User Guide for

XML documents for

Nordic Balance Settlement

Business process:	Nordic Balance Settlement (NBS)
Version:	2.4.A
Status:	Approved (for implementation)
Date:	March 21st, 2024

CONTENT

1 Introduction

1.1 Background

This document is a detailed User Guide for the ENTSO-E and ebIX® documents used in the Nordic Balancing System, made by the Nordic Ediel Group (NEG).

The basis for the document is the BRS (Business Requirement Specification) for Nordic Balance Settlement, [5]. The focus of the document is the technical aspects of the documents to be exchanged, which is based on the ENTSO-E Implementation Guides [1] and ebIX® requirements [4]. In addition, the Harmonised Electricity Market Role Model from ENTSO-E, ebIX® and EFET, [2], is used for identifying relevant roles.

An overview of NBS information exchange and descriptions of the NBS-process can be found in [5] and [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 [5].

1.3 Project organisation

The project is organised as a project group within the Nordic Market Expert Group

1.4 References

[1] ENTSO-E implementation guides, see https://www.entsoe.eu/publications/electronic-data-interchange-edi-library/, e.g.:
- 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 Status Report, ESR
- ENTSO-E Acknowledgement process, EAD

[2] NEG Common XML rules and recommendations, see http://www.ediel.org/

[3] The Harmonised Role Model, ENTSO-E, ebIX® and EFET, see www.ebix.org

[4] ebIX® Business Requirement Specifications, see www.ebix.org

[5] BRS for Nordic Balance Settlement, see http://www.ediel.org/

[6] BRS for Nordic Balance Settlement, between NBS and TSO/Market Operator, see http://www.ediel.org/

1.5 Change log

Ver/rel/rev	Changed by	Date	Changes
2.4.A	Ove Nesvik	20240321	• Addition of the Ediel Activation Document to be used for delivered reserves. • The note related to Business Type **A07** in the "NEG (ebIX® based) Aggregated Data per MGA

			(E31, E44) – consumption document" stating that the quantity can be negative is removed. • Replaced Balance Supplier with Energy Supplier where applicable (in both text and artefacts).
2.3.A	Ove Nesvik	20231208	• Replaced Process Type "**Z05** Bilateral Trade" with "**A59** Internal trade reporting" in ENTSO-E ESS Schedule Document and ENTSO-E ESS Confirmation Report. • Added the following Asset Type codes to NEG (ebIX® based) Aggregated Data per MGA (E31, E44) – production: **A05** Load (replaces **Z07**) **B18** Wind offshore **B19** Wind onshore (replaces **Z05**) **B25** Energy storage **B31** Hydro unspecified (replaces **Z06**) **B37** Thermal unspecified (replaces **Z04**) • Added the Asset Type attribute to NEG (ebIX® based) Aggregated Data per MGA (E31, E44) – consumption, including the following asset type code: **B25** Energy storage. • Added a comment that the losses can be negative for Business type "**A15** Losses". • Replaced the term "Market Balance Area" with "Bidding Zone".
2.2.A	Ove Nesvik	20191213	• Addition data flow for aggregated production, including a new chapter for "ebIX® Aggregated Production per MGA for Settlement Responsible (E31, E44)". The new document is based on the "ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) - consumption": ○ New Metering Point Type: **E18** Production ○ New Settlement Method: **E15** Flex settled ○ New Business Type: **A01** Production ○ New Asset Type attribute ○ New Production Type attribute • Addition of scheme Identifier for Denmark • Correction of spelling errors and textual clarifications
2.1.A	Ove Nesvik	20190131	• Addition of quarterly resolution for all time series documents (**PT15M**) • Addition of new Business Types (**A17**) in the NEG ESP Energy Account Report Document (EAR)
2.0.E	Ove Nesvik	20170626	• Textual clarifications regarding combined pumping and production. • Rename of class diagram from "Energy Account Report Document, v1.2" to "NEG ESP Energy Account Report Document version 1.0"

2.0.D	Ove Nesvik	20170530	• The usage of the Boolean value "true" is corrected. The value shall be written with lower case letters (case sensitive).
2.0.C	Ove Nesvik, ove.nesvik@edisys.no	20170505	Textual corrections: • Updated Energinet logo on the front page
2.0.B	Ove Nesvik, ove.nesvik@edisys.no	20170213	Textual corrections: • Updated logos on the front page • Updated NTC and NEG member list
2.0.A	Ove Nesvik, ove.nesvik@edisys.no	20161121	The status of the document is changed from "For test implementation" to "For implementation".
1.6.E	Ove Nesvik, ove.nesvik@edisys.no	20160309	• Error correction: Changed Business Type **A02** to **A08** in the content column in the ESS Confirmation Report, both Imposed Time Series and Time Series Confirmation
1.6.D	Ove Nesvik, ove.nesvik@edisys.no	20160309	• Error correction: Business type **A02** is replaced with "**A08** Net Internal trade" in the ESS Schedule document and in time series confirmation in the ESS Confirmation Report (Bilateral trade). In addition the explanatory text related to quantity in both documents are corrected. I.e. the quantity is using sign to give the direction.
1.6.C	Ove Nesvik, ove.nesvik@edisys.no	20160210	• The format for Metering Points is increased to A35.
1.6.B	Ove Nesvik, ove.nesvik@edisys.no	20151027	• Rename of Business Type "**Z68**, Production Units own consumption (Only used in Finland)" to **B36** • Delta values can be signed (be negative) in ENTSO-E ESS Confirmation Report
1.6.A	Ove Nesvik, ove.nesvik@edisys.no	20150904	• Addition and update of clarifying text related to ESS Confirmation Report • Addition of Business Type "**Z68** Production Units own consumption" in NEG (ebIX® based) Aggregated Data per MGA (E31, E44) • The ENTSO-E ESP Energy Account Report Document (EAR) is renamed to NEG ESP Energy Account Report Document (EAR), since a "namespaced version" is used in NBS
1.5.A	Ove Nesvik, ove.nesvik@edisys.no	20150421	• Changed cardinality for "Currency" from [1] to [0..1] in EAR • Changed cardinality for "Settlement amount" from [1] to [0..1] in EAR. • Corrected cardinality for "Payload Energy Time Series" from [1] to [1..*] for ebIX® Validated Data for Settlement for Aggregator (E66, E44) • Corrected *listAgencyIdentifier* to 330 in: ○ NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44) – Document Type ○ ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) - Business type

1.4.A	Ove Nesvik, ove.nesvik@edisys.no	20150123	• Changed cardinality for "Payload Energy Time Series" from [1] to [1..*] for all four ebIX® documents. • Addition of Nordic Market Area ID = 10Y1001A1001A91G where relavant • Addition of a new chapter "2.1 Document size"
1.4.A	Ove Nesvik, ove.nesvik@edisys.no	20141223	• Addition of MGA to ENTSO-E ESP Energy Account Report Document • The BS is made dependent in NEG Aggregated Data per MGA, chapter 2.2 • Add **NDK**, **NFI** and **NSE** to Account Time Series / Area / Coding scheme
1.3.B	Ove Nesvik, ove.nesvik@edisys.no	20141205	• The naming of the Quantity elements in *NEG Confirmation of Aggregated Data Per Neighbouring Grid From Settlement* have been corrected (Energy- and Delta- Quantities)
Draft 1.3.A	Ove Nesvik, ove.nesvik@edisys.no	20141017	• Correction of spelling errors • Addition of "**A09,** Metered Data Aggregator" to the ESP Energy Account Report Document" • NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44): ○ *list Agency Identifier* for Document Type changed to **330** (NEG) ○ Document Type Code changed from Z08/Z09 to **A07/A08** • Addition of coding Scheme **A01** (EIC) for all parties in the ENTS-E documents • Restructuring of ESS Schedule Document for Bilateral Trade: ○ Reporting on MBA level instead of MGA level ○ Addition of a Bilateral Trade ID (Capacity Agreement Identification) ○ Changed code for Business Type for bilateral trade from A08 to **A02** • Update of Business Types **Z53 (B14)** Production deviation **Z54 (B15)** Consumption deviation **Z62 (B27)** Pumped **Z63 (B28)** Large installation consumption **Z65 (B29)** MGA imbalance
Draft 1.3.A	Erik Gustavsen, erik.gustavsen@edisys.no and Ove Nesvik, ove.nesvik@edisys.no	20140613	• Addition of : ○ Addition of 305 (EIC) to schemeAgencyIdentifier for parties ○ listAgencyIdentifier 330 (NEG) for UN/CEFACT codes (Role, Classification, Unit Type, Quantity Quality) ○ schemeAgencyIdentifier 89 (Assigned by distributor) added to MP identification ○ Missing scheme identifiers in all documents

			• Addition of clarifying text
1.2.A	Erik Gustavsen, erik.gustavsen@edisys.no	20140422	• Removal of chapter 2, • Addition of clarifying text • Addition of *Quantity Missing* indicator in "ebIX® Validated Data for Settlement for Aggregator (E66, E44)" • Addition of *Quantity* in "NEG Confirmation of Aggregated Data Per Neighbouring Grid From Settlement Responsible" • Addition of a new element *Business Type* in "ebIX® Aggregated Data per MGA (E31, E44)" and related codes: **A04** Consumption **A07** Net production/consumption **A15** Losses **A72** Interruptible Consumption **Z62** Pumped **Z63** Last resort
1.1.B	Erik Gustavsen, erik.gustavsen@edisys.no	20140217	• Restriction of *Resolution Duration* to always cower one hour • Addition of *Unit type* MWh • Restriction of *Energy Quantity* to max Watt resolution • ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44): *Metering Pont Type* is corrected to **E17,** Consumption • ENTSO-E ESS Confirmation Report: ○ *Document Type* is changed to **A07** Intermediate confirmation report **A08** Final confirmation report ○ *Reason Codes* have been updated
1.1.A	Erik Gustavsen, erik.gustavsen@edisys.no	20140129	Addition of *Registration Date Time* in *Payment Energy Time Series* in the ebIX® and NEG documents
1.0.A	Ove Nesvik	20131105	First User Guide published for comments

2 Rules for NBS documents

2.1 Document size

The maximum document size of documents to/from eSett is 50 MB.

3 Description of ebIX® documents

3.1 ebIX® Validated Data for Settlement for Aggregator (E66, E44)

The ebIX® Validated Data for Settlement for Aggregator (E66, E44) is documented in the ebIX® Business information model for Measure Exchange metered data for Billing, see [4]

3.1.1 Class diagram: ebIX® Validated Data for Settlement for Aggregator (E66, E44)

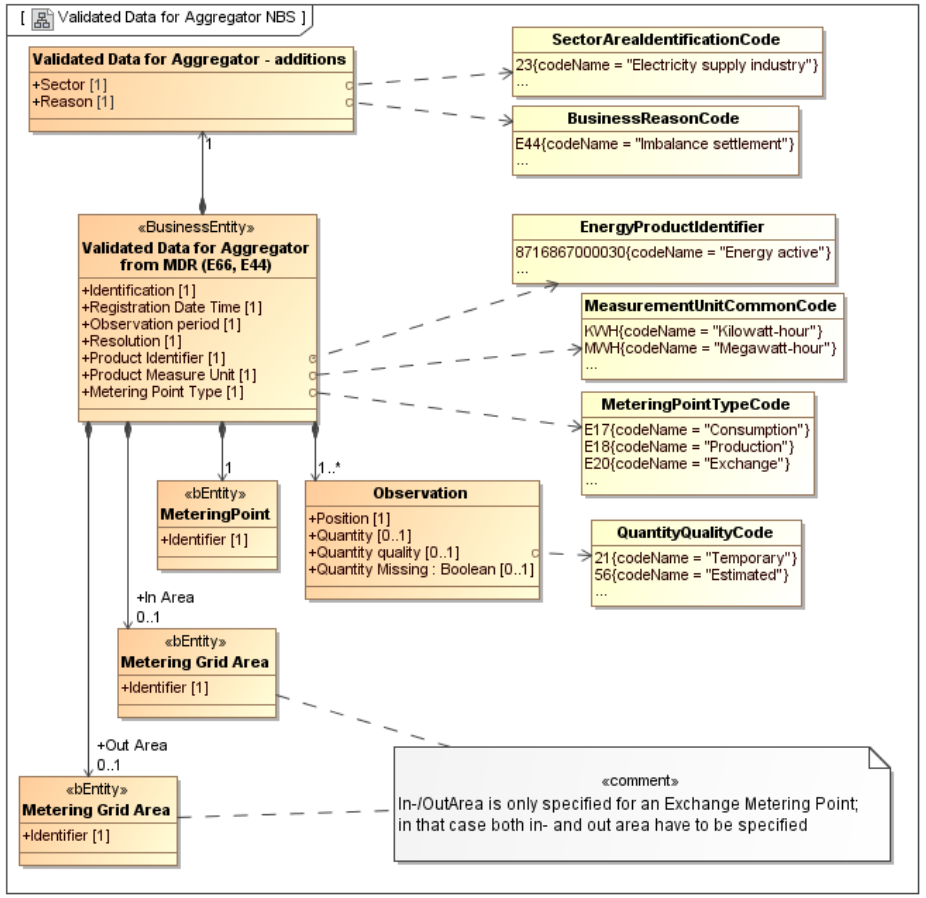

Figure 1: Class diagram: ebIX® Validated Data for Settlement for Aggregator (E66, E44)

Comments to the diagram:

- The Energy Supplier (RE), Balance Responsible Party (BRP), Metering Grid Area (MGA), Resource Object (RO) and Production Unit (PU) are master data for the Metering Point, hence not sent.

3.1.2 Element/*Attribute* usage: ebIX® Validated Data for Settlement for Aggregator, Production (E66, E44)

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Validated Data For Settlement For Aggregator							ValidatedDataFor SettlementForAggregator
Header	Header Class		1..1				Header
Identification		Unique identification of the business document	1..1	A35	Business Document ID		Identification
Document Type	Type of document being sent	**E66** Validated metered data, time series	1..1	A3	E66		DocumentType
listAgency Identifier	*Attribute to the DocumentTtype*	*Identification of the agency maintaining the code list for document types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Creation		Date and time of creation of the business document. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Creation
Sender Energy Party	Sender Energy Party Complex Type		1..1				SenderEnergyParty
Identification		Unique identification of the sender of the document	1..1	A16	Sender ID		Identification
schemeAgency Identifier	*Attribute to the Sender Identification element*	*Identification of the agency issuing the identifier used as sender identification* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Sender Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Recipient Energy Party	Recipient Energy Party Complex Type		1..1				RecipientEnergyParty
Identification		Unique identification of the recipient of the document		A16	Recipient ID		Identification
schemeAgency Identifier	*Attribute to the Recipient Identification element*	*Identification of the agency issuing the identifier used as recipient* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Recipient Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Process Energy Context	Process Energy Context Class		1..1				ProcessEnergyContext
Energy Business Process	The nature of the process that the document is directed at.	**E44** Imbalance Settlement	1..1	A3	E44		EnergyBusinessProcess
listAgency Identifier	*Attribute to the Energy Business Process*	*Identification of the agency maintaining the code list for energy business processes* ***260*** *ebIX®*	*1..1*	*A3*	*260*		*listAgencyIdentifier*
Energy Business Process Role	The role of the process that the document is directed at.	**DEA** Metered data aggregator	1..1	A3	DEA		EnergyBusinessProcessRole

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
listAgency Identifier	*Attribute to the Energy Business Process Role*	*Identification of the agency maintaining the code list for energy business process roles* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Energy Industry Classification	Classification of industry	**23** Electricity supply industry	1..1	A3	23		EnergyIndustryClassification
listAgency Identifier	*Attribute to the Energy Industry Classification*	*Identification of the agency maintaining the code list for energy industry classification* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Payload Energy Time Series	Payload Energy Time Series Class		1..*				PayloadEnergyTimeSeries
Identification		Unique identification of the time series (unique over time for the sender in question)	1..1	A35	Time series ID		Identification
Registration Date Time		The date and time for registration of the metered value in the sender's database. As an intermediate solution the Document Date Time (Creation) may be mapped to the Registration Date Time. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		RegistrationDateTime
Observation Period time Series Period	Observation Period time Series Period Complex type		1..1				ObservationPeriodTimeSeriesPeriod

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
ResolutionDuration	The resolution defining the number of periods that the time interval is divided.	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15 minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		ResolutionDuration
Start		The date and time for the start of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Start
End		Date and time for the end of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		End
Product Included Product Characteristics	Product Included Product Characteristics Complex Type		1..1				ProductIncludedProductCharacteristics
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	I13	8716867000030		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Product*	*Identification of the agency issuing the identifiers used for energy products* ***9*** *GS1*	*1..1*	*N3*	*9*		*schemeAgencyIdentifier*
Unit type	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh **MWH** MWh	1..1	A3	KWH or MWH		UnitType
listAgency Identifier	*Attribute to the Unit Type*	*Identification of the agency maintaining the code list for unit types* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
MP Detail Measurement Metering Point Characteristics	MP Detail Measurement Metering Point Characteristics Complex Type		1..1				***MPDetailMeasurementMeteringPointCharacteristics***
Metering Point Type	The type of metering point	**E17** Consumption **E18** Production **E17** is only used internally within the DSO and not sent to NBS	1..1	A3	E18 (or E17)		MeteringPointType
listAgency Identifier	*Attribute to the Metering Point Type*	*Identification of the agency maintaining the codelist for metering point types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Metering Point Used Domain Location	Metering Point Used Domain Location Complex Type		1..1				MeteringPointUsedDomainLocation
Identification	Unique identification of the Metering Point		1..1	A35			Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Point*	*Identification of the agency issuing the identifiers used for metering points* ***9*** *GS1* ***89*** *Assigned by distributor* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	N3			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Identification of the Metering Point*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SM*** *Norwegian scheme* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Observation Interval Observation Period	Observation Interval Observation Period Complex Type		1..*				**ObservationIntervalObservationPeriod**
Sequence	Sequence number	Sequence number of the observation in the time series	1..1				Sequence
Observation Detail Energy Observation	Observation Detail Energy Observation Complex Type		1..1				ObservationDetailEnergyObservation
Energy Quantity	The quantity in question	The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh. Quantity is not used if Quantity Missing Indicator = **true**	0..1				EnergyQuantity
Quantity Quality	The quality of the quantity	**21** Temporary **56** Estimated, approved for billing Only used if ≠ Metered Quantity Quality is not used if Quantity Missing Indicator = **true**	0..1				QuantityQuality
listAgency Identifier	*Attribute to the Quantity Quality*	*Identification of the agency maintaining the code list for quantity quality* ***330*** *NEG*	1..1	A3	330		*listAgencyIdentifier*
Quantity Missing	Quantity Missing	The Quantity Missing Indicator (**true**) is required for observations with missing values (quantities), else not used. Note: the value (true) is case sensitive	0..1		true		QuantityMissing

Table 1: Element/*Attribute* usage: ebIX® Validated Data for Settlement for Aggregator (E66, E44)

3.1.3 Element/*Attribute* usage: ebIX® Validated Data for Settlement for Aggregator, MGA Exchange (E66, E44)

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Validated Data For Settlement For Aggregator	Validated Data For Settlement For Aggregator class						ValidatedDataFor SettlementForAggregator
Header	Header Class		1..1				Header
Identification		Unique identification of the business document	1..1	A35	Business Document ID		Identification
Document Type	Type of document being sent	**E66** Validated metered data, time series	1..1	A3	E66		DocumentType
listAgency Identifier	*Attribute to the Document Type*	*Identification of the agency maintaining the codelist for document types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Creation		Date and time of creation of the business document. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Creation
Sender Energy Party	Sender Energy Party Complex Type		1..1				SenderEnergyParty
Identification		Unique identification of the sender of the document	1..1	A16	Sender ID		Identification
schemeAgency Identifier	*Attribute to the Sender Identification element*	*Identification of the agency issuing the identifier used as sender identification* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*	*1..1*		*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Sender Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Recipient Energy Party	Recipient Energy Party Complex Type		1..1				RecipientEnergyParty
Identification		Unique identification of the recipient of the document		A16	Recipient ID		Identification
schemeAgency Identifier	*Attribute to the Recipient Identification element*	*Identification of the agency issuing the identifier used as recipient* ***9*** *GS1* **260** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Recipient Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Process Energy Context	Process Energy Context Class		1..1				ProcessEnergyContext
Energy Business Process	The nature of the process that the document is directed at.	**E44** Imbalance Settlement	1..1	A3	E44		EnergyBusinessProcess
listAgency Identifier	*Attribute to the Energy Business Process*	*Identification of the agency maintaining the codelist for energy business processes* ***260*** *ebIX®*	*1..1*	*A3*	*260*		*listAgencyIdentifier*
Energy Business Process Role	The role of the process that the d|ocument is directed at.	**DEA** Metered data aggregator	1..1	A3	DEA		EnergyBusinessProcessRole

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
listAgency Identifier	*Attribute to the Energy Business Process Role*	*Identification of the agency maintaining the code list for energy business process roles* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Energy Industry Classification	Classification of industry	**23** Electricity supply industry	1..1	A3	23		EnergyIndustryClassification
listAgency Identifier	*Attribute to the Energy Industry Classification*	*Identification of the agency maintaining the code list for energy industry classification* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Payload Energy Time Series	Payload Energy Time Series Class		1..*				PayloadEnergyTimeSeries
Identification		Unique identification of the time series (unique over time for the sender in question)	1..1	A35	Time series ID		Identification
Registration Date Time		The date and time for registration of the metered value in the sender's database. As an intermediate solution the Document Date Time (Creation) may be mapped to the Registration Date Time. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		RegistrationDateTime
Observation Period time Series Period	Observation Period time Series Period Complex type		1..1				ObservationPeriodTimeSeriesPeriod

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
ResolutionDuration	The resolution defining the number of periods that the time interval is divided.	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15 minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		ResolutionDuration
Start		The date and time for the start of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Start
End		Date and time for the end of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		End
Product Included Product Characteristics	Product Included Product Characteristics Complex Type		1..1				ProductIncludedProductCharacteristics
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	I13	8716867000030		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Product*	*Identification of the agency issuing the identifiers used for energy products* ***9*** *GS1*	*1..1*	*N3*	*9*		*schemeAgencyIdentifier*
Unit type	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh **MWH** MWh	1..1	A3	KWH or MWH		UnitType
listAgency Identifier	*Attribute to the Unit Type*	*Identification of the agency maintaining the code list for unit types* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
MP Detail Measurement Metering Point Characteristics	MP Detail Measurement Metering Point Characteristics Complex Type		1..1				***MPDetailMeasurementMeteringPointCharacteristics***
Metering Point Type	The type of metering point	**E20** Exchange	1..1	A3	E20		MeteringPointType
listAgency Identifier	*Attribute to the Metering Point Type*	*Identification of the agency maintaining the code list for metering point types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
In Area Used Domain Location	In Area Used Domain Location Complex Type						InAreaUsedDomainLocation
Identification	One MGA in the MGA exchanges		1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* **260** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* ***DK*** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeAgencyIdentifier*
Out Area Used Domain Location	Out Area Used Domain Location Complex Type						OutAreaUsedDomainLocation
Identification	The other MGA in the MGA exchanges		1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for metering points* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* **SLY** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* ***DK*** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeAgencyIdentifier*
Metering Point Used Domain Location	Metering Point Used Domain Location Complex Type		1..1				MeteringPointUsedDomainLocation
Identification	Unique identification of the Metering Point		1..1	A35			Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgencyIdentifier	*Attribute to the Identification of the Metering Point*	*Identification of the agency issuing the identifiers used for metering points* ***9*** *GS1* ***89*** *Assigned by distributor* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Identification of the Metering Point*	*The identification of the scheme used.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SM** *Norwegian scheme* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Observation Interval Observation Period	Observation Interval Observation Period Complex Type		1..*				**ObservationIntervalObservationPeriod**
Sequence	Sequence number	Sequence number of the observation in the time series	1..1				Sequence
Observation Detail Energy Observation	Observation Detail Energy Observation Complex Type		1..1				ObservationDetailEnergyObservation
Energy Quantity	The quantity in question	The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh. Quantity is not used if Quantity Missing Indicator = **true**	0..1				EnergyQuantity
Quantity Quality	The quality of the quantity	**21** Temporary **56** Estimated Only used if ≠ Metered Quantity Quality is not used if Quantity Missing Indicator = **true**	0..1				QuantityQuality

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
listAgency Identifier	*Attribute to the Quantity Quality*	*Identification of the agency maintaining the code list for quantity quality* **330** *NEG*	1..1	A3	330		*listAgencyIdentifier*
Quantity Missing	Quantity Missing	The Quantity Missing Indicator (**true**) is required for observations with missing values (quantities), else not used. Note: the value (true) is case sensitive	0..1		true		QuantityMissing

Table 2: Element/*Attribute* usage: ebIX® Validated Data for Settlement for Aggregator, MGA Exchange (E66, E44)

3.2 ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) - consumption

The ebIX® Aggregated Data per MGA (E31, E44) – consumption, is documented in the ebIX® Business information model for Measure for Imbalance Settlement, see [4].

3.2.1 Class diagram: ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) – consumption

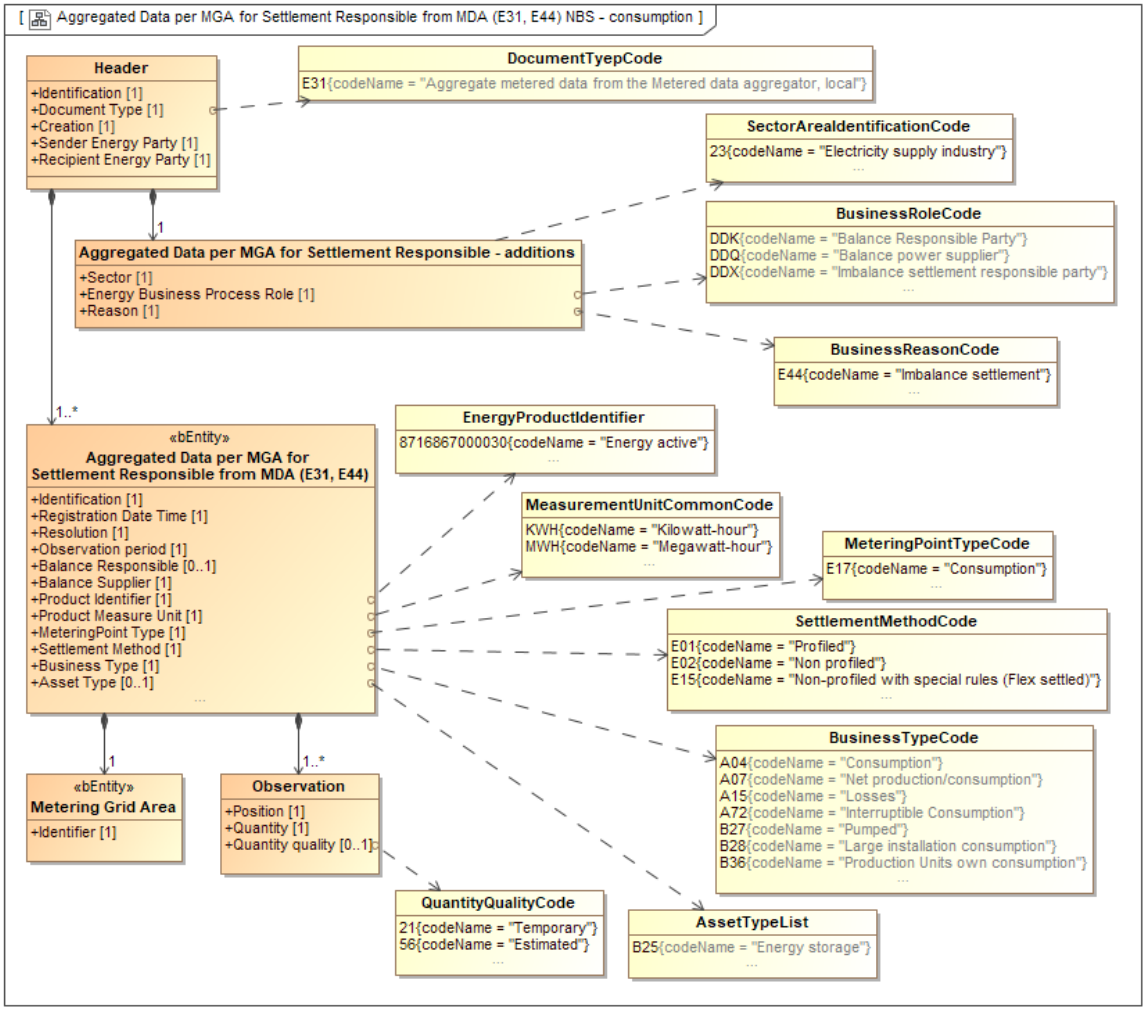

Figure 2: Class diagram: ebIX® Aggregated Data per MGA (E31, E44)

Comments to the diagram:

- An Energy Supplier and a Business Type are added for the Nordic Balance Settlement.
- Quantities shall always be positive

3.2.2 Element/*Attribute* usage: ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) - consumption

Element ***Attribute***	Definition	Description	Card	Max Size	Content	Dep.	XML element
Aggregated Data Per MGA For Settlement For Settlement Responsible	Aggregated Data Per MGA For Settlement For Settlement Responsible class						AggregatedDataPerMGA For Settlement ForSettlementResponsible
Header	Header Class		1..1				Header
Identification		Unique identification of the business document	1..1	A35	Business Document ID		Identification
Document Type	Type of document being sent	**E31** Aggregate metered data from the Metered data aggregator, local	1..1	A3	E31		DocumentType
listAgency Identifier	*Attribute to the DocumentTtype*	*Identification of the agency maintaining the code list for document types* **260** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Creation		Date and time of creation of the business document. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Creation
Sender Energy Party	Sender Energy Party Complex Type		1..1				SenderEnergyParty
Identification		Unique identification of the sender of the document	1..1	A16	Sender ID		Identification
schemeAgency Identifier	*Attribute to the Sender Identification element*	*Identification of the agency issuing the identifier used as sender identification* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	N3			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Sender Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Recipient Energy Party	Recipient Energy Party Complex Type		1..1				RecipientEnergyParty
Identification		Unique identification of the recipient of the document		A16	Recipient ID		Identification
schemeAgency Identifier	*Attribute to the Recipient Identification element*	*Identification of the agency issuing the identifier used as recipient* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Recipient Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Process Energy Context	Process Energy Context Class		1..1				ProcessEnergyContext
Energy Business Process	The nature of the process that the document is directed at.	**E44** Imbalance Settlement	1..1	A3	E44		EnergyBusinessProcess
listAgency Identifier	*Attribute to the Energy Business Process*	*Identification of the agency maintaining the codelist for energy business processes* ***260*** *ebIX®*	*1..1*	A3	260		*listAgencyIdentifier*
Energy Business Process Role	The role of the process that the document is directed at.	**DDX** Imbalance settlement responsible **DDK** Balance responsible party **DDQ** Balance power supplier	1..1	A3			EnergyBusinessProcessRole

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
listAgency Identifier	*Attribute to the Energy Business Process Role*	*Identification of the agency maintaining the code list for energy business process roles* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Energy Industry Classification	Classification of industry	**23** Electricity supply industry	1..1	A3	23		EnergyIndustryClassification
listAgency Identifier	*Attribute to the Energy Industry Classification*	*Identification of the agency maintaining the code list for energy industry classifications* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Payload Energy Time Series	Payload Energy Time Series Class		1..*				PayloadEnergyTimeSeries
Identification		Unique identification of the time series (unique over time for the sender in question)	1..1	A35	Time series ID		Identification
Registration Date Time		The date and time for registration of the metered value in the sender's database. As an intermediate solution the Document Date Time (Creation) may be mapped to the Registration Date Time. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		RegistrationDateTime
Observation Period time Series Period	Observation Period time Series Period Complex type		1..1				ObservationPeriodTimeSeriesPeriod

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
ResolutionDuration	The resolution defining the number of periods that the time interval is divided.	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15-minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		ResolutionDuration
Start		The date and time for the start of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Start
End		Date and time for the end of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		End
Balance Responsible Involved Energy Party	Balance Responsible Involved Energy Party	***Note: This element is an extension to the ebIX® specifications*** The Balance Responsible Party is required for Swedish profile settled consumption.	0..1				BalanceResonsibleInvolvedEnergyParty
Identification		Unique identification of the Balance Responsible Party	1..1	A16	BRP ID		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Balance Responsible Party Identification element*	*Identification of the agency issuing the identifier used as Balance Responsible Party* ***9*** *GS1* ***260*** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Balance Responsible Party Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Energy Supplier Involved Energy Party	Balance Supplier Involved Energy Party	The Balance Supplier is required for Danish, Finnish and Norwegian MPs and not used for Swedish profile settled consumption	0..1				BalanceSupplierInvolvedEnergyParty
Identification		Unique identification of the Energy Supplier Party	1..1	A16	BS ID		Identification
schemeAgency Identifier	*Attribute to the Energy Supplier Party Identification element*	*Identification of the agency issuing the identifier used as Energy Supplier Party* ***9*** *GS1* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Energy Supplier Party Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Product Included Product Characteristics	Product Included Product Characteristics Complex Type		1..1				ProductIncludedProductCharacteristics

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	N13	8716867000030		Identification
schemeAgency Identifier	*Attribute to the Product*	*Identification of the agency issuing the identifiers used for energy products* ***9*** *GS1*	*1..1*	*N3*	*9*		*schemeAgencyIdentifier*
Unit type	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh **MWH** MWh	1..1	A3	KWH or MWH		UnitType
listAgency Identifier	*Attribute to the Unit Type*	*Identification of the agency maintaining the code list for unit types* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
MP Detail Measurement Metering Point Characteristics	MP Detail Measurement Metering Point Characteristics Complex Type		1..1				***MPDetailMeasurementMeteringPointCharacteristics***
Metering Point Type	The type of metering point	**E17** Consumption	1..1	A3	E17		MeteringPointType
listAgency Identifier	*Attribute to the Metering Point Type*	*Identification of the agency maintaining the code list for metering point types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Settlement Method Type	Settlement method	**E01** Profiled **E02** Non-profiled **E15** Flex settled **Note:** Must be used for aggregated consumption.	1..1	A3			SettlementMethodType
listAgency Identifier	*Attribute to the Settlement Method Type*	*Identification of the agency maintaining the code list for metering point types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Business Type	Business type code	**A04** Consumption **A07** Net production/consumption (Pumped storage (from combined generator/pump - only in Norway)) **A15** Losses **A72** Interruptible Consumption **B27** Pumped **B28** Large installation consumption **B36** Production Units own consumption (Only used in Finland)	1..1	A3			BusinessType
listAgency Identifier	*Attribute to the Business type*	*Identification of the agency maintaining the code list for metering point types* ***330*** *NEG*	*1..1*	*N3*	*330*		*listAgencyIdentifier*
Asset Type	Asset type code	**B25** Energy storage **Dependent:** Only used together with Business type **A04.**	0..1	A3	B25		AssetType
listAgency Identifier	*Attribute to the Business type*	*Identification of the agency maintaining the code list for metering point types* ***330*** *NEG*	*1..1*	*N3*	*330*		*listAgencyIdentifier*
Metering Grid Area Used Domain Location	Metering Grid Area Used Domain Location Complex Type		1..1				MeteringPointUsedDomainLocation
Identification	Unique identification of the Metering Grid Area		1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* ***DK*** *Danish Ediel Group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Observation Interval Observation Period	Observation Interval Observation Period Complex Type		1..*				**ObservationIntervalObservationPeriod**
Sequence	Sequence number	Sequence number of the observation in the time series	1..1				Sequence
Observation Detail Energy Observation	Observation Detail Energy Observation Complex Type		1..1				ObservationDetailEnergyObservation
Energy Quantity	The quantity in question	• The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh • Business type "**A15** Losses" uses signed values, i.e. may be negative.	1..1				EnergyQuantity
Quantity Quality	The quality of the quantity	**21** Temporary **56** Estimated • The default Quantity Quality is *"Metered"*, i.e. Quantity Quality is only used if ≠ "Metered". • A time series with aggregated values based on time series on a MP level where one or more observations has a "Quantity Missing Indicator = **true"** (Does not exist) shall use the quantity quality **21** (Temporary)	0..1				QuantityQuality
listAgency Identifier	*Attribute to the Quantity Quality*	*Identification of the agency maintaining the code list for quantity quality* **330** *NEG*	1..1	A3	330		*listAgencyIdentifier*

Table 3: Element/*Attribute* usage: ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44)

3.2.3 Dependency matrix: Types of aggregated metered data for consumption metering points

Description	Settlement method	Business type	Asset type	Production type
Metered consumption in an MGA	**E02** Non-Profiled **E15** **F**lex settled	**A04** Consumption (general consumption) **A07** Net production/consumption (Pumped storage (from combined generator/pump - only in Norway)) **A72** Interruptible Consumption (only in Sweden) **B28** Large installation consumption **B27** Pumped (only in Norway) **B36** Production Units own consumption (Only used in Finland)	Not used	Not used
Total profiled consumption	**E01** Profiled	**A04** Consumption (general consumption)	Not used	Not used
Pumped (only in Norway)	**E01** Profiled	**B27** Pumped	Not used	Not used
Metered grid losses	**E02** Non-Profiled **E15** **F**lex settled	**A15** Losses	Not used	Not used
Profiled grid losses	**E01** Profiled	**A15** Losses	Not used	Not used
Metered energy storage	**E02** Non-Profiled **E15** Flex settled	**A04** Consumption (general consumption)	**B25** Energy storage	Not used

Table 4: Dependency matrix: Types of aggregated metered data for consumption metering points

3.3 ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) - production

The ebIX® Aggregated Data per MGA (E31, E44) – production, is documented in the ebIX® Business information model for Measure for Imbalance Settlement, see [4].

3.3.1 Class diagram: ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) - production

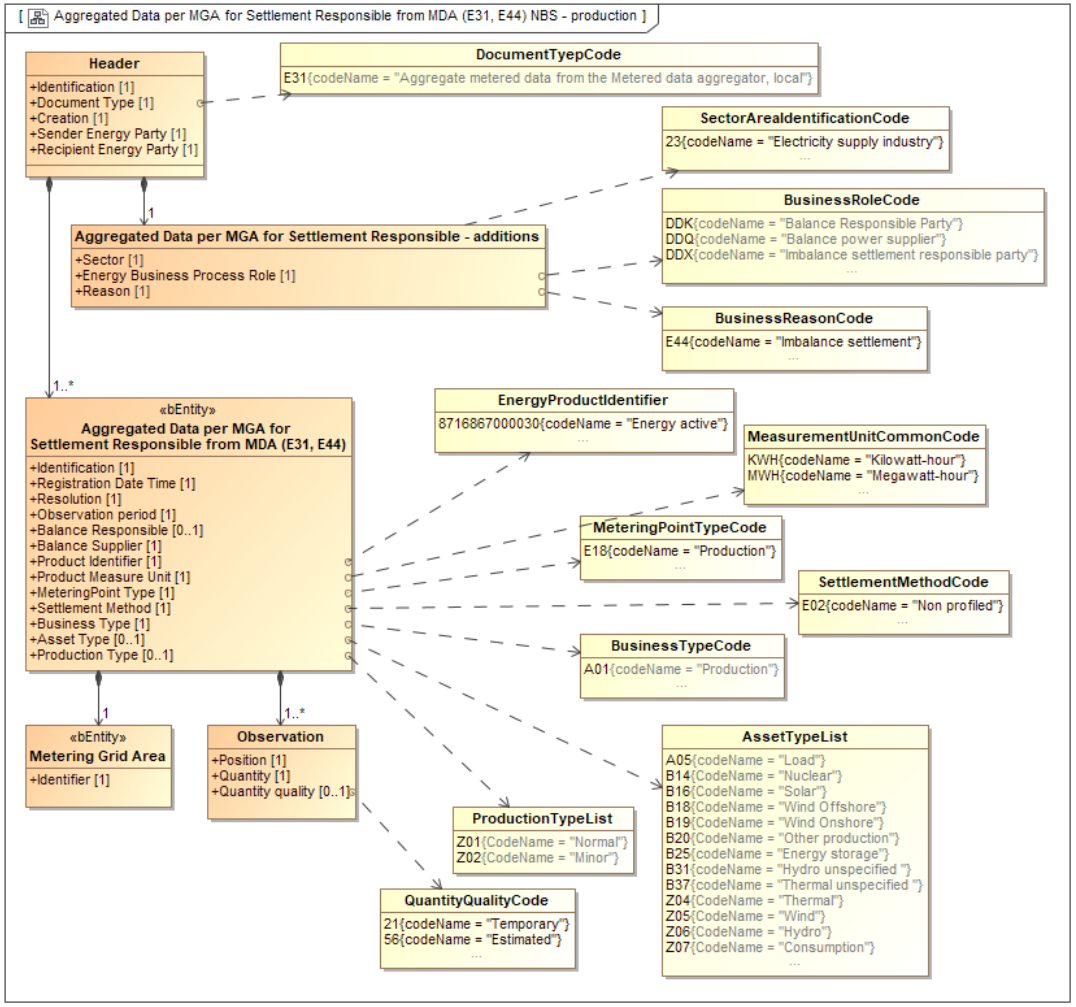

Figure 3: Class diagram: ebIX® Aggregated Data per MGA (E31, E44) - production

Comments to the diagram:

- Energy Supplier, Business Type, Asset Type and Production Type are added for the Nordic Balance Settlement.
- Quantities shall always be positive

3.3.2 Element/*Attribute* usage: ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) - production

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Aggregated Data Per MGA For Settlement For Settlement Responsible	Aggregated Data Per MGA For Settlement For Settlement Responsible class						AggregatedDataPerMGA For Settlement ForSettlementResponsible
Header	Header Class		1..1				Header
Identification		Unique identification of the business document	1..1	A35	Business Document ID		Identification
Document Type	Type of document being sent	**E31** Aggregate metered data from the Metered data aggregator, local	1..1	A3	E31		DocumentType
listAgency Identifier	*Attribute to the DocumentTtype*	*Identification of the agency maintaining the code list for document types* **260** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Creation		Date and time of creation of the business document. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Creation
Sender Energy Party	Sender Energy Party Complex Type		1..1				SenderEnergyParty
Identification		Unique identification of the sender of the document	1..1	A16	Sender ID		Identification
schemeAgency Identifier	*Attribute to the Sender Identification element*	*Identification of the agency issuing the identifier used as sender identification* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	N3			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Sender Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Recipient Energy Party	Recipient Energy Party Complex Type		1..1				RecipientEnergyParty
Identification		Unique identification of the recipient of the document		A16	Recipient ID		Identification
schemeAgency Identifier	*Attribute to the Recipient Identification element*	*Identification of the agency issuing the identifier used as recipient* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Recipient Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Process Energy Context	Process Energy Context Class		1..1				ProcessEnergyContext
Energy Business Process	The nature of the process that the document is directed at.	**E44** Imbalance Settlement	1..1	A3	E44		EnergyBusinessProcess
listAgency Identifier	*Attribute to the Energy Business Process*	*Identification of the agency maintaining the codelist for energy business processes* ***260*** *ebIX®*	*1..1*	A3	260		*listAgencyIdentifier*
Energy Business Process Role	The role of the process that the document is directed at.	**DDX** Imbalance settlement responsible **DDK** Balance responsible party **DDQ** Balance power supplier	1..1	A3			EnergyBusinessProcessRole

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
listAgency Identifier	*Attribute to the Energy Business Process Role*	*Identification of the agency maintaining the code list for energy business process roles* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Energy Industry Classification	Classification of industry	**23** Electricity supply industry	1..1	A3	23		EnergyIndustryClassification
listAgency Identifier	*Attribute to the Energy Industry Classification*	*Identification of the agency maintaining the code list for energy industry classifications* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Payload Energy Time Series	Payload Energy Time Series Class		1..*				PayloadEnergyTimeSeries
Identification		Unique identification of the time series (unique over time for the sender in question)	1..1	A35	Time series ID		Identification
Registration Date Time		The date and time for registration of the metered value in the sender's database. As an intermediate solution the Document Date Time (Creation) may be mapped to the Registration Date Time. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		RegistrationDateTime
Observation Period time Series Period	Observation Period time Series Period Complex type		1..1				ObservationPeriodTimeSeriesPeriod

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
ResolutionDuration	The resolution defining the number of periods that the time interval is divided.	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15-minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		ResolutionDuration
Start		The date and time for the start of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Start
End		Date and time for the end of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		End
Balance Responsible Involved Energy Party	Balance Responsible Involved Energy Party	***Note: This element is an extension to the ebIX® specifications*** The Balance Responsible Party is optional.	0..1				BalanceResonsibleInvolvedEnergyParty
Identification		Unique identification of the Balance Responsible Party	1..1	A16	BRP ID		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Balance Responsible Party Identification element*	*Identification of the agency issuing the identifier used as Balance Responsible Party* ***9*** *GS1* ***260*** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Balance Responsible Party Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Balance Supplier Involved Energy Party	Balance Supplier Involved Energy Party	The Balance Responsible Party is required for Swedish profile settled consumption	1..1				BalanceSupplierInvolvedEnergyParty
Identification		Unique identification of the Energy Supplier Party	1..1	A16	BS ID		Identification
schemeAgency Identifier	*Attribute to the Energy Supplier Party Identification element*	*Identification of the agency issuing the identifier used as Energy Supplier Party* ***9*** *GS1* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Energy Supplier Party Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Product Included Product Characteristics	Product Included Product Characteristics Complex Type		1..1				ProductIncludedProductCharacteristics

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	N13	8716867000030		Identification
schemeAgency Identifier	*Attribute to the Product*	*Identification of the agency issuing the identifiers used for energy products* ***9*** *GS1*	*1..1*	*N3*	*9*		*schemeAgencyIdentifier*
Unit type	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh **MWH** MWh	1..1	A3	KWH or MWH		UnitType
listAgency Identifier	*Attribute to the Unit Type*	*Identification of the agency maintaining the code list for unit types* ***330*** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
MP Detail Measurement Metering Point Characteristics	MP Detail Measurement Metering Point Characteristics Complex Type		1..1				***MPDetailMeasurementMeteringPointCharacteristics***
Metering Point Type	The type of metering point	**E18** Production	1..1	A3	E18		MeteringPointType
listAgency Identifier	*Attribute to the Metering Point Type*	*Identification of the agency maintaining the code list for metering point types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Settlement Method Type	Settlement method	**E02** Non-profiled	1..1	A3			SettlementMethodType
listAgency Identifier	*Attribute to the Settlement Method Type*	*Identification of the agency maintaining the code list for metering point types* ***260*** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Business Type	Business type code	**A01** Production	1..1	A3			BusinessType
listAgency Identifier	*Attribute to the Business type*	*Identification of the agency maintaining the code list for metering point types* ***330*** *NEG*	*1..1*	*N3*	*330*		*listAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Asset Type	Asset type code[1]	**A05** Load (replaces **Z07**) **B14** Nuclear **B16** Solar **B18** Wind offshore **B19** Wind onshore (replaces **Z05**) **B20** Other production **B25** Energy storage **B31** Hydro unspecified (replaces **Z06**) **B37** Thermal unspecified (replaces **Z04**) **Z04** Thermal **Z05** Wind **Z06** Hydro **Z07** Consumption	0..1	A3	A05, B14, B16, B18, B19, B20, B25, B31, B37, Z04, Z05, Z06 or Z07		BusinessType
listAgency Identifier	*Attribute to the Asset type*	*Identification of the agency maintaining the code list for metering point types* ***330*** *NEG*	*1..1*	*N3*	*330*		*listAgencyIdentifier*
Production Type	Production type code	**Z01** Normal **Z02** Minor	0..1	A3			BusinessType
listAgency Identifier	*Attribute to the Production type*	*Identification of the agency maintaining the code list for metering point types* ***330*** *NEG*	*1..1*	*N3*	*330*		*listAgencyIdentifier*
Metering Grid Area Used Domain Location	Metering Grid Area Used Domain Location Complex Type		1..1				MeteringPointUsedDomainLocation
Identification	Unique identification of the Metering Grid Area		1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*

[1] The "**Znn** codes" will be valid one year after eSett have announcement its removal, approximately until the end of 2024. In the transition period eSett will continue using "**Znn** codes".

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* ***DK*** *Danish Ediel Group* ***SLY*** *Finnish Electricity Association* ***SVK*** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Observation Interval Observation Period	Observation Interval Observation Period Complex Type		1..*				**ObservationIntervalObservationPeriod**
Sequence	Sequence number	Sequence number of the observation in the time series	1..1				Sequence
Observation Detail Energy Observation	Observation Detail Energy Observation Complex Type		1..1				ObservationDetailEnergyObservation
Energy Quantity	The quantity in question	• The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1..1				EnergyQuantity
Quantity Quality	The quality of the quantity	**21** Temporary **56** Estimated Only used if ≠ Metered	0..1				QuantityQuality
listAgency Identifier	*Attribute to the Quantity Quality*	*Identification of the agency maintaining the code list for quantity quality* **330** *NEG*	1..1	A3	330		*listAgencyIdentifier*

Table 5: Element/*Attribute* usage: ebIX® Aggregated Data per MGA for Settlement Responsible (E31, E44) – production

3.3.3 Dependency matrix: Types of aggregated metered data for production metering points

Description	Settlement method	Business type	Asset type[2]	Production type
Metered production	**E02** Non-Profiled	**A01** Production	**A05** Load (replaces **Z07**) **B14** Nuclear **B16** Solar **B18** Wind offshore **B19** Wind onshore (replaces **Z05**) **B20** Other production **B25** Energy storage **B31** Hydro unspecified (replaces **Z06**) **B37** Thermal unspecified (replaces **Z04**) **Z04** Thermal **Z05** Wind **Z06** Hydro **Z07** Consumption	**Z01** Normal **Z02** Minor

Table 6: Dependency matrix: Types of aggregated metered data for production metering points

[2] The "**Znn** codes" will be valid one year after eSett have announcement its removal, approximately until the end of 2024. In the transition period eSett will continue using "**Znn** codes".

3.4 ebIX® Aggregated Data Per Neighbouring Grid For Settlement Responsible (E31, E44)

The ebIX® Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44) is documented in the ebIX® Business information model for Measure for Imbalance Settlement, see [4]

3.4.1 Class diagram: ebIX® Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)

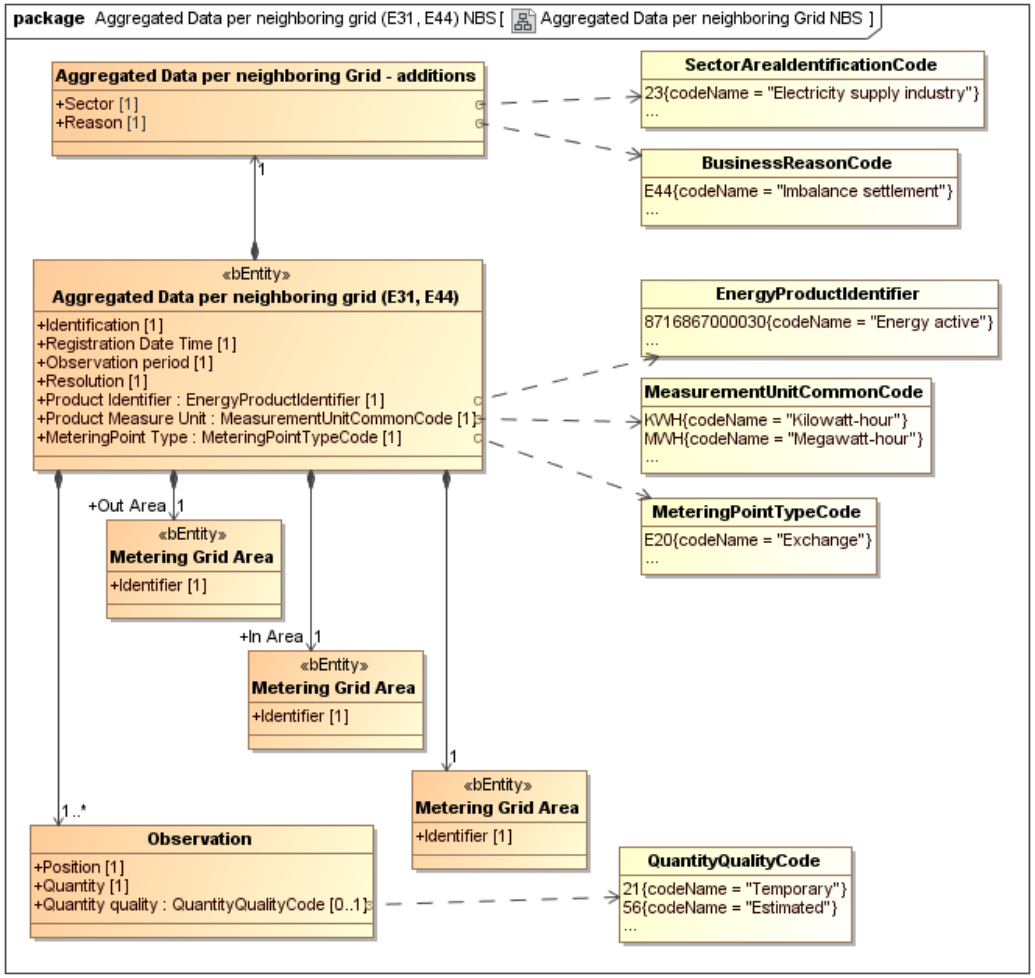

Figure 4: Class diagram: ebIX® Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)

Comments to the diagram:

- The document has an *In Area* (Metering Grid Area) and an *Out Area* (Metering Grid Area) defining the direction of the flow. In addition there is a *Metering Grid Area*, identifying the responsible DSO.
- There is only one time series for each exchange, i.e. netted values are exchanged. The flow from Out Area to In Area will be reported as positive quantities, while the opposite direction will be reported as negative quantities (with a leading minus sign).

3.4.2 Element/*Attribute* usage: ebIX® Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Aggregated Data Per Neighbouring Grid For Settlement For Settlement Responsible	Aggregated Data Per Neighbouring Grid For Settlement For Settlement Responsible Class		1..1				AggregatedDataPer NeighbouringGrid ForSettlementFor Settlement Responsible
Header	Header Class		1..1				Header
Identification		Unique identification of the business document	1..1	A35	Business Document ID		Identification
Document Type	Type of document being sent	**E31** Aggregate metered data from the Metered Data Aggregator, Local	1..1	A3	E31		DocumentType
listAgency Identifier	*Attribute to the DocumentTtype*	*Identification of the agency maintaining the codelist for document types* **260** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Creation		Date and time of creation of the business document. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Creation
Sender Energy Party	Sender Energy Party Complex Type		1..1				SenderEnergyParty
Identification		Unique identification of the sender of the document	1..1	A16	Sender ID		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Sender Identification element*	*Identification of the agency issuing the identifier used as sender identification* ***9*** *GS1* ***260*** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Sender Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Recipient Energy Party	Recipient Energy Party Complex Type		1..1				RecipientEnergyParty
Identification		Unique identification of the recipient of the document		A16	Recipient ID		Identification
schemeAgency Identifier	*Attribute to the Recipient Identification element*	*Identification of the agency issuing the identifier used as recipient* ***9*** *GS1* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
Scheme Identifier	*Attribute to the Recipient Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Process Energy Context	Process Energy Context Class		1..1				ProcessEnergyContext
Energy Business Process	The nature of the process that the document is directed at.	**E44** Imbalance Settlement	1..1	A3	E44		EnergyBusinessProcess

Element	Definition	Description	Card	Max Size	Content	Dep.	XML element
Attribute							
listAgency Identifier	*Attribute to the Energy Business Process*	*Identification of the agency maintaining the code list for energy business processes* ***260*** *ebIX®*	*1..1*	*A3*	*260*		*listAgencyIdentifier*
Energy Business Process Role	The role of the process that the document is directed at.	**DDX** Imbalance Settlement Responsible	1..1	A3	DDX		EnergyBusinessProcessRole
listAgency Identifier	*Attribute to the Energy Business Process Role*	*Identification of the agency maintaining the code list for energy business process roles* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Energy Industry Classification	Classification of industry	**23** Electricity supply industry	1..1	A3	23		EnergyIndustryClassification
listAgency Identifier	*Attribute to the Energy Industry Classification*	*Identification of the agency maintaining the code list for energy industry classifications* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Payload Energy Time Series	Payload Energy Time Series Class		1..*				PayloadEnergyTimeSeries
Identification		Unique identification of the time series (unique over time for the sender in question)	1..1	A35	Time series ID		Identification
Registration Date Time		The date and time for registration of the metered value in the sender's database. As an intermediate solution the Document Date Time (Creation) may be mapped to the Registration Date Time. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		RegistrationDateTime
Observation Period time Series Period	Observation Period time Series Period Complex type		1..1				ObservationPeriodTimeSeriesPeriod

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
ResolutionDuration	The resolution defining the number of periods that the time interval is divided.	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15-minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		ResolutionDuration
Start		The date and time for the start of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Start
End		Date and time for the end of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		End
Product Included Product Characteristics	Product Included Product Characteristics Complex Type		1..1				ProductIncludedProductCharacteristics
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	I13	8716867000030		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Product*	*Identification of the agency issuing the identifiers used for energy products* ***9*** *GS1*	*1..1*	*N3*	*9*		*schemeAgencyIdentifier*
Unit type	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh **MWH** MWh	1..1	A3	KWH or MWH		UnitType
listAgency Identifier	*Attribute to the Unit Type*	*Identification of the agency maintaining the code list for unit types* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
MP Detail Measurement Metering Point Characteristics	MP Detail Measurement Metering Point Characteristics Complex Type		1..1				***MPDetailMeasurementMeteringPointCharacteristics***
Metering Point Type	The type of metering point	**E20** Exchange	1..1	A3	E20		MeteringPointType
listAgency Identifier	*Attribute to the Metering Point Type*	*Identification of the agency maintaining the codelist for metering point types* **260** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Metering Grid Area Used Domain Location	Metering Grid Area Used Domain Location Complex Type		1..1				MeteringGridAreaUsedDomainLocation
Identification	Unique identification of the Metering Grid Area	The ID of the MGA responsible for metering the exchange	1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* ***SLY*** *Finnish Electricity Association* **SVK** *Svenska kraftnät* **DK** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
In Area Used Domain Location	In Area Used Domain Location Complex Type		1..1				InAreaUsedDomainLocation
Identification	The area where the product is being delivered.	The identification of the in Metering Grid Area.	1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* **DK** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Out Area Used Domain Location	Out Area Used Domain Location Complex Type		1..1				OutAreaUsedDomainLocation
Identification	The area where the product is being extracted.	The identification of the out Metering Grid Area.	1..1	A18	MGA ID		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* ***260*** *ebIX®* ***305*** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* ***DK*** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*1..1*	*A3*			*schemeIdentifier*
Observation Interval Observation Period	Observation Interval Observation Period Complex Type		1..*				**ObservationIntervalObservationPeriod**
Sequence	Sequence number	Sequence number of the observation in the time series	1..1				Sequence
Observation Detail Energy Observation	Observation Detail Energy Observation Complex Type		1..1				ObservationDetailEnergyObservation
Energy Quantity	The quantity in question	Netted values are exchanged. The flow from Out Area to In Area will be reported as positive quantities, while the opposite direction will be reported as negative quantities (with a leading minus sign). The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1..1				EnergyQuantity

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Quantity Quality	The quality of the quantity	**21** Temporary **56** Estimated Only used if ≠ Metered A time series with aggregated values based on time series on a MP level where one or more observations has a "Quantity Missing Indicator = **true"** (Does not exist) shall use the quantity quality **21** (Temporary)	0..1				QuantityQuality
listAgency Identifier	*Attribute to the Quantity Quality*	*Identification of the agency maintaining the code list for quantity quality* ***330*** *NEG*	1..1	A3	330		*listAgencyIdentifier*

Table 7: Element/*Attribute* usage ebIX® Aggregated Data per Neighbouring Grid for Settlement Responsible (E31, E44)

3.5 NEG Confirmation of Aggregated Data Per Neighbouring Grid From Settlement Responsible (A07/A08, E44)

The NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44) is currently a proposal from NBS, but will hopefully be documented in the ebIX® Business information model for Measure for Imbalance Settlement, see [4].

3.5.1 Class diagram: NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)

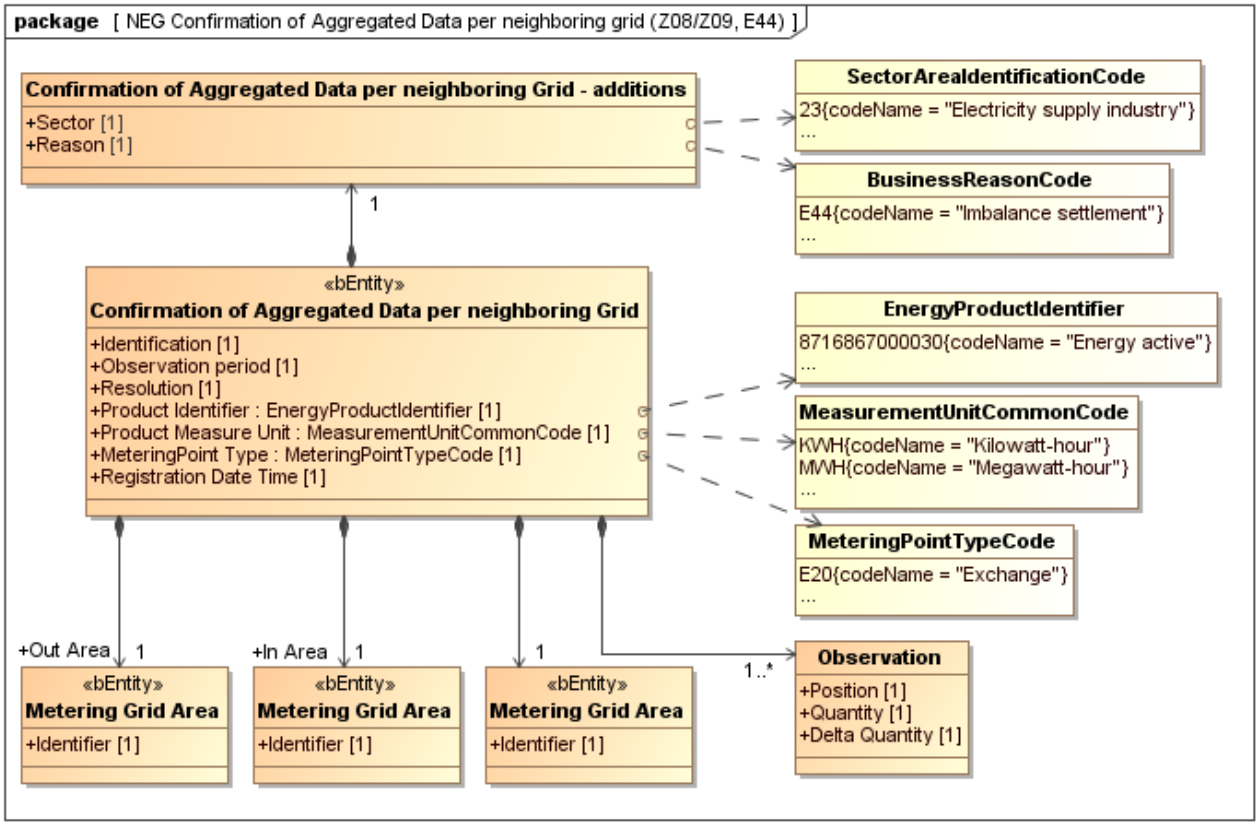

Figure 5: Class diagram: NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)

Comments to the diagram:

- The document has an *In Area* (Metering Grid Area) and an *Out Area* (Metering Grid Area) defining the direction of the flow. In addition there is a *Metering Grid Area*, identifying the responsible DSO.
- There is only one time series for each exchange, i.e. netted values are exchanged. The flow from Out Area to In Area will be reported as positive quantities, while the opposite direction will be reported as negative quantities (with a leading minus sign).

3.5.2 Element/*Attribute* usage: NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Header	Header Class		1..1				Header
Identification		Unique identification of the business document	1..1	A35	Business Document ID		Identification
Document Type	Type of document being sent	**A07** Intermediate confirmation report **A08** Final confirmation report **Note:** A request for a new codes has been submitted to ebIX®	1..1	A3	A07/A08		DocumentType
listAgency Identifier	*Attribute to the Document Type*	*Identification of the agency maintaining the code list for document types* **330** NEG	*1..1*	*N3*	*330*		*listAgencyIdentifier*
Creation		Date and time of creation of the business document. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Creation
Sender Energy Party	Sender Energy Party Complex Type		1..1				SenderEnergyParty
Identification		Unique identification of the sender of the document	1..1	A16	Sender ID		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Sender Identification element*	*Identification of the agency issuing the identifier used as sender identification* ***9*** *GS1* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
Scheme Identifier	*Attribute to the Sender Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Recipient Energy Party	Recipient Energy Party Complex Type		1..1				RecipientEnergyParty
Identification		Unique identification of the recipient of the document		A16	Recipient ID		Identification
schemeAgency Identifier	*Attribute to the Recipient Identification element*	*Identification of the agency issuing the identifier used as recipient* ***9*** *GS1* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
Scheme Identifier	*Attribute to the Recipient Identification element*	*The identification of the identifier scheme.* ***DK*** *Danish Ediel group* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Process Energy Context	Process Energy Context Class		1..1				ProcessEnergyContext
Energy Business Process	The nature of the process that the document is directed at.	**E44** Imbalance Settlement	1..1	A3	E44		EnergyBusinessProcess

Element	Definition	Description	Card	Max Size	Content	Dep.	XML element
Attribute							
listAgency Identifier	*Attribute to the Energy Business Process*	*Identification of the agency maintaining the code list for energy business processes* **260** *ebIX®*	*1..1*	*A3*	*260*		*listAgencyIdentifier*
Energy Business Process Role	The role of the process that the document is directed at.	**DEA** Metered Data Aggregator	1..1	A3	DDX		EnergyBusinessProcessRole
listAgency Identifier	*Attribute to the Energy Business Process Role*	*Identification of the agency maintaining the code list for energy business process roles* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Energy Industry Classification	Classification of industry	**23** Electricity supply industry	1..1	A3	23		EnergyIndustryClassification
listAgency Identifier	*Attribute to the Energy Industry Classification*	*Identification of the agency maintaining the code list for energy industry classifications* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
Payload Energy Time Series	Payload Energy Time Series Class		1..*				PayloadEnergyTimeSeries
Identification		Unique identification of the time series (unique over time for the sender in question)	1..1	A35	Time series ID		Identification
Registration Date Time		The date and time for registration of the metered value in the sender's database. As an intermediate solution the Document Date Time (Creation) may be mapped to the Registration Date Time. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		RegistrationDateTime
Observation Period time Series Period	Observation Period time Series Period Complex type		1..1				ObservationPeriodTimeSeriesPeriod

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
ResolutionDuration	The resolution defining the number of periods that the time interval is divided.	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15 minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		ResolutionDuration
Start		The date and time for the start of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		Start
End		Date and time for the end of the time series. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		End
Product Included Product Characteristics	Product Included Product Characteristics Complex Type		1..1				ProductIncludedProductCharacteristics
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	I13	8716867000030		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Product*	*Identification of the agency issuing the identifiers used for energy products* ***9*** *GS1*	*1..1*	*N3*	*9*		*schemeAgencyIdentifier*
Unit type	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh **MWH** MWh	1..1	A3	KWH or MWH		UnitType
listAgency Identifier	*Attribute to the Unit Type*	*Identification of the agency maintaining the code list for unit types* **330** *NEG*	*1..1*	*A3*	*330*		*listAgencyIdentifier*
MP Detail Measurement Metering Point Characteristics	MP Detail Measurement Metering Point Characteristics Complex Type		1..1				***MPDetailMeasurementMeteringPointCharacteristics***
Metering Point Type	The type of metering point	**E20** Exchange	1..1	A3	E20		MeteringPointType
listAgency Identifier	*Attribute to the Metering Point Type*	*Identification of the agency maintaining the codelist for metering point types* **260** *ebIX®*	*1..1*	*N3*	*260*		*listAgencyIdentifier*
Metering Grid Area Used Domain Location	Metering Grid Area Used Domain Location Complex Type		1..1				MeteringGridAreaUsedDomainLocation
Identification	Unique identification of the Metering Grid Area	The ID of the MGA responsible for metering the exchange	1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* **DK** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
In Area Used Domain Location	In Area Used Domain Location Complex Type		1..1				InAreaUsedDomainLocation
Identification	One MGA in the MGA exchanges		1..1	A18	MGA ID		Identification
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* ***260*** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* **DK** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*0..1*	*A3*			*schemeIdentifier*
Out Area Used Domain Location	Out Area Used Domain Location Complex Type		1..1				OutAreaUsedDomainLocation
Identification	The other MGA in the MGA exchanges.		1..1	A18	MGA ID		Identification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
schemeAgency Identifier	*Attribute to the Identification of the Metering Grid Area*	*Identification of the agency issuing the identifiers used for Metering Grid Areas* ***9*** *GS1* **260** *ebIX®* **305** *EIC*	*1..1*	*N3*			*schemeAgencyIdentifier*
scheme Identifier	*Attribute to the Identification of the Metering Grid Area*	*The identification of the scheme used.* **SLY** *Finnish Electricity Association* **SVK** *Svenska kraftnät* **DK** *Danish Ediel Group* *Only used for scheme Agency Identifier = 260 (ebIX®)*	*1..1*	*A3*			*schemeIdentifier*
Observation Interval Observation Period	Observation Interval Observation Period Complex Type		1..*				**ObservationIntervalObservationPeriod**
Sequence	Sequence number	Sequence number of the observation in the time series	1..1				Sequence
Observation Detail Energy Observation	Observation Detail Energy Observation Complex Type		1..1				ObservationDetailEnergyObservation
EnergyQuantity	Quantity	The result from the matching process. The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1..1				EnergyQuantity

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Delta Quantity	Quantity	The delta quantity in question. The delta quantity is the difference between the quantities reported from the two DSOs where an energy exchange has taken place. Unless there are errors in the original reported exchanged quantities from the two DSOs, the delta quantity will be zero. Netted values are exchanged. The flow from Out Area to In Area will be reported as positive quantities, while the opposite direction will be reported as negative quantities (with a leading minus sign). The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1..1				DeltaQuantity

Table 8: Element/*Attribute* usage NEG Confirmation of Aggregated Data per Neighbouring Grid for Settlement Responsible (A07/A08, E44)

4 Description of ENTSO-E documents

4.1 NEG Energy Account report document (EAR)

The *NEG Energy Account report document (EAR)* is documented in the ENTSO-E Settlement Process (ESP) Implementation Guide, see [1].

4.1.1 Class diagram: NEG Energy Account report document (EAR)

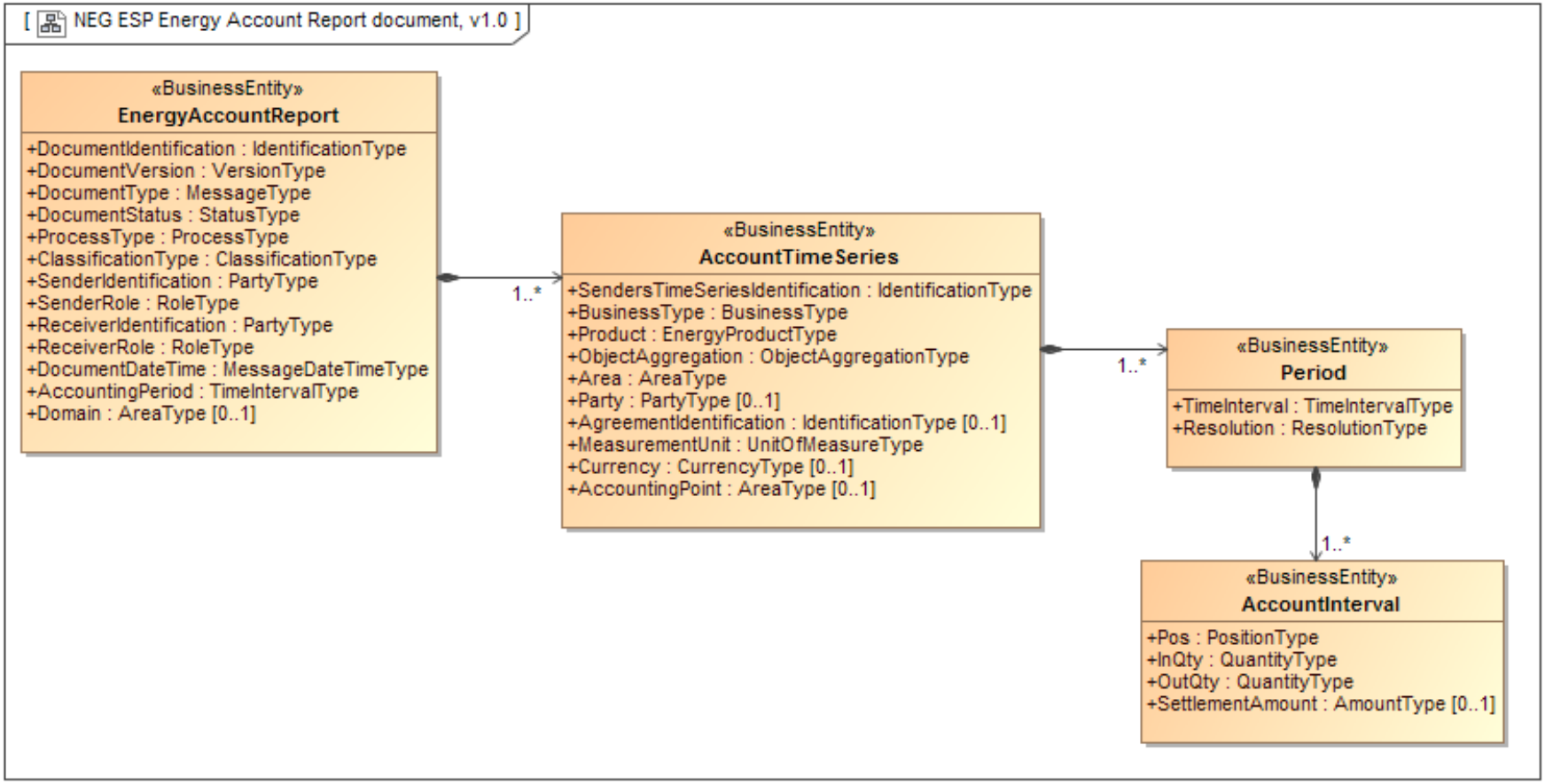

Figure 6: Class diagram: NEG Energy Account report document (EAR)

4.1.2 Element / *Attribute* usage: NEG Energy Account report document (EAR)

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Energy Account Report Document							EnergyAccountReport
Document Identification	Unique identification of the document for which the time series data is being supplied.	An Energy account report for a given set of time series and a given accounting period must have a unique identification assigned by the sender of the document for all transmissions to the receiver. All additions, modifications, or suppressions for the time series and accounting period must use the same identification.	1..1	A 35			DocumentIdentification
Document Version	Version of the document being sent. A document may be sent several times, each transmission being identified by a different version number that starts at 1 and increases sequentially.	The document version is used to identify a given version of a time series set for a given accounting period. The first version number for a given document identification shall normally be 1. The document version number must be incremented for each retransmission of a document that contains changes to the previous version. The receiving system should ensure that the version number for a document is superior to the previous version number received. For NBS the version is always 1	1..1	I 3	1		DocumentVersion
Document type	The coded type of the document being sent.	The document type identifies the information flow characteristics. **A12** Imbalance report	1..1	A3	A12		DocumentType
Document Status	The status of the document	**A01** Intermediate **A02** Final	1..1	A3			DocumentStatus
Process type	The nature of the process that the document is directed at.	The process type identifies the process to which the information flow is directed. **A06** Imbalance settlement	1..1	A3	A06		ProcessType

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Classification type	A type that is used to classify the schedule by aggregation or classification.	The schedule classification type identifies the aggregation or classification type of the schedule. **A02** Summary type	1..1	A3	A03		ClassificationType
Sender identification	Identification of the party that is the owner of the document and is responsible for its content.	The sender of the document is identified by a unique coded identification. This code identifies the party that is the "owner" of the information being transmitted in the document and who is responsible for its content.	1..1	A16	SO or MO ID		SenderIdentification
Coding scheme	*Coding scheme for sender identification*	*The codification scheme used for the coded identification is indicated by the coding scheme attribute.* ***A01*** ***EIC*** ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Sender role	Identification of the role that is played by the sender.	The sender role, which identifies the role of the sender within the document. **A05** Imbalance Settlement Responsible	1..1	A3	A05		SenderRole
Receiver identification	Identification of the party who is receiving the document.	The receiver of the document is identified by a unique coded identification.	1..1	A16	ISR ID		ReceiverIdentification
Coding scheme	*Coding scheme for receiver identification*	*The codification scheme used for the coded identification is indicated by the coding scheme attribute.* ***A01*** ***EIC*** ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Receiver role	Identification of the role that is played by the receiver.	The receiver role, which identifies the role of the receiver within the document. **A08** Balance Responsible Party **A09** Metered Data Aggregator	1..1	A3	A08		ReceiverRole
Document date and time	Date and time of the creation of the document.	The date and time that the document was prepared for transmission by the application of the sender. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ	1..1	A20	YYYY-MM-DDTHH:MM:SSZ		DocumentDateTime
Accounting period	The beginning and ending date and time of the period covered by the document	This information provides the start and end date and time of the accounting period. The receiver will discard any time intervals outside the accounting period. The start and end date and time must be expressed as YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ.	1..1	A35			AccountingPeriod
Domain	The domain covered within the Energy Account Report	The identification of the domain that is covered in the Energy Account Report. This will be frequently be the Bidding Zone that is the subject of the report. However, other domains may also be used as defined by local market rules to enable the particular balancing markets to be identified. Nordic Market Area ID = 10Y1001A1001A91G	1..1		Nordic Market Area ID		Domain
Coding scheme	*Coding scheme for domain*	*The codification scheme used for the coded identification is indicated by the coding scheme attribute.* **A01** *EIC (Energy Identification Coding Scheme)*	*1..1*	*A3*	*A01*		*codingScheme*
Account Time Series	Account time series class		1..*				AccountTimeSeries

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Senders Time Series Identification	Sender's identification of the time series instance. This must be unique over time for the sender in question and guarantee the non-duplication of all the attributes of the account time series class. Note that this is a Nordic rule that is stricter than stated in the ENTSO-E implementation guides, which only requires the Time Series Identification to be unique within the document.	Unique ID of the Time Series (unique over time for the sender in question)	1..1	A35			SendersTimeSeriesIdentification
Business type	Identifies the trading nature of an energy product.	The nature of the time series for which the product is handled. **A17** Settlement deviation **B14** Production deviation **B15** Consumption deviation **B29** **MGA** imbalance	1..1	A3	A17		BusinessType
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. There is a different time series for each product. **8716867000030** Active energy	1..1	I13	8716867000030		Product
Object aggregation	Identifies how the object is aggregated	This identified to what extent the object is aggregated. **A01** Area	1..1	A3	A01		ObjectAggregation
Area	The area of concern for the imbalance settlement responsible that the time series addresses.	The identification of the area (balance group, Bidding Zone, control area, control block, coordination center zone, etc.) that the Imbalance settlement responsible handles. The Bidding Zone to which the settlement result belongs.	1..1	A18	MBA or MGA ID		Area

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Coding scheme	*Coding scheme for area*	*The codification scheme used for the coded identification is indicated by the coding scheme attribute.* **A01** *EIC (Energy Identification Coding Scheme)* ***NDK*** *Denmark National coding scheme* **NFI** *Finland National coding scheme* **NSE** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Party	The party of concern for the time series.	The identification of the party of concern. The Balance Responsible Party for which the imbalance settlement is calculated. For NBS the Party is always the Balance Responsible Party for which the imbalance settlement is calculated	1..1	A16	BRP ID	Ref. 4.1.3	Party
Coding scheme	*Coding scheme for party*	*The codification scheme used for the coded identification is indicated by the coding scheme attribute.* ***A01*** *EIC* **A10** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Measurement unit	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh, **MWH** MWh,	1..1	A3	KWH or MWH		MeasurementUnit

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Currency	The currency in which the monetary amount is expressed.	The currency used for the monetary amount expressed within the time series. **DKK** Denmark, krone **EUR** European Union, Euro **NOK** Norway, krone **SEK** Sweden, krona Not used for Business type "**B29 =** MGA imbalance"	0..1	A3	DKK, EUR, NOK, SEK	Ref. 4.1.3	Currency
Period	Period class	There may be several period classes for a time series. The overall time interval covered by the period shall be cover the complete accounting period. The number of periods within a time series as characterized by the resolution must completely cover the period's time interval. If a time series is suppressed then the interval quantities are all zeroed out. A senders minimal resolution must respect market rules.	1..*				Period
Time interval	The start and end date and time of the time interval of the period in question.	This information provides the start and end date and time of the period being reported. The start and end date and time must be expressed in compliance with the following format: YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ.	1..1	A35			TimeInterval

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Resolution	The resolution defining the number of periods that the time interval is divided.	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15 minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		Resolution
Account Interval	Account interval class	The Account interval class contains the relative position within a time interval period, the quantities associated with that position and eventually the total monetary amount of the cost of any eventual imbalance. The position must begin with 1 and increment by 1 for each subsequent position forming a series of contiguous numbers covering the complete range of the period. Any leading zeroes in a position shall be suppressed. Negative values are not allowed in time series quantities. Leading zeroes in a quantity shall be suppressed before transmission.	1..*				AccountInterval

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Pos	The relative position of a period within an account interval.	This information provides the relative position of a period within an account interval. The relative position must be expressed as a numeric integer value beginning with 1. All leading zeroes must be suppressed.	1..1	I6			Pos
In qty	The quantity of the product that enters the area for the position within the account interval in question.	This information defines the quantity of the product that enters the area for the position within the account interval period. A decimal point value may be used to express values that are inferior to the defined unit of measurement. The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part. (ISO 6093) shall always be a period (“.”). All quantities are non-signed values. The maximum length of this information is 17 numeric characters (decimal mark included). The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1..1	DE17	BRP selling quantity		InQty
Out qty	The quantity of the product that leaves the area. For the position within the account interval in question.	This information defines the quantity of the product that leaves the area for the position within the account interval period. A decimal point value may be used to express values that are inferior to the defined unit of measure-ment. The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part. (ISO 6093) shall always be a period (“.”). All quantities are non-signed values. The maximum length of this information is 17 numeric characters (decimal mark included). The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1.1	DE17	BRP buying quantity		OutQty

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Settlement Amount	The amount due for the account interval in question.	This information defines the settlement amount taking into consideration the in and out quantities and the pricing scheme based on local market rules. A negative value indicates that the settlement amount is due by the party in question (party to be debited). If the amount is positive it is due by the imbalance settlement responsible (party to be credited). The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part (ISO 6093) shall always be a period (“.”). The maximum length of this information is 17 numeric characters (decimal mark and sign, if used included). Not used for Business type “**B29 =** MGA imbalance”	0..1	DE17		Ref. 4.1.4	SettlementAmount

Table 9: Element/*Attribute* usage: NEG Energy Account report document (EAR)

4.2 ENTSO-E ESS Schedule document

The *ENTSO-E ESS Schedule document* is documented in the *ENTSO-E Scheduling System (ESS) Implementation Guide*, see [1].

4.2.1 Class diagram: ENTSO-E ESS Schedule document

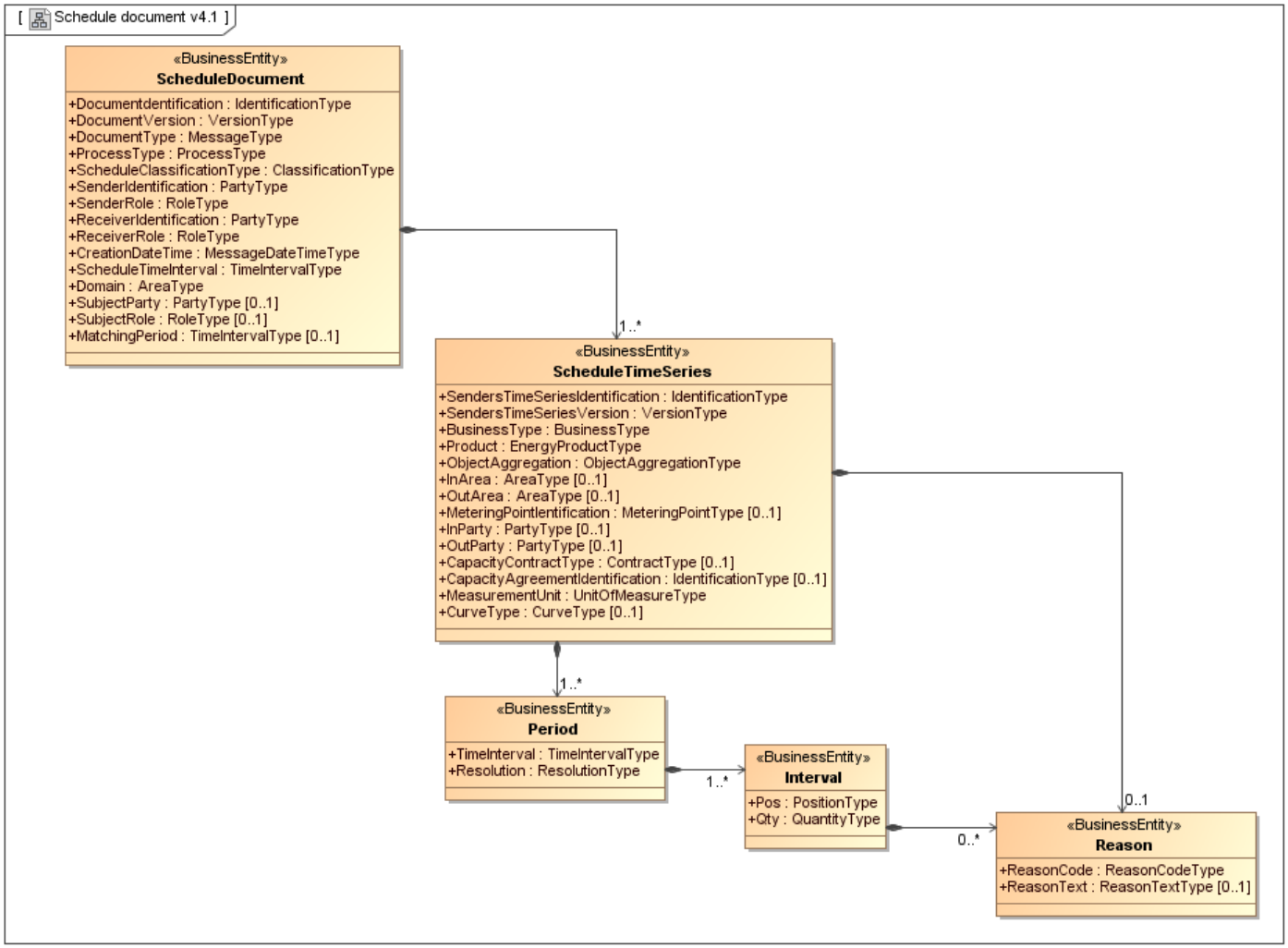

Figure 7: Class diagram: ENTSO-E ESS Schedule document

4.2.2 Element/*Attribute* usage: ENTSO-E ESS Schedule Document, Bilateral Trade

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Schedule Document							ScheduleDocument
Document Identification	Unique identification of the document for which the time series data is being supplied.	A schedule document must have a unique identification assigned by the sender of the document to be sent to a receiver. The party sending a time series can only send it within a single role (e.g. trade responsible, consumption responsible, etc.). If the sender plays multiple independent roles then, as many documents as the party plays roles must be sent. For example, in the case where the sender is a production responsible party who also acts as a trader, two documents may be sent to the system operator. One document will be sent in the sender's capacity as production responsible party and one in his capacity as trade responsible party. In cases where several roles are required in a single document a generic role must be used.	1..1	A35			DocumentIdentification

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Document Version	Version of the document being sent. A document may be sent several times, each transmission being identified by a different version number that starts at 1 and increases sequentially.	The schedule document version is used to identify a given version of a time series set for a given schedule time interval. The first version number for a given schedule document identification should normally be 1. The document version number must be incremented for each retransmission of a schedule document that contains changes to the previous version. The receiving system should ensure that the version number for a schedule document is superior to the previous version number received. For NBS the version is always 1	1..1	I3	1		DocumentVersion
Document type	The coded type of the document being sent.	The schedule document type identifies the information flow characteristics. **A01** Balance responsible schedule	1..1	A3	A01		DocumentTYpe
Process type	The nature of the process that the document is directed at.	The process type identifies the process to which the information flow is directed. **A59** Internal trade reporting **Z05** Bilateral trade[3]	1..1	A3	A59 or Z05		ProcessType
Schedule classification type	A type that is used to classify the schedule by aggregation or classification.	The schedule classification type identifies the aggregation or classification type of the schedule. **A02** Summary type	1..1	A3	A02		ScheduleClassificationType
Sender Identification	Identification of the party who is sending the confirmation report.	The sender of the document is identified by a unique coded identification.	1..1	A16	SO or BRP ID		SenderIdentification

[3] The code "**Z05** Bilateral trade" will be valid one year after eSett have announcement its removal, approximately until the end of 2024. In the transition period eSett will continue using **Z05**.

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Coding scheme	*Coding scheme for sender identification*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* **A10** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Sender role	Identification of the role that is played by the sender.	The sender role, which identifies the role of the sender within the document. **A04** System Operator **A08** Balance Responsible Party	1..1	A3			SenderRole
Receiver identification	Identification of the party who is receiving the schedules.	The receiver of the document is identified by a unique coded identification.	1..1	A3	ISR ID		ReceiverIdentification
Coding scheme	*Coding scheme for receiver identification*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* **A10** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Receiver role	Identification of the role played by the receiver.	The receiver role, which identifies the role of the receiver within the document. **A05** Imbalance Settlement Responsible	1..1	A3			ReceiverRole
Creation Date Time	Date and time of the preparation for transmission of the scheduling data.	The date and time that the document was prepared for transmission by the application of the sender. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ.	1..1	A20			CreationDateTime

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Schedule Time Interval	The beginning and ending date and time of the period covered by the document containing the schedule.	This information provides the start and end date and time of the schedule time interval. The System Operator, or the Balance Settlement Responsible for which the Balance Responsible Parties (or their service providers) have to provide schedule information, defines the schedule time interval. Typically the Balance Responsible Parties have to provide schedules for the next local day. All time intervals for the time series in the document must be within the total time interval for the schedule. The receiver will discard any time intervals outside the schedule period. The start and end date and time must be expressed as YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ. The time must be expressed in UTC.	1..1	A35			ScheduleTimeInterval
Domain	The domain covered within the Schedule Document.	The identification of the domain that is covered in the Schedule Document. Nordic Market Area ID = 10Y1001A1001A91G	1..1	*A18*	Nordic Market Area ID		Domain
Coding scheme	*Coding scheme for domain*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. **A01** *EIC (Energy Identification Coding Scheme)*	*1..1*	*A3*			*codingScheme*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
ScheduleTime Series	Schedule Time Series Class	A Balance Responsible Party may transmit as many time series as necessary to establish his position. A document sent without any time series signifies that the sending party has no time series information to transmit for the period in question at the moment of transmission. Market rules may require such a context. The sender assigns a unique identification to each occurrence of the product, business type, object aggregation, in area, out area, metering point identification, in party, out party, capacity contract type and capacity agreement identification. A time series has a version number that has initially the value of "1". If a given time series is modified then its version number shall be assigned the same value of the version number of the schedule document in which it is transmit. If a version number of a time series has not changed between transmissions, it is the receiver's responsibility to ensure that this is correct. A time series shall contain a period that will cover the complete schedule time interval. The period shall also indicate the resolution of the periods within the time interval. The time interval must be completely covered by a whole multiple of the resolution. If a time series is suppressed in a later transmission the time series will be resent with all the periods containing a zero value quantity.	*1..**				*ScheduleTimeSeries*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Senders time series identification	Sender's identification of the time series instance. This must be unique over time for the sender in question and guarantee the non-duplication of all the attributes of the account time series class. Note that this is a Nordic rule that is stricter than stated in the ENTSO-E implementation guides, which only requires the Time Series Identification to be unique within the document.	Unique ID of the Time Series (unique over time for the sender in question)	1..1	A35			SendersTimeSeriesIdentification
Senders Time Series Version	The senders time series version of the time series instance.	The version of the time series. For NBS the version is always 1.	1..1	I3	1		SendersTimeSeriesVersion
Business type	The trading nature of the time series.	The nature of the time series. **A08** Net internal trade (Within a Bidding Zone) (Net internal trade - where the direction from out party (seller) to in party (buyer) is positive and the opposite direction is negative (with minus signs))..	1..1	A3	*A08*		BusinessType
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	I13	8716867000030		Product
Object aggregation	Identifies how the object is aggregated.	This identifies to what extent the object is aggregated. **A01** Area	1..1	A3	A01		ObjectAggregation
In Area	The area where the product is being delivered.	The Bidding Zone where the trade has taken place.	1..1	A18	MBA ID		InArea

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Coding scheme	*Coding scheme for In Area*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NNO*** *Norway National coding scheme* ***NSE*** *Sweden* National coding scheme	*1..1*	*A3*			*codingScheme*
Out Area	The area where the product is being extracted.	The same Bidding Zone as defined in In Area, i.e. where the trade has taken place.	1..1	A18	MBA ID		OutArea
Coding scheme	*Coding scheme for Out Area*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NNO*** *Norway National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
In Party	The party that is putting the product into the area.	The Balance responsible Party acting as the buyer in the bilateral trade.	1..1	A16	BRP 1		InParty
Coding scheme	*Coding scheme for In Party*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* **A10** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Out Party	The party taking the product out of the area.	The Balance responsible Party acting as the seller in the bilateral trade.	1..1	A16	BRP 2		OutParty

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Coding scheme	*Coding scheme for Out Party*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* **A10** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Capacity Agreement Identification	A unique ID, only used when reporting trade on an Energy Supplier (Retailer) level, identifying the two involved Energy Suppliers and the related Bidding Zone.	Bilateral Trade ID	0..1	A35			CapacityAgreementIdentification
Measurement unit	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh, **MWH** MWh,	1..1	A3	KWH or MWH		MeasurementUnit
Period	Period class	There is at least one period class for a time series schedule. The Time Intervals in all the Period classes shall cover the complete period of the Schedule Time Interval. The number of time intervals within a time series as characterized by the resolution must completely cover the period's time interval. If a time series is suppressed then the interval quantities are all zeroed out. A senders minimal resolution must respect market rules.	1..*				Period

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Time Interval	The start and end date and time of the time interval of the period in question.	This information provides the start and end date and time of the period being reported. The start and end date and time must be expressed in UTC with the following format: YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ.	1..1	A35			TimeInterval
Resolution	The resolution defining the number of periods that the time interval is divided	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15 minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M**	1..1	A14	PT15M, PT1H or PT60M		Resolution

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Interval	Interval class	The interval class contains the relative position within a time interval period and the quantity associated with that position. The position must begin with 1 and increment by 1 for each subsequent position forming a series of contiguous numbers covering the complete range of the period. Any leading zeroes in a position shall be suppressed. Negative values are not allowed in schedule time series quantities except in the case where a netted business type is employed. If the direction of the product flow changes during the schedule period the two time series with opposite In area, Out area and parties are required. Zero value periods must be sent. Leading zeroes in a quantity shall be suppressed before transmission. If the direction of the product flow changes during the schedule time interval the two time series with opposite in area, out area or parties are required.	1..*				Interval
Pos	The relative position of a period within the time interval.	This information provides the relative position of a period within a time interval. The relative position must be expressed as a numeric integer. value beginning with 1. All leading zeroes must be suppressed.	1..1	I6			Pos

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Qty	The quantity of the product scheduled for the position within the time interval in question.	This information defines the quantity of energy scheduled for the position within the time interval period. A decimal point value may be used to express values that are inferior to the defined unit of measurement. The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part. (ISO 6093) shall always be a period (“.”). The maximum length of this information is 17 numeric characters (decimal point and sign, if used, included). The direction from out party (seller) to in party (buyer) is positive, while the opposite direction is negative (with minus signs)) The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1..1	DE17			Qty

Table 10: Element**/***Attribute* usage: ENTSO-E ESS Schedule Document, Bilateral Trade

4.3 ENTSO-E ESS Confirmation Report

The *ENTSO-E ESS Confirmation Report* is documented in the *ENTSO-E Scheduling System (ESS) Implementation Guide*, see [1].

4.3.1 Rules for usage of: ENTSO-E ESS Confirmation Report

4.3.1.1 Link between ESS Schedule Time Series and ESS Confirmation Reports Time Series

When eSett is returning ESS Conformation Reports, which require a reference to one unique ESS Schedules Time Series ID, there will be separate ESS Confirmation Reports Time Series for each received ESS Schedule Time Series. This may in worst cases result in a separate ESS Confirmation Reports for each observation of the day. Note that this only is an issue for the ESS Time Series Confirmation, where a reference to the ESS Schedule Time Series is required. The ESS Imposed Time Series in the ESS Confirmation Report is not referencing any received ESS Schedule Time Series and can contain all 24 hours of the day.

Finland will send ESS Schedule Time Series in UTC+2, while the Nordic balance settlement will be done in UTC+1, i.e. the settlement will be based on ESS Schedule Time Series for two different days (the first hour of a “balancing day” will be sent the day before the last 23 hours of the “balancing day”).

4.3.1.2 Time Series Confirmation vs Imposed Time series

eSett will always return a Time Series Confirmation to the party that has sent an ESS schedule document and an imposed time series to the counterpart.

4.3.1.3 Time Series Identification

The Time Series Identification shall be unique over time for the sender in question. Note that this is a Nordic rule that is stricter than what is stated in the ESS implementation guide from ENTSO-E [1], which only requires the Time Series Identification to be unique within the document.

4.3.2 Class diagram: ENTSO-E ESS Confirmation Report

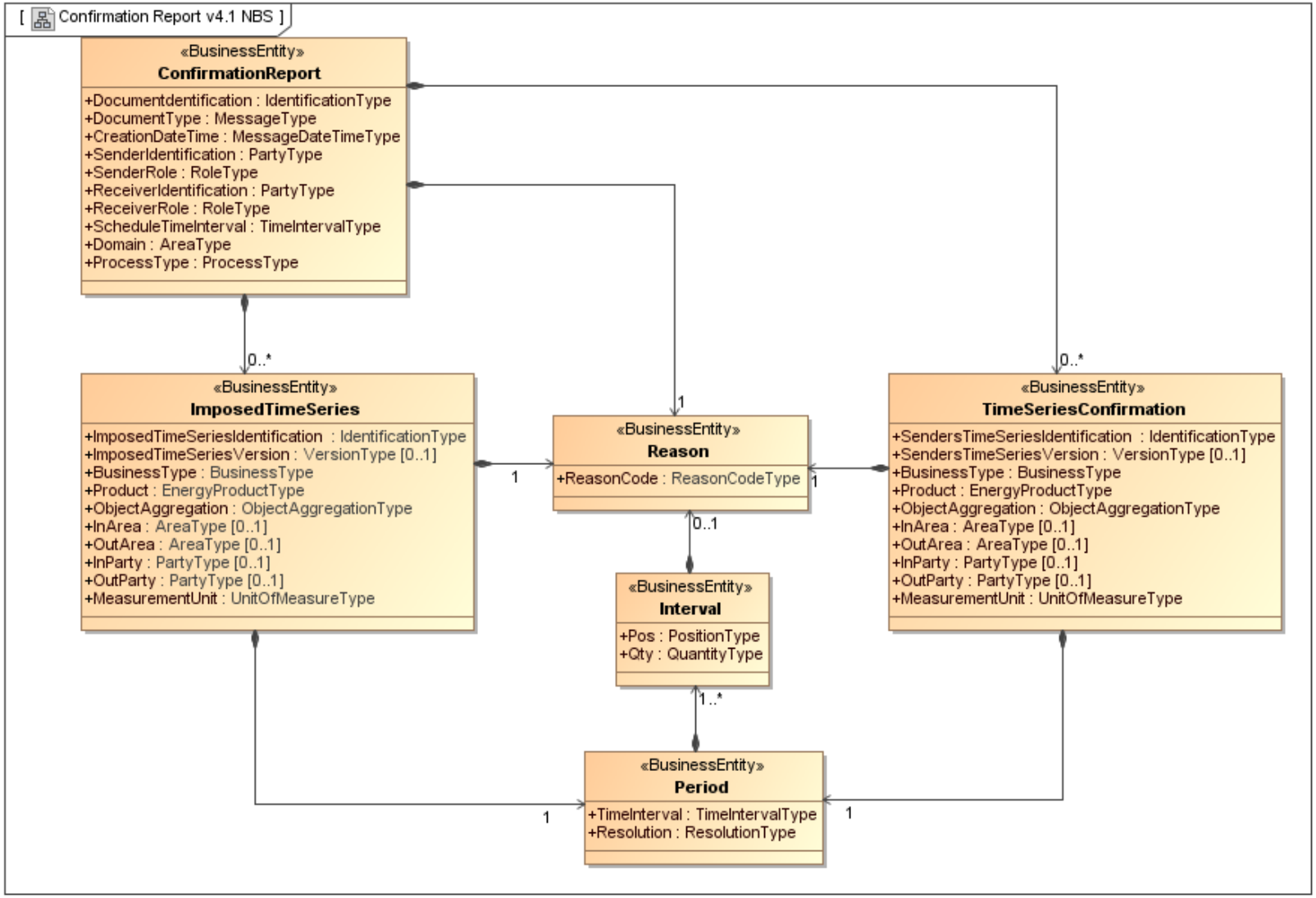

Figure 8: Class diagram: ENTSO-E ESS Confirmation Report

4.3.3 Element/*Attribute* usage: ENTSO-E ESS Confirmation Report

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Confirmation Report	Confirmation Report Class						ConfirmationReport
Document Identification	Unique identification of the confirmation report that is sent to all involved parties after phase 3 of the schedule process.	A confirmation report is identified by a unique number generated by the sender to serve as the identification of the report in any further communication on the subject.	1..1	A35			DocumentIdentification
Document Type	The coded type of the document being sent.	The confirmation report document type identifies the information flow characteristics. **A07** Intermediate confirmation report **A08** Final confirmation report	1..1	A3	A07 or A08		DocumentType
Creation Date Time	Date and time of the preparation for transmission of the confirmation report.	The date and time that the document was prepared for transmission by the sender. The date and time must be expressed in UTC as YYYY-MM-DDTHH:MM:SSZ.	1..1	A20			CreationDateTime
Sender Identification	Identification of the party who is sending the confirmation report.	The sender of the document is identified by a unique coded identification.	1..1	A16	ISR ID		SenderIdentification
Coding scheme	*Coding scheme for sender identification*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* **A10** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Sender role	Identification of the role that is played by the sender.	The sender role, which identifies the role of the sender within the document. **A05** Imbalance Settlement Responsible	1..1	A3	A05		SenderRole

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Receiver identification	Identification of the party who is receiving the confirmation report	The receiver of the document is identified by a unique coded identification.	1..1	A16	BRP ID		ReceiverIdentification
Coding scheme	*Coding scheme for receiver identification*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Receiver role	Identification of the role played by the receiver.	The receiver role, which identifies the role of the receiver within the document. **A08** Balance Responsible Party	1..1	A3	A08		ReceiverRole
Schedule Time Interval	The beginning date and time and the ending date and time of the schedule period covered by the confirmation report.	This information provides the beginning date and time and the ending date and time of the schedule period for which the confirmation report is being generated. The start and end date and time must be expressed as YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ. The time must be expressed in UTC.	1..1	A35			ScheduleTimeInterval
Domain	The domain covered within the document being confirmed.	The identification of the domain that is covered in the document being confirmed. Nordic Market Area ID = 10Y1001A1001A91G	1..1	A16	Nordic Market Area ID		Domain
Coding scheme	*Coding scheme for domain*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC (Energy Identification Coding Scheme)*	*1..1*	*A3*			*codingScheme*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Process type	The nature of the process defined in the document being confirmed.	The process type of the document being confirmed **A59** Internal trade reporting **Z05** Bilateral trade[4]	1..1	A3	A59 or Z05		ProcessType
Reason (Confirmation Report level)	Reason class	In a confirmation report reason codes can be detailed at three levels (the period class is assimilated with the time series level): 1. At the header level to identify that all the schedules have been accepted, partially accepted or rejected. 2. At the time series level to identify where differences have occurred. 3. At the interval level to indicate where quantities have been increased, decreased, or where default quantities have been applied. The time series level and interval level can also be used in the case of imposed time series (used exclusively in the case of reason code A30).	1..1				Reason

[4] The code "**Z05** Bilateral trade" will be valid one year after eSett have announcement its removal, approximately until the end of 2024. In the transition period eSett will continue using **Z05**.

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Reason Code	A code providing the status of the information.	The reason code provides the status of the differences and confirmation. If the schedule is fully accepted then there is simply a reason code (A06) at the header part of the report. For errors as many reason elements as necessary may be used. The following status's have been identified: At the document level: **A06** Schedule accepted **A07** Schedule partially accepted A06 is used when there are no changes to a received time series, while A07 is used there are changes to a received schedule or when sending imposed time series to the counterparty	1..1	A3			ReasonCode
Time Series Confirmation	Time Series Confirmation Class	At least one Time Series Confirmation or one Imposed time series must be present in the ESS confirmation report.	0..*				TimeSeriesConfirmation
Senders time series identification	Original Time Series ID	Sender's identification of the time series instance (the same as in the referenced ESS schedule document) **Note:** The confirmation report contains two time series for each trade (one with the quantity to be used in the settlement, and another with the delta value). Both time series reference the same time series from the ESS schedule document, hence the Original Time Series ID (Senders Time Series Identification) will be the same.	1..1	A35			SendersTimeSeriesIdentification
Senders Time Series Version	The senders time series version of the time series instance.	The version of the time series. For NBS the version is always 1.	1..1	I3	1		SendersTimeSeriesVersion

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Business type	The trading nature of the time series	The nature of the time series. **A08** Net internal trade (Within a Bidding Zone) (Net internal trade - where the direction from out party (seller) to in party (buyer) is positive and the opposite direction is negative (with minus signs)). **Z64** Internal trade difference, within a Bidding Zone, i.e. the difference between trades reported from an out party (seller) and an in party (buyer). The internal trade difference is the delta value between what is reported by the two Balance Responsible Parties.	1..1	A3	A08 or Z64		BusinessType
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	I13	8716867000030		Product
Object aggregation	Identifies how the object is aggregated.	This identifies to what extent the object is aggregated. **A01** Area	1..1	A3	A01		ObjectAggregation
In Area	The area where the product is being delivered.	The Bidding Zone where the trade has taken place.	1..1	A18	MBA ID		InArea
Coding scheme	*Coding scheme for In Area*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NNO*** *Norway National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Out Area	The area where the product is being extracted.	The same Bidding Zone as defined in In Area, i.e. where the trade has taken place.	1..1	A18	MBA ID		OutArea
Coding scheme	*Coding scheme for Out Area*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. **A01** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NNO*** *Norway National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
In Party	The party that is putting the product into the area.	The Balance responsible Party acting as the buyer in the bilateral trade.	1..1	A16	BRP 1		InParty
Coding scheme	*Coding scheme for In Party*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* **A10** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Out Party	The party taking the product out of the area.	The Balance responsible Party acting as the seller in the bilateral trade.	1..1	A16	BRP 2		OutParty
Coding scheme	*Coding scheme for Out Party*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Capacity Agreement Identification	A unique ID, only used when reporting trade on an Energy Supplier (Retailer) level, identifying the two involved Energy Suppliers and the related Bidding Zone.	Bilateral Trade ID	0..1	A35			CapacityAgreementIdentification
Measurement unit	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh, **MWH** MWh,	1..1	A3	KWH or MWH		MeasurementUnit
Reason (Time Series Confirmation level)	Reason class	See description at Confirmation Report level	1..1				Reason
Reason Code	A code providing the status of the information.	At the Time Series Confirmation level: **A85** Confirmation without adjustment (time series have been matched without change) **A86** Confirmation with adjustment (time series have been modified)	1..1	A3			ReasonCode
Imposed Time Series	Imposed Time Series Class	At least one **Time Series Confirmation** or one **Imposed time series** must be present in the ESS confirmation report.	0..1				ImposesTimeSeries

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Imposed Time Series Identification	Sender's identification of the time series instance. This must be unique over time for the sender in question and guarantee the non-duplication of all the attributes of the account time series class. Note that this is a Nordic rule that is stricter than stated in the ENTSO-E implementation guides, which only requires the Time Series Identification to be unique within the document.	Unique ID of the Time Series (unique over time for the sender in question)	1..1	A35			SendersTimeSeriesIdentification
Imposed Time Series Version	The senders time series version of the time series instance.	The version of the time series. For NBS the version is always 1	1..1	I3	1		SendersTimeSeriesVersion
Business type	The trading nature of the time series	The nature of the time series. **A08** Net internal trade (Within a Bidding Zone) (Net internal trade - where the direction from out party (seller) to in party (buyer) is positive and the opposite direction is negative (with minus signs)). **Z64** Internal trade difference, within a Bidding Zone, i.e. the difference between trades reported from an out party (seller) and an in party (buyer). The internal trade difference is the delta value between what is reported by the two Balance Responsible Parties.	1..1	A3	A08 or Z64		BusinessType
Product	Identification of an energy product such as power, energy, reactive power, transport capacity, etc.	This identifies the product for which the time series is reporting. **8716867000030** Active energy	1..1	I13	8716867000030		Product

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Object aggregation	Identifies how the object is aggregated.	This identifies to what extent the object is aggregated. **A01** Area	1..1	A3	A01		ObjectAggregation
In Area	The area where the product is being delivered.	The Bidding Zone where the trade has taken place.	1..1	A18	MBA ID		InArea
Coding scheme	*Coding scheme for In Area*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NNO*** *Norway National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Out Area	The area where the product is being extracted.	The same Bidding Zone as defined in In Area, i.e. where the trade has taken place.	1..1	A18	MBA ID		OutArea
Coding scheme	*Coding scheme for Out Area*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. **A01** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NNO*** *Norway National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
In Party	The party that is putting the product into the area.	For Business type **A08**: • The Balance responsible Party acting as the buyer in the bilateral trade. For business type **Z64** (delta value): • The Balance responsible Party having to buy energy to get the trade in balance	1..1	A16	BRP 1		InParty
Coding scheme	*Coding scheme for In Party*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*
Out Party	The party taking the product out of the area.	For Business type **A08**: • The Balance responsible Party acting as the seller in the bilateral trade. For business type **Z64** (delta value): • The Balance responsible Party having to sell energy to get the trade in balance	1..1	A16	BRP 2		OutParty
Coding scheme	*Coding scheme for Out Party*	The codification scheme used for the coded identification is indicated by the coding scheme attribute. ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*	*1..1*	*A3*			*codingScheme*

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Capacity Agreement Identification	A unique ID, only used when reporting trade on an Energy Supplier (Retailer) level, identifying the two involved Energy Suppliers and the related Bidding Zone.	A unique ID, only used when reporting trade on a Energy Supplier (Retailer) level, identifying the two involved Energy Suppliers and the related Bidding Zone. The Bilateral Trade ID (Capacity Agreement Identification) is metadata for trade on supplier level. The BRP sends bilateral trade with InParty = BRP1 and OutParty = BRP2. If the trade is between two suppliers, then the Bilateral Trade ID is added to the message. The Bilateral Trade ID is generated by eSett when the BRP enters (structures) which trade relations (on a supplier level) this has balance responsibility for. The suppliers can then be identified by the Bilateral Trade ID.	0..1	A35			CapacityAgreementIdentification
Measurement unit	The unit of measure that is applied to the quantities in which the time series is expressed.	The unit if measurement used for the quantities expressed within the time series. **KWH** kWh, **MWH** MWh,	1..1	A3	KWH or MWH		MeasurementUnit
Reason (Imposed time series level)	Reason class	See description at Confirmation Report level	1..1				Reason
Reason Code	A code providing the status of the information.	At the Imposed Time Series level: **A30** Imposed time series	1..1	A3			ReasonCode
Period	Period class	The Period class Time Interval and Resolution attributes must be the same as those in the original document and must be sent in the confirmation report for all the time series that have been accepted or accepted with modification. In the case of imposed time series the resolution must be the same as the one for the market participant's time series.	1..1				Period

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Time interval	The start and end date and time of the time interval of the period in question.	This information provides the start and end date and time of the period being reported. The start and end date and time must be expressed in compliance with the following format: YYYY-MM-DDTHH:MMZ/YYYY-MM-DDTHH:MMZ.	1..1	A35			TimeInterval
Resolution	The resolution defining the number of periods that the time interval is divided	This information defines the resolution of a single period. The time interval must contain a whole number of periods as expressed by the resolution. 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. For example: **PT15M** expresses a 15 minute resolution. **PT1H** and **PT60M** expresses a one-hour resolution. In NBS hourly or quarterly resolution is used, i.e. **PT1H**, **PT60M** or **PT15M.**	1..1	A14	PT15M, PT1H or PT60M		Resolution
Interval	Interval class	All the interval quantities for the time series that has been accepted or those imposed by the system operator must be sent in the confirmation report.	1..*				Interval
Pos	The relative position of a period within the time interval defined in the Period class.	The relative position must be expressed as a numeric integer value beginning with 1. All leading zeroes must be suppressed.position that has been accepted or imposed.	1..1	I6			Pos

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Qty	The quantity that has been accepted or imposed.	This information defines the quantity of the product that enters the area for the position within the account interval period. A decimal point value may be used to express values that are inferior to the defined unit of measurement. The decimal mark that separates the digits forming the integral part of a number from those forming the fractional part. (ISO 6093) shall always be a period (“.”). The direction from out party (seller) to in party (buyer) is positive, while the opposite direction is negative (with minus signs)). Rules regarding the delta value: • The delta value is defined as: $\Delta = \text{Value}_{\text{BRP sale}} - \text{Value}_{\text{BRP purchase}}$ • The latest received value from a party is used in the calculation of the delta value. • If a value is received from only one of the parties in a trade, the delta value is zero. • There are no delta values in the final confirmation report The maximum length of this information is 17 numeric characters (decimal point and sign, if used, included). The resolution shall be maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh.	1..1	DE17			Qty
Reason (Interval level)	Reason class	See description at Confirmation Report level	0..1				Reason

Element *Attribute*	Definition	Description	Card	Max Size	Content	Dep.	XML element
Reason Code	A code providing the status of the information.	At the time interval level: **A43** Quantity increased **A44** Quantity decreased Only used for *Reason Code* "***A86** Confirmation with adjustment (time series have been modified)*" in *Reason* at *Time Series Confirmation* level. I.e. Not used for Imposed Time Series.	1..1	A3			ReasonCode

Table 11: Element/*Attribute* usage: ENTSO-E ESS Confirmation Report

4.4 Ediel Activation Document (based on IEC62325-451-7 Ed.2 Activation Document)

The Ediel Activation Document is based on the ENTSO-E Activation Market Document.

The Ediel Activation Market Document is extended with an association from the TimeSeries class to the Market Participant class to convey information of parties related to the time series in question, such as a Balance Responsible Party or an Energy Supplier (Retailer). The document used for data flow for delivered balancing services (delivered reserves). The Activation Document will be sent from the BSPs or on behalf of the BSPs by the TSOs or datahubs.

4.4.1 Class diagram: Ediel Activation contextual model version 1.0

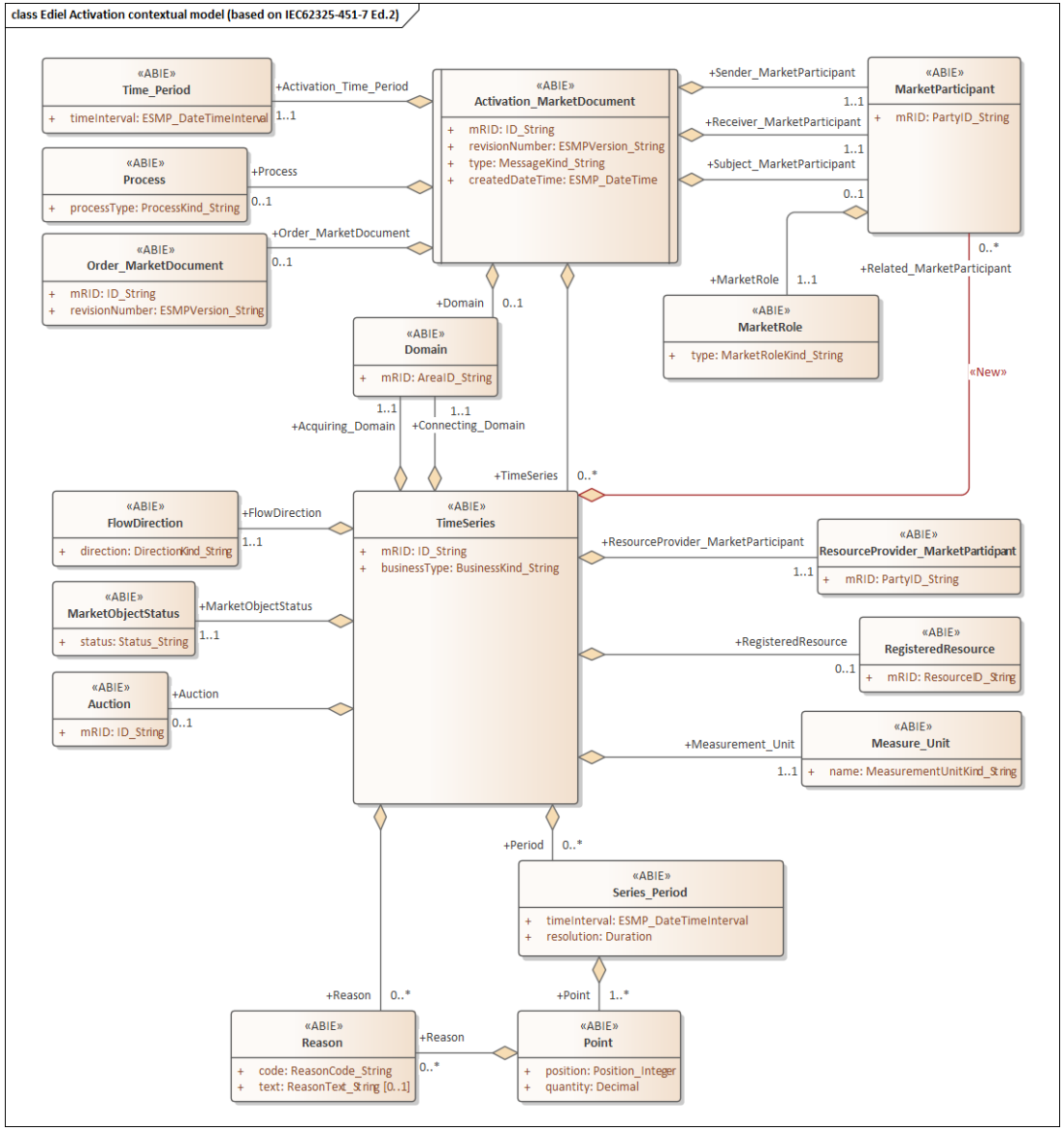

Figure 9: Class diagram: Ediel Activation contextual model version 1.0

4.4.2 Class diagram: Ediel Activation assembly model version 1.0

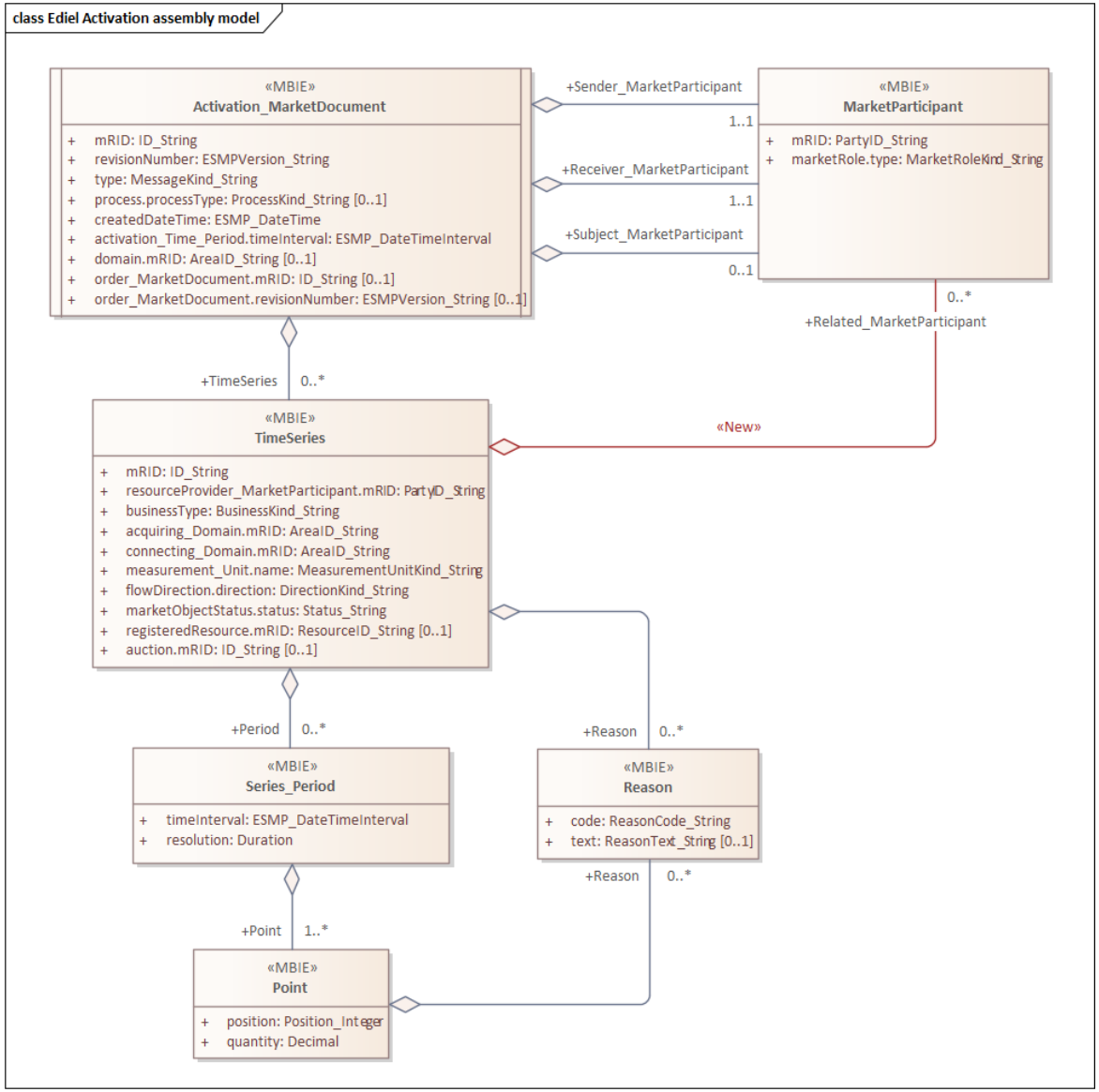

Figure 10: Class diagram: Ediel Activation assembly model version 1.0

4.4.3 Attribute usage: Ediel Activation Document

Attribute	Cl.	Code and description
Activation_MarketDocument		
mRID : ID_String	[1]	Unique identification of the document.
revisionNumber : ESMPVersion_String	[1]	Use one of: 1) Sequence number incrementing by 1 for each update 2) Fixed value "1" **Note:** If 1) is used, the mRID must be the same for messages in the same sequence.
Type : MessageKind_String	[1]	**A83** Activated balancing quantities
process.processType : ProcessKind_String	[1]	**A16** Realised
sender_MarketParticipant.mRID : PartyID_String	[1]	Unique identification of the party who is sending the document. *codingScheme:* ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*
sender_MarketParticipant. marketRole.type : MarketRoleKind_String	[1]	**A04** System Operator **A05** Imbalance Settlement Responsible (eSett ID: **44X-00000000004B**) **A09** Metered Data Aggregator **A46** Balancing Service Provider
receiver_MarketParticipant.mRID: PartyID_String	[1]	Identification of the party who is receiving the schedules. *codingScheme:* ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*
receiver_MarketParticipant. marketRole.type : MarketRoleKind_String	[1]	**A05** Imbalance Settlement Responsible **A08** Balance Responsible Party

		A46 Balancing Service Provider
createdDateTime : ESMP_DateTime	[1]	Date and time for creation of the document. *Format:* <cim:createdDateTime>YYYY-MM-DDTt:mm:ssZ</cim:createdDateTime>
activation_Time_Period.timeInterval : ESMP_DateTimeInterval	[1]	The beginning and ending date and time of the period covered by the document. *Format:* <cim:start>YYYY-MM-DDThh:mmZ</cim:start> <cim:end>YYYY-MM-DDThh:mmZ</cim:end>
domain.mRID : AreaID_String	[1]	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area). *codingScheme:* ***A01*** *EIC*
subject_MarketParticipant.mRID : PartyID_String	[0..1]	Specifies the BSP (**A46**) when a TSO, DSO or someone else is sending on behalf of the BSP
subject_MarketParticipant. marketRole.type: MarketRoleKind_String	[0..1]	**A46** Balancing Service Provider (BSP) *codingScheme:* ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*
	[1..*]	**Time Series**
mRID: ID_String	[1]	Unique identification of the Time Series (unique over time for the sender in question).
resourceProvider_ MarketParticipant.mRID : PartyID_String	[1]	The identification of the Balancing Service Provider. *codingScheme:* ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*
Related_MarketParticipant.mRID : PartyID_String	[1]	Unique identification of the party whose resource is activated *codingScheme:* ***A01*** *EIC*

		A10 *GS1* ***NDK*** *Denmark National coding scheme* ***NFI*** *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*
Related_MarketParticipant. marketRole.type: MarketRoleKind_String	[1]	**A08** Balance Responsible Party **A12** Energy Supplier (Retailer)
businessType : BusinessKind_String	[1]	**A95** Frequency containment reserve (FCR) **A96** Automatic frequency restoration reserve (aFRR) **A97** Manual frequency restoration reserve (mFRR) **C26** Frequency Containment Reserve-Normal (FCR-N) **C27** Frequency Containment Reserve-Disturbance (FCR-D) **Z85** Fast Frequency Reserve (FFR)
acquiring_Domain.mRID : AreaID_String	[1]	Unique identification of the Bidding Zone (BZ) where the energy is purchased. This will be the same BZ as the Connecting Area, except for supportive power (incl. transit) where the resource is connected in another BZ. *codingScheme:* ***A01*** *EIC*
connecting_Domain.mRID : AreaID_String	[1]	Unique identification of the Bidding Zone (BZ) or Metering Grid Area (MGA) where the resource is connected. *codingScheme:* ***A01*** *EIC*
measurement_Unit.name : MeasurementUnitKind_String	[1]	**KWH** kWh (kilowatt hour) **MWH** MWh (megawatt hour)
flowDirection.direction : DirectionKind_String	[1]	**A01** Up **A02** Down
marketObjectStatus.status : Status_String	[1]	**A07** Activated **A73** Delta (used for reporting misdelivered quantity, where correction applies to a BRP instead of the BSP, i.e. uses signed values, i.e. will be negative in case of an 'under-delivery' and positive in case of an 'over-delivery'.
registeredResource.mRID : ResourceID_String	[1]	Regulation object code *codingScheme:* ***A01*** *EIC* ***A10*** *GS1* ***NDK*** *Denmark National coding scheme*

		NFI *Finland National coding scheme* ***NSE*** *Sweden National coding scheme*
	1st rep.	**Reason (TimeSeries Level)**
Code : ReasonCode_String	[1]	**Z29** FCR (Frequency Containment Reserve) **Z30** aFRR (Frequency Restoration Reserve - Automatic) **Z31** mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves, Balancing Power) **Z34** mFRR, Quarter regulation (Frequency Restoration Reserve - Manual activated reserves, Quarter regulation) **Z35** mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves, Special Regulation) **Z36** Hour Change Regulation **Z37** Power Transaction **Z38** TSO Internal Countertrades **Z39** Day Ahead Production Adjustment **Z40** Frequency Containment Reserve, Normal operation (FCR-N). **Z41** Frequency Containment Reserve, Disturbance (FCR-D). **Z56** Fast Frequency Reserve (FFR) **Z63** Period shift activation **Z77** aFRR AOF activation **Z78** aFRR non-AOF activation
	2nd rep.	**Reason (TimeSeries Level)**
Code : ReasonCode_String	[0..1]	**Z84** Activation of own resources as Balance Responsible Party/Energy Supplier (Retailer) **Z85** Activation of contracted resources as contractual Balancing Service Provider (no compensation) **Z86** Independent aggregation
	[1..*]	**Series_Period**
timeInterval : ESMP_DateTimeInterval	[1]	The start and end date and time of the time interval of the period in question. *Format:* <cim:start>YYYY-MM-DDThh:mmZ</cim:start> <cim:end>YYYY-MM-DDThh:mmZ</cim:end>
Resolution : Duration	[1]	The resolution is expressed in compliance with ISO 8601 in the following format: PnYnMnDTnHnMnS.

		Where nY expresses number of years, nM number of months, nD number of days. The letter "T" separates the date expression from the time expression and after it nH identifies number of hours, nM number of minutes and nS number of seconds. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
	[1]	**Point**
Position : Position_Integer	[1]	The position of the observation in a time series – Always 1.
Quantity : Decimal	[1]	The quantity for the interval in question. The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh

Table 12: Attribute usage: Ediel Activation Document

4.4.4 Dependency matrix: Ediel Activation Document

Document type	Process type	Business type	Direction	Reason code (1st repetition)	DK	FI	NO	SE
A83 Activated balancing quantities	**A16** Realised	**A95** Frequency containment reserve	**A01** Up **A02** Down	**Z29** FCR (Frequency Containment Reserve)		✓	✓	✓
		Z85 Fast frequency reserve (FFR)	**A01** Up **A02** Down	**Z56** Fast Frequency Reserve (FFR)	✓			✓
		A96 Automatic frequency restoration reserve (aFRR)	**A01** Up **A02** Down	**Z30** aFRR (Frequency Restoration Reserve - Automatic)	✓	✓	✓	✓
				Z77 aFRR AOF activation	✓	✓	✓	✓
				Z78 aFRR non-AOF activation	✓	✓	✓	✓
		A97 Manual frequency restoration reserve (mFRR)	**A01** Up **A02** Down	**Z31** mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves, Balancing Power)	✓	✓	✓	✓
				Z34 mFRR, Quarter regulation (Frequency Restoration Reserve - Manual activated reserves, Quarter regulation)			✓	
				Z35 mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves, Special Regulation)	✓	✓	✓	
				Z36 Hour Change Regulation		✓	✓	
				Z37 Power Transaction		✓		
				Z38 TSO Internal Countertrades		✓		
				Z39 Day Ahead Production Adjustment		✓	✓	✓
				Z63 Period shift activation			✓	
		C26 Frequency Containment Reserve-Normal (FCR-N)	**A01** Up **A02** Down	**Z40** Frequency Containment Reserve, Normal operation (FCR-N).	✓			✓
		C27 Frequency Containment Reserve-Disturbance (FCR-D)	**A01** Up **A02** Down	**Z41** Frequency Containment Reserve, Disturbance (FCR-D).				✓

Table 13: Dependency matrix: Ediel Activation Document