BRS
(BUSINESS REQUIREMENT SPECIFICATION)

A MODEL FOR THE NORDIC TSO DETERMINE TRANSFER CAPACITY PROCESS

Business process:	Nordic TSO determine transfer capacity document exchange
Version:	2.0.E
Status:	Approval by Nordic Ediel Group (NEG)
Date:	September 30th, 2013

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 (defined in chapter 5) 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 and Nord Pool Spot have set up a project for migration of the message exchanges towards one common message standard. The project is run as a Nordic project with the Nordic Ediel Group as the steering group. The aim is to define document exchange models that can be used for all document exchanges between the Nordic TSOs and Nord Pool Spot.

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 [3]. When implementing the BRS, the ENTSO-E ECAN Implementation guide and the related ENTSO-E XML schemas should be used.

In addition a show case is made for the *Determine Transfer Capacity* process [9]. This BRS is based on the ENTSO-E ECAN Implementation Guide [1], but modified to fit the UN/CEFACT standards:

- UN/CEFACT Modelling Methodology (UMM) [4]
- UN/CEFACT UML Profile for Core Components (UPCC) [5]
- UN/CEFACT XML Naming and Design Rules (NDR) [6]

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 [9].

1.3 Project organisation

The project is organised as a project group within Nordic Ediel Group (NEG), with the following members at the time of publication:

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1.4 References

[1] ENTSO-E implementation guides, see http://entsoe.eu/index.php?id=73

- ENTSO-E Modelling Methodology (EMM)

- ENTSO-E UCTE SO-SO Process
- ENTSO-E Scheduling System, ESS
- ENTSO-E Settlement Process, ESP
- ENTSO-E Reserve Resource Planning, ERRP
- ENTSO-E Capacity Allocation and Nomination, ECAN
- ENTSO-E Publication Document, EPD
- ENTSO-E Status Report, ESR
- ENTSO-E Acknowledgement process

[2] ECP (Energy communication platform) Functional Specifications
[3] The ebIX, EFET and ENTSO-E Harmonised role model, see http://entsoe.eu/index.php?id=73
[4] UN/CEFACT Unified Modelling Methodology (UMM), see http://umm-dev.org/
[5] UML Profile for Core Components (UPCC), see http://www.untmg.org/
[6] UN/CEFACT XML Naming and Design Rules (NDR), see http://www.uncefactforum.org/ATG/ATG_Home.htm
[7] ebIX Modelling methodology and process models (EMD), see http://www.ebix.org/
[8] Ediel Implementation guides, see http://www.ediel.org/
[9] Nordic Ediel Group, Show case for usage of UN/CEFACT standards; BRS for the Nordic TSO Determine transfer capacity model, see http://www.ediel.org/
[10] BRS for the Nordic TSO Scheduling and Ancillary Services Process, see http://www.ediel.org/
[11] Nordic Energy Market Domain Model, see http://www.ediel.org/

1.5 Terms

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.

When the term TSO is used in this document it may include Nord Pool Spot.

1.6 Change log

Ver/rel/rev	Changed by	Date	Changes
2.0.E	Ove Nesvik	20130930	• A note is added in chapter 7.3 that the notification process is run the day before operation for Elspot, and both the day before and intraday for Elbas. • The product code for *transport capacity* is replaced by *active power* • The NEG and NEMM member list in the introduction has been updated • Clarifications and error corrections
2.0.D	Ove Nesvik	20120104	• *Update of the Capacity document* o A *Connecting Line* element replaces the earlier Corridor element, (agreed in ENTSO-E ECAN project November 2011)
2.0.C	Ove Nesvik	20110531	• *Correction of spelling errors* • The code A81 is assigned to *Total Transfer Capacity (TTC)* • Curve Type and Classification category has been added from ECAN 5.0
2.0.B	Ove Nesvik	20110519	• *International system operator* has been changed to *Capacity coordinator* • Business rules for the transfer capacity document in the Nordic countries, chapter 8.1.3 is updated. • Update of the rules in Appendix A. • The Document version element in the capacity document is changed to a fixed value 1
2.0.A	Ove Nesvik	20100713	Version 2.0 is a complete recast of version 1.1 and changes have not been tracked.

2 PLANNING

2.1 Planning in the overall context (Domain model)

The *Domain model* describes the main 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.

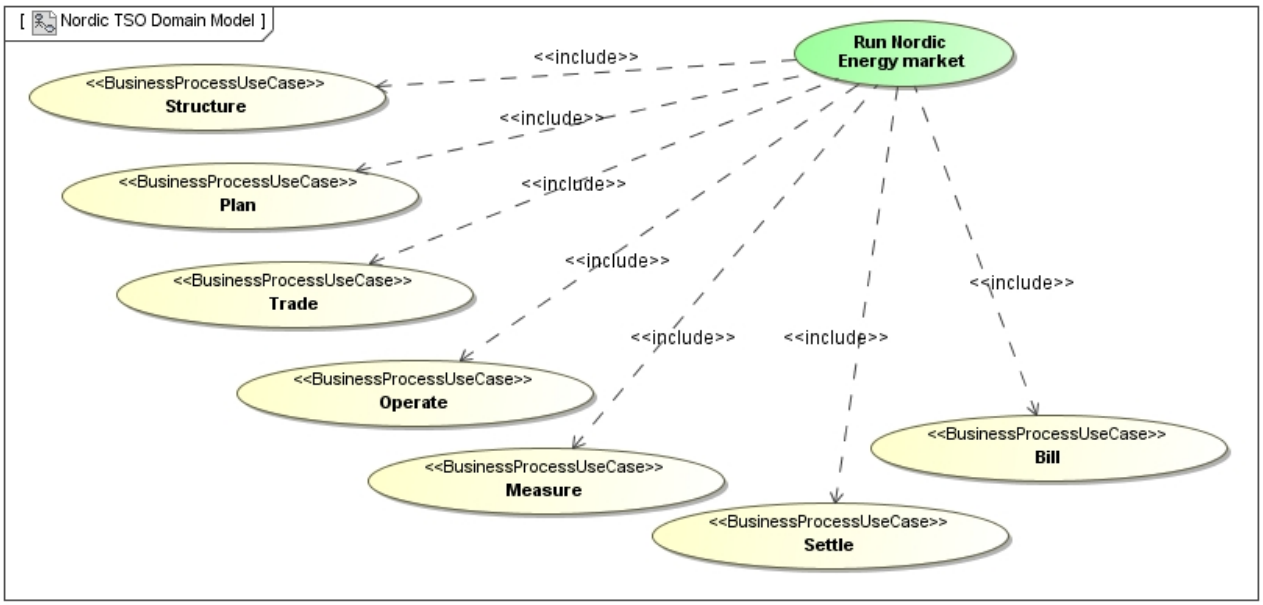

Figure 1: UseCase diagram: Domain model

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

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.

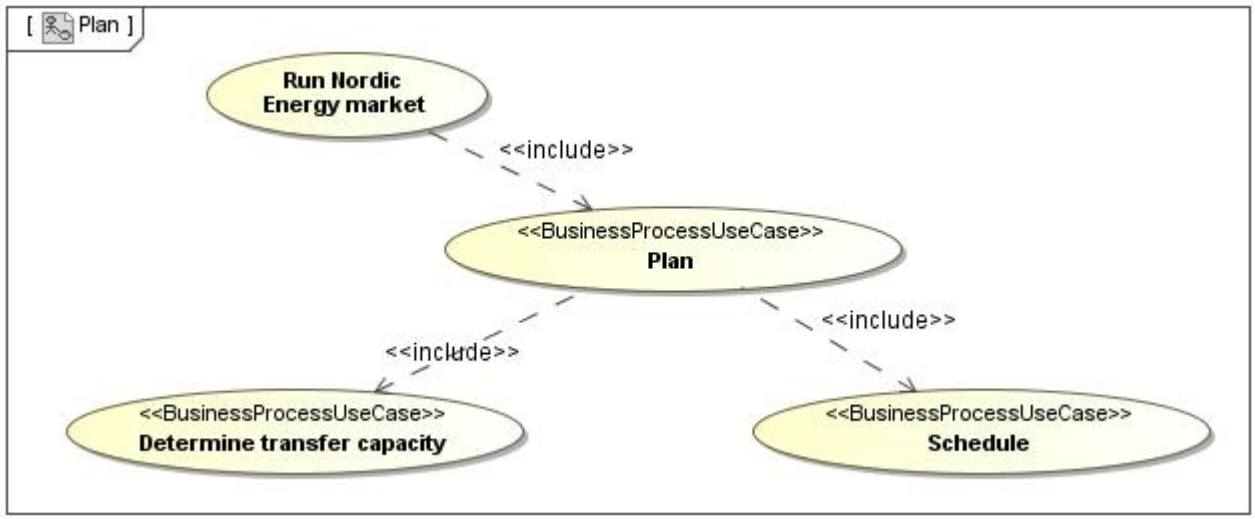

Figure 2: UseCase diagram: The Nordic planning process

The *Schedule resources* process is documented in a separate BRS, see [10].

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 *Market balance area* or a group of *Market balance areas*. It also deals with the exchange of schedules between two *Market balance areas* via *System operators* and the *Capacity coordinator*. 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.*

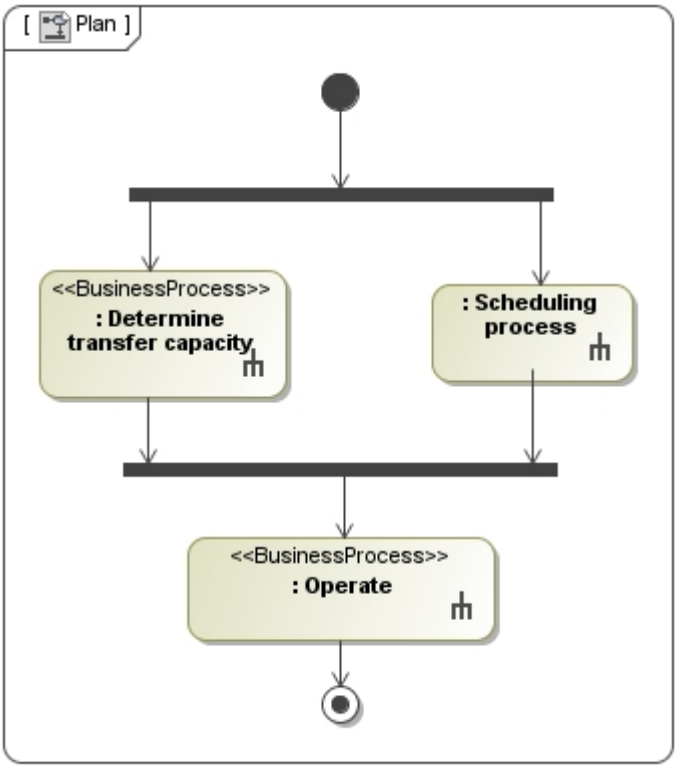

Figure 3: Activity diagram: The Nordic planning process

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

3 OVERVIEW OF THE NORDIC DETERMINE TRANSFER CAPACITY PROCESS

3.1 Transfer capacity allocation overview

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 1228/2003.

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 *Capacity coordinator* 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 Nord Pool Spot for day-ahead trading (Elspot) in its entirety. The *System Operators* guarantee the NTC value given for Elspot trading. The remaining cross-border transmission capacity available under actual operational conditions after the Elspot notification of planned trading flow is offered to the intra-day market Elbas. Capacities are updated automatically when market trades between parties across borders are made. Market splitting separates the Elbas 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).

However, to be in line with the ENTSO-E ECAN IG, which is the basis for the transfer capacity process described in this document, the terms ATC (Available Transfer Capacity) will be used instead of NTC. Based on the actual calculation principles used for transfer capacities in the Nordic countries the ENTSO-E definition of ATC and the Nordel definition of NTC will coincide. In addition the term OC (Operational Capacity) will be used for available transfer capacity as established during the operational day, i.e. the capacity available after closure of the Elbas market. The terms ATC and OC is explained in chapter 6.

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.

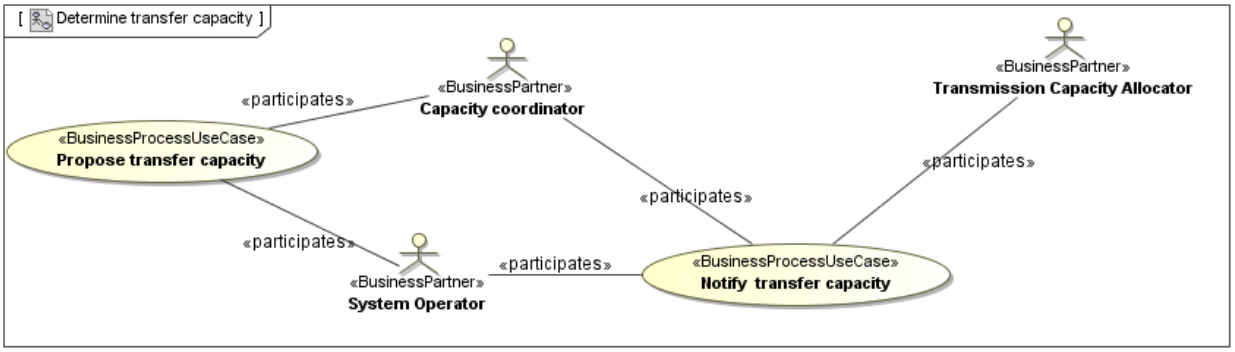

Figure 4: UseCase of the transmission capacity allocation process in the Nordic market

There are two principle 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 *Capacity coordinator*. The main actors in the process are the *System Operators*, *Capacity coordinator* 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.

4 HARMONISED ROLES USED IN "DETERMINE TRANSFER CAPACITY"

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

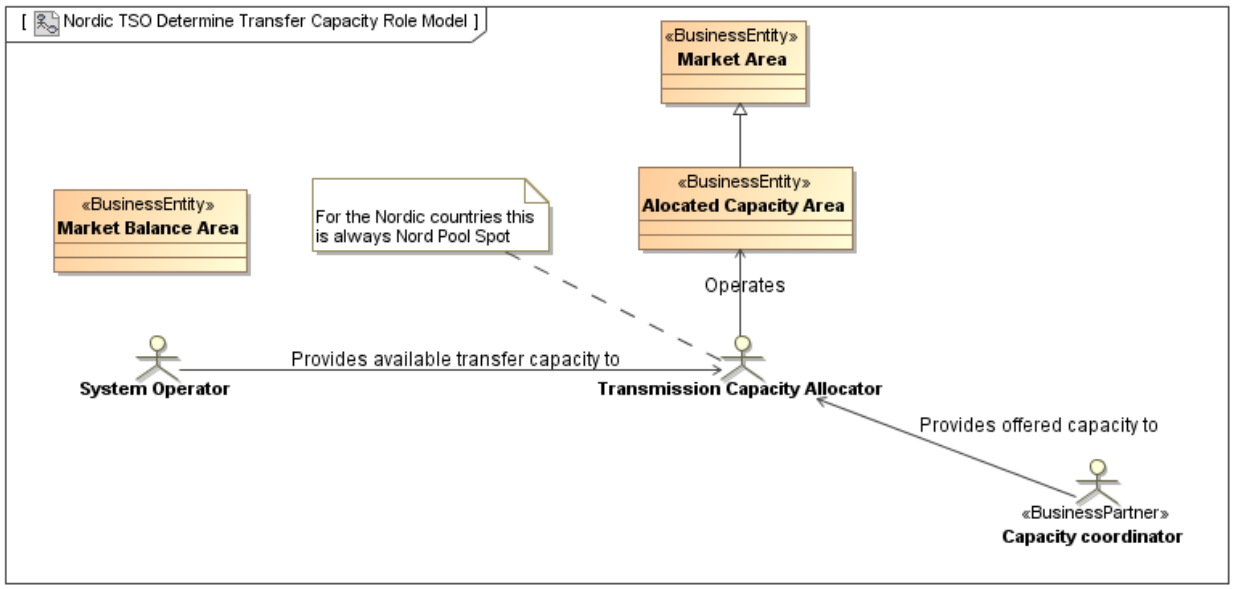

Figure 5: Outline of the Harmonised role model within the scope of capacity allocation

***Definitions (from the ebIX, EFET and ENTSO-E Harmonised role model*):**

Capacity coordinator: A party, acting on behalf of the System Operators involved, responsible for establishing a coordinated Offered Capacity and/or NTC and/or ATC between several Market Balance Areas.

Market Balance Area: A geographic area consisting of one or more *Metering Grid Areas* with common market rules for which the settlement responsible party carries out a balance settlement and which has the same price for imbalance. A *Market Balance Area* may also be defined due to bottlenecks.

Market Area: An area made up of several *Market Balance Areas* interconnected through AC or DC links. Trade is allowed between different *Market Balance Areas* with common market rules for trading across the interconnection.

Allocated Capacity Area: A *Market area* where the transmission capacity between the *Balance areas* is given to the *Balance Responsible Parties* according to rules carried out by a *Transmission Capacity Allocator*. Trade between *Balance areas* is carried out on a bilateral or unilateral basis.

System Operator: A party that is responsible for a stable power system operation (including the organisation of physical balance) through a transmission grid in a geographical area. The SO will also determine and be responsible for cross border capacity and exchanges. If necessary he may reduce allocated capacity to ensure operational stability.

Transmission as mentioned above means "the transport of electricity on the extra high or high voltage network with a view to its delivery to final customers or to distributors. Operation of transmission

includes as well the tasks of system operation concerning its management of energy flows, relibability of the system and availability of all necessary system services." (definition taken from the UCTE Operation handbook Glossary).

Note 1:
Additional obligations may be imposed through local market rules.

Note 2:
NOIS (see definition in chapter 5) will act in the role as *Capacity coordinator* in the Determine transfer capacity process.

Transmission Capacity Allocator: Manages the allocation of transmission capacity for an allocated capacity area.

For explicit auctions:
The *Transmission Capacity Allocator* manages, on behalf of the *System Operators*, the allocation of available transmission capacity for an *Allocated capacity area*. 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*.

Note:
Nord Pool Spot will act in the role as *Transmission Capacity Allocator* in the *Determine transfer capacity* process in the Nordic countries.

5 BUSINESS PARTNER VIEW, DETERMINE TRANSFER CAPACITY

In addition to the roles defined in the ebIX, EFET and ENTSO-E Harmonised role model (see 4) the following *partner types* have been identified as relevant for the Business area *Determine transfer capacity*.

Definitions:

Nord Pool Spot:	*Nord Pool Spot* is a specialisation of the generic role *Transmission Capacity Allocator*. *Nord Pool Spot* fixes the allocations through *implicit auctioning*.
NOIS:	NOIS is a specialisation of the generic role *Capacity coordinator*. NOIS is an information system for exchange of operational information between *System Operators*.

6 BUSINESS ENTITY VIEW, DETERMINE TRANSFER CAPACITY

In addition to the domains defined in the ebIX, EFET and ENTSO-E Harmonised role model (see 4) the following *business entities* have been identified as relevant for the Business area *Determine transfer capacity*.

Transfer capacity:	Capacity exchanged between *System operators* and between *System operators* and the *Transmission capacity allocator*. The *Transfer capacity* can be split into *Operational capacity* (OC) and *Available Transfer Capacity* (ATC).
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 Elbas 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.
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.

7 BUSINESS DOMAIN VIEW

7.1 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 1228/2003. Allocated transmission capacity, which in the Nordic countries are on a daily (Elspot) and hourly (Elbas) 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.

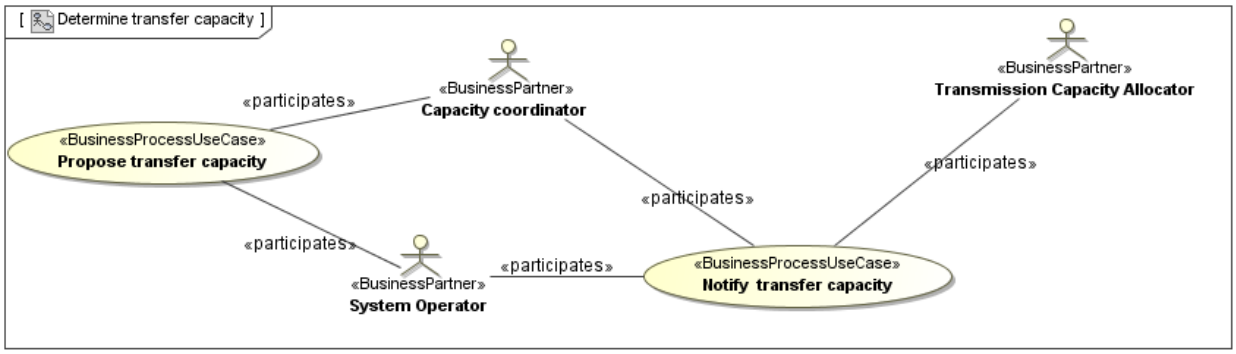

Figure 6: UseCase: Determine transfer capacity

Figure 6 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 Market Balance Areas;
- *Capacity coordinator* 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 *Capacity coordinator* 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*:

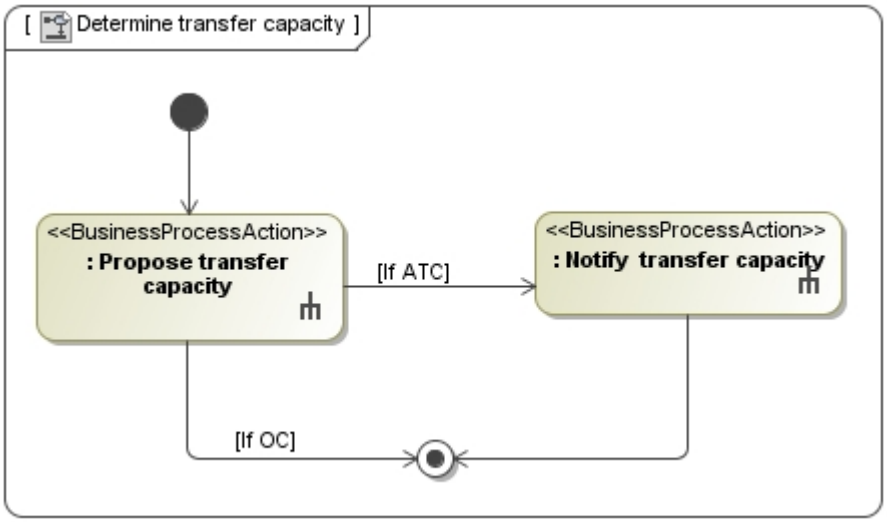

Figure 7: Activity diagram: Determine transfer capacity

7.2 Process area: Propose transfer capacity

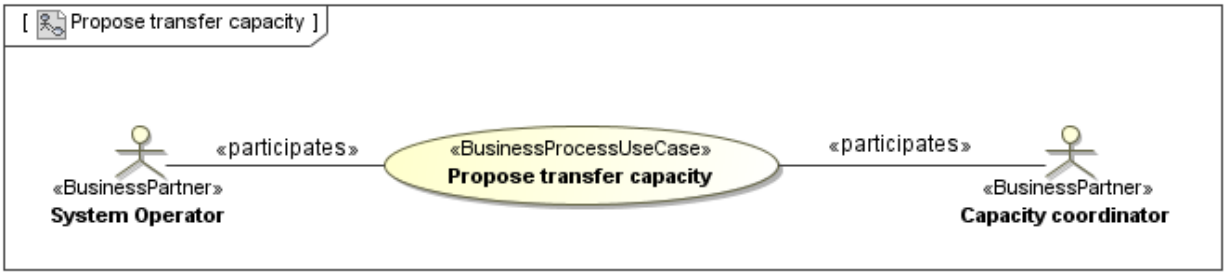

Figure 8: UseCase: Propose transfer capacity

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 *Capacity coordinator*. 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 *Capacity coordinator*, 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 *Capacity coordinator* 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 *Capacity coordinator*.

Time constraints:

TTC: In due time before the market needs the information.
OC: When needed, also during the operational day.

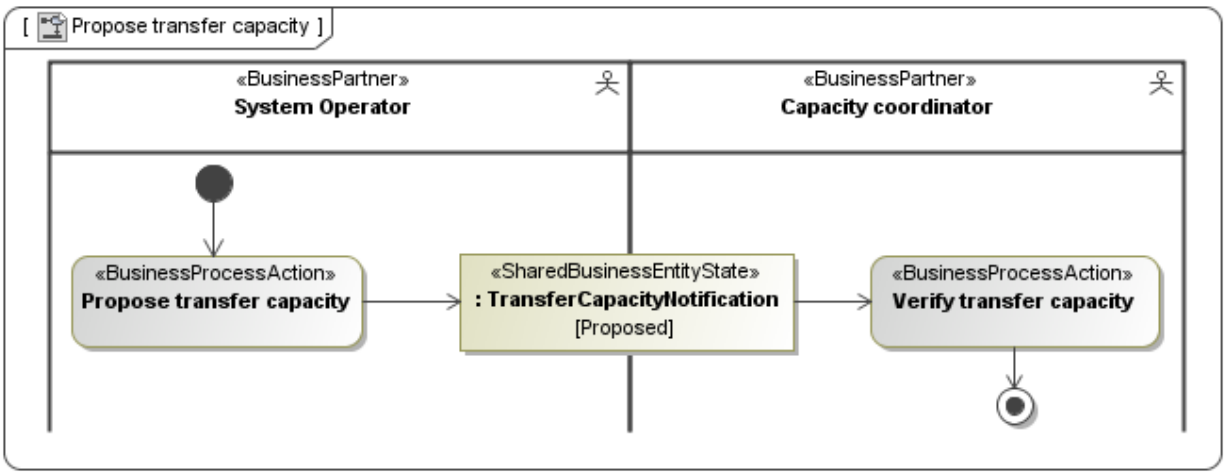

Figure 9: Activity diagram: Propose transfer capacity

7.3 Process area: Notify transfer capacity

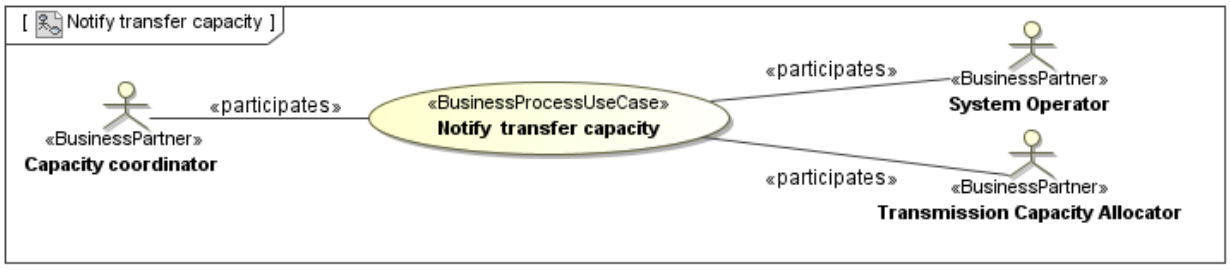

Figure 10: UseCase: Notify transfer capacity

After agreement of ATC the *Capacity coordinator* notifies the offered capacity to the *Transmission Capacity Allocator*, who makes the information available to the market. In addition the *Capacity coordinator* notifies affected *System Operators*. The notification process is run the day before operation for Elspot, and both the day before and intraday for Elbas.

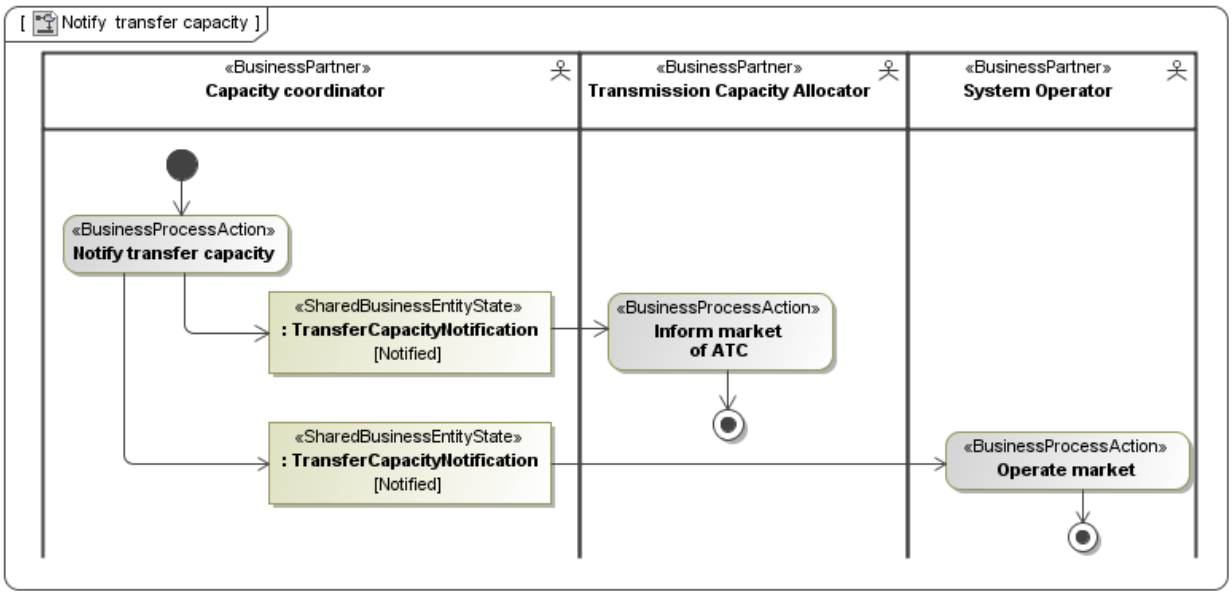

Figure 11: Activity diagram: Notify transfer capacity

8 BUSINESS DATA VIEW

8.1 Capacity document

In this chapter the details of the C*apacity document* is defined. It is a subset of the ENTSO-E ECAN Capacity document without any changes.

8.1.1 Class diagram

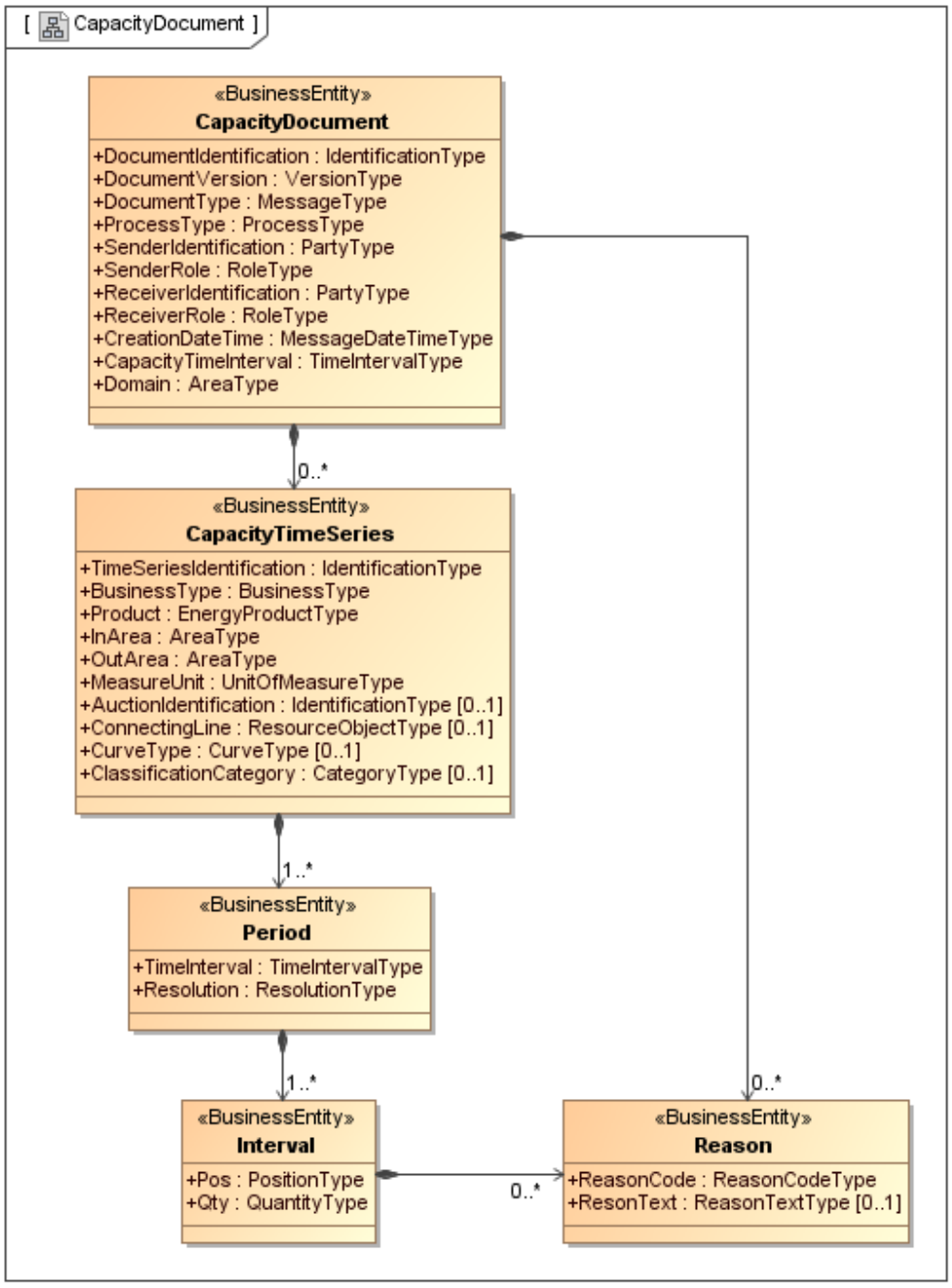

Figure 12: Class diagram: Capacity document

8.1.2 Attribute usage

Document	Attribute	Code and description

Capacity document	***Capacity document***	
	Document version	Fixed 1
	Document type	A13 Interconnection capacity A31 Agreed capacity A32 Proposed capacity
	Process type	A07 Capacity allocation A15 Capacity determination
	Sender role	A04 System operator A36 Capacity coordinator
	Receiver role	A04 System operator A07 Transmission capacity allocator A36 Capacity coordinator
	Domain	Market balance area (Elspot area) or National area Domain is mandatory according to ENTSO-E ECAN IG, but is not used for Capacity deduction reason (NOIS Export), sent from NOIS to Nord Pool Spot on operator request.
	Capacity time series	
	Business type	A31 Offered Capacity A25 General capacity information A26 Available Transfer Capacity (ATC) A27 Net Transfer Capacity (NTC) A29 Already Allocated Capacity (AAC) A41 Released AAC A81 Total Transfer Capacity (TTC)
	Product	8716867000016 Active power
	In area	Elspot- or Cut area
	Out area	Elspot- or Cut area
	Auction identification	Currently not used between the Nordic countries. Used between Nordic TSOs and other European TSOs (e.g. DK-DE). From the ENTSO-E ECAN IG: A unique identification of the set of specifications that clearly identify the auction to which the capacity is addressed.
	Connecting line	Elspot- or Cut corridor
	Curve type	Not used in the Nordic countries
	Classification Category	Not used in the Nordic countries

Table 1: Usage of the Capacity document

8.1.3 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 Elspot market the *Transfer capacity document* is sent to NOIS before 09:00 the day before operation and should be published on the Nord Pool Spot web site within an hour. The message contains values for the whole coming day (24 hours).
- For the Elbas 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 TSO responsibility area (*National Area* from [3]) managed by the sending TSO.
- The *Domain* must cover either the in or the out *Elspot area* of each capacity time series.
- The *In-* and the *Out area* of each capacity time series must identify a known *Elspot- or Cut area*.
- The *Connecting line* must be the identification of a known *Elspot- or Cut corridor*.

8.1.4 Date and time

- All time expressions shall be in UTC (UTC+0) time.
- The day is always expressed in *local time*, i.e.:
    - A day is from 23:00 to 23:00 during winter time
    - A day is from 22:00 to 22:00 during summer time (daylight saving time)
    - When changing from winter time to summer time there are 23 hours in the time series (from 23:00 to 22:00)
    - When changing from summer time to winter time there are 25 hours in the time series (from 22:00 to 23:00)

Appendix A AN EXAMPLE OF TECHNICAL IMPLEMENTATION

A.1 Transfer capacity messages exchange to/from NOIS

Message exchanges to/from NOIS are in this appendix presented as an example of where the transfer capacity message will be used in the Nordic countries.

The Nordic TSOs Energinet.dk, Fingrid, Statnett and Svenska Kraftnät are sending day-ahead proposals for transmission capacity to NOIS related to different needs, i.e. Transmission Capacity Proposals for the Elspot market (for ELSPOT corridors (connecting lines)), Elbas Capacity, Cut Corridor Capacity, Out of Nordel Transmission Capacity and Capacity Reduction Reasons for ELSPOT corridors.

NOIS validates the received transfer capacities and distribute validated ELSPOT and Elbas trading capacities to the TSOs and NordPool Spot. The validated ELSPOT trading capacities are always on day-ahead basis, while the validated Elbas trading capacities may be on both day-ahead and intra-day basis.

In addition the Capacity Reduction Reasons are sent to NordPool Spot from NOIS on operator request.

The transfer capacity document is based on the ENTSO-E ECAN capacity document.

In the Sequence diagram shown below, Svenska Kraftnät (SvK) is used as example of a Nordic TSO. The same message exchange scenario is however valid also for the other Nordic TSOs Energinet.dk, Fingrid and Statnett.

A.2 Sequence of transfer capacity messages sent to/from NOIS

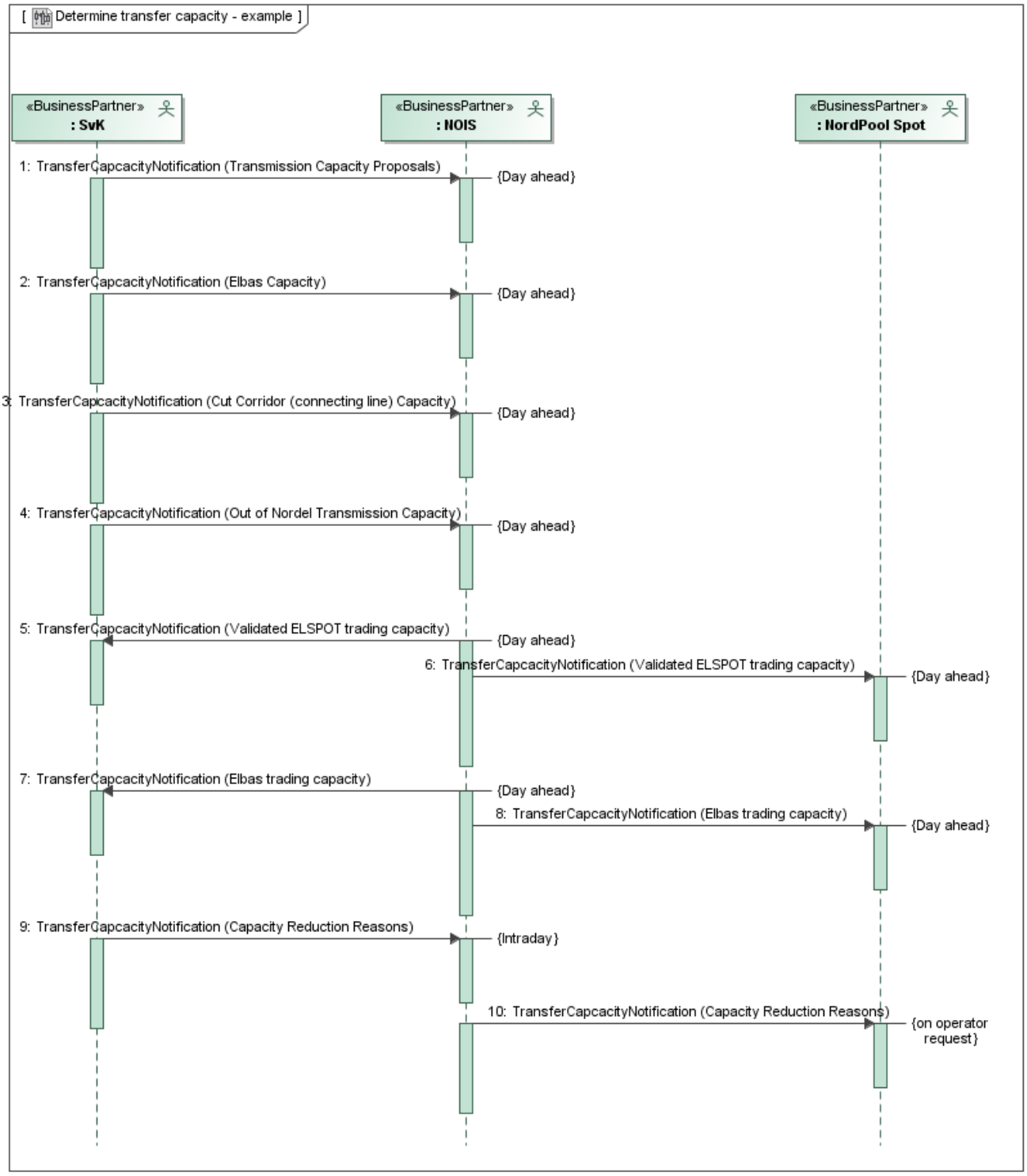

Figure 13: Sequence diagram: NOIS, Transfer Capacity exchanges

A.3 Business rules for transfer capacity messages sent to/from NOIS

A.3.1 Transmission Capacity Proposals

- Transmission Capacity Proposals are sent in day ahead by TSO's for corridors (connecting lines) between bidding areas.
- The Transmission Capacity Proposals must cover a full day.
- The sender identification must be the identification of a known TSO.
- The domain area must be a known area managed by the sender TSO.
- The in or the out area must be within the domain area within each capacity time series.
- The in and the out area of each capacity time series must identify a known area.
- The corridor (connecting line) identification must be the identification of a known corridor between bidding areas.

A.3.2 Elbas Capacity

- Elbas Capacity is sent in day ahead and afterword when changed by TSO's.
- Elbas Capacity must cover a full day.
- The sender identification must be the identification of a known TSO.
- The domain area must be a known area managed by the sender TSO.
- The in or the out area must be within the domain area within each capacity time series.
- The in and the out area of each capacity time series must identify known bidding areas

A.3.3 Cut Corridor (connecting line) Capacity

- Cut Corridor Capacity documents are sent in day ahead by TSO's.
- The Cut Corridor Capacity must cover a full day.
- The sender identification must be the identification of a known TSO.
- The domain area must be a known control area managed by the sender TSO.
- The in and the out area of each capacity time series must identify known cut areas
- The corridor identification must be the identification of a known cut corridor.

A.3.4 Out of Nordel Transmission Capacity

- Out of Nordel Transmission Capacity documents are sent in day ahead by TSO's.
- The Out of Nordel Transmission Capacity must cover a full day.
- The sender identification must be the identification of a known TSO.
- The domain area must be a known control area managed by the sender TSO.
- The domain area must be equal to the in or the out area of each capacity time series.
- The in and the out area of each capacity time series must identify a known control area.
- The corridor (connecting line) identification must be the identification of a known external corridor.

A.3.5 Capacity Reduction Reasons

- Capacity Reduction Reasons are sent in intra-day to NOIS by TSO's for corridors (connecting lines) between bidding areas.
- The Capacity Reduction Reasons must cover a full day.
- The sender identification must be the identification of a known TSO.
- The domain area must be a known area managed by the sender TSO.
- The domain area must be equal to the in or the out bidding area of each capacity time series.
- The in and the out area of each capacity time series must identify a known bidding area.
- The quantity values will be ignored by NOIS: as per TSO request, NOIS will use the latest physical capacity proposal that has been submitted by the TSO (This value is stored in NOIS db.)

A.3.6 Validated Elspot trading capacity to TSO (Output from NOIS)

- Validated trading capacity is sent to TSO's in day ahead.
- The Validated trading capacity must cover a full day.
- domain area is a known control area of the TSO

A.3.7 Validated Elspot trading capacity to Nord Pool Spot (Output from NOIS)

- Validated Elspot trading capacity is sent to NordPool in day ahead.
- The Validated trading capacity must cover a full day.
- Domain will be set as "Nordel"

A.3.8 Elbas trading capacity to NordPool (Output from NOIS)

- Elbas trading capacity is sent to NordPool in day ahead or in intraday.
- The trading capacity must cover a full day.
- Domain will be set as "Nordel"

A.3.9 Elbas trading capacity to TSO (Output from NOIS)

- Elbas trading capacity is sent to TSO's in day ahead or in intraday when it is required by TSO.
- The Validated trading capacity must cover a full day.
- Domain area is a known control area of the TSO

A.3.10 Capacity Reduction Reasons – NOIS export

- Capacity Reduction Reasons are sent to NORDPOOL from NOIS on operator request.
- The Capacity Reduction Reasons must cover a full day.
- The sender identification is NOIS identification
- The domain area is left empty
- The in and the out area of each capacity time series must identify a known bidding area.

Appendix B NOIS REASON TEXT CODES

NOIS Reason text codes, first 2 digits

10	Normal capacity (100 MW tolerance)
11	Planned outage on cross-border connection
12	Network failure on cross-border connection
13	Thermal limitation on cross-border connection
14	Internal congestion due to planned outage
15	Internal congestion due to network failure
16	Internal congestion due to stability
17	Internal congestion due to regional power balance
18	Increased reliability margin
19	Unavailable system protection
20	Reduced amount of operational reserves
21	Constrained regional power balance
22	Step by step restriction
90	Not available
99	Other reasons

NOIS Reason text codes, last 2 digits

10	No bottleneck causing reduction
11	The Skagerrak interconnection (NO1-DK1)
12	"Sørlandssnittet" (southern part of Norway, internal NO1)
13	"Flesakersnittet" + "Hallingdalssnittet" (West/North of the Oslo area, internal NO1)
14	"Haslesnittet" (NO1-SE)
15	The cut between middle part of Norway and SE (NO2-SE)
16	The cut between northern part of Norway and Sweden (NO3-SE)
17	The cut between southern and middle part of Norway (NO1 and NO2)
18	The cut between middle and northern part of Norway (NO2 and NO3)
19	The interconnections between Finland and Sweden (FI-SE)
20	Cut P1 in Finland (internal FI)
21	Cut 1 in Sweden (internal SE)
22	Cut 2 in Sweden (internal SE)
23	Cut 4 in Sweden (internal SE)
24	The West coast corridor in Sweden (internal SE)
25	The Kontiskan interconnection (SE-DK1)
26	The Øresund interconnection (SE-DK2)
27	The Kontek interconnection (DK2-KT)
28	Cut B in Jutland (internal DK1)
90	Not available
99	Other connections