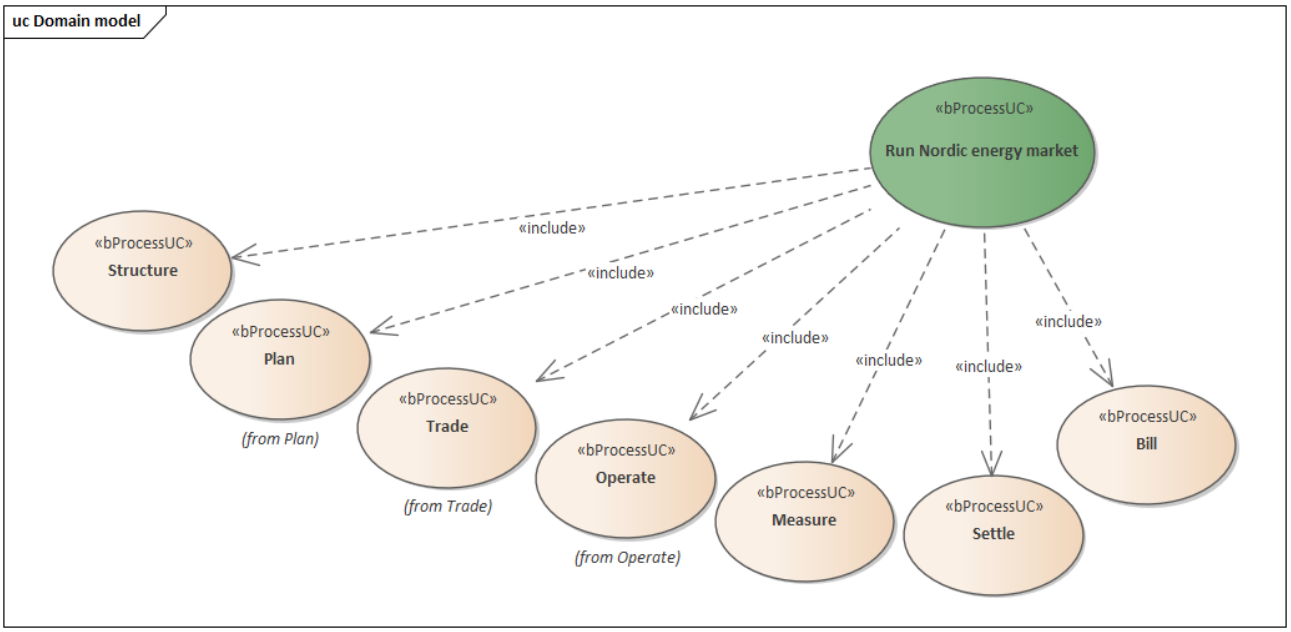

Figure 1: UseCase diagram: Domain model

The domain model of the energy market covers all stages from the structuring of the market until the settlement and billing of consumption and transport of energy, with a focus on the exchange of information:

- **Structure**: Exchange of master data including the Change of Supplier processes
- **Plan:** Planning of production, consumption, exchange, and transport
- **Trade:** Trade on different markets, including ancillary services, bilateral trade, etc.
- **Operate:** Operation
- **Measure:** Measuring of production, consumption, exchange, and transport
- **Settle:** Settlement
- **Bill:** Billing

The *Nordic operational system process* is a part of the process area *Operate*.

For a more elaborated description of the processes include in the domain model, see [9].

2.2 Breakdown of the operational phase

In the rest of this document the Business area (UseCase) Operate is further elaborated.

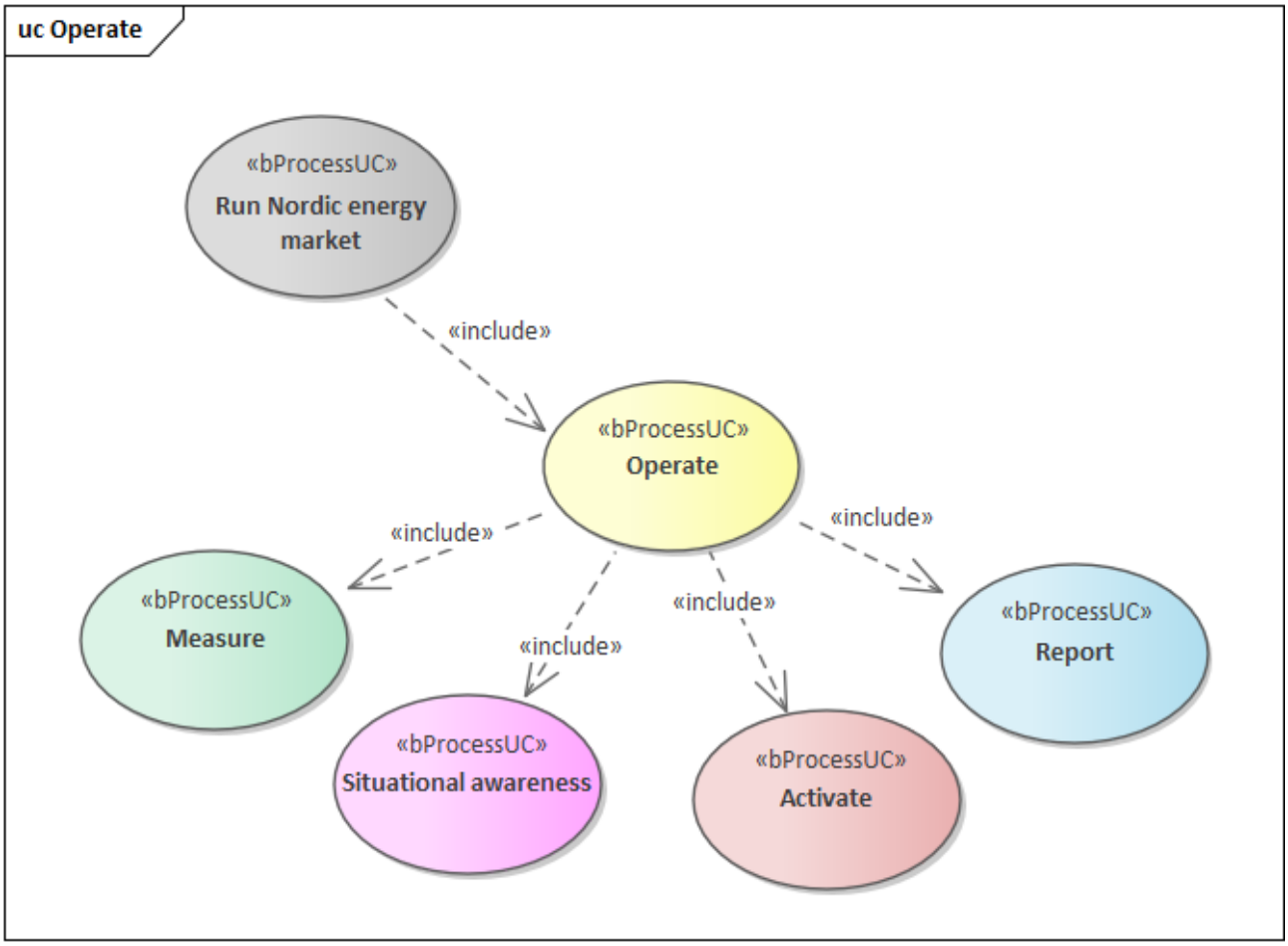

Figure 2: UseCase diagram: The Nordic operational system process

The Business Area Operate outlined in **Figure 2**, concerns principally the Measure, Situational Awareness, Activate and Report processes.

In the rest of this document the green, purple, red and blue UseCases, i.e., Measure, Situational Awareness, Activate and Report are further elaborated.

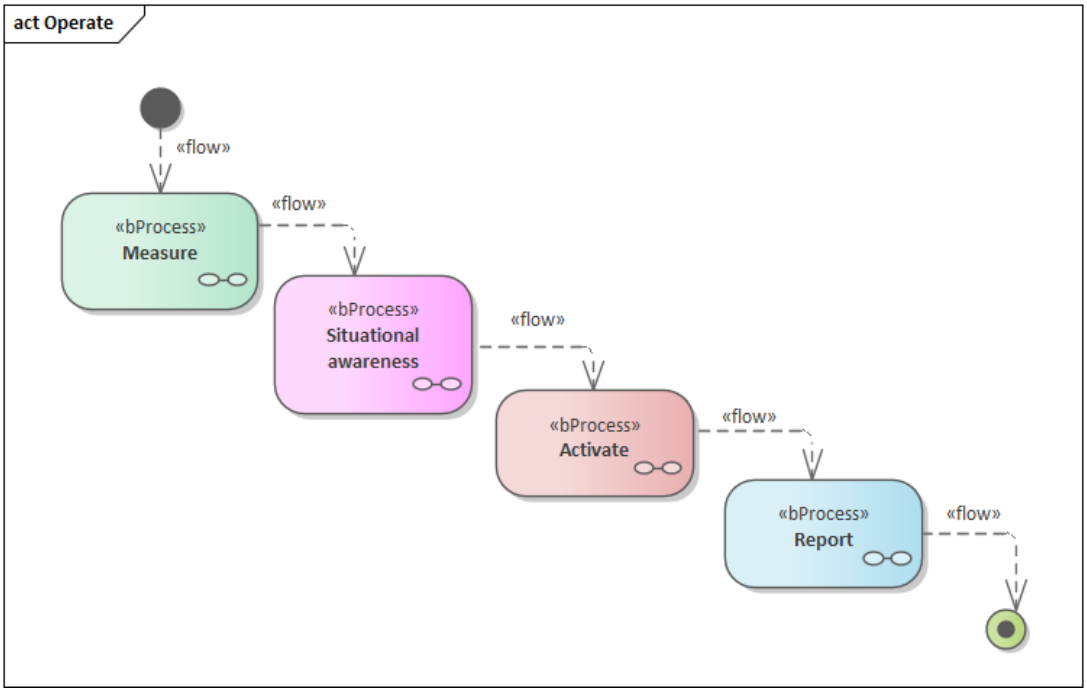

Figure 3: Activity diagram: The Nordic operational system process

The Measure, Situational Awareness, Activate and Report processes are parts of the Balance Regulation Market. An activation is always within a Bidding Zone.

2.3 Overview of information exchange between market actors

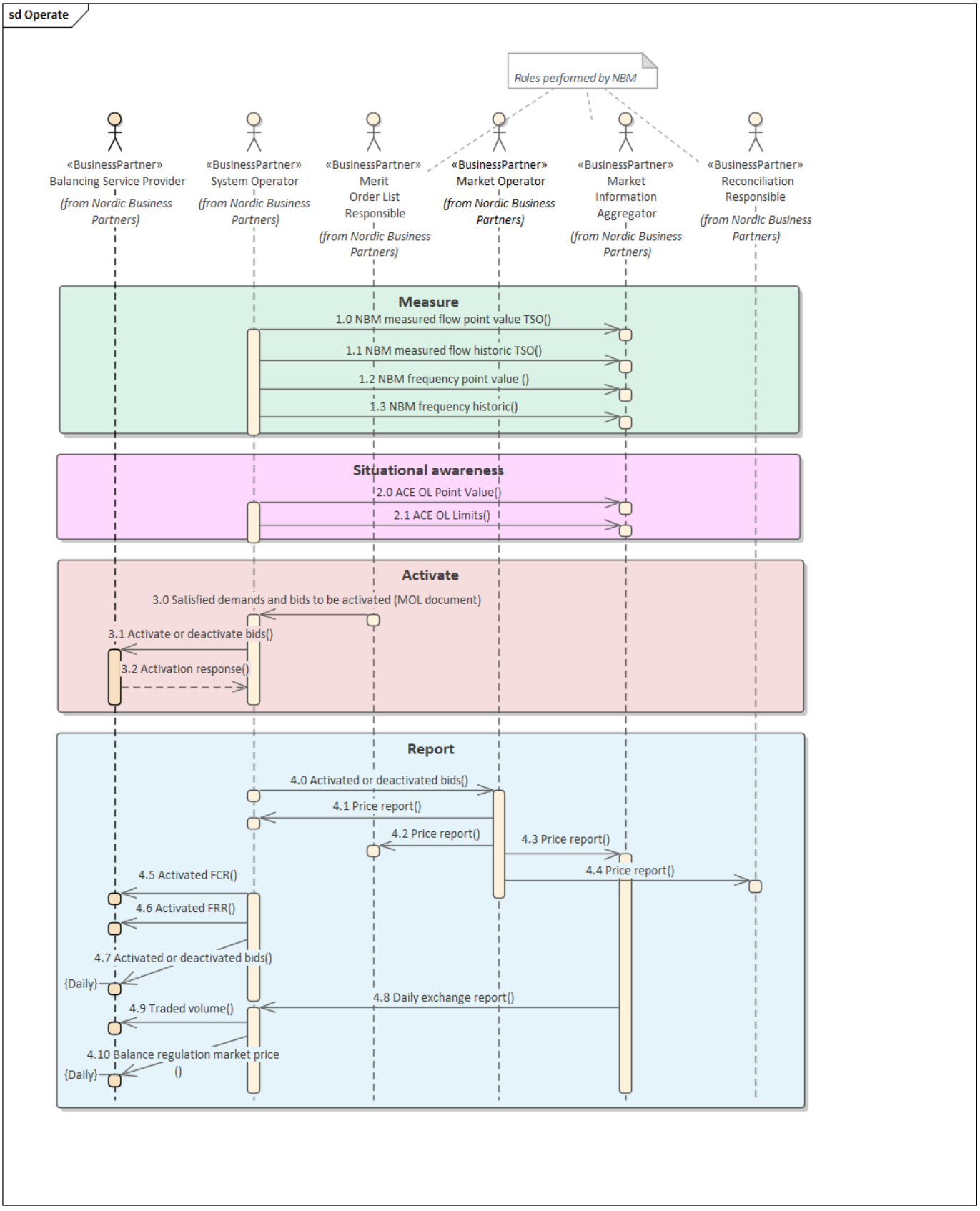

Figure 4: Sequence diagram: Information exchange overview for "operational markets"[1]

[1] The report part will be updated when the process is finally agreed by NBM.

Process area	Arrow	Content	Where to find detailed description
Measure	1.0	NBM measured flow point value TSO	NBM Measurement Data Market Document (CIM based NBM document), see 5.5
	1.1	NBM measured flow historic TSO	NBM Measurement Data Market Document (CIM based NBM document), see 5.5
	1.2	NBM frequency point value	NBM Measurement Data Market Document (CIM based NBM document), see 5.5
	1,3	NBM frequency historic	NBM Measurement Data Market Document (CIM based NBM document), see 5.5
Situational awareness	2.0	ACE OL Point Value	ACE OL Point Value Document (IEC/CIM), see 5.3
	2.1	ACE OL Limits	ESS Schedule Document from IEC62325-451-2 Ed.2 (ACE OL Limits), See 5.4
Activation	3.0	Satisfied demands and bids to be activated (MOL document)	Merit Order List Document (IEC/CIM 62325-451-7, Ed. 1), see 5.1
	3.1	Activate or deactivate bids (Status = A10, Ordered)	ERRP Activation Document (IEC/CIM 62325-451-7 Activation Document version 6.0), see 5.2
	3.2	Activation response (Status = A07, Activated or A09, cancelled)	
	3.3	Activation response (Status = A07, Activated or A09, cancelled)	ERRP Activation Document (IEC/CIM 62325-451-7 Activation Document version 6.0), see 5.2
Reporting	4.0	Activated or deactivated bids	Merit Order List Document (IEC/CIM 62325-451-7, Ed. 1), see 5.1
	4.1	Price report	Balancing Market Document (IEC/CIM 62325-451-6, Ed. 2.1), see 5.6
	4.2	Price report	
	4.3	Price report	
	4.4	Price report	
	4.5	Activated FCR	ERRP Activation Document (IEC/CIM 62325-451-7 Activation Document version 6.0), see 5.2
	4.6	Activated FRR	
	4.7	Activated or deactivated bids	
	4.8	Daily exchange report	Balancing Market Document (IEC/CIM 62325-451-6, Ed. 2.1), see 5.6
	4.9	Traded volume	
	4.10	Balance regulation market price	

Table 1: ENTSO-E documents used in the Nordic operational system

Figure 4 shows the main electronic documents exchanged between the Balancing Service Providers, TSOs (System Operators), MOL Responsible (Merit Order List Responsible), Market Operator, Market information aggregator and the Reconciliation Responsible. Reporting to the Imbalance settlement responsible is shown in a separate BRSs [11].

Trade on mFRR CM (Capacity Market) and EAM (Energy Activation Market), and aFRR CM and EAM, are document in the NMEG BRS for the Nordic trading system [10].

Measured flow, sum of all measured flow and frequency on an interconnector between bidding zones, consists of Real time values (PT10S) and Historical values which can be more accurate (corrected) than real time values.

After the bids have been received the bids may be activated. Each activated bid is reported back to the Balancing Service Provider in question and reported to the Market Operator. Daily, after the operational phase, the activated and deactivated bids, and Balance regulation market prices are distributed to the Balancing Service Providers.

After activation, the System Operator continuously (every 10 seconds) informs the Market Information Aggregator (NBM) of real-time Area Control Error Open Loop (ACE OL) Point Values and the ACEOL Limits document, the latter whenever the limit for warnings and alarms changes.

Summaries of traded volumes for consumption and production per Bidding area may be sent from the TSO to the Balancing Service Provider.

In addition to the information exchange shown in the diagram above, the marginal prices and total quantity bought are made available on a webserver for the different markets.

The Balancing Service Providers must be, or be contracted with, a Balance Responsible Party, which is responsible for consumption, production, or both.

3 Process areas within Nordic operational system

3.1 Process area: Operate

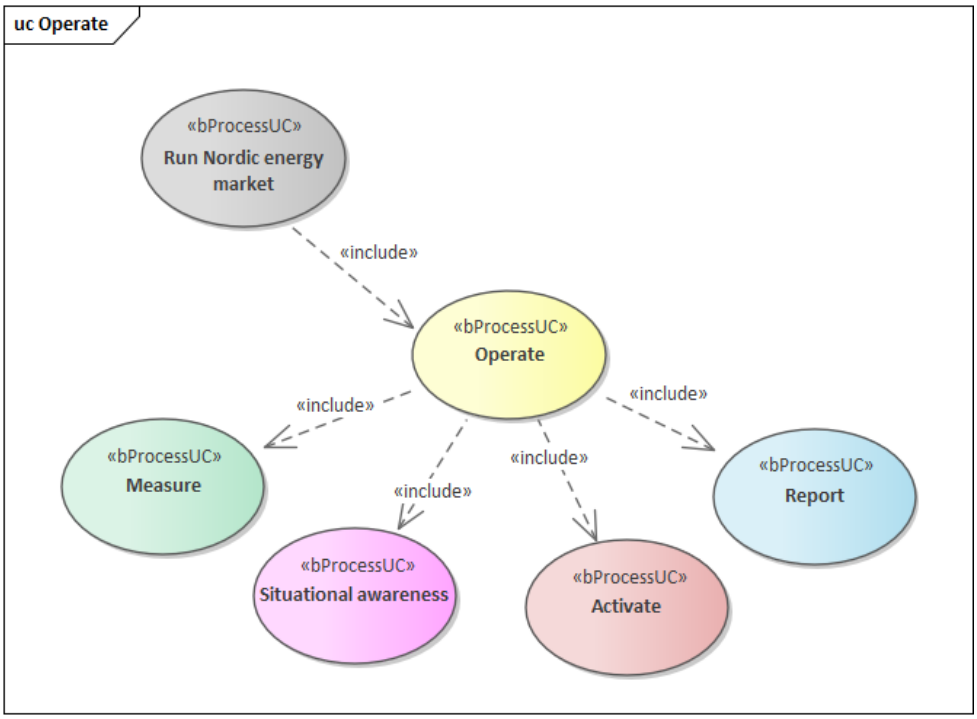

Figure 5: UseCase diagram: Operate

3.1.1 Measure

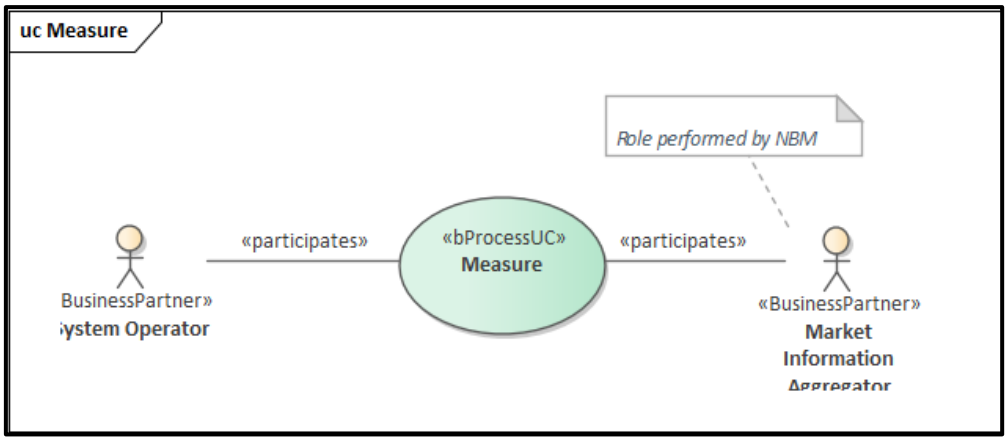

Figure 6: UseCase diagram: Situational awareness

Figure 6 shows the Measure process and the participating actors. The Business process is further described below.

Measured flow is sum of all measured flow on an interconnector between Bidding Zones. It consists of Real time values (PT10S) and Historical values which can be more accurate (corrected) than real time values.

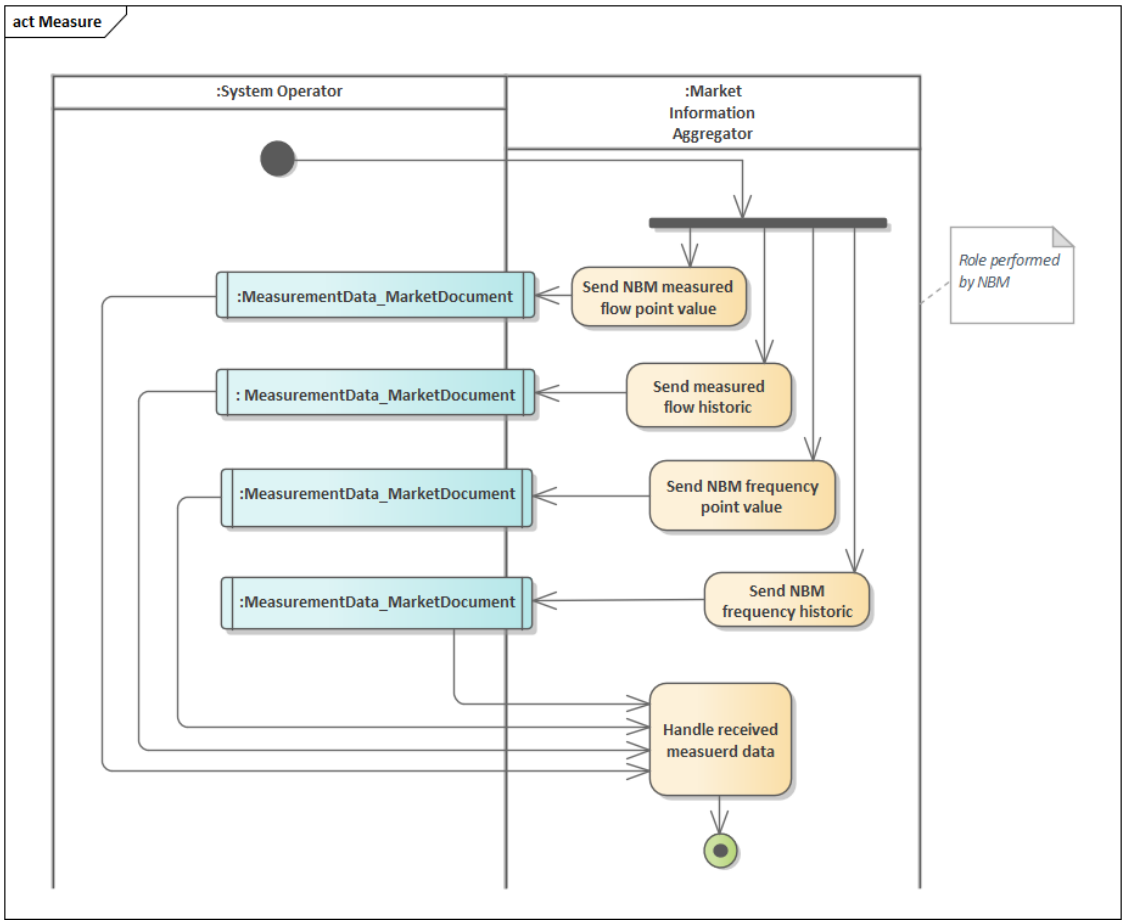

Figure 7: Activity diagram: Measure

3.1.2 Process area: Situational awareness

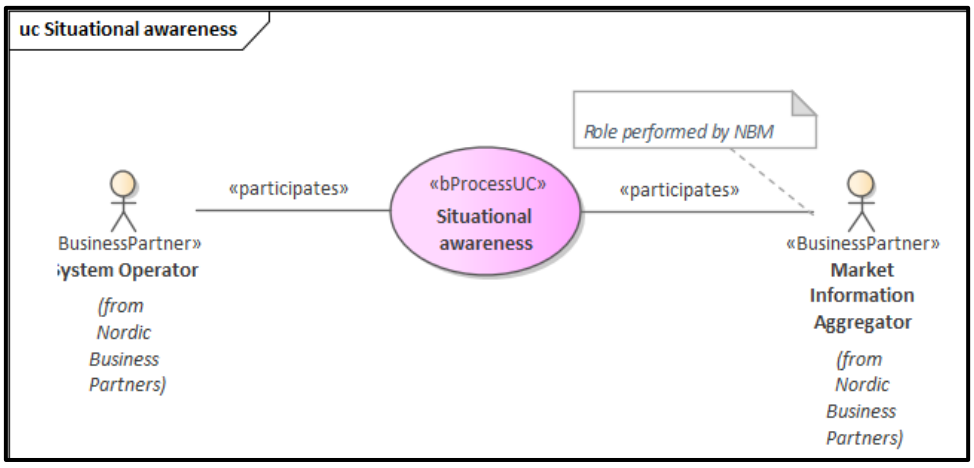

Figure 8: UseCase diagram: Situational awareness

Figure 8 shows the process Situational awareness and the participating actors. The Business process is further described below.

In the Situational awareness process, the System Operator informs the Market Information Aggregator (NBM) of real-time Area Control Error Open Loop (ACE OL) Point Values. The ACE OL Point values is sent by a 10-second resolution per Bidding Zone and represents the imbalance of a Bidding Zone in the power

system without automatic Frequency Restoration Reserve (aFRR) and manual Frequency Restoration Reserves (mFRR). ACE OL is the imbalance before any operator balancing actions.

Furter the ACEOL Limits document is sent whenever the limit for warnings and alarms changes. The ACE OL limits is used for visualisation when ACE OL exceed or goes below certain values within a bidding zone. The ACE OL limits is sent infrequent, i.e. the distribution may range from e.g. 3 months down to every 15 minutes. ACE OL Limits are given by Time Series for each Bidding Zone within a TSO area of responsibility.

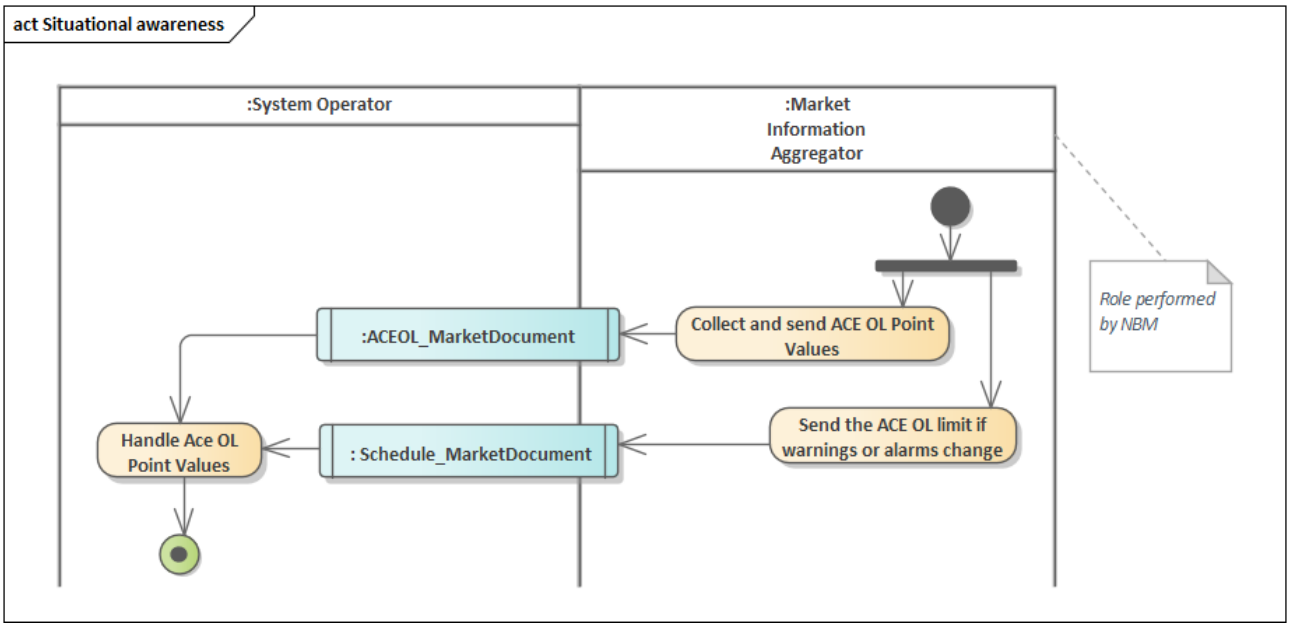

Figure 9: Activity diagram: Situational awareness

3.1.3 Process area: Activate

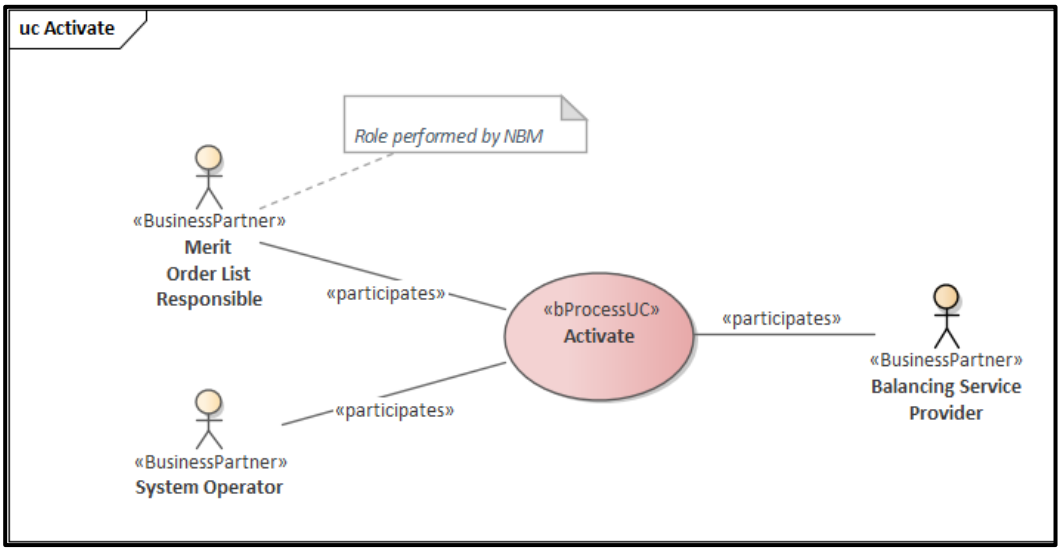

Figure 10: UseCase diagram: Activate

Figure 10 shows the process *Activate* and the participating actors. The *Business process* is further described below.

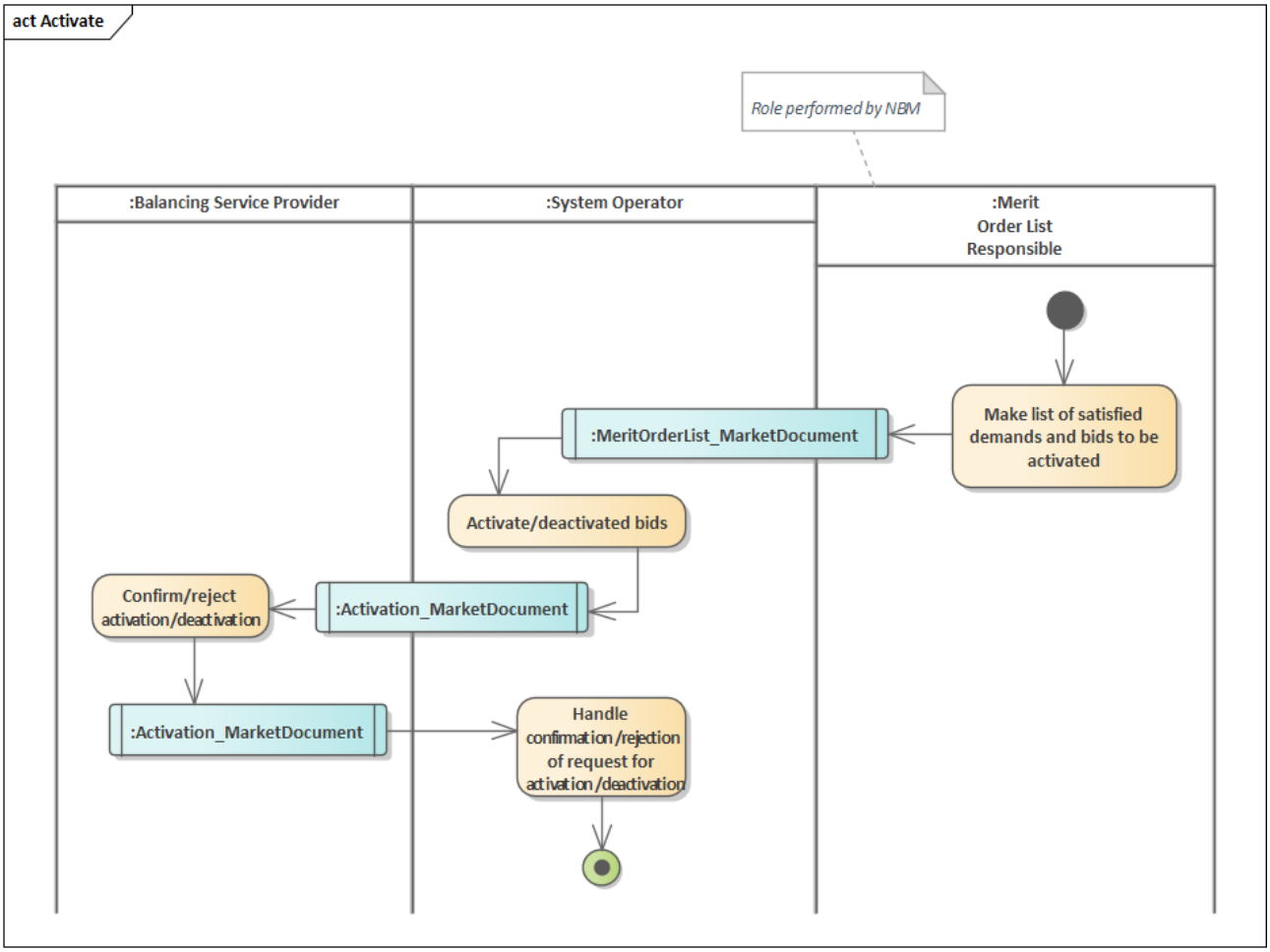

Figure 11: Activity diagram: The Nordic activation process

The Balance regulation market is a tool for the TSOs and must be able to manage unpredictable differences between planned and actual exchange in the delivery phase on short notice. Active bidders on the Balance regulation market must be able to regulate their delivery and usage within a given time defined by the market rules. In practice, this means that only producers and large consumers are bidding actively. All other participants remain passive. An overview of how the trading of balancing services across borders is facilitated within Nordic countries can be found in [10].

Before the activities in

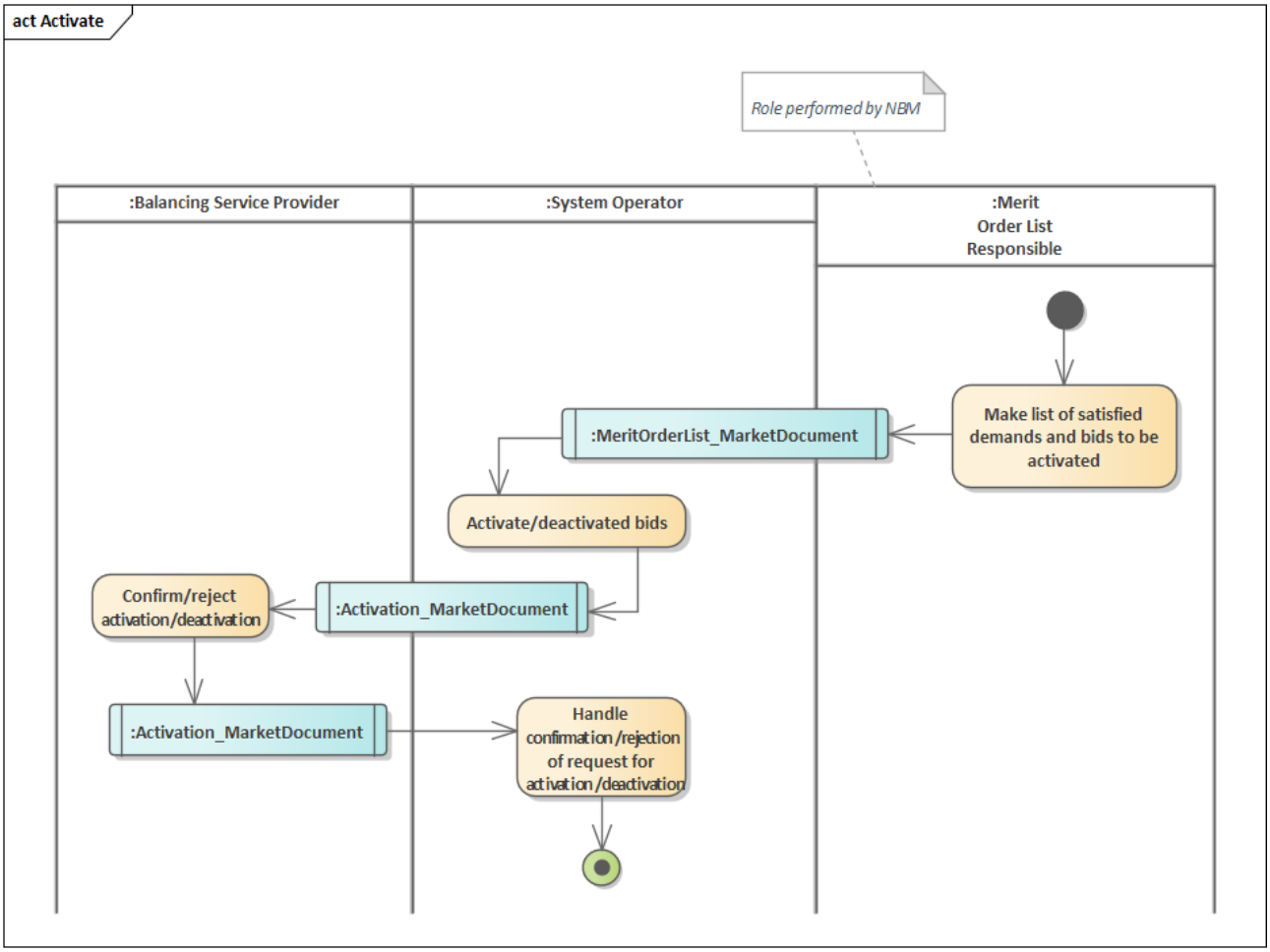

Figure 11, bids are collected, accumulated, and presented for the TSO by the MOL Responsible (NBM), as a sorted list of bids.

The Nordic Balance regulation market document transmission cycle is composed of the following phases:

1. In the national Balance regulation market, Balance responsible parties sends bids to the TSOs on a day-ahead basis. Bids may be for both up and down regulation and be corrected during the operational phase (e.g., within 45 minutes before operation). The TSO activates up or down regulation according to the lowest bids.
2. The national TSO forwards all the bids to the MOL Responsible.
3. When there is a need to perform balance regulation, and provided there are no network restrictions, the operator checks with the MOL Responsible list of sorted bids (e.g., NBM) to find the cheapest unused bid. If it is within the operator's area, he or she activates the bid, otherwise he or she calls the TSO with the cheapest unused bid

Related documents are defined, according to the UMM [3], in chapter 5, Business Entity View (Business Data View), Nordic operational system.

In the Nordic market NBM act as MOL responsible. In fallback scenarios, the TSO has a Market Operator role for their own area. The latter is however not reflected in the sequence and activity diagrams in this BRS.

Tertiary reserve is a rescheduling action used for the restoration of Primary and Secondary reserve and to cater for a high rate of change of demand or generation, demand forecast errors or short-term plant losses.

Two types of Tertiary reserve activation are possible:

- Schedule Activated Tertiary Control Reserve (SATCR): is activated with relation to the predefined timeframe of exchange schedules, e.g., 15 minutes. A special exchange scheduling procedure is

used. It may include exchange rescheduling between TSOs, a special kind of exchange schedule is used.

- Directly Activated Tertiary Control Reserve (DATCR): can be activated at any time, independent from a timeframe of exchange schedules. It is activated by manual action at any time and may also include call-up reserve contracts between TSOs. In this case, the activation procedure results in a dynamically changing exchange pattern.

In Denmark (for emergency in DK2), Finland, Norway, and Sweden the DATCR type is used for activations in the *Balance regulation market*. Except for emergency in DK2, Denmark uses SATCR.

3.1.3.1 Process for activations

1. The TSO orders an activation by sending an activation request to a Balancing Service Provider
2. The Balancing Service Provider sends an acknowledgement that the activation request was received
3. The Balancing Service Provider sends an activation response to confirm that the activation order has been noted
4. The TSO sends an acknowledgement that the activation response was received
5. The Balancing Service Provider activates the requested resource according to the confirmed order
6. Optionally the Balancing Service Provider may send an updated activation response in case there is a deviation between the actual activation and the activation request
7. Optionally the TSO sends an acknowledgement that the updated activation response was received and approved

3.1.3.2 Handling of activations

Balance regulation market activations are ordered for up to one hour at a time but may be recurring. Continuation of recurring activations may be sent as an activation order prior to each new hour.

3.1.3.2.1 Handle new activations and stopped activations

An activation is new if:

- the activation document refers to a bid that is currently not in an activated state

An activation is stopped if:

- the activation document refers to a bid that is currently in an activated state
- end time is less than a given time according to local market rules

New and stopped activations must be presented to the Balancing Service Provider for confirmation before the activation response is sent to the TSO.

3.1.3.2.2 Handle recurring activations

To avoid unnecessary interruptions for the Balancing Service Provider because of hourly recurring activations, an automatic process can take care of these activations. The alternative to such a process is a manual intervention from the Balancing Service Provider every hour to confirm activation response.

An activation is "recurring" if all the following holds true:

- the activation document has the same order ID as a previous activation, but an updated version number
- the activation document refers to a bid that is currently in an activated state
- start time is equal to the end time of the current bid activation
- end time is increased from the last activation document
- end time is further ahead than a given time according to local market rules

If a recurring activation has not been received 15 minutes before the current end time of the activation, e.g., 15 minutes before the new hour, the activation should be stopped at the current end time.

3.1.3.3 Business rules – Activation Response

- The activation response must refer to a specific activation request (by ID and version)
- The Activation Time Series Class must be equal to the activation request except for Status (Balancing Service Provider, Business Type, Acquiring Area, Connecting Area, Measure Unit, Direction, Resource Object must be the same as requested)
- Quantity of the power block cannot be changed
- Start time (ST) may be adjusted if the start time is closer than a given time according to local market rules from the ordering time (OT, the time the order was sent).
- End time (ST) may be adjusted if the start time is closer than a given time according to local market rules from the ordering time.

3.1.4 Process area: Report

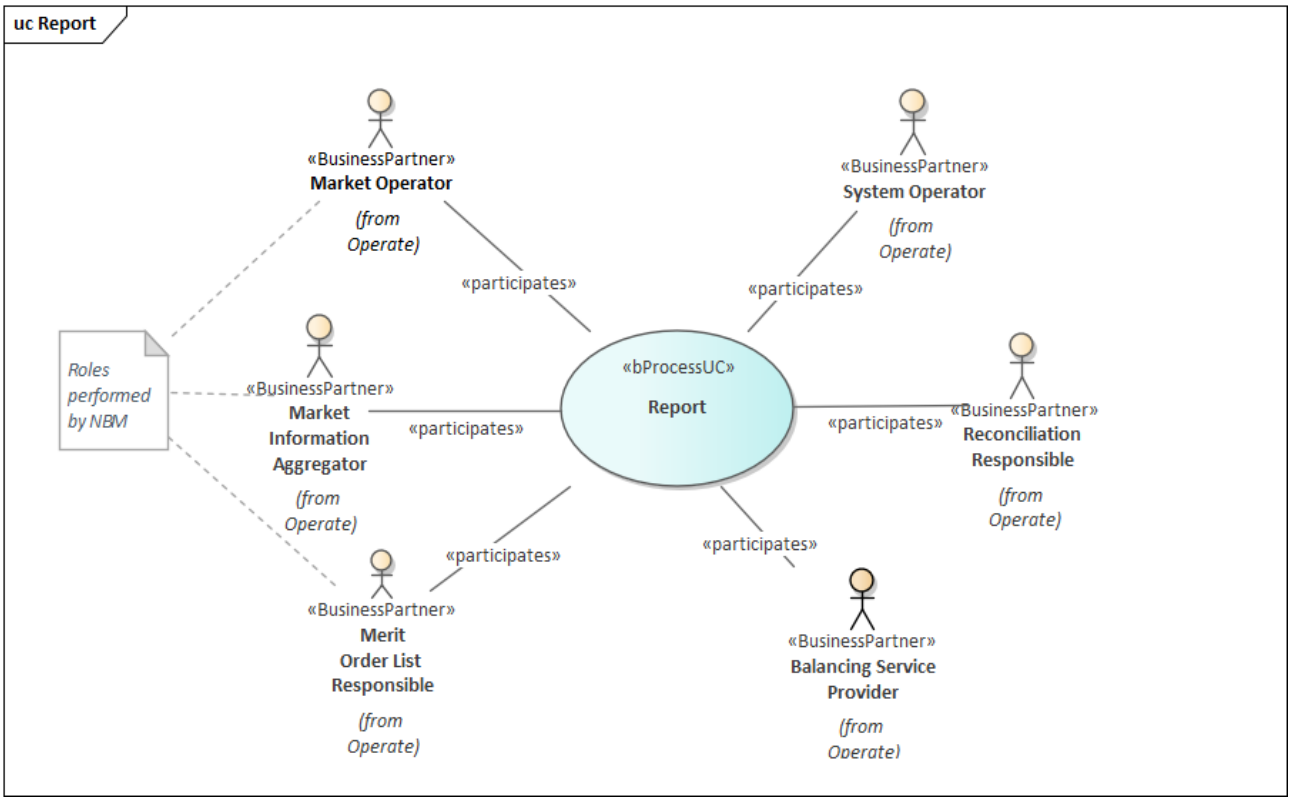

Figure 12: UseCase diagram: Report

Figure 12 shows the process *Activate* and the participating actors. The *Business process* is further described below.

After the operational day, the following are reported for FCR:

- The System Operator shall report to the BRP, which supplies FCR involved in the balancing capacity trade for FCR-N after the end of the delivery day:
  - Average frequency per quarter (Hz).
  - Activated FCR-N balance energy (amount in EUR and net energy per hour and Scheduling Area, separately for production and consumption).
  - Binding procured FCR-N balance capacity (power per Scheduling Area, separate for production and consumption).
- The System Operator shall report to the BRP, which delivers FCR involved in the trade in FCR-D after the end of the delivery day:
  - Average frequency per quarter (Hz).

- Activated FCR-D balance energy (net energy per hour and Scheduling Area, separate for production and consumption).
- Binding planned FCR-D balance capacity (power per Scheduling Area, separate for production and consumption).

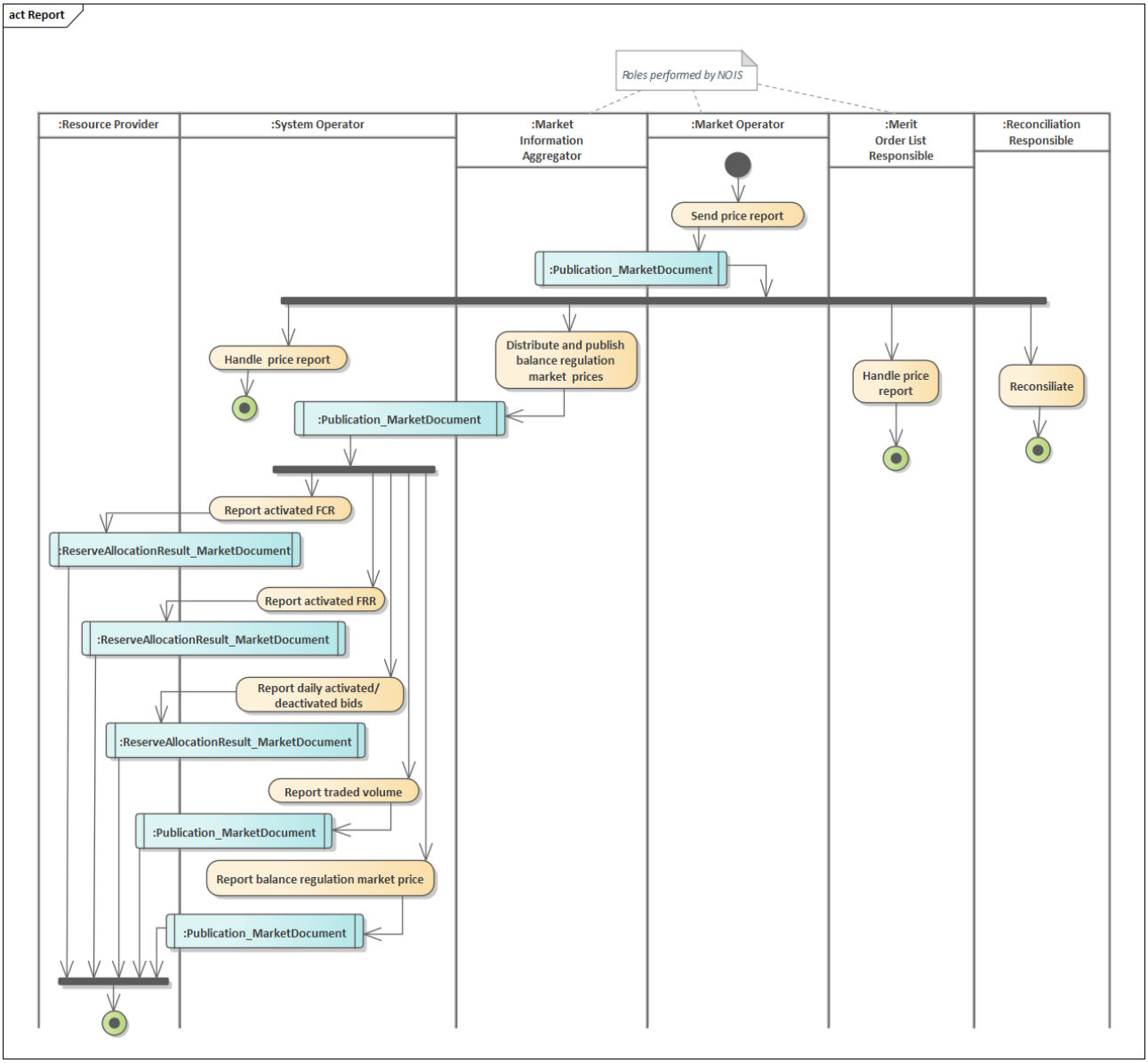

Figure 13: Activity diagram: Report

4 Harmonised roles and domains used in Nordic operational system

In **Figure 14** and in definitions below the relevant parts of the ebIX®, EFET and ENTSO-E Harmonised role model are outlined.

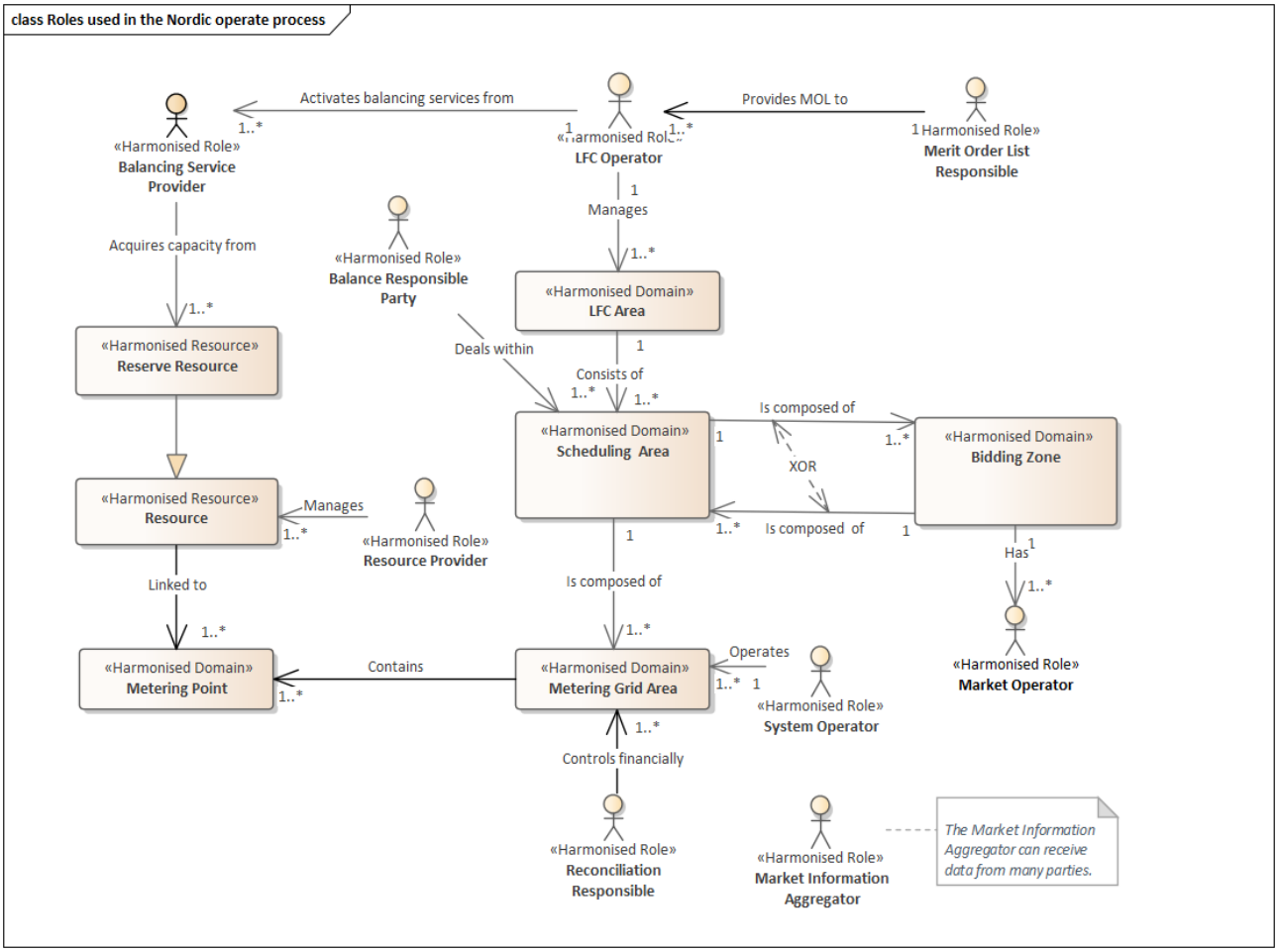

Figure 14: Outline of the Harmonised role model within the scope of the Nordic operational system

4.1 Roles from the ebIX®, EFET and ENTSO-E Harmonised role model HRM)

4.1.1 Balance Responsible Party

A Balance Responsible Party is responsible for its imbalances, meaning the difference between the energy volume physically injected to or withdrawn from the system and the final nominated energy volume, including any imbalance adjustment within a given imbalance settlement period.

Note:
Based on Electricity Balancing - Art.2 Definitions.

Additional information:
Responsibility for imbalances (Balance responsibility) requires a contract proving financial security with the Imbalance Settlement Responsible of the Scheduling Area entitling the party to operate in the market.

4.1.2 Balancing Service Provider

A party with reserve-providing units or reserve-providing groups able to provide balancing services to one or more LFC Operators.

Additional information:
Based on Electricity Balancing - Art.2 Definitions.

4.1.3 LFC Operator

Responsible for the load frequency control for its LFC Area or LFC Block.

Additional information:
This role is typically performed by a TSO.

4.1.4 Market information aggregator

A party that provides market related information that has been compiled from the figures supplied by different actors in the market. This information may also be published or distributed for general use.

Note:
The Market Information Aggregator may receive information from any market participant that is relevant for publication or distribution.

4.1.5 Market operator

A party that provides a service whereby the offers to sell electricity are matched with bids to buy electricity.

Additional information:

1) The definition above is based on Regulation on the internal market for electricity (EU) 2019/943:
2) A more detailed description:

   A party that provides a service of collecting offers to sell and bids to buy electricity and matching these offers and bids in order to determine a market price at the clearing point. This activity can be conducted in the forward, days-ahead and/or intraday timeframes, and can be combined with transmission capacity allocation in the context of market coupling.

   This is usually an energy/power exchange or platform.

4.1.6 Merit Order List (MOL) Responsible

Responsible for the management of the available tenders for all Acquiring LFC Operators to establish the order of the reserve capacity that can be activated.

4.1.7 Reconciliation Responsible

A party that is responsible for reconciling, within a Metering Grid Area, the volumes used in the imbalance settlement process for profiled Accounting Points and the actual measured quantities.

Note:
The Reconciliation Responsible may delegate the invoicing responsibility to a more generic role such as a Billing Agent.

4.1.8 Resource Provider

A role that manages a resource and provides production/consumption schedules for it, if required.

4.1.9 System Operator

A party responsible for operating, ensuring the maintenance of and, if necessary, developing the system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the distribution or transmission of electricity.

Additional information:

The definition is based on DIRECTIVE 2009/72/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC, Article 2 (Definitions).

4.2 Domains from the ebIX®, EFET and ENTSO-E Harmonised role model HRM)

4.2.1 Bidding Zone[2]

The largest geographical area within which market participants are able to exchange energy without capacity allocation.

Source: Commission Regulation (EU) 543/2013.

4.2.2 LFC Area

A part of a synchronous area or an entire synchronous area, physically demarcated by points of measurement at interconnectors to other LFC Areas, operated by one or more TSOs fulfilling the obligations of load-frequency control.

Source: System Operation Guideline, Commission Regulation (EU) 2017/1485.

4.2.3 Metering Grid Area

A Metering Grid Area is a physical area where consumption, production and exchange can be measured. It is delimited by the placement of meters for continuous measurement for input to, and withdrawal from the area.

[2] In the Nordic countries the Bidding Zone and the Scheduling Area will be the same

Additional information:
It can be used to establish volumes that cannot be measured such as network losses.

4.2.4 Metering Point

An entity where energy products are measured or computed.

4.2.5 Reserve Resource

A resource technically pre-qualified using a uniform set of standards to supply reserve capabilities to a System Operator and is associated with one or more tele-measuring devices.

Additional information:
This is a type of Resource.

4.2.6 Resource

A market representation of an asset or a group of assets related to the energy industry.

Additional information:
A Resource represents for example grid assets, consumption assets or production assets, such as generating units, consumption units, energy storage units or virtual power plants.

4.2.7 Scheduling Area[3]

An area within which the TSOs' obligations regarding scheduling apply due to operational or organisational needs.

This area consists of one or more Metering Grid Areas with common market rules for which the settlement responsible party carries out an imbalance settlement and which has the same price for imbalance.

Source: System Operation Guideline, Commission Regulation (EU) 2017/1485.

Additional information:
This covers both Imbalance Area and Imbalance Price Area from the Electricity Balancing Guideline (2017/2195).

[3] In the Nordic countries the Bidding Zone and the Scheduling Area will be the same

5 Business Entity View (Business Data View), Nordic operational system

5.1 Merit Order List Document (IEC/CIM 62325-451-7, Ed. 1)

The Merit Order List Document *(CIM version)* is developed by ENTSO-E/WG-EDI, see [1].

5.1.1 Class diagram: Merit Order List Document contextual model (CIM version)

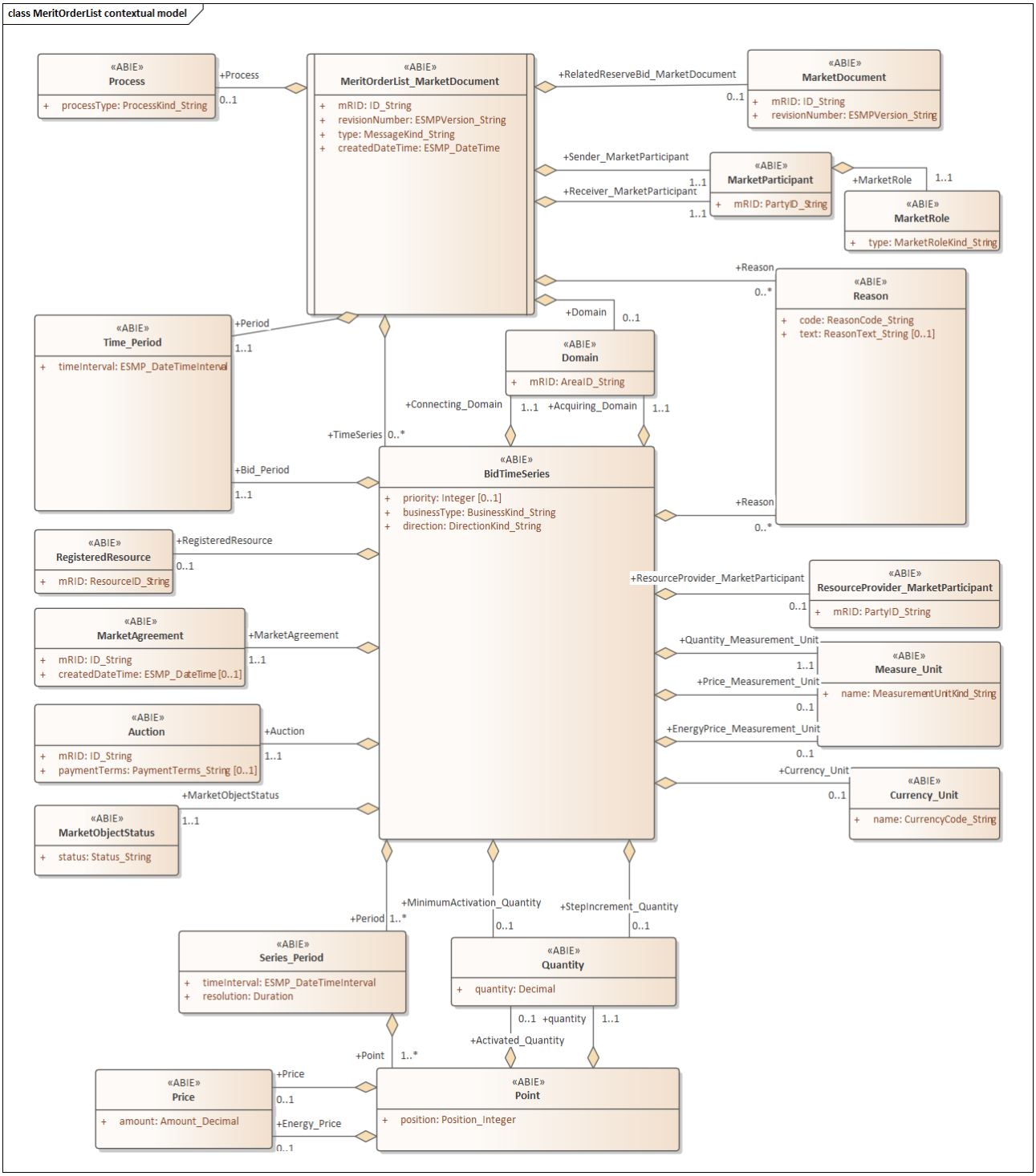

Figure 15: Class diagram: Merit Order List Document contextual model (CIM version)

5.1.2 Class diagram: Merit Order List Document assembly model (CIM version)

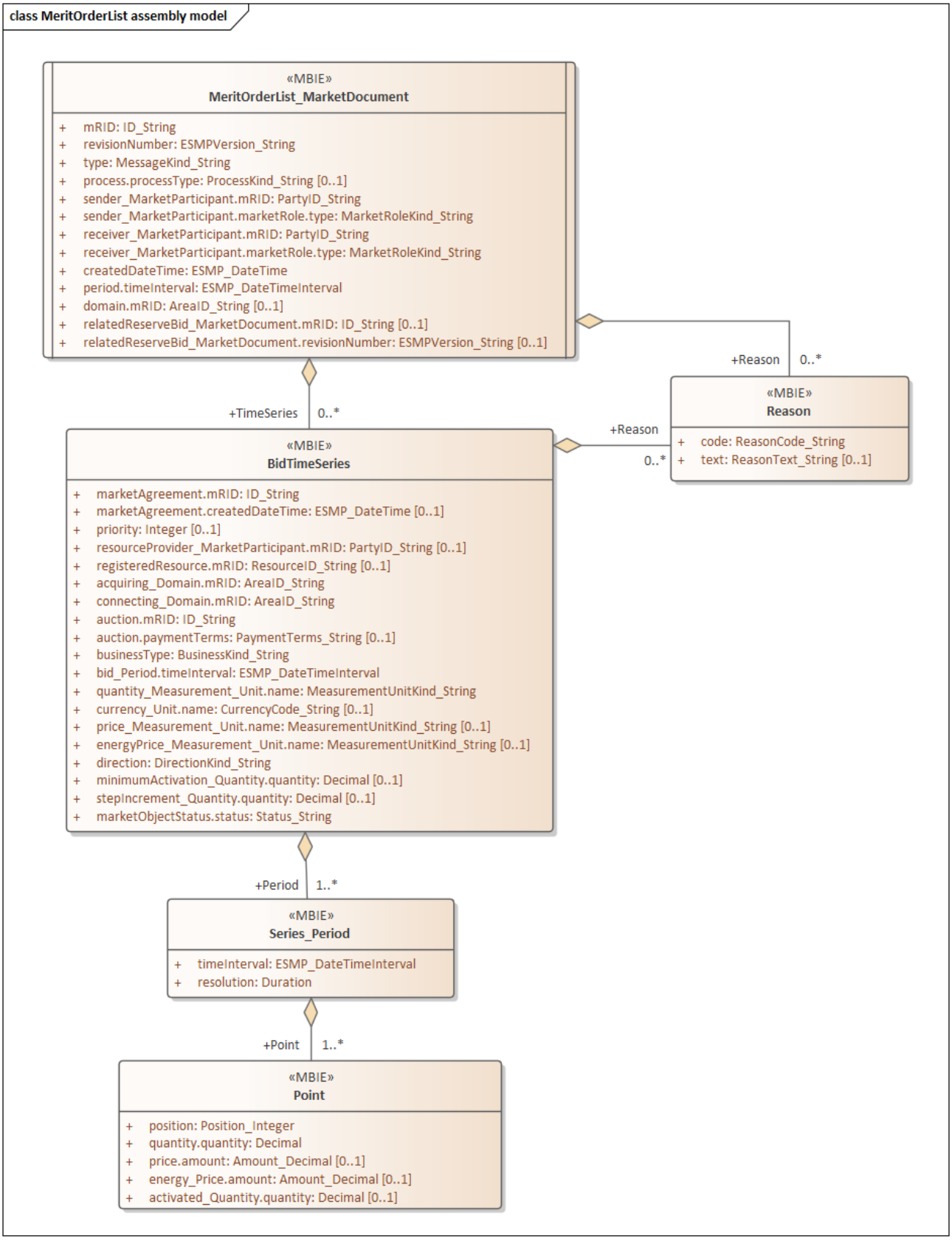

Figure 16: Class diagram: Merit Order List Document assembly model (CIM version)

5.1.3 Attribute usage: Merit Order List Document (CIM version)

Attribute	Cl.	Code and description
MeritOrderList_MarketDocument		
mRID	[1]	Unique identification of the document. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.
revisionNumber	[1]	The identification of the version that distinguishes one evolution of a document from another.
type	[1]	**A66** Final MOL
process.processType	[1]	**A60** mFRR with scheduled activation
sender_MarketParticipant.mRID	[1]	Identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[1]	**A35** MOL responsible **A04** System Operator
receiver_MarketParticipant.mRID	[1]	Identification of the party who is receiving the schedules.
receiver_MarketParticipant. marketRole.type	[1]	**A04** System Operator **A11** Market operator
createdDateTime	[1]	Date and time for creation of the document.
period.timeInterval	[1]	This information provides the start and end date and time of the time interval covered in this document.
domain.mRID	[1]	The EIC identification of the Control Area **10Y1001A1001A796** (Denmark) **10YFI-1--------U** (Finland) **10YNO-0--------C** (Norway) **10YSE-1--------K** (Sweden)
	[1..*]	***BidTimeSeries***
marketAgreement.mRID	[1]	The unique identification of the bid.
resourceProvider_MarketParticipant. mRID	[0..1]	The identification of the Balancing Service Provider.
registeredResource.mRID	[0..1]	The unique identification of a resource.
acquiring_Domain.mRID	[1]	The unique identification of the Bidding Zone where the product is being delivered.
connecting_Domain.mRID	[1]	The unique identification of the Bidding Zone where the Resource is located.
auction.mRID	[1]	A fixed value identifying the auction: **MFRR_ENERGY_ACTIVATION_MARKET**
businessType	[1]	**B74** Offer **B75** Need
bid_Period.timeInterval	[1]	The beginning and ending date and time of the period covered by the tender.
quantity_Measurement_Unit.name	[1]	**MAW** Megawatt
currency_Unit.name	[1]	**EUR** Euro
price_Measurement_Unit.name	[1]	**MWH** Megawatt hour
energyPrice_Measurement_Unit.name	[0..1]	**MWH** Megawatt hour

Attribute	Cl.	Code and description
direction	[1]	**A01** UP **A02** DOWN
marketObjectStatus.status	[1]	**A06** Available (the offer has not been activated) **A10** Ordered (the offer has been activated) **A33** Not satisfied (i.e. The need cannot be satisfied by the common platform)
	[0..*]	***Reason (BidTimeSeries level)***
code	[1]	**A95** Complementary information
text	[1]	The textual explanation corresponding to the reason code.
	[1..*]	***Series_Period*** The time interval and resolution for a period associated with a TimeSeries.
timeInterval	[1]	The start and end time of the period.
resolution	[1]	The definition of the number of units of time that compose an individual step within a period.
	[1]	***Point*** The Point information associated with a given Series_Period within a TimeSeries.
position	[1]	Fixed 1.
quantity.quantity	[1]	The quantity for the interval in question with a resolution in Megawatt
price.amount	[1]	The power price for each unit of quantity.
energy_Price.amount	[0..1]	The offered price. Not used for demands.
activated_Quantity.quantity	[0..1]	The quantity that has been activated for the interval in question.

Table 2: Attribute usage of Merit Order List Document (CIM version)

5.2 ERRP Activation Document (IEC/CIM 62325-451-7 Activation Document version 6.0)

The *ERRP Activation Document (CIM version)* is developed by ENTSO-E/WG-EDI, see [1].

5.2.1 Class diagram: ERRP Activation Document contextual model (CIM version)

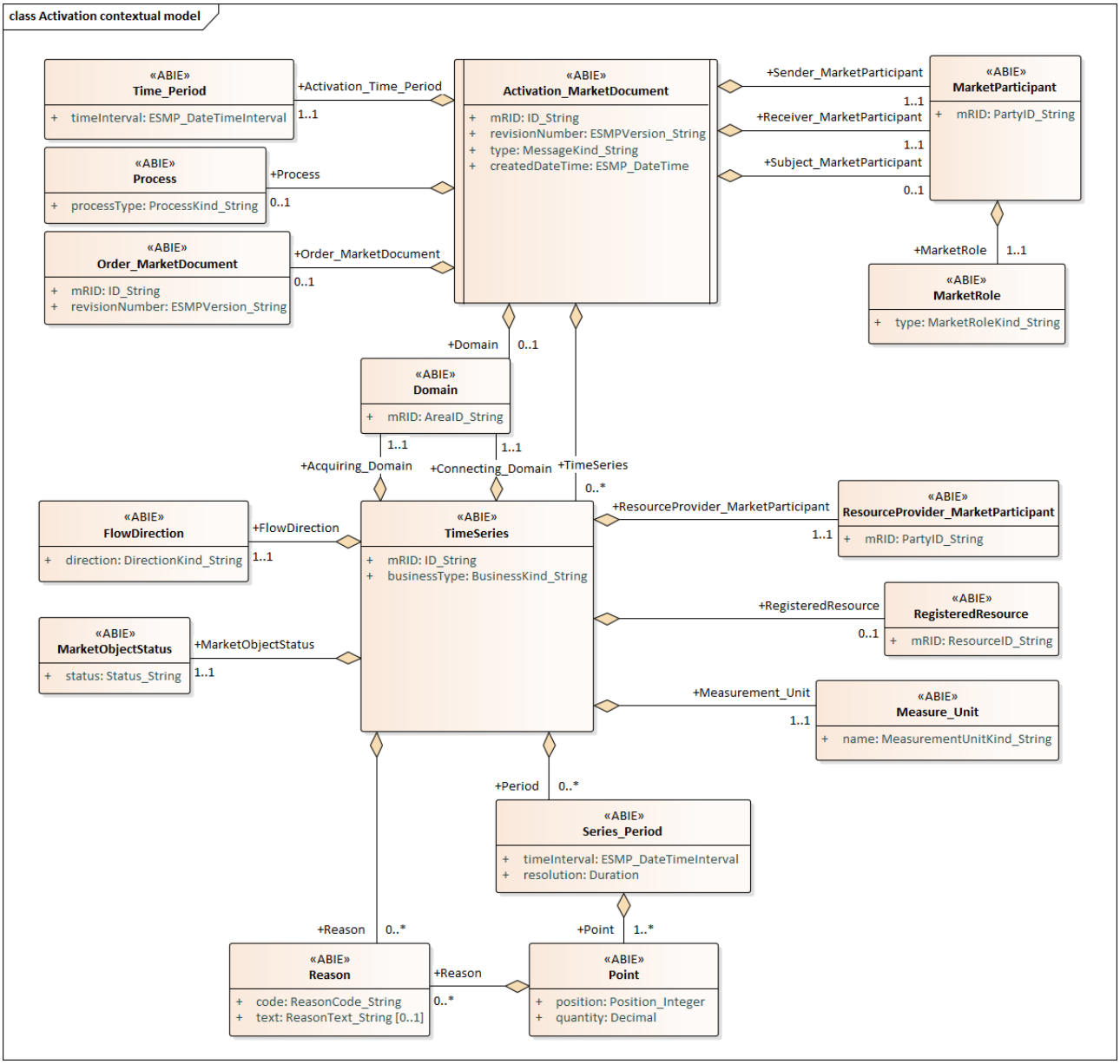

Figure 17: Class diagram: ERRP Activation Document contextual model (CIM version)

5.2.2 *Class diagram: ERRP Activation Document assembly model (CIM version)*

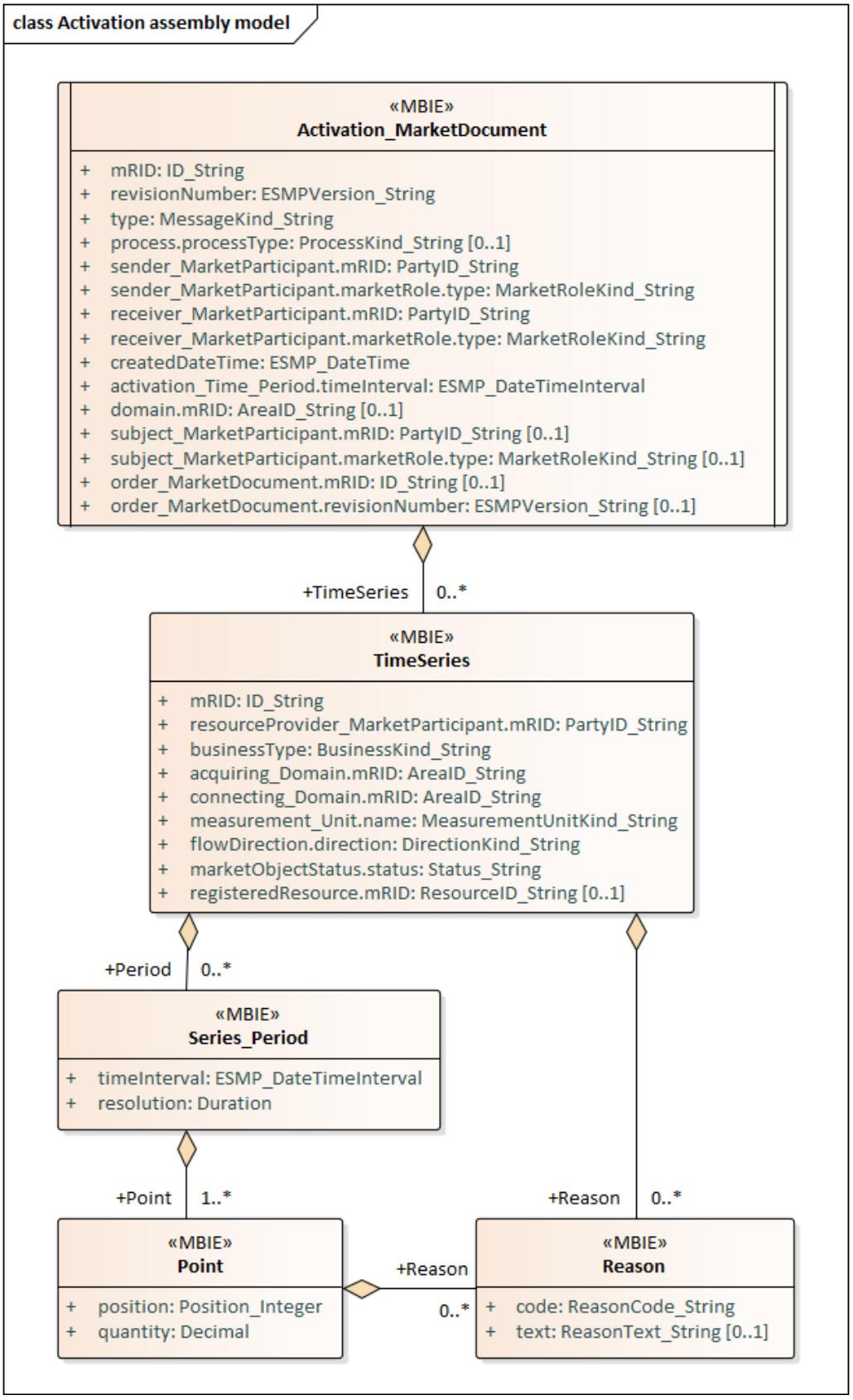

Figure 18: Class diagram: ERRP Activation Document assembly model (CIM version)

5.2.3 Attribute usage: ERRP Activation Market Document (CIM version)

Attribute	Cl.	Code and description
Activation_MarketDocument		
mRID	[1]	Unique identification of the document.
revisionNumber	[1]	Fixed 1.
type	[1]	For request: **A36** Deactivation document **A39** SATCR activation **A40** DATCR activation (normal activations based on MOL) **Z37** Faster than standard FAT **Z38** Faster than standard deactivation time **Z39** Slower than standard FAT **Z40** Period shift activation **Z41** Production smoothing (applicable only in Norway For response: **A41** Activation response Code ***A39*** *SATCR activation* is only used in Denmark.
process.processType	[1]	*New codes:* **A47** Manual frequency restoration reserve **A51** Automatic frequency restoration reserve
sender_MarketParticipant.mRID	[1]	Identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[1]	Sender of request: **A04** System Operator Sender of response: **A27** Resource Provider **A46** Balancing Service Provider
receiver_MarketParticipant.mRID	[1]	Identification of the party who is receiving the schedules.
receiver_MarketParticipant. marketRole.type	[1]	Receiver of response: **A04** System Operator (for the response) Receiver of request: **A27** Resource Provider **A46** Balancing Service Provider
createdDateTime	[1]	Date and time for creation of the document.
activation_Time_Period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
domain.mRID	[1]	National Area.
subject_MarketParticipant.mRID	[0..1]	Identification of the party for whom the bid document is submitted.
subject_MarketParticipant. marketRole.type	[0..1]	**A46** Balancing Service Provider (BSP)
order_MarketDocument.mRID	[1]	Unique identification of the activation order “Activation ID”. The same Activation id is used in the request and the response.
order_MarketDocument. revisionNumber	[1]	The version of the activation order. Incremented with one for each transmission of the document from the System Operator. The same version is used in the request and the response.

	[1..*]	***Time Series***
mRID	[1]	Reference to relevant bid or an "Move of planned production ID".
resourceProvider_ MarketParticipant.mRID	[1]	The identification of the Balancing Service Provider or Resource Provider related to the contract identification.
businessType	[1]	**A01** Production **A04** Consumption **A12** Secondary control (A time series concerning secondary reserve) (FRR-A, earlier LFC) **A96** Automatic frequency restoration reserve **A97** Manual frequency restoration reserve
acquiring_Domain.mRID	[1]	**10Y1001A1001A91G** The EIC identification of the Nordic Market Area
connecting_Domain.mRID	[1]	Bidding Zone.
measurement_Unit.name	[1]	**MAW** MW
flowDirection.direction	[1]	**A01** Up **A02** Down
marketObjectStatus.status	[1]	*Only in the request:* **A10** Ordered (The quantities in the time series are to be activated) *Only in the response:* **A07** Activated (*The quantities in the time series have been activated*), i.e., confirmation **A09** Cancelled (*The tender indicated in the time series has been completely cancelled. In this case the resources are no longer available to all Acquiring TSOs*), i.e., rejection. **A11** Unavailable
registeredResource.mRID	[0..1]	Identification of the resource that is used to supply energy capabilities to the TSO. Mandatory in Finland, Norway, and Sweden. Optional in Denmark
	[0..1]	***Reason (TimeSeries Level)***
code	[1]	**A95** Complementary information **B22** System regulation **B23** Frequency regulation **B49** Balancing **B59** Unavailability of reserve providing unit **999** Errors not specifically identified **Z57** Auction Run ID, Unique identification of a given auction The code **A95** may be used to transmit extra information related to a bid.
text	[0..1]	To be used together with Reason code **A95**. Or together with Reason code **Z57:** NBM: Auction Run Id, an ID that can identify a certain auction done by the AOF. See definition of Auction Run Id here: https://nordic-balancing.pages.fifty.eu/information/TSO-

		TSO/BusinessRequirementSpecification/pricecalc/index.html#_auctionrunid
	[1..*]	***Series_Period***
timeInterval	[1]	The start and end date and time of the time interval of the period in question.
resolution	[1]	The time resolution is always the difference between the Time Interval End and the Time Interval Start.
	[1]	***Point***
position	[1]	The position of the observation in a time series – Always 1.
quantity	[1]	The quantity for the interval in question.

Table 3: Usage of ERRP Activation Document (CIM version)

5.2.4 Dependency matrix for ERRP Activation Document

Document Type	Process Type	Business Type	Allocation ID	Direction	Status	Reason
A36 Deactivation document	**A51** Automatic frequency restoration reserve	A01 Production	Activation ID	Required	Required	Required
		A12 Secondary control (A time series concerning secondary reserve) (FRR-A, earlier LFC)	Activation ID	Required	Required	Not used
A39 SATCR activation	**A47** Manual frequency restoration reserve	A97 Manual frequency restoration reserve	Bid ID	Required	Required	Not used
A40 DATCR activation	**A47** Manual frequency restoration reserve	A97 Manual frequency restoration reserve	Bid ID or Move of planned production ID	Required	Required	Dependent on national rules
A41 Activation response	**A51** Automatic frequency restoration reserve	A12 Secondary control (A time series concerning secondary reserve) (FRR-A, earlier LFC)	Order ID	Required	Required	Not used
	A47 Manual frequency restoration reserve	A01 Production A04 Consumption A97 Manual frequency restoration reserve	Bid ID or Move of planned production ID from received activation			

Table 4: Dependency matrix for ERRP Activation Document

5.3 ACE OL Point Value Document (IEC/CIM)

The *ACE OL Point Value Document (CIM version)* is developed by NBM, see [1].

5.3.1 Class diagram: ACE OL Point Value Document contextual model (CIM version)

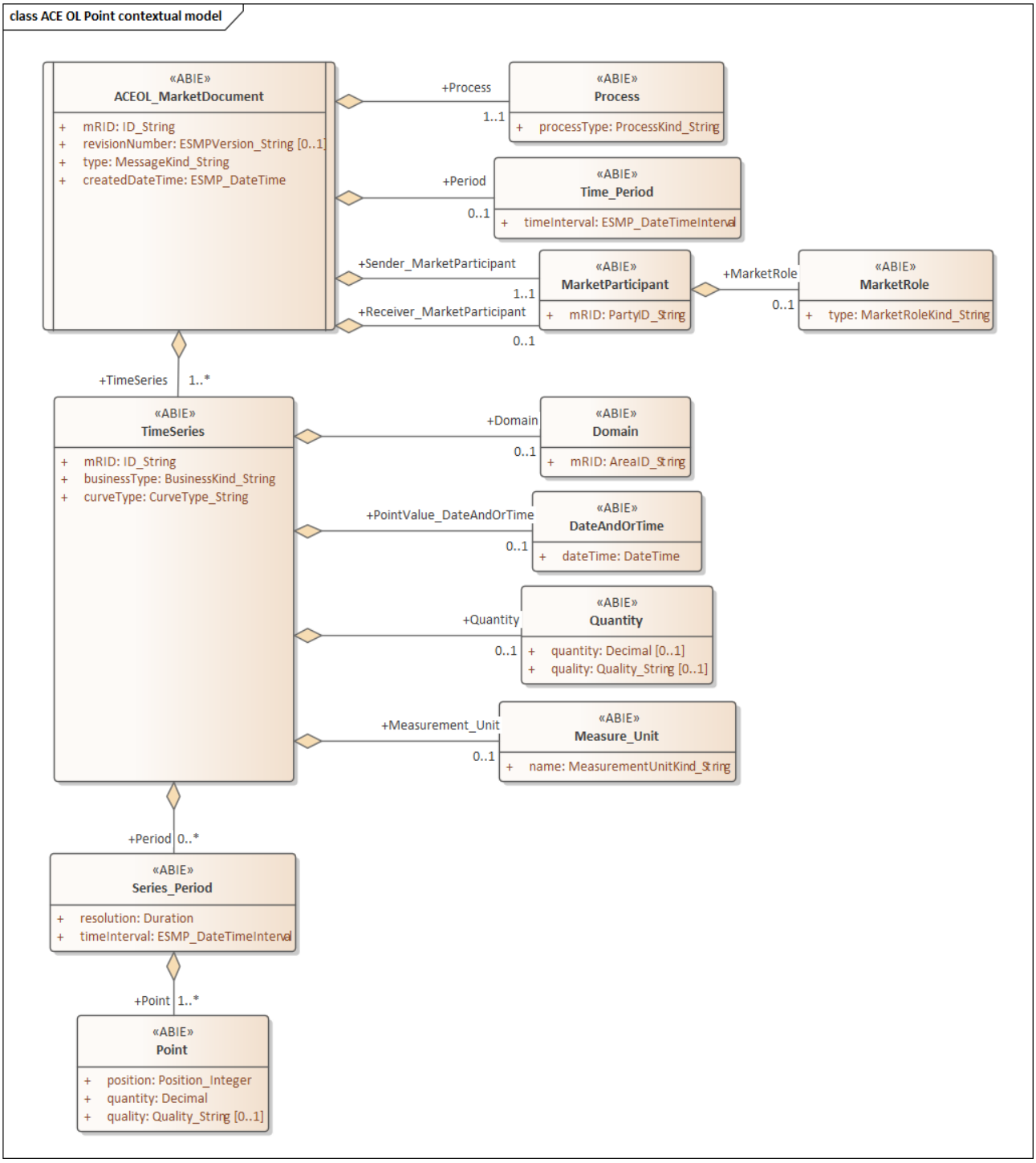

Figure 19: Class diagram: ACE OL Point Value Document contextual model (CIM version)

5.3.2 Class diagram: ACE OL Point Value Document assembly model (CIM version)

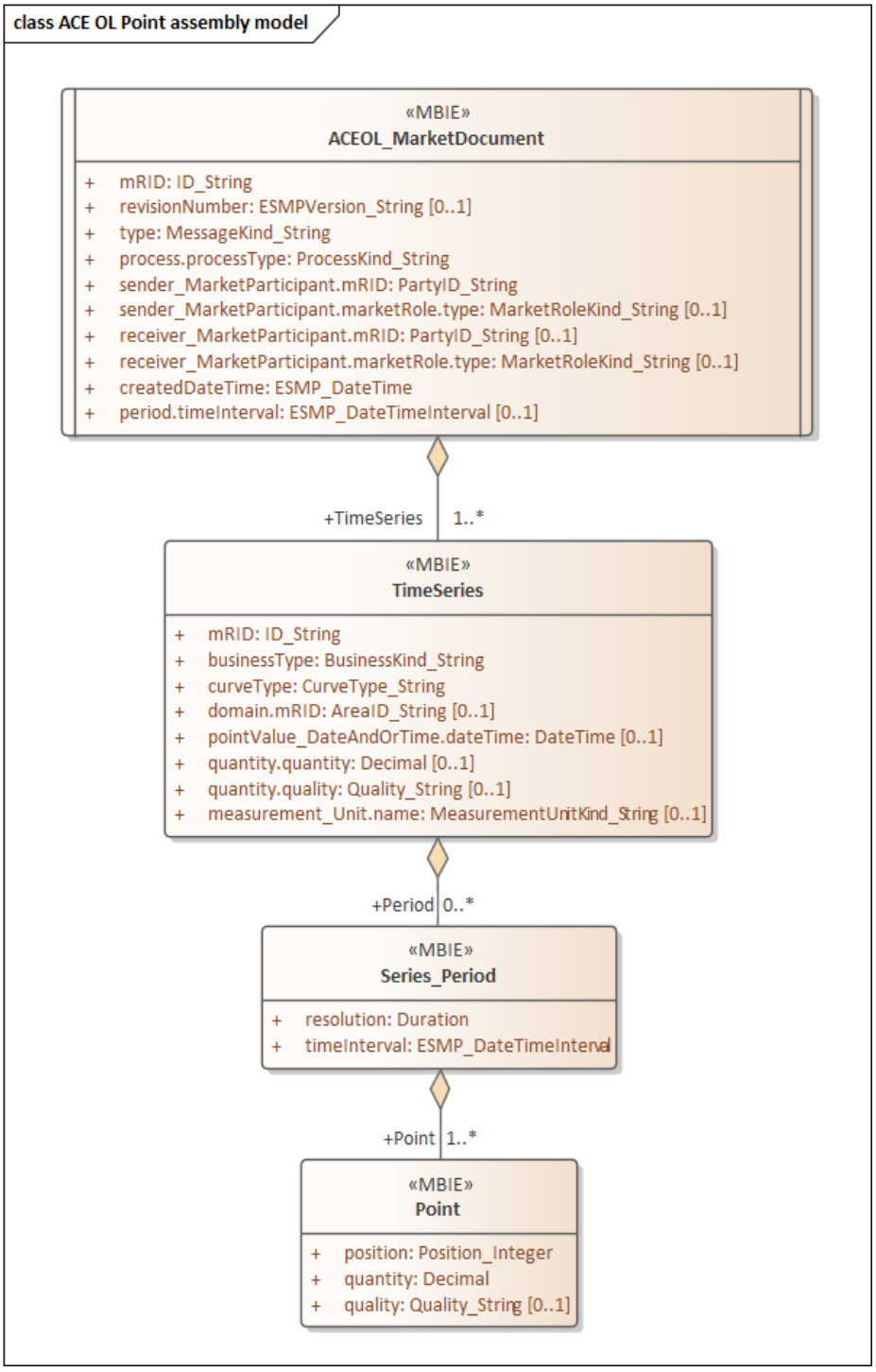

Figure 20: Class diagram: ACE OL Point Value Document assembly model (CIM version)

5.3.3 Attribute usage: ACE OL Point Value Document (CIM version)

Attribute	Cl.	Code and description
ACEOL_MarketDocument		
mRID	[1]	Unique identification of the document. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.
revisionNumber	[0..1]	Fixed 1.
type	[1]	**Z35** ACE OL
process.processType	[1]	**Z12** ACE OL real-time
sender_MarketParticipant.mRID	[1]	Identification of the party who is sending the document.
createdDateTime	[1]	The date and time of the creation of the document.
	[1..*]	***Time Series***
mRID	[1]	Unique ID of the time series.
businessType	[1]	**Z27** ACE OL (Area Control Error Open Loop)
curveType	[1]	**A02** Point
domain.mRID	[1]	Bidding zone for ACE OL.
pointValue_DateAndOrTime.dateTime	[1]	Point value date and time. Only used when processType=**Z12**.
quantity.quantity	[1]	Value of ACE OL. Only used when processType=**Z12**. Unit type is implicitly **MW**.
quantity.quality	[0..1]	May be used, and only when processType=**Z12**. **A01** Adjusted **A02** Not available **A03** Estimated **A04** As provided **A05** Incomplete **A06** Calculated

Table 5: Attribute usage of ACE OL Point Value Document (CIM version)

5.4 ESS Schedule Document from IEC62325-451-2 Ed.2 (ACE OL Limits)

The ESS (ENTSO-E Scheduling System) Schedule Document is used for ACE OL Limits exchanges. The ACE OL limits is used for visualisation when ACE OL exceed or goes below certain values within a bidding zone. The ACE OL limits is sent infrequent, i.e. the distribution may range from e.g. 3 months down to every 15 minutes. ACE OL Limits are given by Time Series for each Bidding Zone within a TSO area of responsibility.

This chapter describes a Nordic subset of the document described in IEC 62325 framework for energy market communications, Part 451, see [1].

5.4.1 Class diagram: ESS Schedule Document contextual model

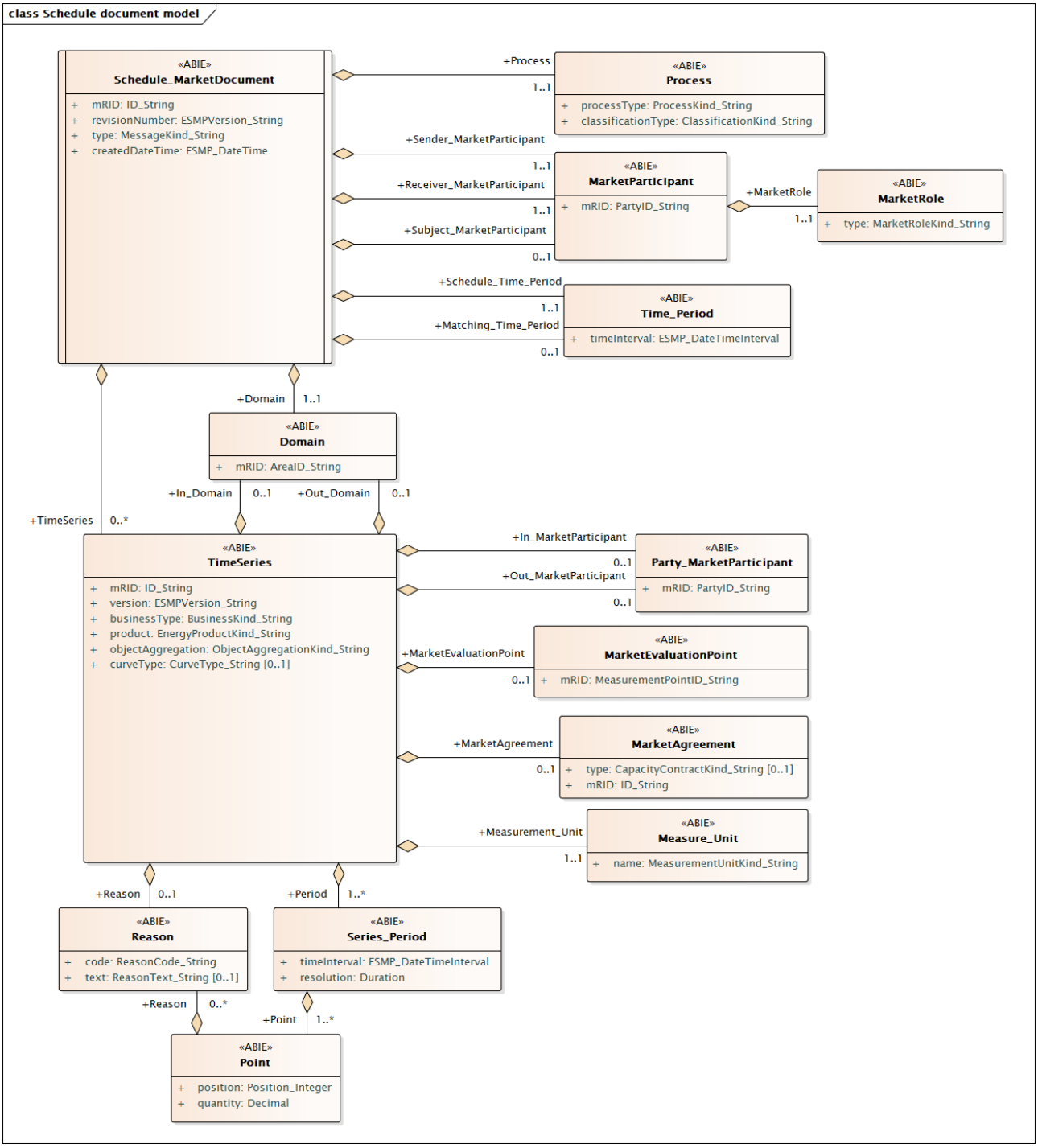

Figure 21: Class diagram: ESS Schedule Document contextual model

5.4.2 Class diagram: ESS Schedule Document assembly model

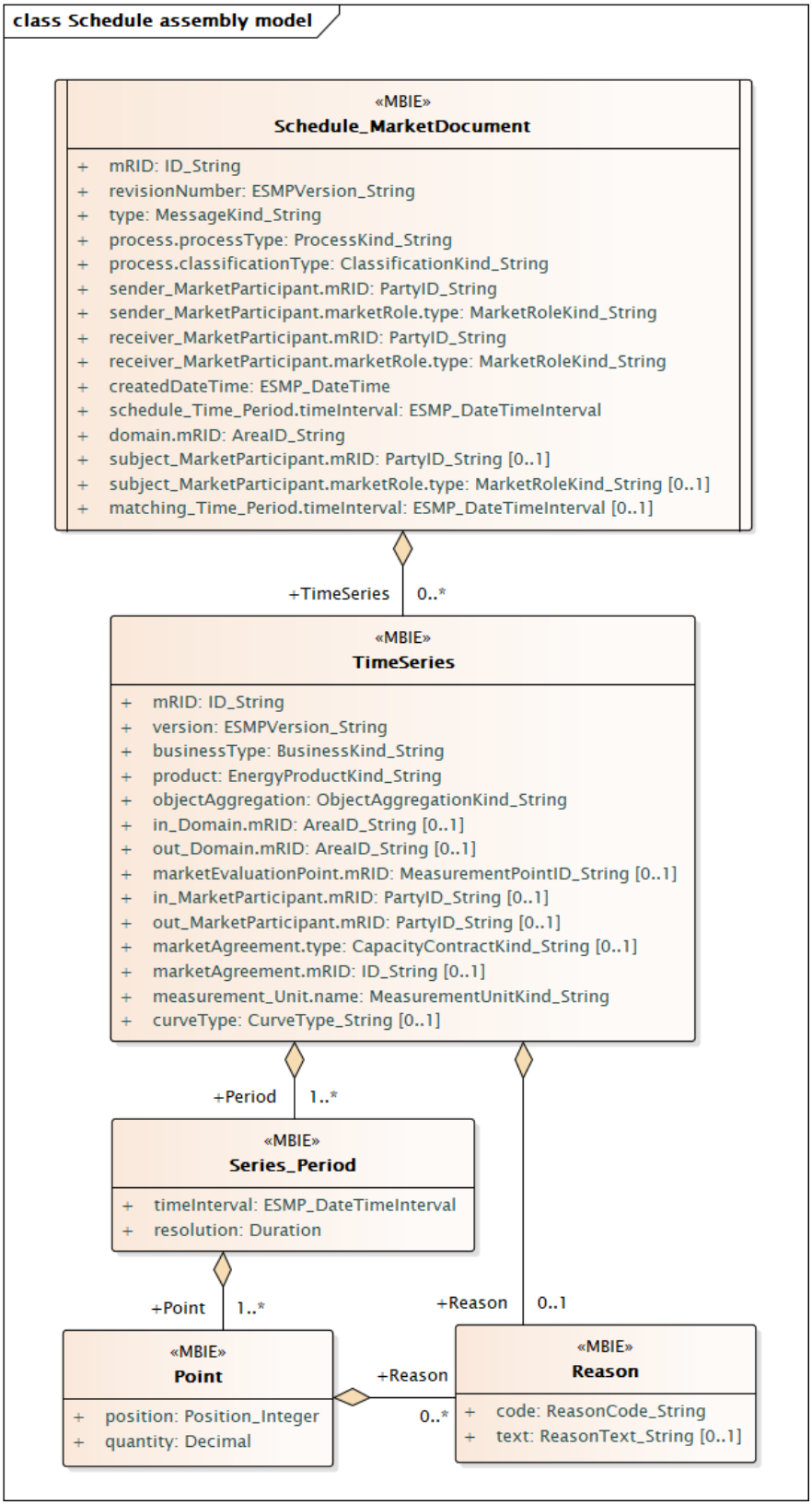

Figure 22: Class diagram: ESS Schedule Document assembly model

5.4.3 Attribute usage ESS Schedule Document, ACE OL Limits

IEC CIM Attribute	Cl.	Code and description
	[1]	**Schedule_MarketDocument**
mRID	[1]	Unique identification of the document. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.
revisionNumber	[1]	The identification of the version that distinguishes one evolution of a document from another.
type	[1]	**Z36** Power Prognoses
process.processType	[1]	**Z12** ACE OL real-time
process.classificationType	[1]	**A01** Detail type
sender_MarketParticipant. mRID	[1]	Identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[1]	**A32** Market information aggregator
receiver_MarketParticipant. mRID	[1]	Identification of the party who is receiving the schedules.
receiver_MarketParticipant.market Role.type	[1]	**A04** System Operator
createdDateTime	[1]	Date and time for creation of the document.
schedule_Time_Period. timeInterval	[1]	This information provides the start and end date and time of the time interval covered in this document.
domain.mRID	[1]	The EIC identification of the Control Area **10Y1001A1001A796** (Denmark) **10YFI-1--------U** (Finland) **10YNO-0--------C** (Norway) **10YSE-1--------K** (Sweden)
	[1..*]	**TimeSeries**
mRID	[1]	A unique identification of the time series.
version	[1]	Fixed 1
businessType	[1]	**Z78** Upper Alert **Z79** Upper Emergency **Z80** Lower Alert **Z81** Lower Emergency **Z82** Upper Warning **Z83** Lower Warning
product	[1]	**8716867000016** Active power
objectAggregation	[1]	**A01** Area
in_Domain.mRID	[1]	EIC code of area where the energy is going to
measurement_Unit.name	[1]	**MAW** MW
curveType	[1]	**A03** Variable sized Block.
	[1..*]	**Series_Period**
timeInterval	[1]	The start and end time of the period.

IEC CIM Attribute	Cl.	Code and description
resolution	[1]	The resolution defining the number of periods that the time interval is divided. The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. I.e. **PT1M** or **PT5M**
	[1..*]	**Point**
position	[1]	The position of the observation within the time series. Sequential value beginning with 1.
quantity	[1]	Quantity..

Table 6: Usage of ESS Schedule Document, NBM schedules: ESS Schedule

5.5 NBM Measurement Data Market Document (CIM based NBM document)

The *NBM Measurement Data Market Document* is developed by NBM, see [1].

5.5.1 Class diagram: NBM Measurement Data Market Document (CIM based NBM document)

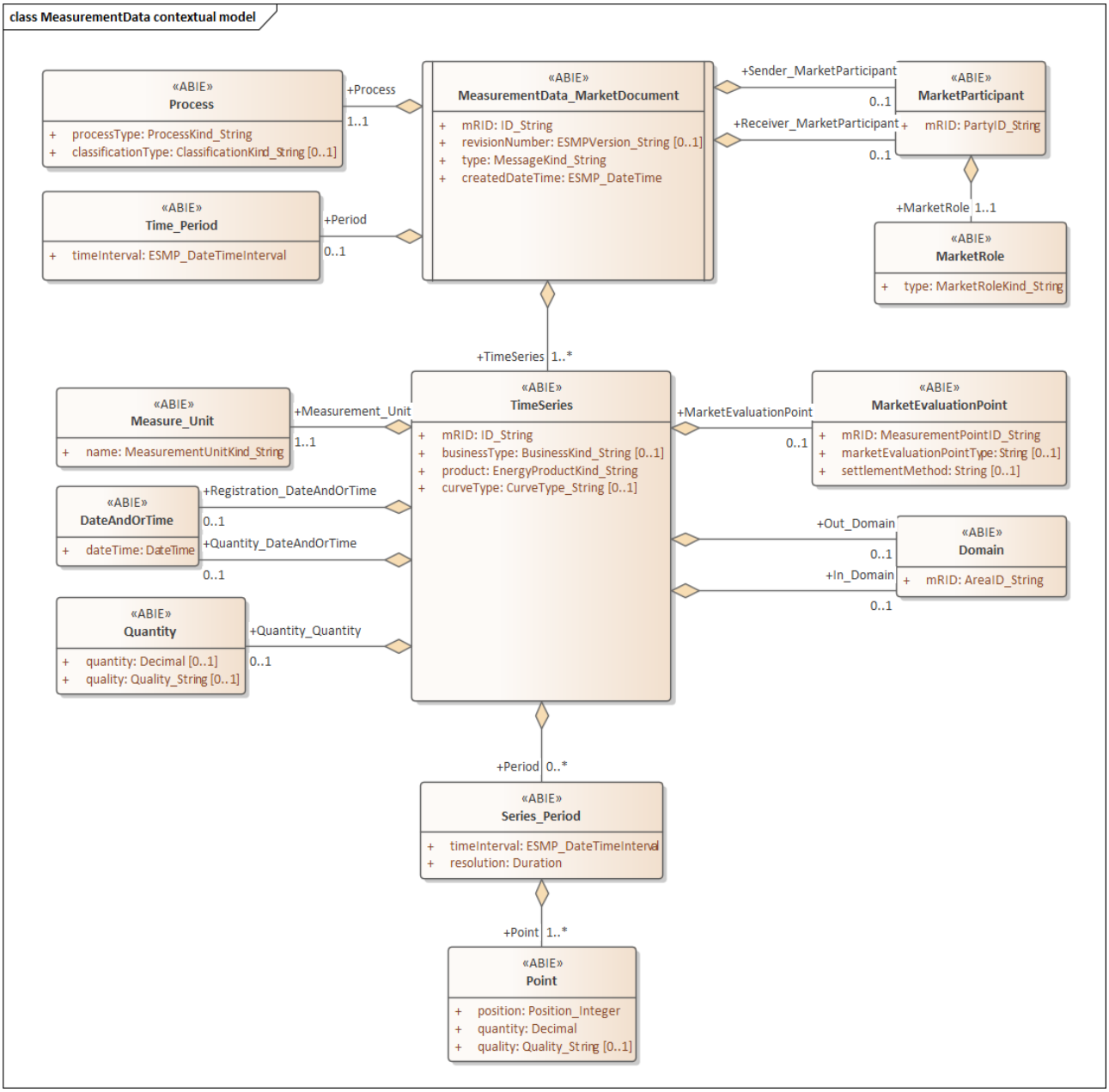

Figure 23: Class diagram: NBM Measurement Data Market Document (CIM based NBM document)

5.5.2 Class diagram: NBM Measurement Data Market Document (CIM based NBM document)

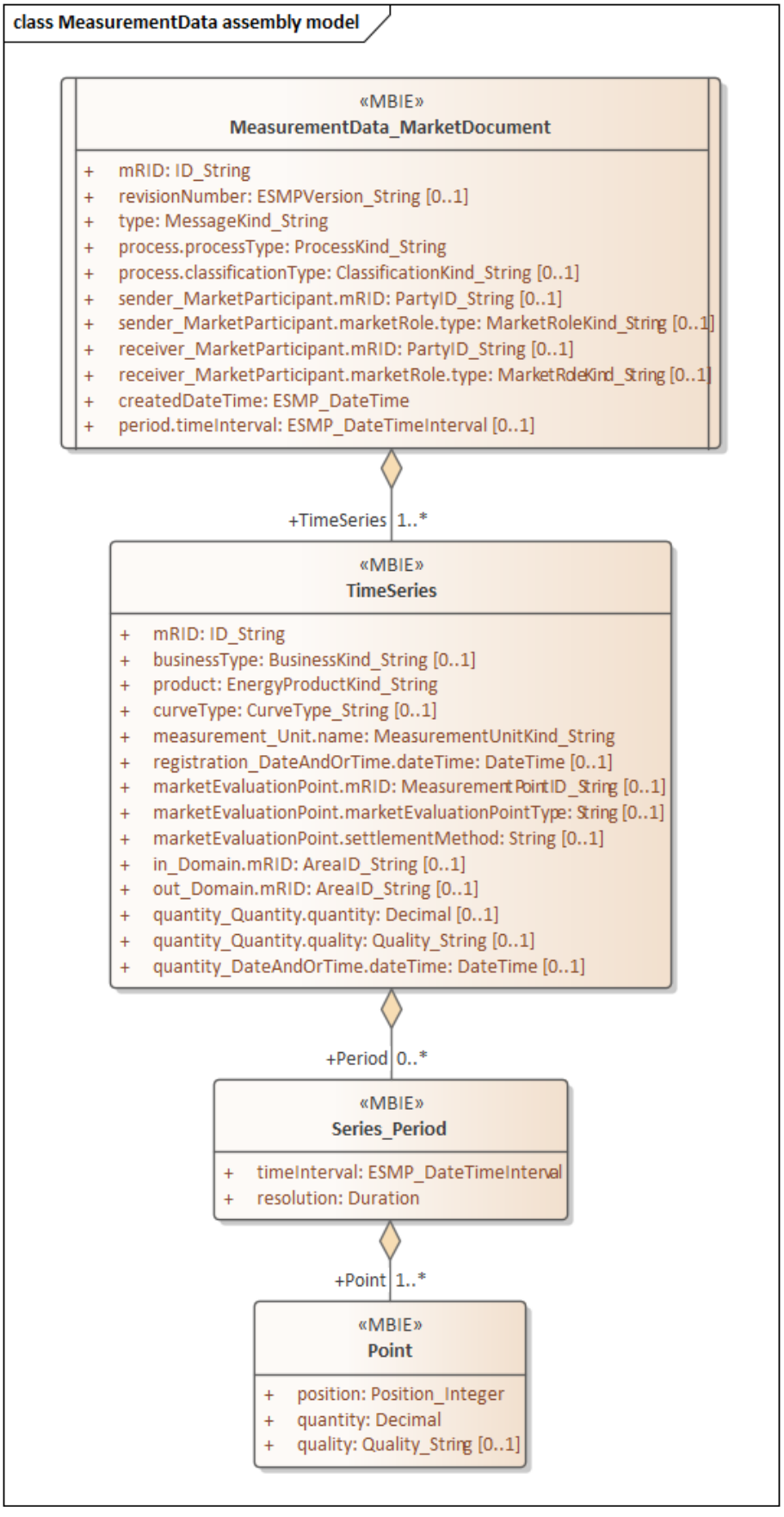

Figure 24: Class diagram: NBM Measurement Data Market Document (CIM based NBM document)

5.5.3 Attribute usage: NBM Measurement Data Market Document (CIM based NBM document)

Attribute	Cl.	Code and description
MeasurementData_MarketDocument		
mRID	[1]	Unique identification of the document. *NBM:* UUID
type	[1]	The coded type of a document. *NBM:* **A45** Measurement Value Document
process.processType	[1]	The identification of the nature of process that the document addresses. *NBM measured flow point value TSO and NBM measured frequency:* **A39** Synchronisation process *NBM Measured Flow Historic TSO:* **Z13** Corrected real time values
process.classificationType	[0..1]	The classification mechanism used to group a set of objects together within a business process. The grouping may be of a detailed or a summary nature. *NBM:* **A02** Summary Type
sender_MarketParticipant.mRID	[0..1]	Identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[0..1]	**A04** System Operator
receiver_MarketParticipant.mRID	[0..1]	Identification of the party who is receiving the schedules. *NBM:* 50V0000000000241J (NAP).
receiver_MarketParticipant. marketRole.type	[0..1]	The identification of the role played by a market player. *NBM:* **A33** Information receiver
createdDateTime	[1]	Date and time for creation of the document.
	[1..*]	***Time Series***
mRID	[1]	Unique ID of the time series.
businessType	[1]	The identification of the nature of the time series. *NBM:* **A64** Meter Measurement data => Used when measure_Unit.name = MAW (dependency from: NBM Measured Flow Point Value TSO) **C57** Metered frequency => Used when measure_Unit.name = HTZ
product	[1]	The identification of the nature of an energy product such as power, energy, reactive power, etc. *NBM:* **8716867000016** Active power

Attribute		Cl.	Code and description
curveType		[1]	The identification of the coded representation of the type of curve being described. *NBM:* **A02** Point
measurement_Unit.name		[1]	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). *NBM measured frequency:* **HTZ** Hertz (when businessType = **C57**) *NBM Measured Flow TSO:* **MAW** MW
in_Domain.mRID		[1]	The unique identification of the domain. *NBM:* EIC code of area where the energy is going to
out_Domain.mRID		[1]	The unique identification of the domain. *NBM:* EIC code of area where the energy is coming from
Only used for NBM Measured Flow Point Value TSO and NBM measured frequency	quantity_Quantity.quantity	[1]	*NBM Measured Flow Point Value TSO:* The quantity value. *NBM Measured Flow Historic TSO:* Not used
	quantity_Quantity.quality	[0..1]	*NBM Measured Flow Point Value TSO:* The description of the quality of the quantity. *NBM Measured Flow Historic TSO:* Not used
	quantity_DateAndOrTime.dateTime	[1]	Date and time as per ISO 8601: YYYY-MM-DDThh:mm:ss.sssZ.

Attribute		Cl.	Code and description
Only used for NBM Measured Flow Historic TSO		**[1..*]**	***Series_Period***
	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
	resolution	[1]	The time resolution is always the difference between the Time Interval End and the Time Interval Start. The definition of the number of units of time that compose an individual step within a period. *NBM Measured Flow Point Value TSO:* Not used. *NBM Measured Flow Historic TSO:* **PT10S**
			Point
	position	[1]	The position of the observation in a time series.
	quantity	[1]	The quantity for the interval in question.
	quality	[0..1]	The quality of the information being provided. This quality may be estimated, not available, as provided, etc. *NBM Measured Flow Point Value TSO:* Not used. *NBM Measured Flow Historic TSO:* See additional suggestion for QualityTypes table in section Code lists. E.g. **A04** - As provided.

Table 7: Attribute usage: NBM Measurement Data Market Document (CIM based NBM document)

5.6 Balancing Market Document (IEC/CIM 62325-451-6, Ed. 2.1)

The *Balancing Market Document (CIM version)* is developed by ENTSO-E/WG-EDI, see [1].

5.6.1 Class diagram: Balancing Market Document contextual model (CIM version)

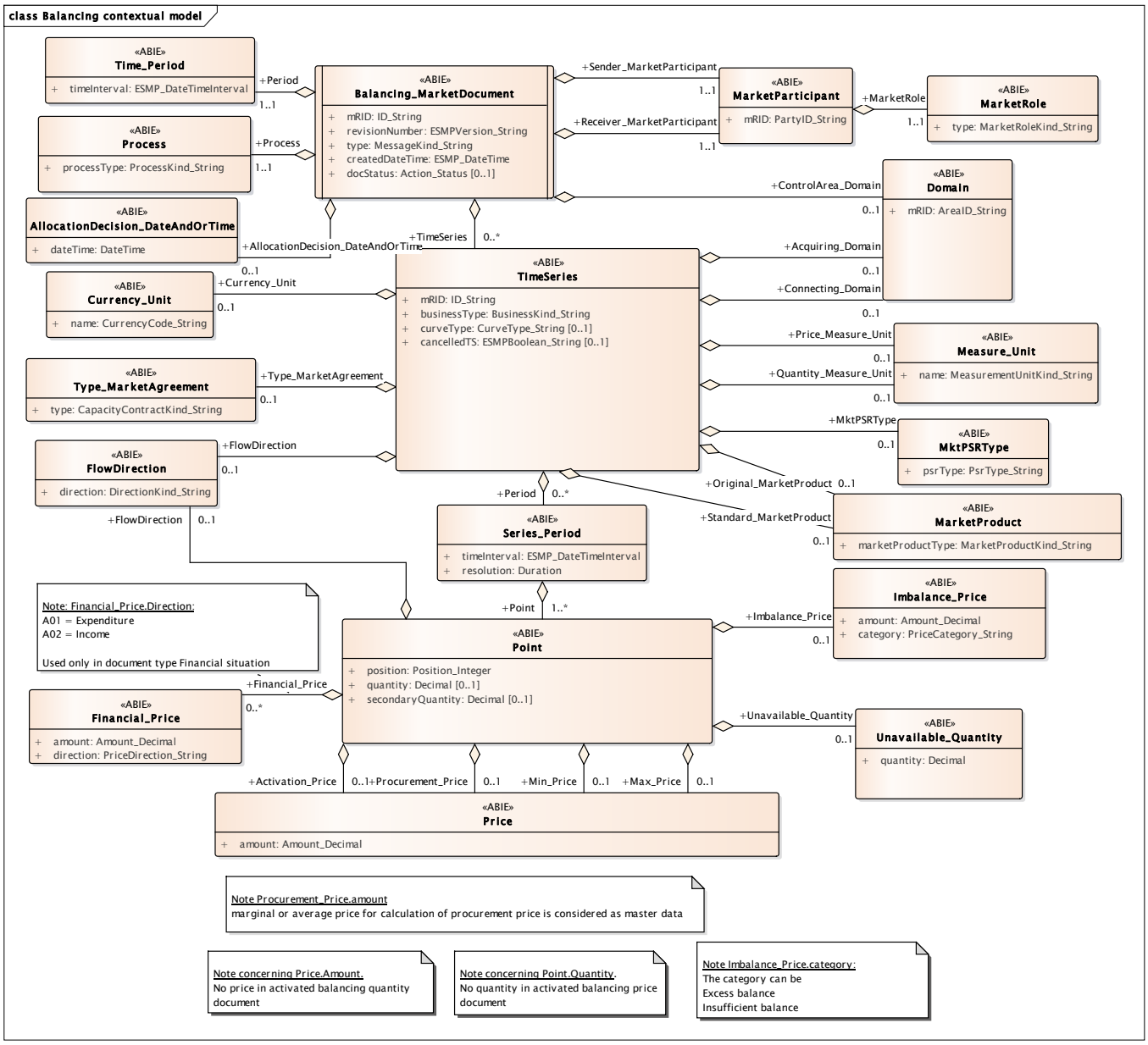

Figure 25: Class diagram: Balancing Market Document contextual model (CIM version)

5.6.2 Class diagram: Balancing Market Document assembly model (CIM version)

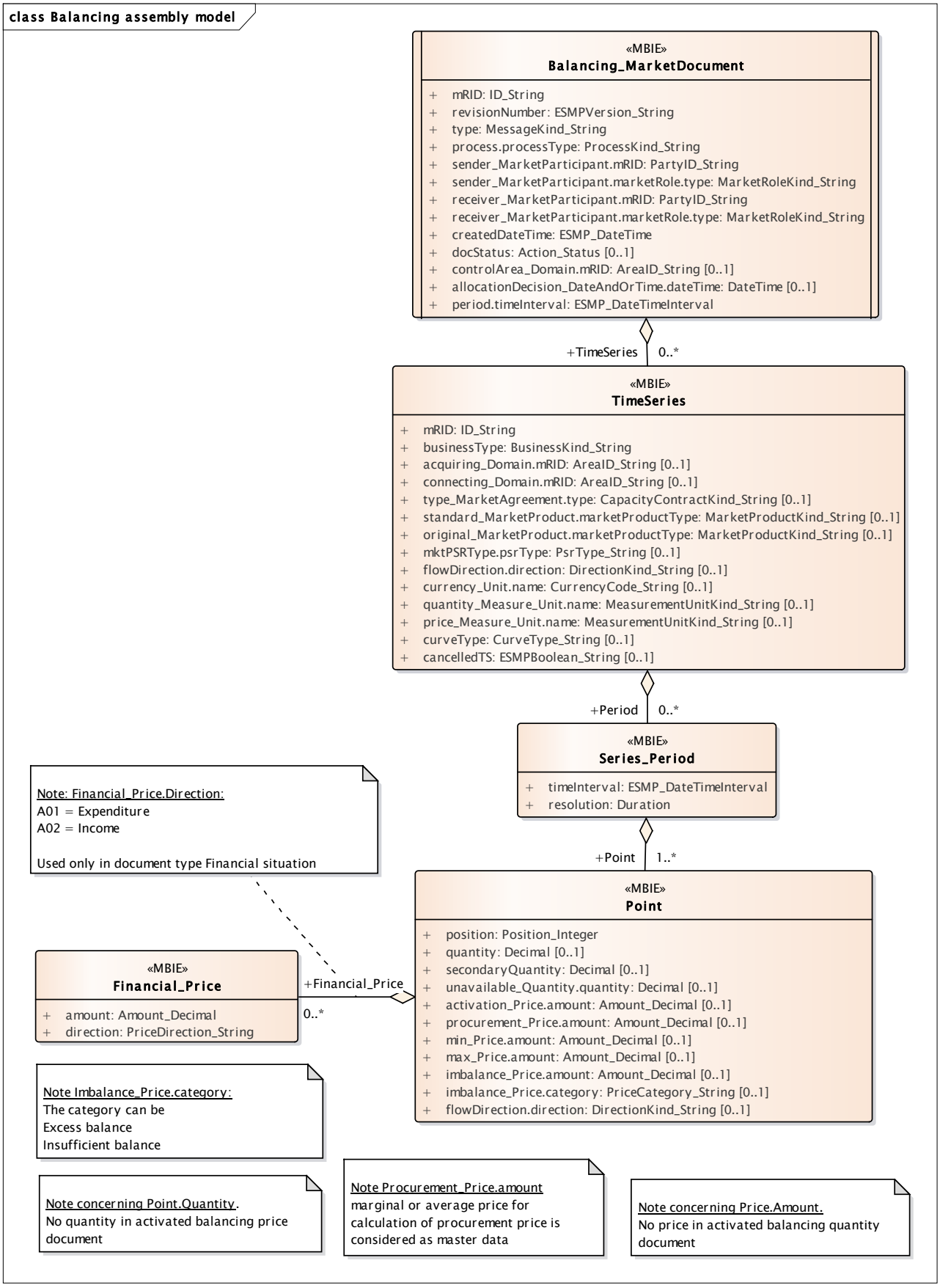

Figure 26: Class diagram: Balancing Market Document assembly model (CIM version)

5.6.3 Attribute usage: Balancing Market Document (CIM version)

Attribute	Cl.	Code and description
Balancing _MarketDocument		
mRID	[1]	Unique identification of the document.
revisionNumber	[1]	Fixed 1.
type	[1]	**A38** Reserve Allocation Result (Operational bids) **A44** Price document
process.processType	[1]	**A47** Manual frequency restoration reserve
sender_MarketParticipant.mRID	[1]	Identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[1]	**A11** Market operator (or TSO)
receiver_MarketParticipant.mRID	[1]	Identification of the party who is receiving the schedules.
receiver_MarketParticipant. marketRole.type	[1]	**A04** System Operator **A08** Balance responsible party **A11** Market operator (NBM) **A35** MOL Responsible **A38** Reconciliation Responsible **A46** Balancing Service Provider
createdDateTime	[1]	Date and time for creation of the document.
controlArea_Domain.mRID	[1]	Nordic Market Area, National Area or Bidding Zone.
period.timeInterval	[1]	The start and end date and time for a given interval.
	[1..*]	***Time Series***
mRID	[1]	Unique ID of the time series.
businessType	[1]	**A01** Production **A04** Consumption **B23** Consumption imbalance price (Balance regulation market price in dominant direction) **C57** Metered frequency
acquiring_Domain.mRID	[1]	Relevant area for the market.
currency_Unit.name	[1]	Any valid ISO 3 letter currency code, e.g.: **DKK** Danish Kroner **EUR** EURO **NOK** Norwegian Kroner **RUB** Russian Rubel **SEK** Swedish Kronor
quantity_Measure_Unit.name	[0..1]	**MWH** MWh **HTZ** Hz Not used when only sending prices.
price_Measure_Unit.name	[0..1]	**MWH** MWh Shall be used when sending a price, otherwise not used.
	[1..*]	***Series_Period***
timeInterval	[1]	The start and end date and time of the time interval of the period in question.

Attribute	Cl.	Code and description
resolution	[1]	The time resolution is always the difference between the Time Interval End and the Time Interval Start.
	[1..*]	***Point***
position	[1]	The position of the observation in a time series.
quantity	[1]	The quantity for the interval in question.
activation_Price.amount	[0..1]	The price for the interval in question Only used when sending prices
imbalance_Price.amount	[0..1]	The imbalance price used for Business Type **B69** Only used when sending prices

Table 8: Attribute usage of Balancing Market Document (CIM version)

5.6.4 Dependency matrix for Balancing Market Document

Balancing Market Document		TimeSeries			
type	**receiver_ MarketParticipant. marketRole.type**	**businessType**	**quantity_ Measure_ Unit.name**	**price_ Measure_ Unit.name**	**Imbalance Price**
A38 Reserve Allocation Result (Operational bids)	**A04** System Operator **A08** Balance responsible party **A11** Market operator (NBM) **A35** MOL Responsible **A38** Reconciliation Responsible **A46** Balancing Service Provider	**A01** Production	**MWH**	**MWH**	
		A04 Consumption	**MWH**	**MWH**	
		B23 Consumption imbalance price (Balance regulation market price in dominant direction)	**MWH**	**MWH**	**Yes**
		C57 Metered frequency	**HTZ**		
A44 Price document	**A04** System Operator **A08** Balance responsible party **A11** Market operator (NBM) **A35** MOL Responsible **A38** Reconciliation Responsible **A46** Balancing Service Provider	**A01** Production **A04** Consumption **B23** Consumption imbalance price (Balance regulation market price in dominant direction) **C57** Metered frequency			

Table 9: Dependency matrix for Balancing Market Document (CIM version)