BRS

(Business Requirement Specification)

NORDIC

DETERMINE TRANSFER CAPACITY PROCESS

A market model for data exchange

Business process:	Nordic determine transfer capacity process
Version:	3.0.A
Status:	Approved by NMEG
Date:	June 26th, 2023

Content

1 Introduction

1.1 Background

Today the Nordic TSOs exchange messages based on several different formats and standards, such as Ediel (DELFOR/MSCONS), NOIS XML messages based on ENTSO-E 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 *determination of transfer capacity* in the Nordic countries. The focus of the document is the business aspects of the document exchanges and the basis for the document is the ENTSO-E ECAN Implementation Guide [1], together with the ebIX®, EFET and ENTSO-E Harmonised role model [4] and NBM capacity market documents . When implementing the BRS, the ENTSO-E ECAN Implementation guide and the related ENTSO-E XML schemas should be used.

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 in [6].

1.3 Project organisation

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

1.4 References

[1] ENTSO-E implementation guides, see http://entsoe.eu/index.php?id=73
- Implementation Guides
- CIM XML schemas
- MADES specifications
- Etc.

[2] UN/CEFACT Unified Modelling Methodology (UMM)

[3] UN/CEFACT XML Naming and Design Rules (NDR)

[4] The Harmonised Role Model, ENTSO-E, ebIX® and EFET

[5] Ediel BRSs, see http://www.ediel.org/, such as BRS for Nordic Scheduling and Ancillary Services Processes

[6] Ediel Common Nordic XML rules and recommendations, see http://www.ediel.org/

[7] Nordic Energy Market Domain Model, see http://www.ediel.org/

[8] NBM Implementation Guides, see https://nordic-balancing.pages.fifty.eu/information/index.html, especially:
- mFRR ATC AOF
- mFRR ATC TSO
- mFRR Remaining ATC AOF

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
AOF	Activation Optimisation Function
ATC:	*Available Transfer Capacity* (ATC) exchanged between *System operators* and between *System operators* and the *Transmission capacity allocator*. The ATC for a certain market cannot be changed after the closure of the relevant market. The ATC may be negative.
BRP	Balance Responsible Party
BRS	Business Requirement Specification
BSP	Balancing Service Provider
ECAN	ENTSO-E Capacity Allocation and Nomination
FRR	Frequency Restoration Reserve
mFRR	Manual Frequency Restoration Reserve
NBM	Nordic Balancing Model
NTC	Net Transfer Capacity
OC:	*Operational capacity* exchanged between *System operators*. The OC is the available transfer capacity as established during the operational day, i.e. the capacity available after closure of the Intraday market. The OC is used for system operation and not for market purposes. The OC may be both higher and lower than the ATC. The OC may be negative.
TRM	Transmission Reliability Margin
TSO	Transmission System Operator
TTC	Total Transfer Capacity

1.6 Change log

Ver/rel/rev	Changed by	Date	Changes
3.0.A	Ove Nesvik	20230626	Version 3.0 is a complete recast of version 2.0, hence changes have not been tracked.

2 Planning

2.1 Planning 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.

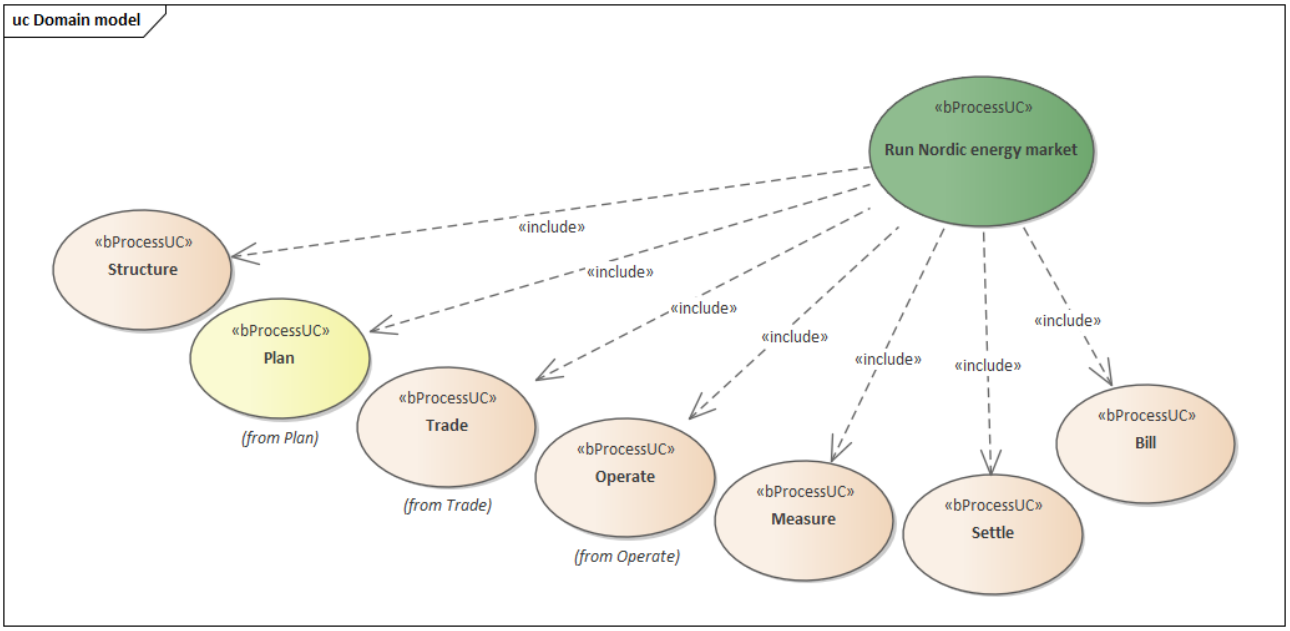

Figure 1: UseCase diagram Domain model

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 determine transfer capacity process is a part of the process area Plan.

For a more elaborated description of the process include in the domain model, see [6].

2.2 Breakdown of the scheduling process within the planning phase

In the rest of this document the Business area (UseCase) Determine transfer capacity from the Business area Plan is further elaborated.

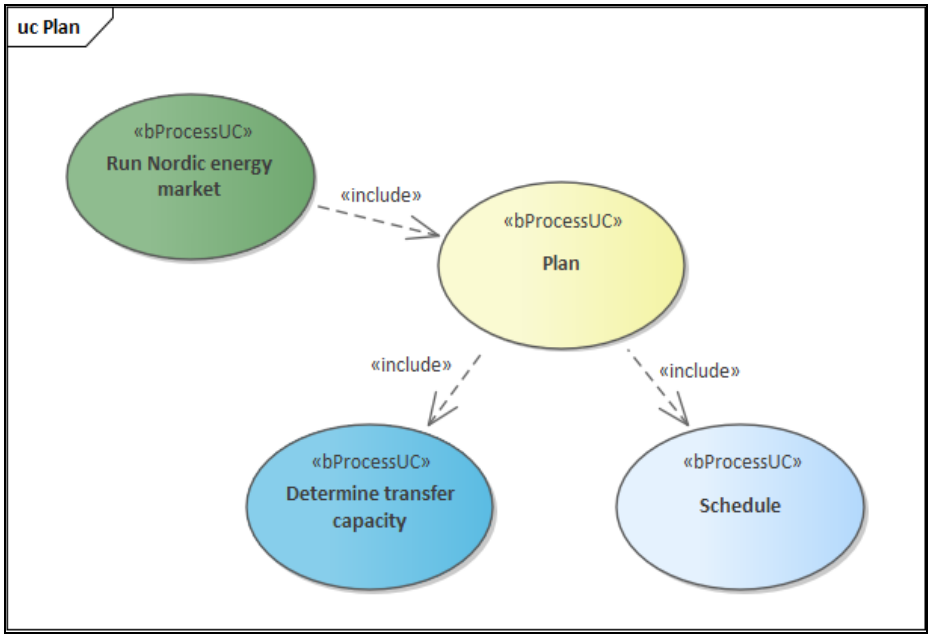

Figure 2: UseCase diagram: The Nordic planning process

The Schedule process is documented in a separate BRS, see [5].

The Process area Plan, outlined in **Figure 2**, concerns principally schedules and prognosis supplied by the different Balance Responsible Parties and the System Operator for a given Scheduling Area or a group of Scheduling Areas. It also deals with the exchange of schedules between two Scheduling Areas via System Operators and the Coordinated Capacity Calculator. Some of the resulting schedules are afterwards sent to the Imbalance Settlement Responsible after validation, to be used in the settlement process. Furthermore, the planning phase, include exchanges related to Reserve Resources.

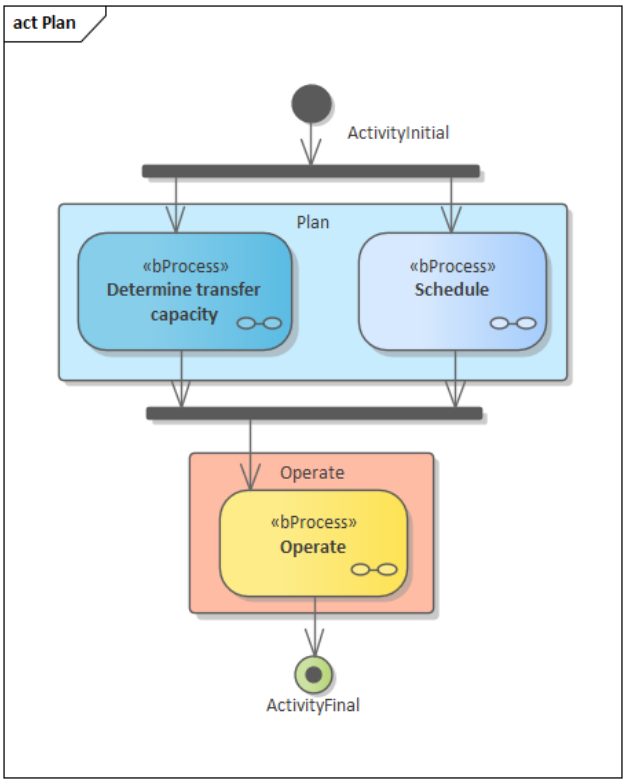

Figure 3: Activity diagram: The Nordic planning process

In the rest of this document the Business area Determine transfer capacity is further elaborated.

2.3 Overview of the Nordic determine transfer capacity process

There are some network grids within the ENTSO-E domain which are affected by structural congestion. Various congestion management methods such as, explicit auctioning, implicit auctioning, explicit auctioning involving two or more System Operators, etc. have been devised and implemented. The prerequisite for each of these methods is a transparent, non-discriminatory capacity allocation process in compliance with European regulations in particular EC 2019/943.

Allocated transmission capacity, which can be on a long-term, daily or intraday basis, is validated during the final day ahead or intraday Scheduling process for cross border transactions.

This BRS is focussed on providing the generic information models for the data exchange between the Transmission Capacity Allocator, the System Operators and the Coordinated Capacity Calculator participating in the capacity market for cross border scheduling in the Nordic countries. The information models in question cover the essential requirements of all the congestion management methods identified above, however limited to those used in the Nordic market.

When determining the transfer capacities and margins between the Nordic countries the following three terms are used:

Total Transfer Capacity (TTC)	TTC is the maximum exchange program between two areas compatible with operational security standards applicable at each system if future network conditions, generation and load patterns were perfectly known in advance.
Transmission Reliability Margin (TRM)	TRM is a security margin that copes with uncertainties on the computed TTC values arising from: a) Unintended deviations of physical flows during operations due to physical functioning of load-frequency regulation, b) Emergency exchanges between *System Operators* to cope with unexpected, unbalanced situations in real time, c) Inaccuracies, e.g. in data collection and measurements. In practice, only the definition a) described above is used in the Nordic countries. The present TRM values for each connection are agreed upon in the System Operation Agreement.
Net Transfer Capacity (NTC)	The Net Transfer Capacity NTC (trading capacity) is defined as: NTC = TTC – TRM NTC is the maximum exchange program between two areas compatible with security standards applicable in both areas and taking into account the technical uncertainties on future network conditions.

The TTC between two subsystems is jointly determined by the TSOs on both sides of the interconnection.

When determining the capacity on the interconnection between two subsystems, the capacity is calculated by the System Operators on each side of the connection by using computer programs based on coordinated network models. If the values differ, the lowest value is used.

The objective is to give the market as high capacity for energy trade as possible taking into account outages and faults in the network.

The ability to transmit power shall be calculated for each state of operation. This applies both to transmissions within each subsystem and to exchanges between subsystems. Most frequently, this is achieved by means of a transmission corridor (connecting line) being defined, and static and dynamic simulations determine how much power can be transmitted in any direction through the corridor before thermal overloads, voltage collapse and/or instability arise following a dimensioning fault. In the corridor, an arbitrary number of lines on different levels of voltage can be included.

The TTC is the maximum transmission of active power, which is permitted in transmission corridors (connecting lines) between the subsystems or individual installations. If the transfer capacity is exceeded, measures must be taken. The transfer capacity is set, using a certain safety margin (stability, voltage etc), at the transmission levels, which will entail network collapse in the event of dimensioning faults.

The NTC values between all the subsystems are given to Market Operator for day-ahead trading in its entirety. The System Operators guarantee the NTC value given for day-ahead trading. The remaining cross-border transmission capacity available under actual operational conditions after the day-ahead notification of planned trading flow is offered to the intra-day market. Capacities are updated automatically when market trades between parties across borders are made. Market splitting separates the intraday market areas dynamically when congestion occurs.

On the HVDC-connections, the thermal capacity (TTC) is normally used as NTC value in both directions and there is no need for any margin (TRM).

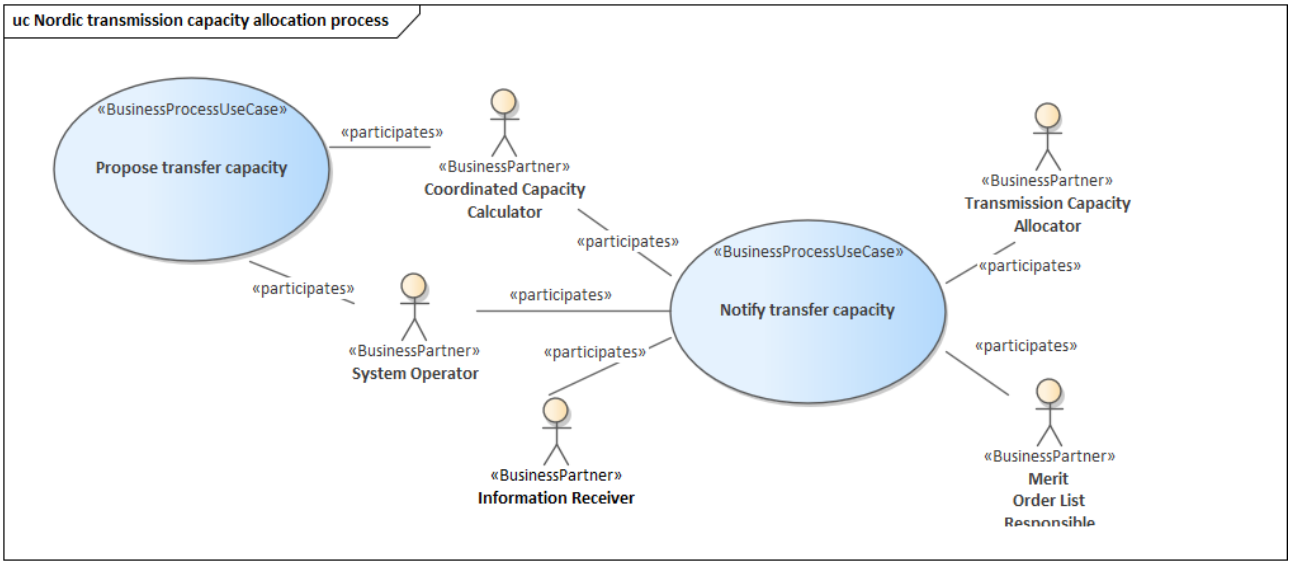

Figure 4 outlines the generic steps that are required in a capacity allocation process. This BRS defines the data interchanges that will be required to enable such a generic process to operate. The registration and qualification of market participants to enable them to participate in the market is outside the scope of this guide.

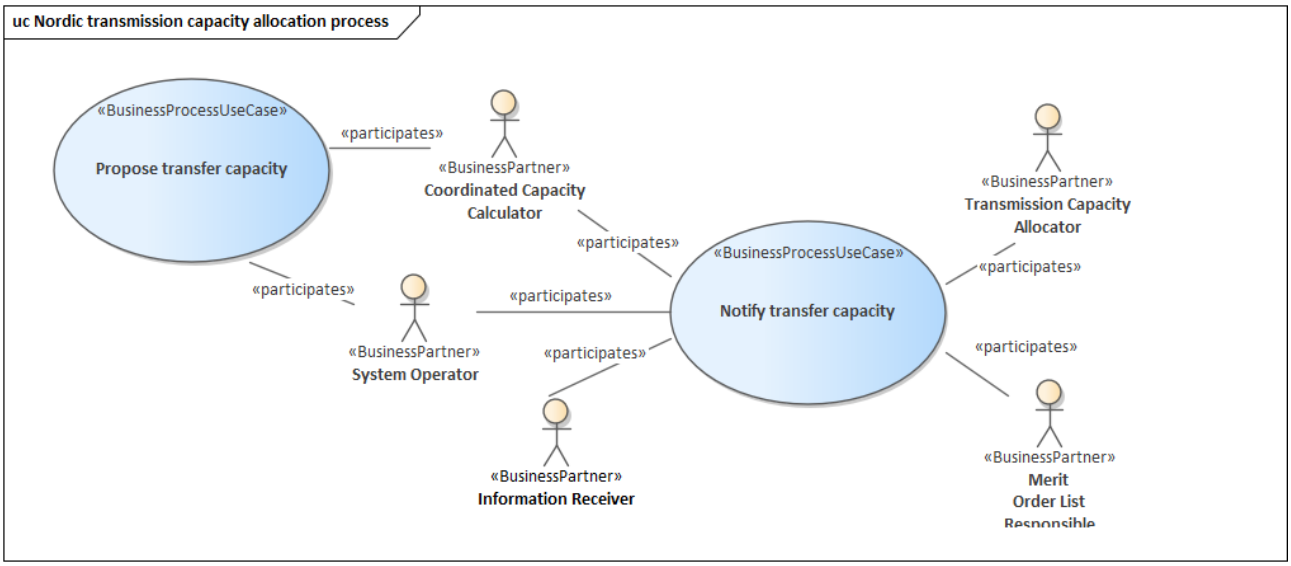

Figure 4: UseCase of the transmission capacity allocation process in the Nordic market[1]

There are two principal activities in such a process. The first step relates to the identification of all available transmission capacity that can be allocated. The available capacity has initially to be agreed between the System Operators through the Coordinated Capacity Calculator. The main actors in the process are the System Operators, Coordinated Capacity Calculator and the Transmission Capacity Allocator.

The second step covers allocation activity itself and publication (distribution) of the available transmission capacity. Once agreed it is made available to the market participants through the Transmission Capacity Allocator.

This BRS defines the information flows required to satisfy these two steps and it is particularly focused on the day-ahead capacity allocation market for implicit auctioning.

[1] The Merit Order List (MOL) Responsible is used in this document because of TERRE processes - The MOL Responsible is having both the MOL Responsible role and the LFC Operator role.

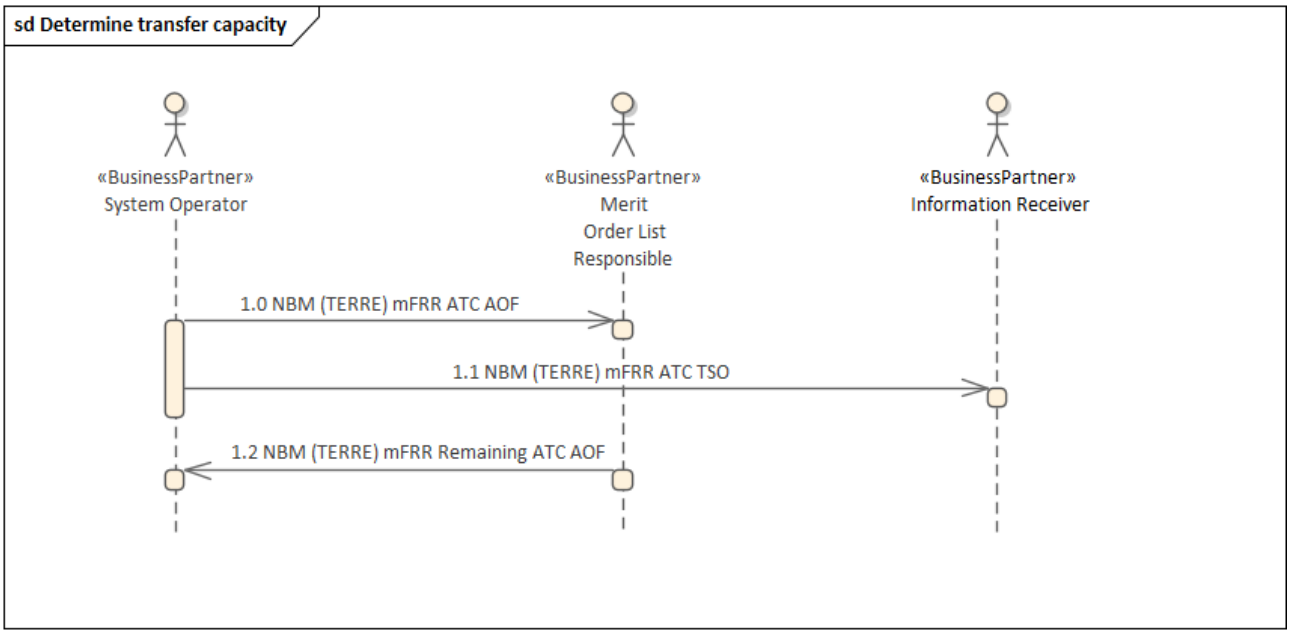

Figure 5: Sequence diagram: Information exchange overview for "determine transfer capacity"

Process area	Arrow	Content	Where to find detailed description
Determine transfer capacity	1.0	NBM (TERRE) mFRR ATC AOF	ECAN Capacity Document IEC62325-451-2 Ed.2, see 5.1
	1.1	NBM (TERRE) mFRR ATC TSO	ECAN Capacity Document IEC62325-451-2 Ed.2, see 5.1
	1.2	NBM (TERRE) mFRR Remaining ATC AOF	ECAN Capacity Document IEC62325-451-2 Ed.2, see 5.1

Table 1: ENTSO-E documents used in the determine transfer capacity process

Figure 5 shows the main electronic documents exchanged between the System Operators, MOL Responsible and the Information Receivers.

3 Business Partner View, Determine transfer capacity

In **figure 4** and definitions below, the relevant parts of the ebIX®, EFET and ENTSO-E Harmonised role model are outlined.

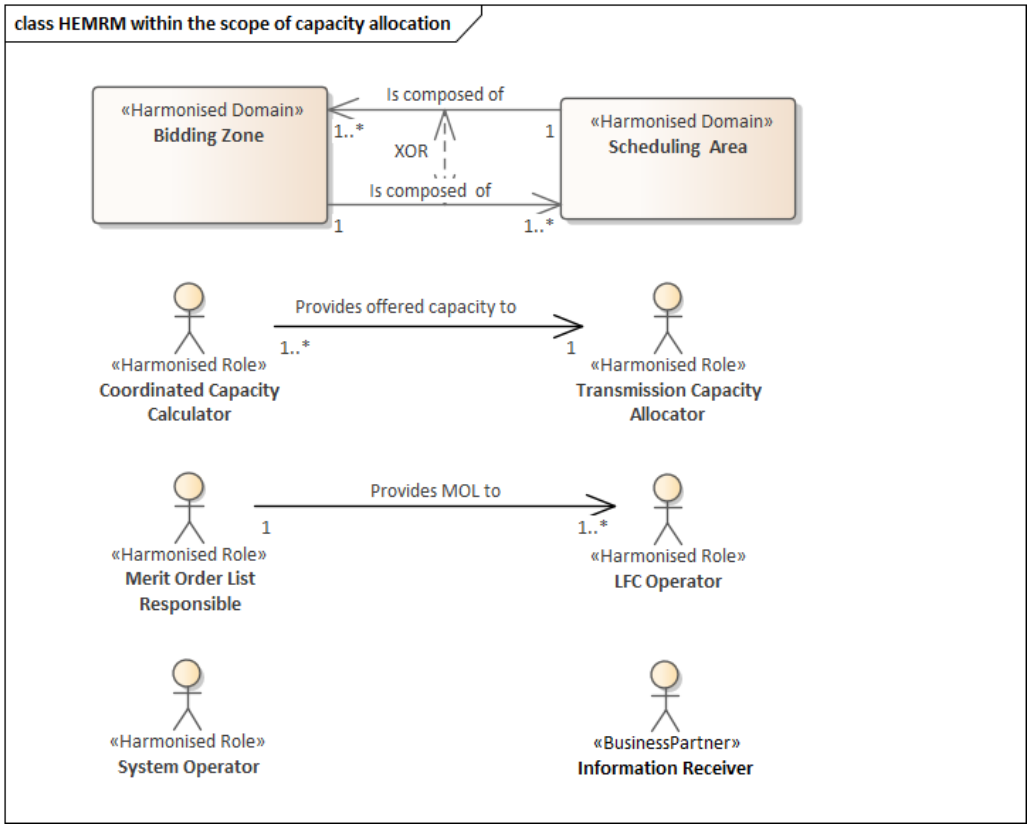

Figure 6: Outline of the Harmonised role model within the scope of capacity allocation

3.1 Roles from the ebIX®, EFET and ENTSO-E Harmonised role model, see [4]:

Coordinated Capacity Calculator[2]:	Coordinated Capacity Calculator is the entity or entities with the task of calculating transmission capacity, at regional level or above. **Source:** Commission Regulation (EU) 2015/1222 (CACM).
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.
Merit Order List 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.

[2] NOIS will act in the role as Coordinated Capacity Calculator in the Determine transfer capacity process. NOIS is an information system for exchange of operational information between the Nordic System Operators.

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).
Transmission Capacity Allocator[3]:	The Transmission Capacity Allocator manages, on behalf of the System Operators, the allocation of available transmission capacity for a Bidding Zone Border. He offers the available transmission capacity to the market, allocates the available transmission capacity to individual Capacity Traders and calculates the billing amount of already allocated capacities to the Capacity Traders. **Additional information**: The single allocation platform established by all TSOs for Forward Capacity Allocation performs the role of a Transmission Capacity Allocator.

3.2 Domains from the ebIX®, EFET and ENTSO-E Harmonised role model, see [4]:

Bidding Zone	The largest geographical area within which market participants are able to exchange energy without capacity allocation. **Source:** Commission Regulation (EU) 543/2013.
Scheduling Areas	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).

3.3 Nordic defined roles:

Information Receiver	A party, not necessarily a market participant, which receives information about the market.

[3] The Market Operator will act in the role as Transmission Capacity Allocator in the Determine transfer capacity process in the Nordic countries.

4 Business Domain View

4.1 Business area: Determine Transfer Capacity

In the Nordic countries the congestion management is handled through implicit auctioning, involving the *System Operators*. The prerequisite is a transparent, non-discriminatory capacity allocation process in compliance with European regulations in particular EC 2019/943. Allocated transmission capacity, which in the Nordic countries are on a daily (day-ahead) and hourly (Intraday) basis, is validated during the scheduling process for cross border transactions. In addition *Operational capacity* may be exchanged in the future as an intraday process.

This Business Requirement Specification (BRS) is focused on providing the generic information models for the data exchange between the *System Operators* and the *Transmission Capacity Allocator*. Needed communication towards the various market players participating in the capacity market for cross border scheduling may be covered on a later stage.

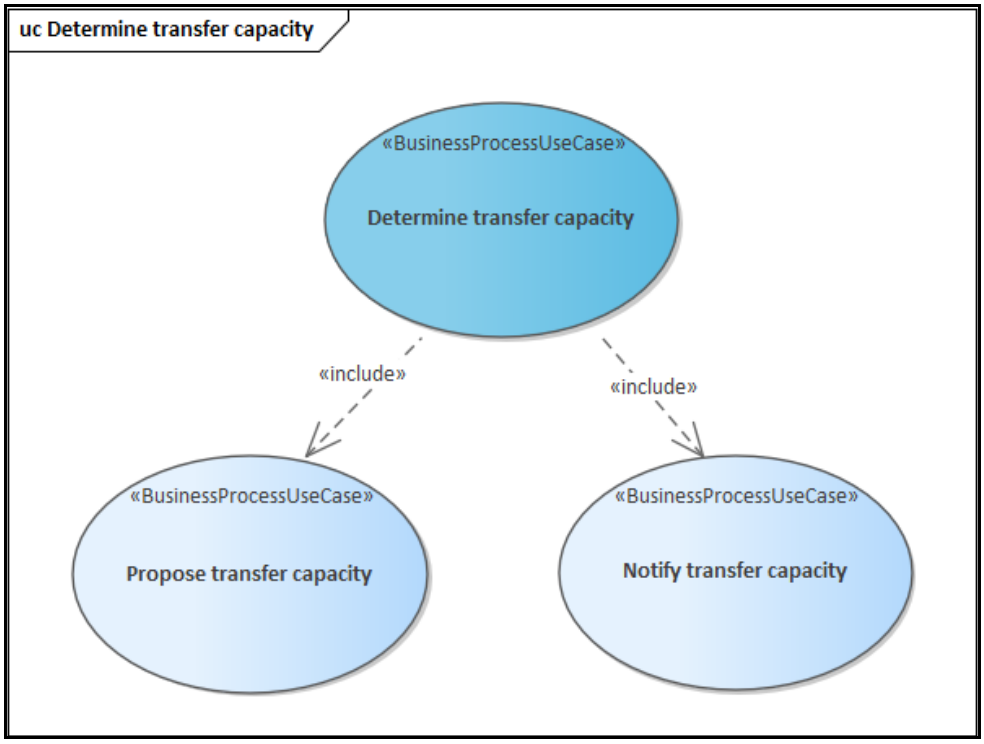

Figure 7: UseCase: Determine transfer capacity

Figure 7 outlines the steps that are required in a capacity allocation process in the Nordic countries. This BRS defines the data interchanges that will be required to enable such a generic process to operate.

In the Nordic countries the first step is identification of all Available Transmission Capacity (ATC) that can be allocated. The available capacity has to be agreed between the System Operators through the UseCase Propose transfer capacity. Once agreed it is made available to the market participants through the Transmission Capacity Allocator, i.e. UseCase Notify transfer capacity. The main actors in the process are the System Operators and the Transmission Capacity Allocator.

In the future (today only relevant for the NorNed cable) it may be possible for System Operators to adjust the ATC during the intra-day phase, i.e. determine the Operational Capacity (OC), also this according to the UseCase Propose transfer capacity.

This BRS defines the information flows required to satisfy these steps.

The Roles that take part in the Determine Transfer Capacity calculation are:

- System Operators (TSO) who perform all network security calculations and has the overall responsibility for the definition of Available Capacity between Bidding Zones.
- Coordinated Capacity Calculator who is an information system for exchange of operational information between the System operators.
- Transmission Capacity Allocator who provides data on the Already Allocated Capacity (AAC).

For Available Transfer Capacity (ATC) the System Operators agree the capacity that is to be offered to the market through the Coordinated Capacity Calculator and this agreed capacity is transmitted to the affected System Operators and the Transmission Capacity Allocator, who makes the information available to the market. The process is further described in the next chapters.

For Operational Capacity (OC) the System operators agree the capacity on an intra-day basis.

The Business area Determine Transfer Capacity can be split into to two processes; Propose transfer capacity and Notify transfer capacity:

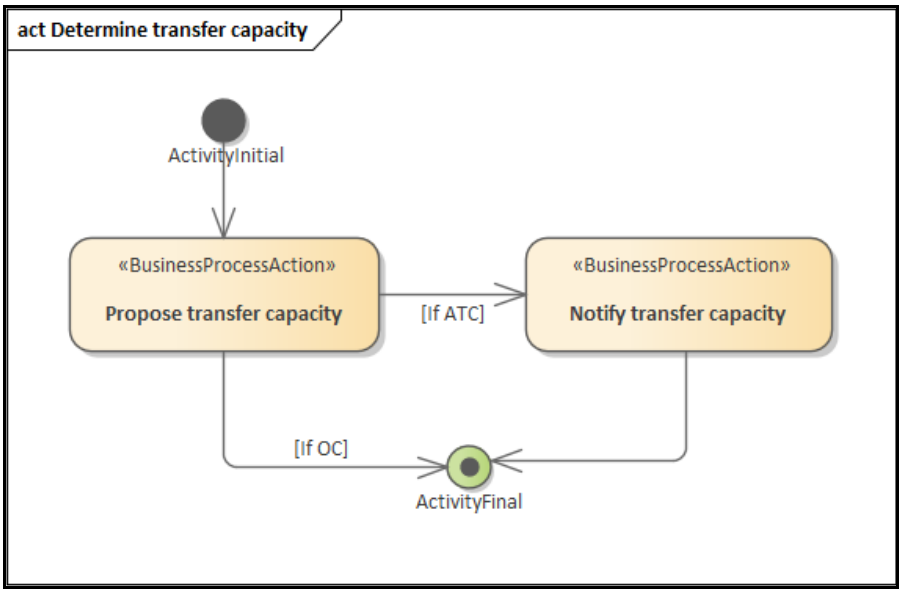

Figure 8: Activity diagram: Determine transfer capacity

4.2 Process area: Propose transfer capacity

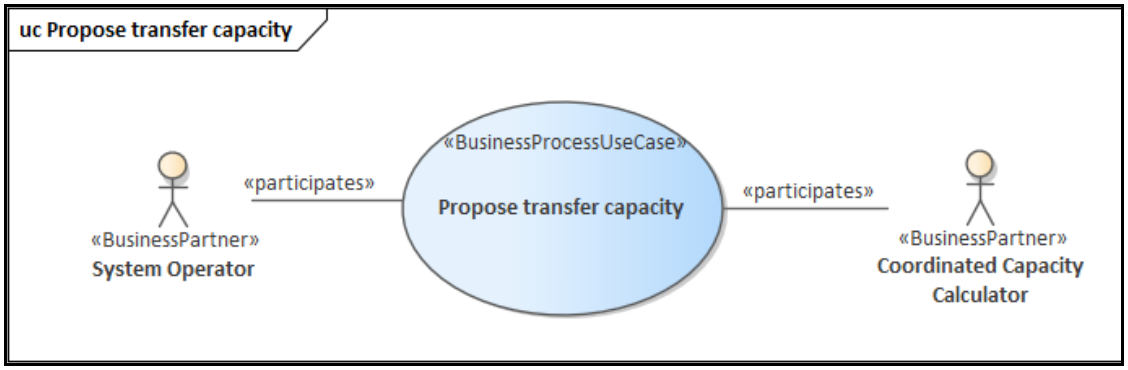

Figure 9: UseCase: Propose transfer capacity

When available and operational transfer capacities are agreed for exchange between the Nordic countries the roles that take part in the process are the System Operators and the Coordinated Capacity Calculator. When the capacities are agreed between a Nordic country and a non-Nordic country the approval process can be run as a bilateral process between a Leading System Operator and a Following System Operator, such as for the NorNed cable. In the rest of this BRS it is assumed that the process is run between Nordic countries.

Between a System operator and the Coordinated Capacity Calculator, plans for TTC are exchanged in order to determine Transfer Capacity for the operation of the cross-border connection. As a result of this process ATC is established by the Coordinated Capacity Calculator and thereafter notified to affected parties. It is used to plan operation of the cross-border connection.

The process may be run as TTC, the day before operation or as OC during intra-day.

A System Operator sends a proposal for transfer capacity, either TTC or OC, to the Coordinated Capacity Calculator.

Time constraints:

TTC: In due time before the market needs the information.

OC: When needed, also during the operational day.

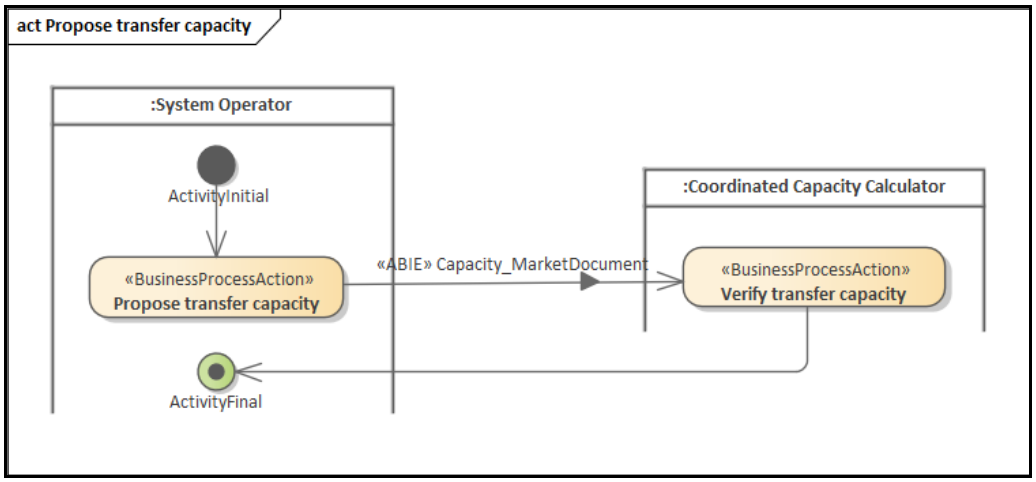

Figure 10: Activity diagram: Propose transfer capacity

4.3 Process area: Notify transfer capacity

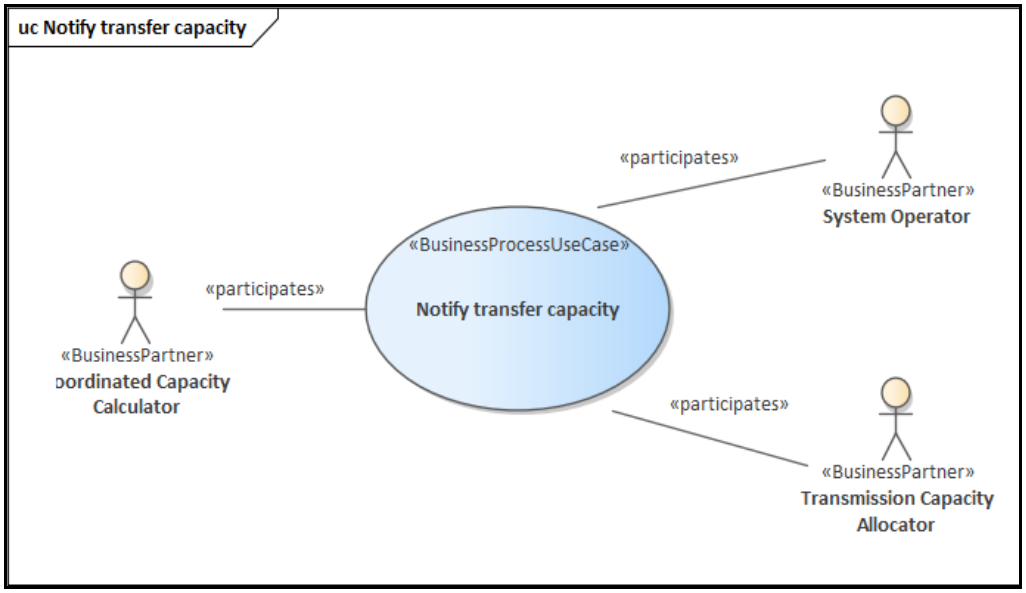

Figure 11: UseCase: Notify transfer capacity

After agreement of ATC the Coordinated Capacity Calculator notifies the offered capacity to the Transmission Capacity Allocator, who makes the information available to the market. In addition the Coordinated Capacity Calculator notifies affected System Operators. The notification process is run the day before operation for day-ahead, and both the day before and during the operational day for intraday.

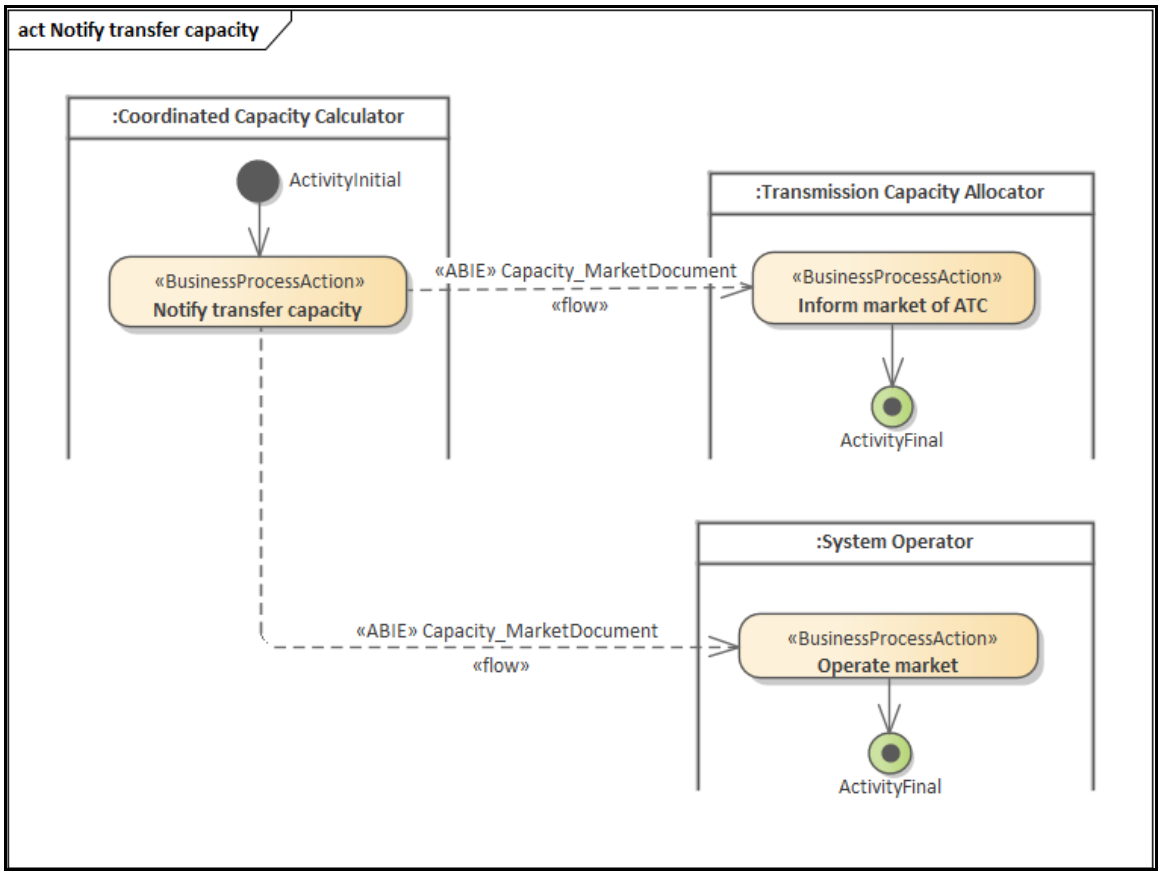

Figure 12: Activity diagram: Notify transfer capacity

5 Business Data View

5.1 ECAN Capacity Document IEC62325-451-2 Ed.2

The ECAN (ENTSO-E Capacity Allocation and Nomination process) Capacity Document is among others used for mFRR ATC exchanges.

This chapter describes a Nordic subset of the document described in IEC 62325 framework for energy market communications, Part 451, edition 2.

5.1.1 Class diagram: ECAN Capacity document contextual model

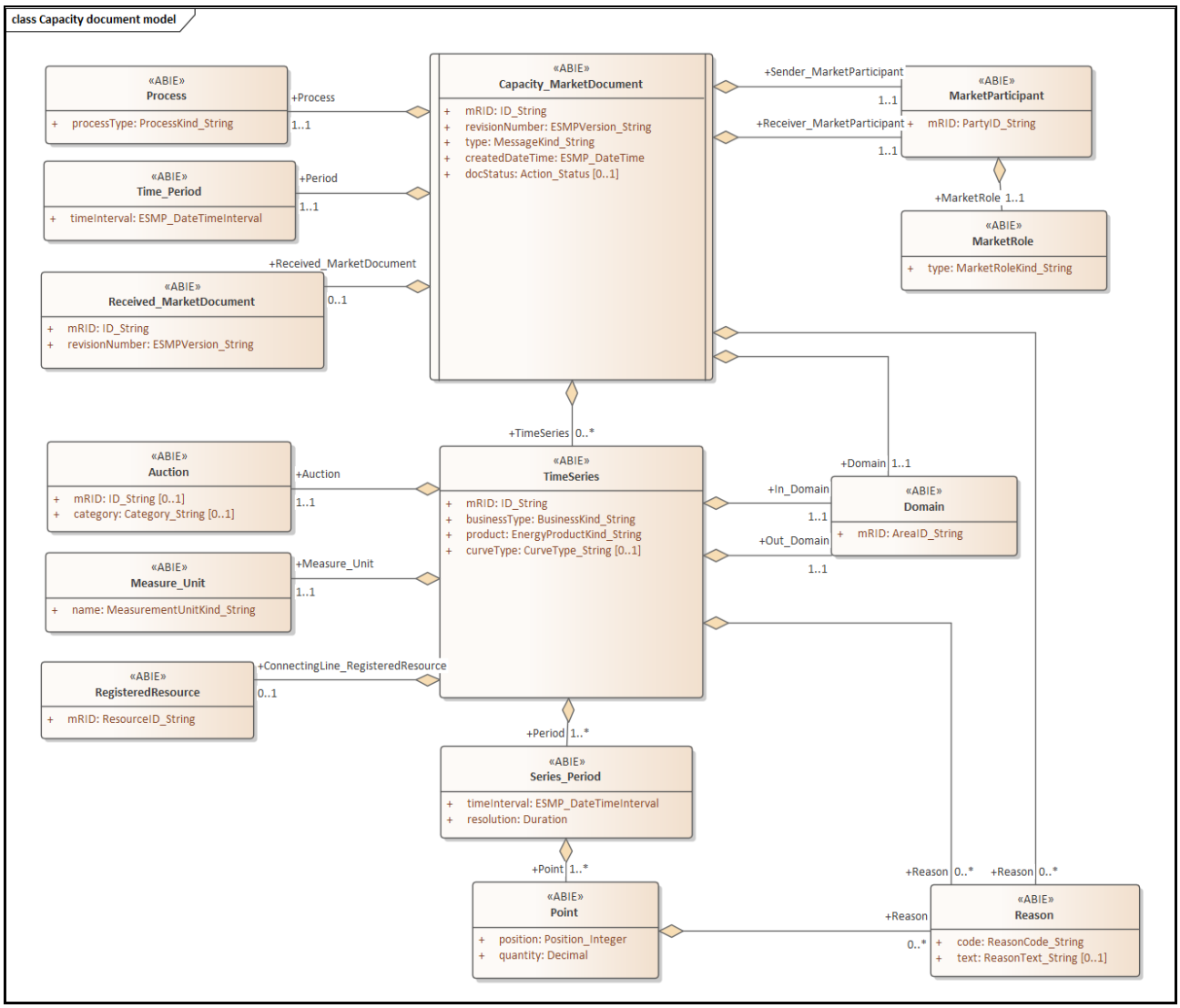

Figure 13: Class diagram ECAN Capacity document contextual model

5.1.2 Class diagram: ECAN Capacity document assembly model

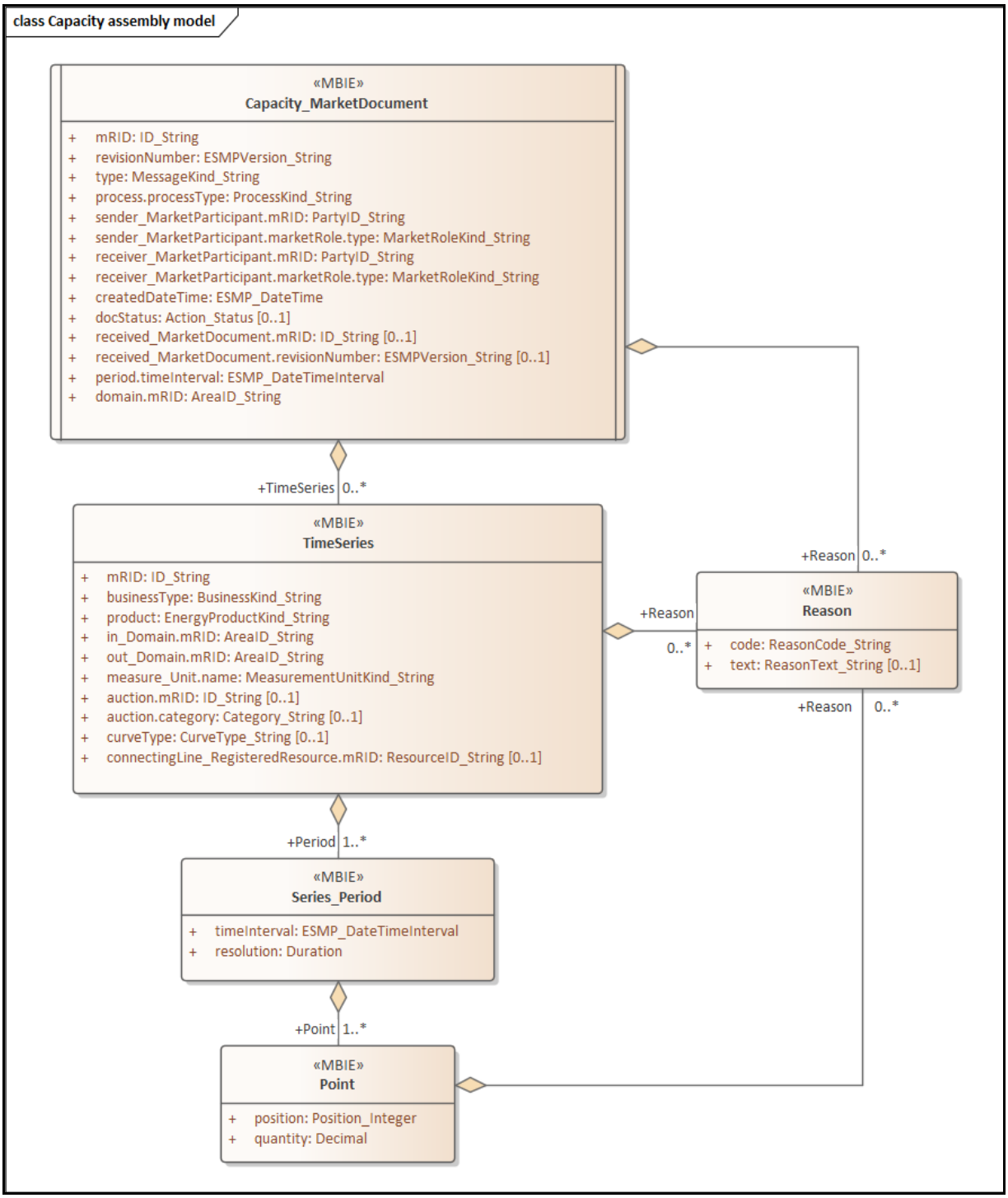

Figure 14: Class diagram: ECAN Capacity document assembly model

5.1.3 Attribute usage ECAN Capacity document assembly model

IEC CIM Attribute	Cl.	Code and description
	[1]	**Capacity_MarketDocument**
mRID	[1]	The unique identification of the document being exchanged within a business process flow. 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]	*NBM (TERRE) mFRR ATC AOF:* **A31** Agreed capacity (used when submitting available capacity to common platform) *NBM (TERRE) mFRR ATC TSO:* **A31** Agreed capacity *NBM (TERRE) mFRR Remaining ATC AOF:* **A26** Capacity document (used to transmit remaining capacity from the common platform to the TSOs)
process.processType	[1]	*NBM(TERRE) mFRR ATC AOF, ATC TSO and Remaining ATC AOF:* **A15** Capacity determination
sender_MarketParticipant. mRID	[1]	Identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[1]	*NBM (TERRE) mFRR ATC AOF:* **A04** System operator (document type = **A31**) *NBM (TERRE) mFRR ATC TSO:* **A04** System operator *NBM (TERRE) mFRR Remaining ATC AOF:* **A35** MOL responsible **(**document type = **A26**)
receiver_MarketParticipant. mRID	[1]	Identification of the party who is receiving the schedules.
receiver_MarketParticipant.marketRole.type	[1]	*NBM (TERRE) mFRR ATC AOF:* **A35** MOL responsible (document type **A31**) *NBM (TERRE) mFRR ATC TSO:* **A33** Information Receiver *NBM (TERRE) mFRR Remaining ATC AOF:* **A04** System operator **(**document type = **A26**)
createdDateTime	[1]	Date and time of the creation of the document.
docStatus	[0..1]	The identification of the condition or position of the document with regard to its standing. **A01** Intermediate **A02** Final **A03** Deactivated **A04** Reactivated

IEC CIM Attribute	Cl.	Code and description
received_MarketDocument.mRID	[0..1]	The unique identification of the document being exchanged within a business process flow. --- The identification of the received document. The identification of an electronic document that is related to an electronic document header.
received_MarketDocument. revisionNumber	[0..1]	The identification of the version that distinguishes one evolution of a document from another. --- The identification of the received document. The identification of an electronic document that is related to an electronic document header.
period.timeInterval	[0..1]	The beginning and ending date and time of the period covered by the document.
domain.mRID	[1]	The EIC identification of the domain covered within the Capacity_MarketDocument: **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.
businessType	[1]	*NBM:* **A26** ATC
product	[1]	*NBM:* **8716867000016** Active power
in_Domain.mRID	[1]	The area where the energy is to be put.
out_Domain.mRID	[1]	The area where the energy is coming from.
measurement_Unit.name	[1]	The identification of the formal code for a measurement unit (UN/ECE Recommendation 20). The unit of measure that is applied to the quantities in which the time series is expressed, e.g. MAW. **MAW** MW (Mega Watt)
auction.mRID	[0..1]	The unique identification of the auction. The identification of a set of specifications created by the auction operator.
auction.category	[0..1]	The identification of a set of specifications created by the auction operator. **A01** Base **A02** Peak **A03** Off peak **A04** Hourly

IEC CIM Attribute	Cl.	Code and description
curveType	[1]	*NBM mFRR ATC AOF:* **A01** Sequential fixed size block *NBM mFRR ATC TSO:* **A03** Variable sized block (when businessType = **A26** and ramps excluded) **A05** Non-overlapping breakpoint (when businessType = **A26** and ramps included **A01** Sequential fixed size block (when businessType = **A31**) *NBM mFRR Remaining ATC AOF:* **A01** Sequential fixed size block **A05** Non-overlapping breakpoint *Nordic Libra:* * Ramping information. The TSO can choose between 2 formats: The original output uses curveType = **A01** and contains a 15 minute 'block' without ramping information. The added format uses curveType = A05 with 1 minute resolution and contains the ramping information for the standard product. This produces an information length of 25 (T-5 to T+20)
connectingLine_Registered Resource.mRID	[0..1]	The identification of a resource associated with a TimeSeries. The identification of a set of lines that connect two areas; the transmission capacity rights are related to this set of lines.
	[1..*]	**Series_Period**
timeInterval	[1]	The start and end time of the period.
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. *NBM (TERRE) mFRR ATC AOF:* **PT60M** **PT30M** **PT15M** *NBM (TERRE) mFRR ATC TSO:* **PT1M** *NBM (TERRE) mFRR Remaining ATC AOF:* **PT60M** **PT30M** **PT15M**

IEC CIM Attribute	Cl.	Code and description
	[1..*]	**Point**
position	[1]	A sequential value representing the relative position within a given time interval.
quantity	[1]	The principal quantity identified for a point.

Table 2: Attribute usage of ECAN Capacity document assembly model

5.1.4 Business rules for the transfer capacity document in the Nordic countries

The following business rules apply to the Transfer capacity document in the Nordic countries:

- For the day-ahead market the Transfer capacity document is sent to NOIS before 09:00 the day before operation and should be published by the NEMOs within an hour. The message contains values for the whole coming day (24 hours).
- For the Intraday market the Transfer capacity document is sent latest 45 minutes before the operational hour, but always containing data for a whole day.
- The volume in the Transfer capacity document is always representing power (MW, without decimals).
- The Transfer capacity document will always contain two or more time series, i.e. there shall always be separate time series for each direction.
- The Direction is explicitly given by the In area and Out area. Positive values are used when the direction is from the Out area to the In area.

Rules taken from the NOIS documentation:

- The Sender Identification must be the identification of a known TSO.
- The Domain must be a known Control Area managed by the sending TSO.
- The Domain must cover either the in- or the out-Bidding Zone of each capacity time series.
- The In- and the Out area of each capacity time series must identify a known Bidding Zone.
- The Connecting line must be the identification of a known Bidding Zone.