ENERGINET eSett FINGRID Statnett SVENSKA KRAFTNÄT

Mapping of NBS documents

to

CIM

Business process: Nordic Balance Settlement
Version: 1.0A
Status: Approved by NMEG
Date: December 3rd, 2025

CONTENT

1 Introduction

1.1 Background

This document is drafted by NMEG Technical Committee (NTC), approved by NMEG and supported by eSett. NTC is a subgroup of NMEG involving energy market data exchange experts representing all the four Nordic counties and the three Nordic datahubs. One of the main tasks is making a common CIM based data exchange framework that will fit all the four Nordic countries. In addition, EU Implementing Regulation (IR), such as for Access to metering and Consumption Data, Supplier Switching and Demand Response is considered.

NTC and NMEG will prepare CIM based XML documents based on Nordic requirements and thereafter submit these as Nordic proposals for update of the basic CIM model (IEC61970, IEC61968 and IEC62315) and the European Style Marked Profile (ESMP IEC62325-351).

This document describes a proposal for how to best migrate from the xml documents used by eSett today to CIM based documents for the Nordic Balance Settlement (NBS). Most of the xml documents used by eSett today are based on older ebIX® xml schemas or ENTSO-E xml standards.

NMEG has during some years been working with Maintenance Requests (MR) for update of CIM and ESMP to be in line with the NBS need and now it seems that all NBS needs are covered.

1.2 Next steps

1) eSett and TSOs (eSett's SLA group) evaluate together when could be the suitable time to start the implementation in eSett. E.g. is it better timing to start e.g. in 2026. This is heavily dependent on other upcoming market changes.
2) eSett start to migrate the new CIM documents.
3) Once the new CIM documents have been implemented successfully in eSett, there is a minimum of 2-year transition period where we support both current non-CIM and the CIM documents in parallel to give market participants sufficient time to adapt to the change.
4) NMEG will follow up the migration process and if needed make new Maintenance Requests (MRs) to ENTSO-E.

1.3 References

[1] NBS BRS, see https://ediel.org/nordic-balance-settlement-nbs/

[2] NBS BRS for master data, see https://ediel.org/nordic-balance-settlement-nbs/

[3] eSett Handbook, see https://www.esett.com/handbook/

1.4 Change log

Ver/rel/rev	Date	Changes
1.0A	20251203	• First published version

2 ebIX® based documents (measured and aggregated data)

2.1 Validated data for settlement for Aggregator

2.1.1 Recommendations

Today this document is based on an older ebIX® standard, i.e. NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44). There are two good alternatives for migration:

The ENTSO-E Measurement Data Market Document is a new document intended to be used for all most kind of measurements in the European energy industry.

2.1.2 Class diagram: NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)

This is how the document looks today, i.e. what is currently being sent to eSett.

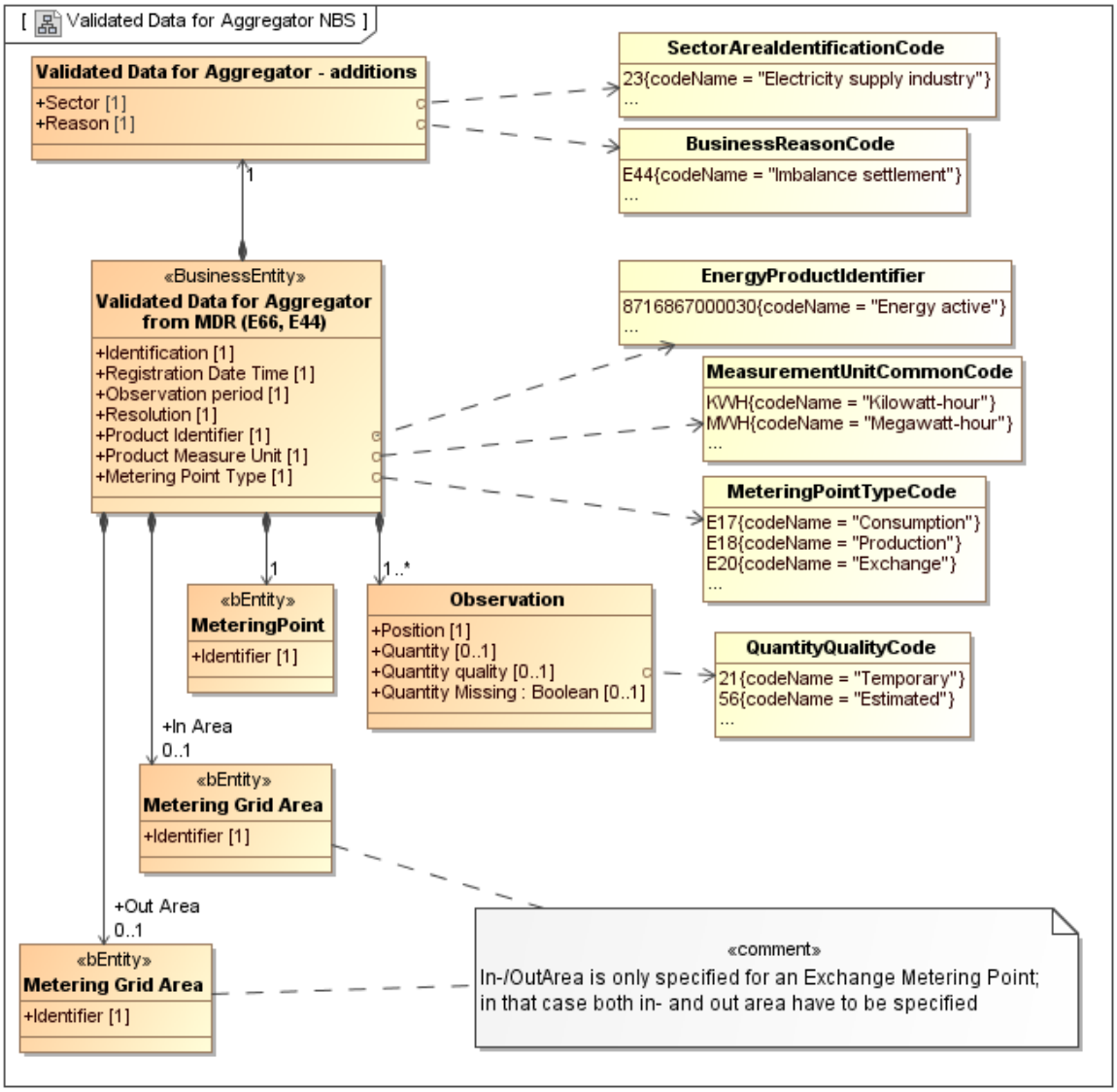

Figure 1: Class diagram: NEG (ebIX® based) Validated Data for Settlement for Aggregator (E66, E44)

2.1.3 ENTSO-E Measurement data document contextual model, version 1.1

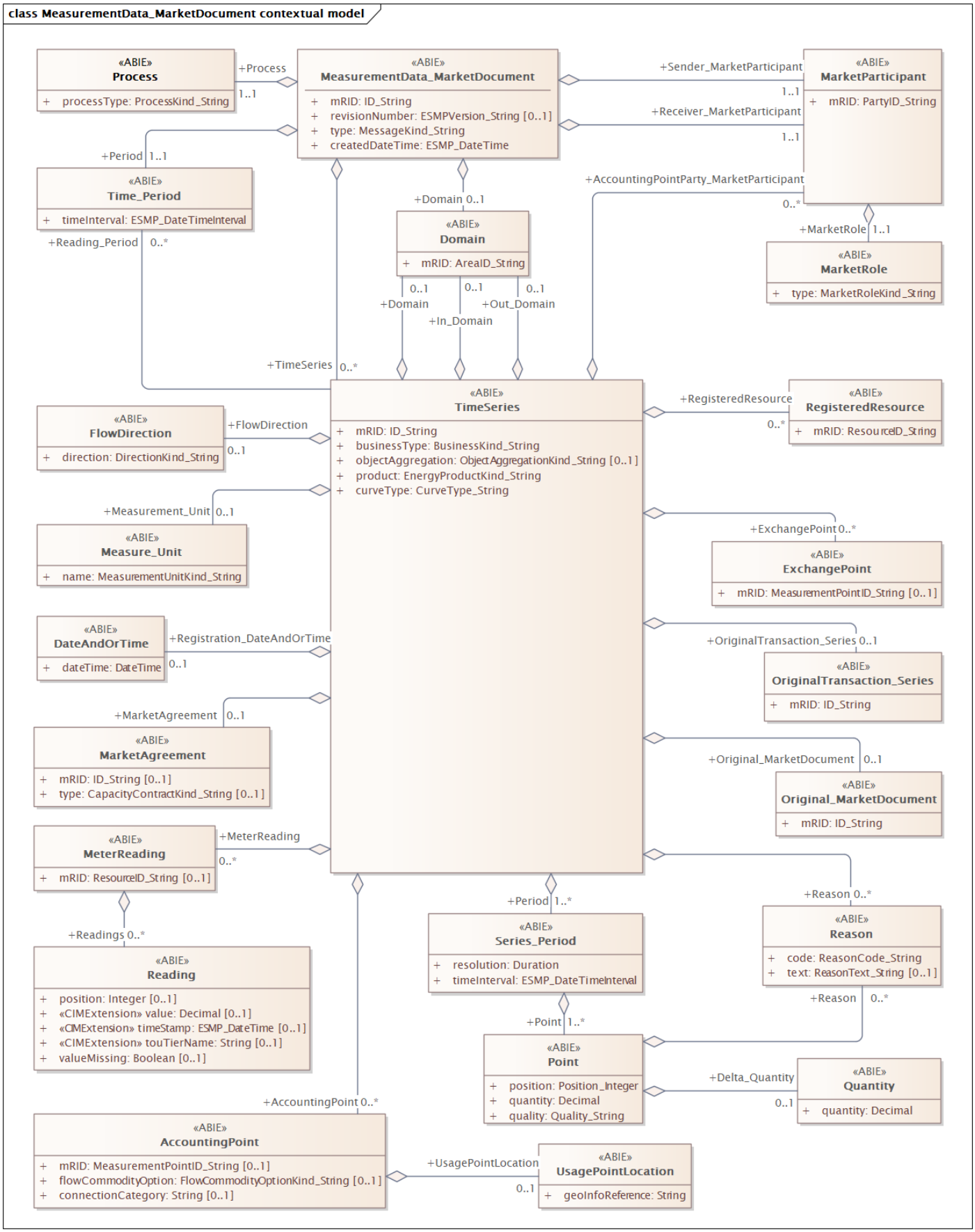

Figure 2 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

2.1.4 ENTSO-E Measurement data document contextual model, version 1.1

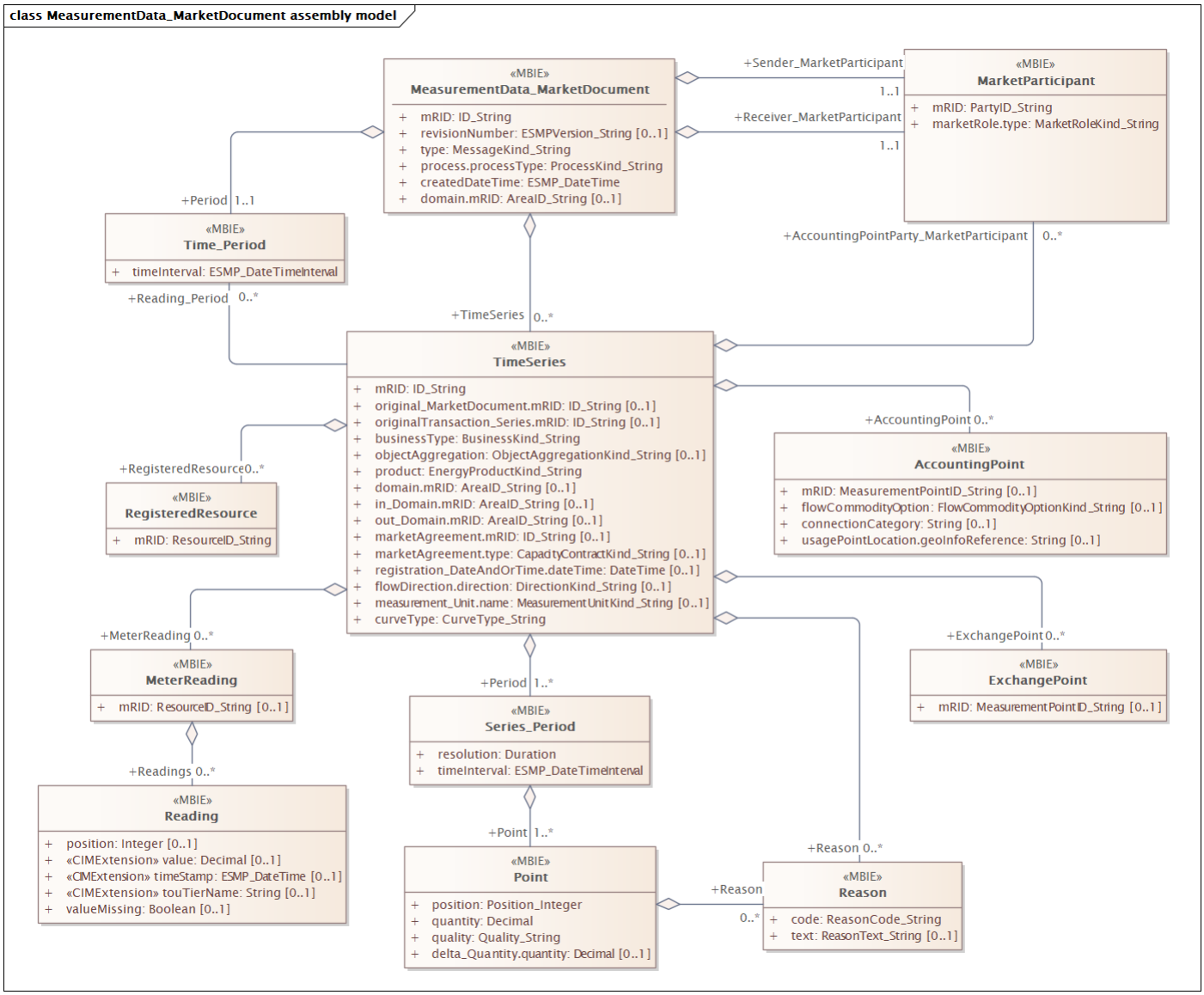

Figure 3 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

2.1.5 Attribute usage: ENTSO-E Measurement data document contextual model, version 1.1

NEG Validated Data for Settlement for Aggregator classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
MeasurementData_MarketDocument			
Identification	mRID	[1]	Unique identification of the document.
	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A45** Measurement Value Document (The document is used to provide measurement information from measurement devices)
Energy Business Process (Reason)	process.processType	[1]	**A06** Imbalance Settlement
Sender Energy Party	sender_MarketParticipant. mRID	[1]	Unique identification of the sender
	sender_MarketParticipant. marketRole.type	[1]	**A09** Metered data aggregator
Recipient Energy Party	receiver_MarketParticipant. mRID	[1]	Unique identification of the receiver
	receiver_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation	createdDateTime	[1]	Date and time for creation of the document.
	period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Energy Industry Classification (Sector)	*Not applicable*		
Payload Energy Time Series	**TimeSeries**	**[1..*]**	
Identification	mRID	[1]	The identification of the time series instance.
	businessType	[1]	**A64** Meter measurement data
Identification (Product Identifier)	product	[1]	**8716867000030** Active energy
	AccountingPoint	[1]	
Identification (Identifier)	mRID	[0..1]	Unique identification of an Accounting Point.
Metering Point Type	flow CommodityOption		**E17** Consumption (Only used internally within the DSO, i.e. not sent to eSett) **E18** Production **E20** Exchange
In Area / Metering Grid Area			
Identifier	in_Domain.mRID	[0..1]	One MGA in the MGA exchanges
Out Area / Metering Grid Area			
Identifier	out_Domain.mRID	[0..1]	The other MGA in the MGA exchanges

NEG Validated Data for Settlement for Aggregator classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
Registration Date Time	registration_DateAndOrTime. dateTime	[1]	Data and time for registration or update
Unit Type (Pro)duct Measure Unit)	measurement_Unit.name	[1]	**KWH** kilo Watt hour (kWh) **MWH** Mega Watt hour (MWh)
	curveType	[1]	**A01** Sequential fixed size block
	Period	**[1..*]**	
Resolution Duration (Resolution)	resolution	[1]	The resolution defining the number of periods that the time interval is divided. The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. E.g.: **PT60M** **PT1H** **PT15M**
Start and End (Observation period)	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
	Point	**[1..*]**	
Sequence (Position)	position	[1]	A sequential value representing the relative position within a given time interval.
Energy Quantity (Quantity)	quantity	[0..1]	The principal quantity identified for an observation. The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh. Quantity is not used if the quantity is missing.
Quantity Quality	quality	[0..1]	**A02** Not available (maps to "**46** Does not exist") **A03** Estimated (maps to "**56** Estimated, approved for billing") **A07** Temporary, the value will be updated The default quality is *"Metered"*, i.e. quality is only used if ≠ "*Metered*" if the value is missing, the quality code **A02** must be used .

Table 1 Attribute usage: ENTSO-E Measurement data document contextual model, version 1.1

2.1.6 Dependency matrix: ENTSO-E Measurement data document contextual model, version 1.1

IEC CIM classes/attributes	Validated Data, Production	Validated Data, MGA exchange
MeasurementData_MarketDocument		
TimeSeries		
businessType	**A64** Meter measurement data	**A64** Meter measurement data
product	**8716867000030** Active energy	**8716867000030** Active energy
In_Domain.mRID	Not used	Unique ID of one MGA
Out_Domain.mRID	Not used	Unique ID of the other MGA
marketEvaluationPoint.mRID	Unique identification of an Accounting Point.	
marketEvaluationPoint.flow CommodityOption	**E18** Production	**E20** Exchange

Table 2 Dependency matrix: ENTSO-E Measurement data document contextual model, version 1.1

2.2 Aggregated data per MGA

2.2.1 Recommendations

Today this document is based on an older ebIX® standard, i.e. NEG (ebIX® based) Aggregated Data per MGA (E31, E44). The best alternative for migration seems to be migrating to the ENTSO-E Energy Account Market Document (EAR).

The Energy Account Market Document has been updated with several changes, such as new associations and attributes to fill the Nordic needs.

2.2.2 Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) – consumption

This is how the document looks today when used for aggregated data from consumption Metering Points, i.e. what is currently being sent to eSett.

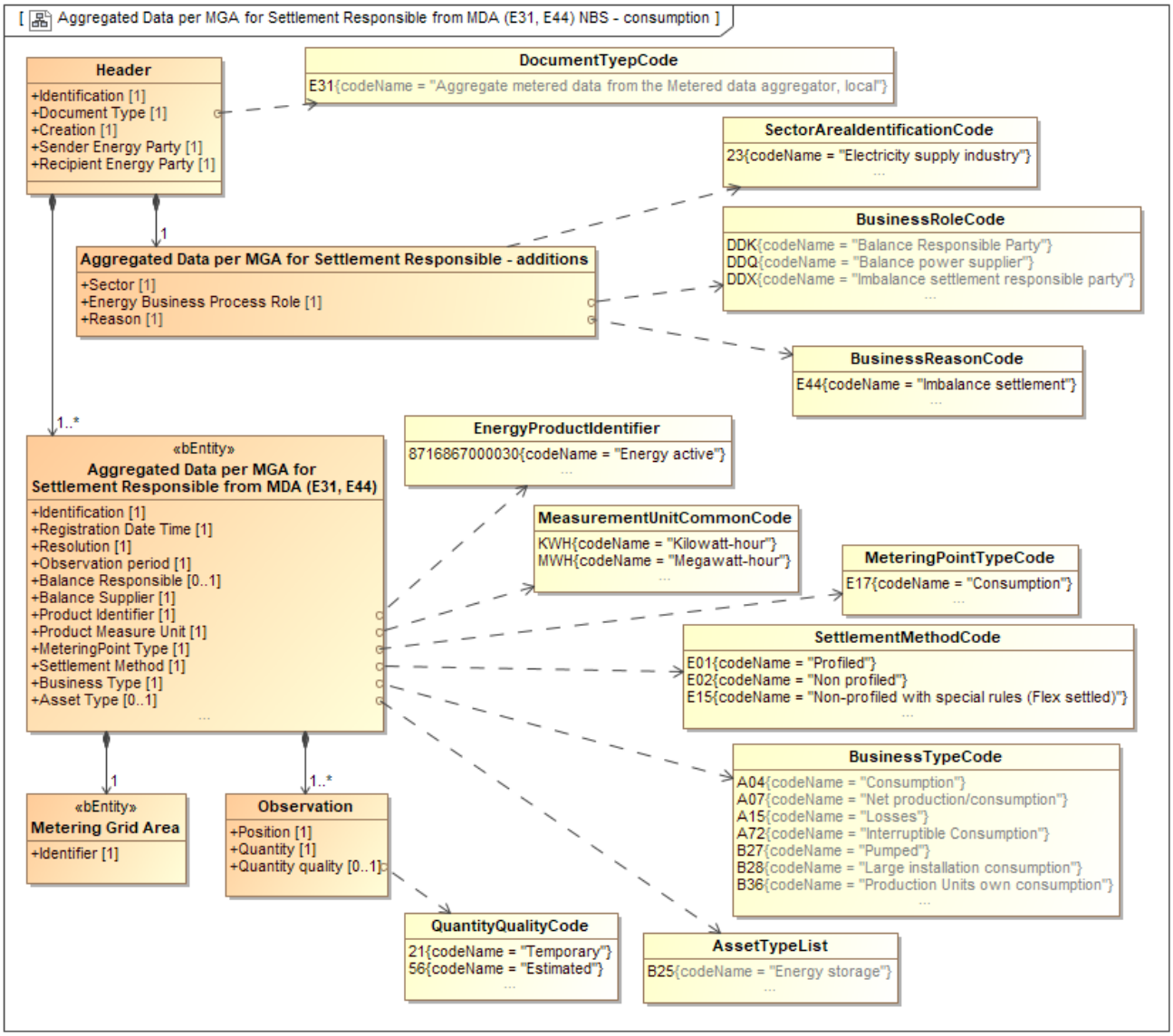

Figure 4 Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - consumption

2.2.3 Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) – production

This is how the document looks today when used for aggregated data from production Metering Points, i.e. what is currently being sent to eSett. This document has an extra "Production Type" attribute in the "Aggregated Data per MGA for Settlement Responsible from MDA (E31, E44)" class.

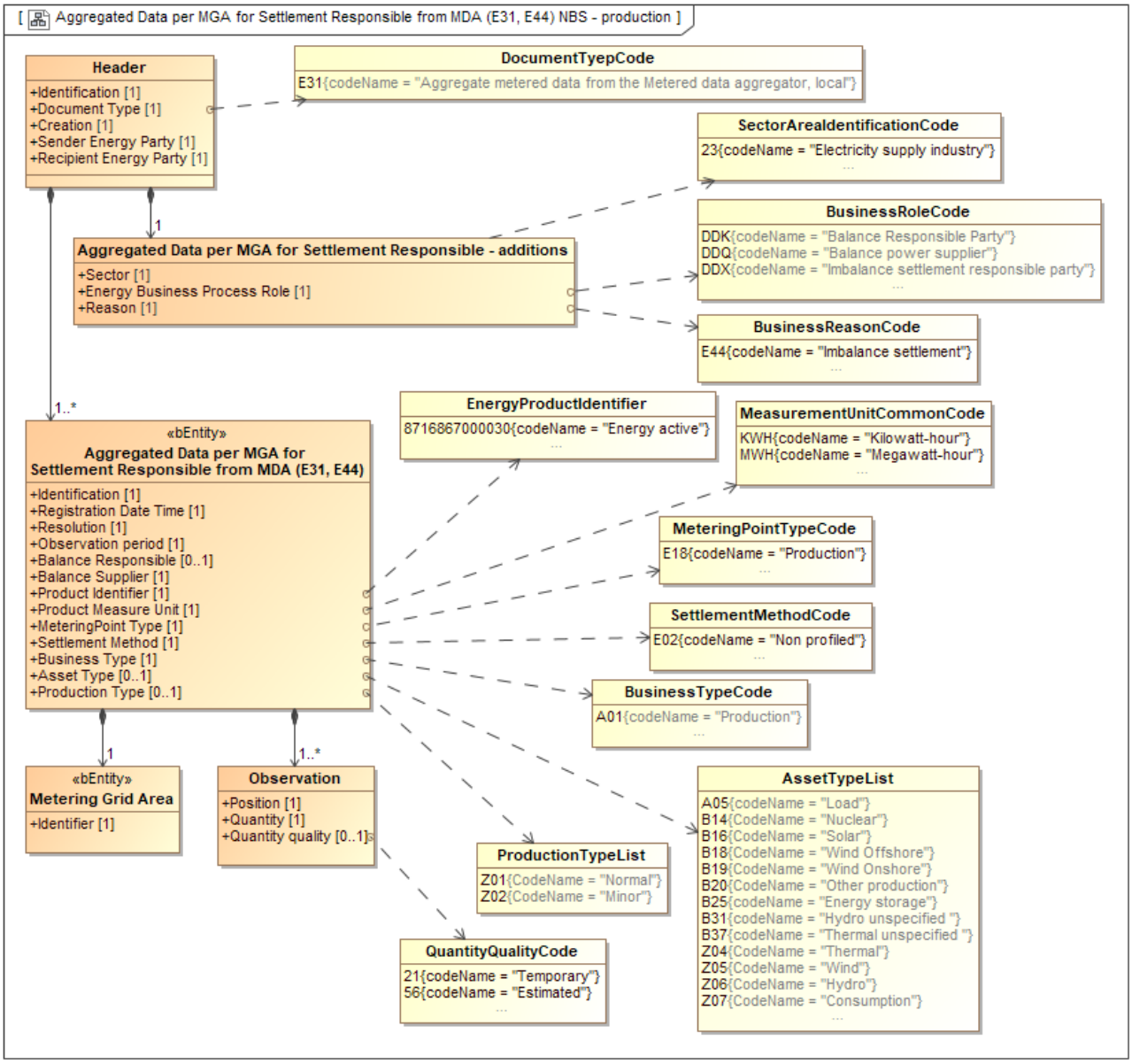

Figure 5 Class diagram: NEG (ebIX® based) Aggregated Data per MGA (E31, E44) - production

2.2.4 ENTSO-E Energy Account Market Document contextual model, version 4.2

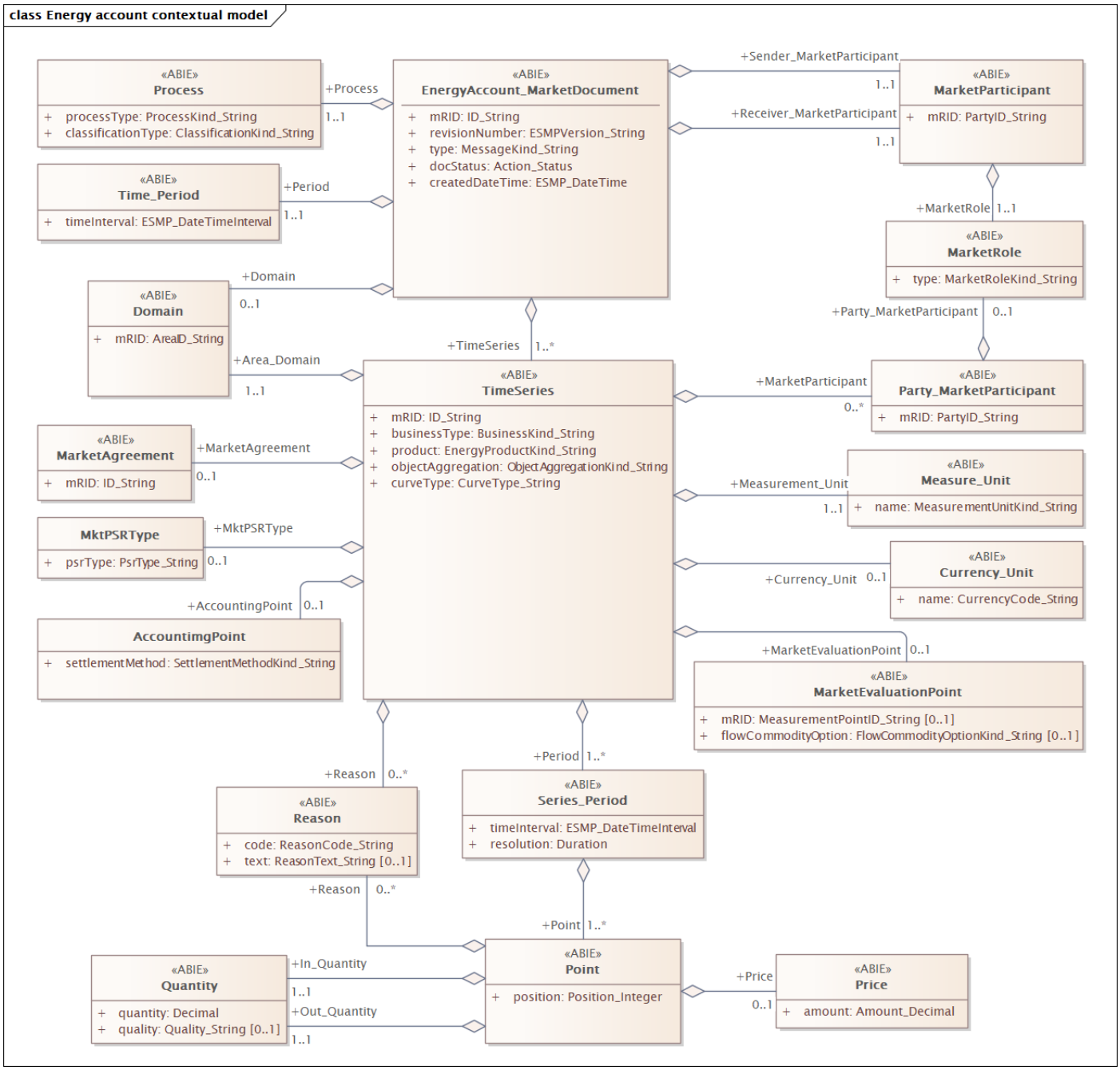

Figure 6 Class diagram: ENTSO-E Energy Account Market Document contextual model, version 4.2

2.2.5 Class diagram: ENTSO-E Energy Account Market Document assembly model, version 4.2

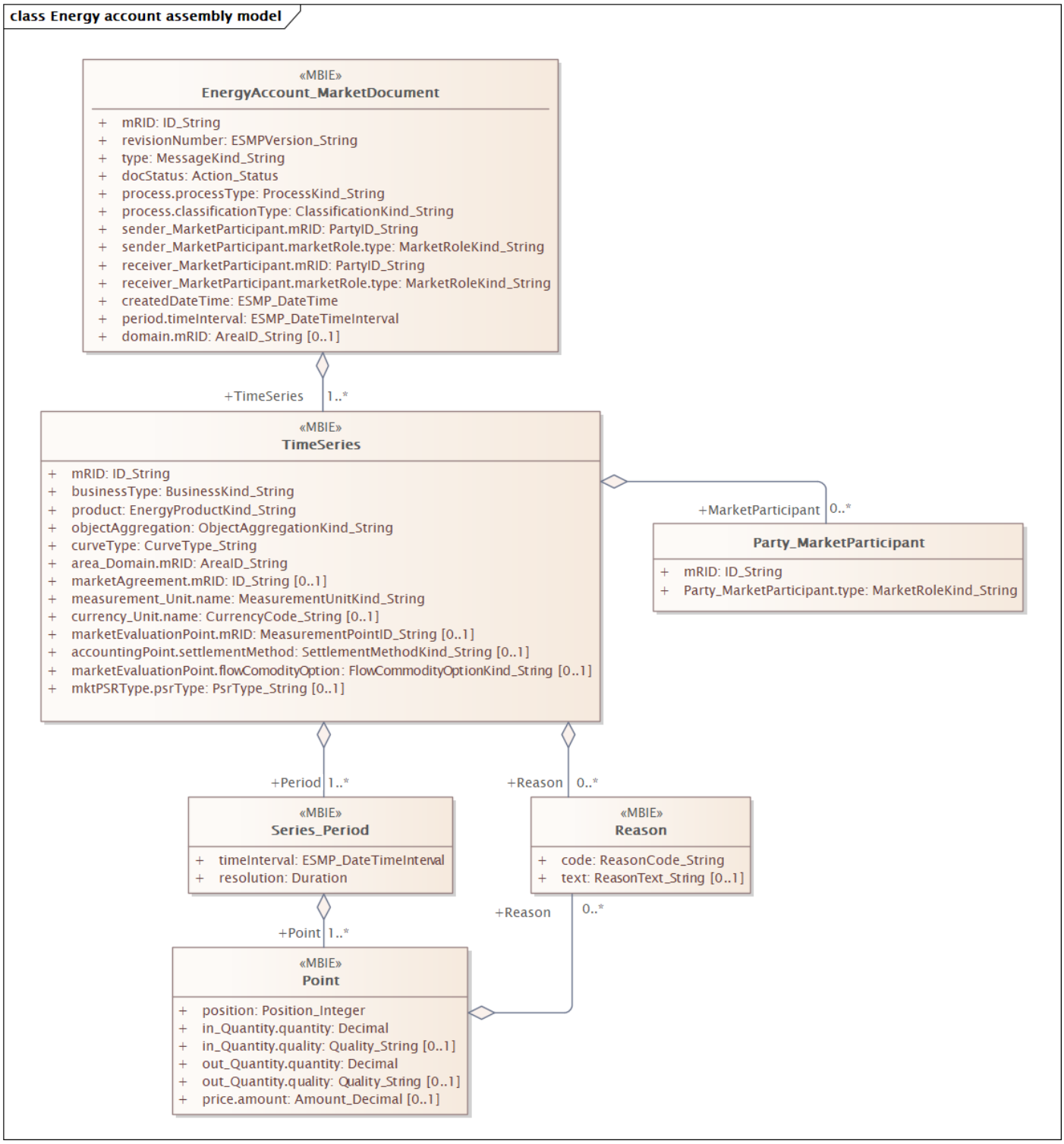

Figure 7 Class diagram: ENTSO-E Energy Account Market Document assembly model, version 4.2

2.2.6 Attribute usage: ENTSO-E Energy Account Market Document, version 4.2

NEG Aggregated Data per MGA classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
EnergyAccount_ MarketDocument			
Identification	mRID	[1]	Unique identification of the document.
	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A14** Aggregated energy data (A time series concerning adjusted metered readings received from a metered data collector and aggregated and validated by a metered data aggregator)
	docStatus	[1]	**A02** Final
Energy Business Process (Reason)	process.processType	[1]	**A06** Imbalance Settlement
	process.classificationType	[1]	**A02** Summary type
Sender Energy Party	sender_MarketParticipant. mRID	[1]	Unique identification of the sender
	sender_MarketParticipant. marketRole.type	[1]	**A09** Metered data aggregator
Recipient Energy Party	receiver_MarketParticipant. mRID	[1]	Unique identification of the receiver
	receiver_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation	createdDateTime	[1]	Date and time for creation of the document.
	period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Energy Industry Classification (Sector)	*Not applicable*		
Payload Energy Time Series	**TimeSeries**	**[1..*]**	
Identification	mRID	[1]	The identification of the time series instance.
	businessType	[1]	**A01** Production **A04** Consumption (general 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)
Identification (Product Identifier)	product	[1]	**8716867000030** Active energy

NEG Aggregated Data per MGA classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
	objectAggregation	[1]	**A14** Metering grid area
Unit Type (Pro)duct Measure Unit)	measurement_Unit.name	[1]	**KWH** kilo Watt hour (kWh) **MWH** Mega Watt hour (MWh)
Identification (Identifier)	area_Domain.mRID	[1]	Unique identification of the Metering Grid Area
Settlement Method	accountingPoint. settlementMethod	[1]	**E01** Profiled **E02** Non-profiled **E15** Non-profiled with special rules (Flex settled)
Asset Type	mktPSRType.psrType	[0..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
	curveType	[1]	**A01** Sequential fixed size block
Balance Responsible Party, Balance Supplier	**MarketParticipant**	[0..1]	
	mRID	[1]	Unique ID of the market participant
	marketRole.type	[1]	**A08** Balance responsible party **A12** Energy supplier
Metering Point Type	marketEvaluationPoint.flow CommodityOption	[1]	**E17** Consumption (Only used internally within the DSO, i.e. not sent to eSett) **E18** Production
	Series_Period	**[1..*]**	
Start and End (Observation period)	timeInterval	[1]	The start and end date and time of the time interval of the period in question.

NEG Aggregated Data per MGA classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
Resolution Duration (Resolution)	resolution	[1]	The resolution defining the number of periods that the time interval is divided. The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. E.g.: **PT60M** **PT1H** **PT15M**
		[1..*]	**Point**
Sequence (Position)	position	[1]	A sequential value representing the relative position within a given time interval.
Energy Quantity (Quantity)	quantity	[0..1]	The principal quantity identified for an observation. The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh. Quantity is not used if the quantity is missing.
Quantity Quality	quality	[0..1]	**A02** Not available (maps to "**46** Does not exist") **A03** Estimated (maps to "**56** Estimated, approved for billing") **A??** Temporary, the value will be updated The default quality is *"Metered"*, i.e. quality is only used if ≠ "*Metered*" if the value is missing, the quality code **A02** must be used .

Table 3 Attribute usage: ENTSO-E Energy Account Market Document, version 4.2

2.2.7 Dependency matrix: ENTSO-E Energy Account Market Document, version 4.2

Description	Type	Settlement method	Flow commodity option	Business type	Asset type	Production type
Energy Account Market Document, consumption						
Metered consumption in an MGA	**E66** Validated metered data, time series	**E02** Non-Profiled **E15** Flex settled	**E17** Consum-ption	**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	**E66** Validated metered data, time series	**E01** Profiled	**E17** Consum-ption	**A04** Consumption (general consumption)	Not used	Not used
Pumped (only in Norway)	**E66** Validated metered data, time series	**E01** Profiled	**E17** Consum-ption	**B27** Pumped	Not used	Not used
Metered grid losses	**E66** Validated metered data, time series	**E02** Non-Profiled **E15** Flex settled	**E17** Consum-ption	**A15** Losses	Not used	Not used
Profiled grid losses	**E66** Validated metered data, time series	**E01** Profiled	**E17** Consum-ption	**A15** Losses	Not used	Not used
Metered energy storage	**E66** Validated metered data, time series	**E02** Non-Profiled **E15** Flex settled	**E17** Consum-ption	**A04** Consumption (general consumption)	**B25** Energy storage	Not used

Description	Type	Settlement method	Flow commodity option	Business type	Asset type	Production type
Energy Account Market Document, production						
Metered production	**E31** Aggregate metered data from the Metered data aggregator, local	**E02** Non-Profiled	**E18** Produc-tion	**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 4 Dependency matrix: ENTSO-E Energy Account Market Document, version 4.2

2.3 Aggregated data per neighbouring grid

2.3.1 Recommendations

The ENTSO-E Measurement Data Market Document is a new document intended to be used for all most kind of measurements in the European energy industry.

2.3.2 Class diagram: NEG (ebIX® based) Aggregated Data Per Neighbouring Grid For Settlement Responsible (E31, E44)

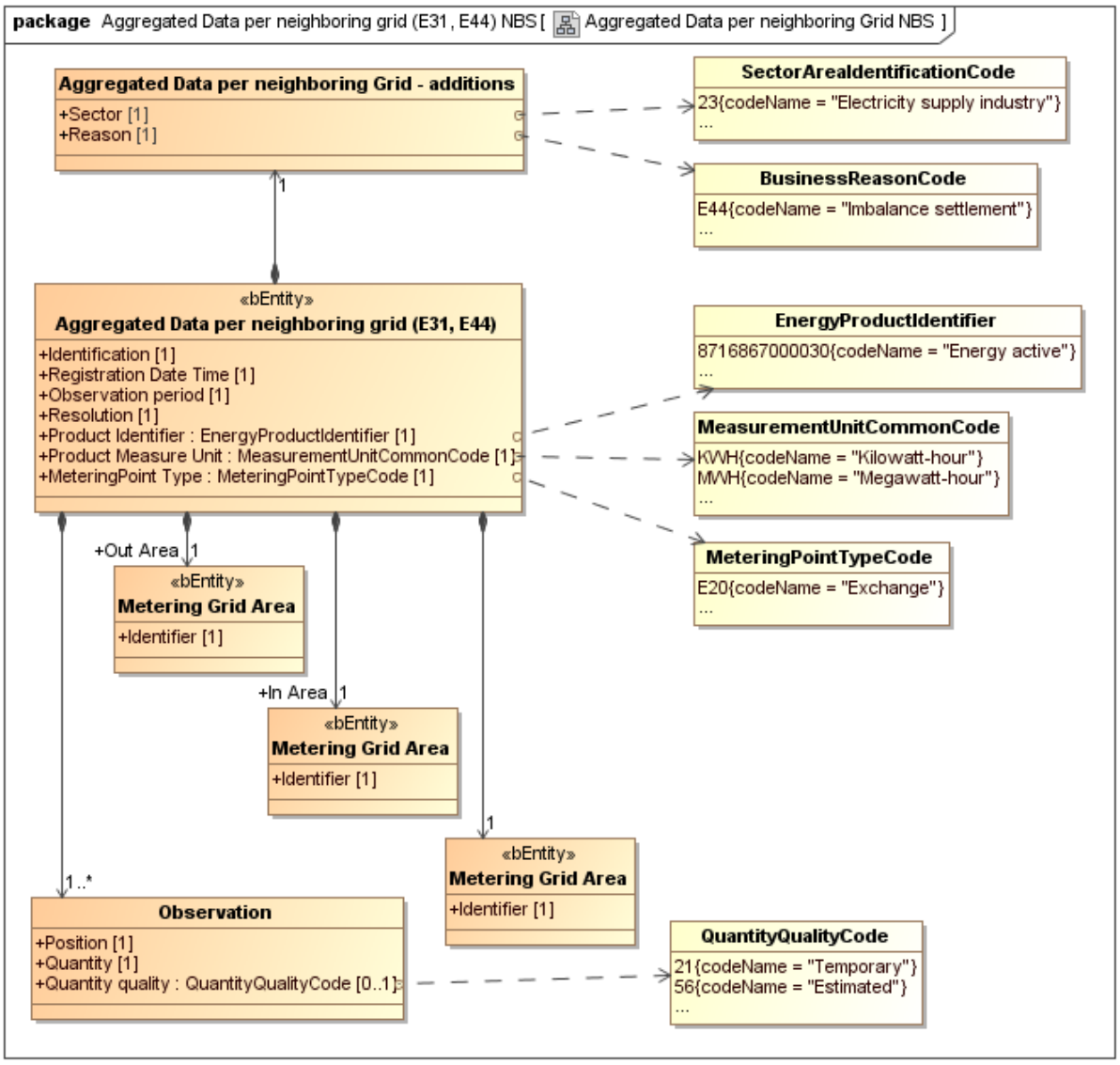

Figure 8 Class diagram: NEG (ebIX® based) Aggregated Data Per Neighbouring Grid For Settlement Responsible (E31, E44)

2.3.3 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

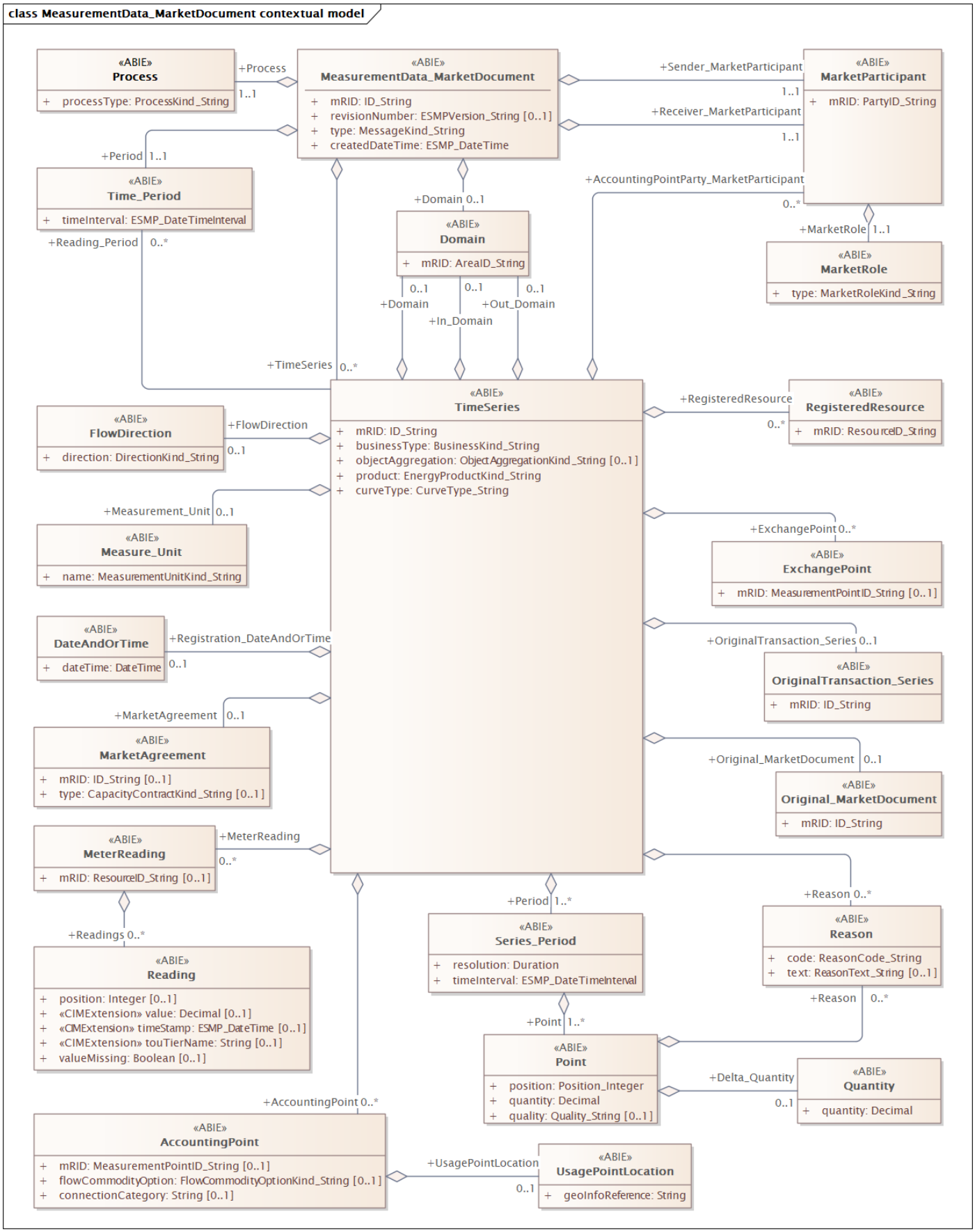

Figure 9 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

2.3.4 Class Diagram: ENTSO-E Measurement data document contextual model, version 1.1

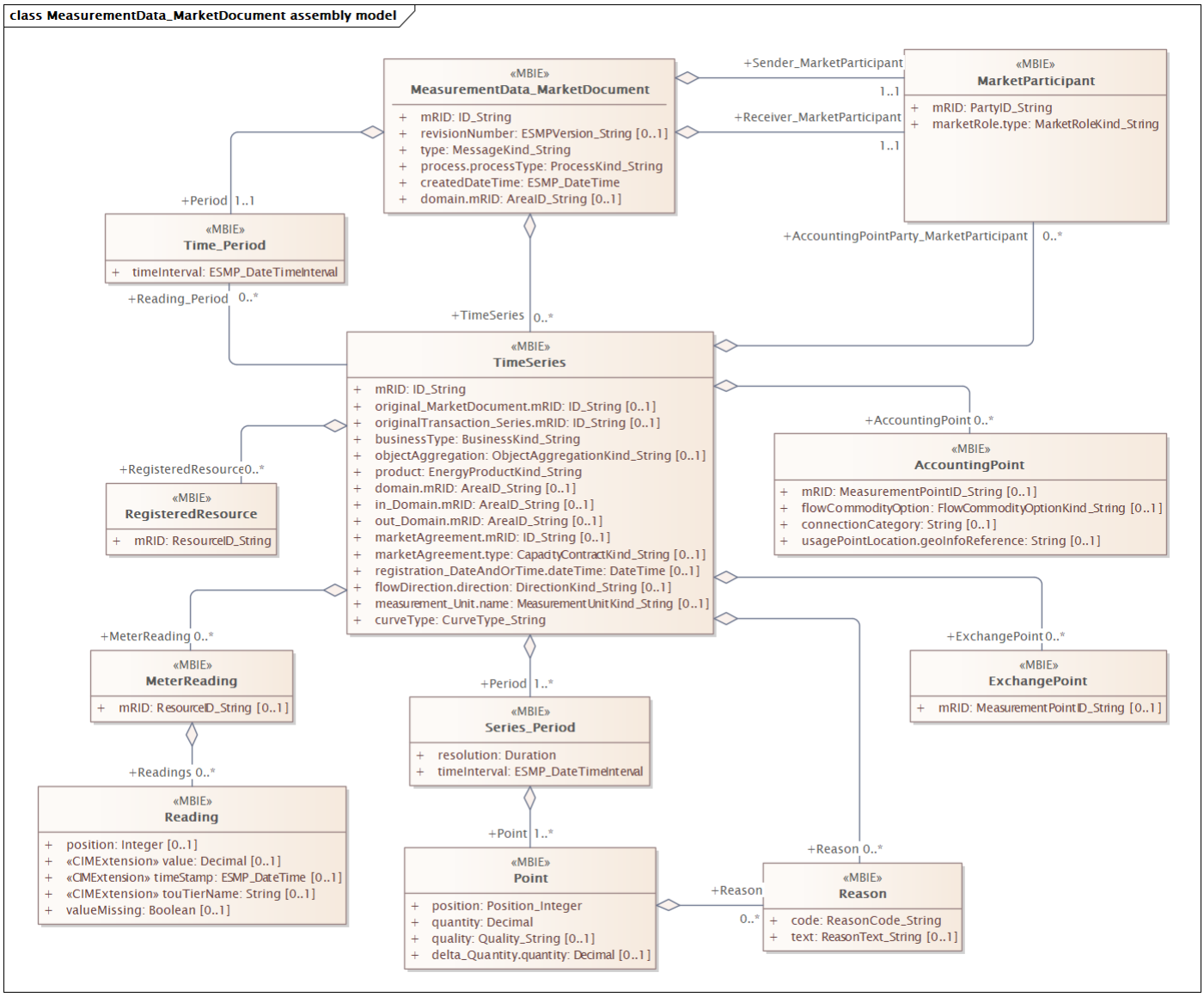

Figure 10 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

2.3.5 Attribute usage: ENTSO-E Measurement data document contextual model, version 1.1

NEG Aggregated Data Per Neighbouring Grid for Settlement Responsible classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
MeasurementData_MarketDocument			
Identification	mRID	[1]	Unique identification of the document.
	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A14** Aggregated energy data (A time series concerning adjusted metered readings received from a metered data collector and aggregated and validated by a metered data aggregator)
Energy Business Process (Reason)	process.processType	[1]	**A06** Imbalance Settlement
Sender Energy Party	sender_MarketParticipant. mRID	[1]	sender_MarketParticipant.mRID
	sender_MarketParticipant. marketRole.type	[1]	**A09** Metered data aggregator
Recipient Energy Party	receiver_MarketParticipant. mRID	[1]	receiver_MarketParticipant.mRID
	receiver_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation	createdDateTime	[1]	Date and time for creation of the document.
	period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Energy Industry Classification (Sector)	*Not applicable*		
Payload Energy Time Series	**Series**	**[1..*]**	
Identification	mRID	[1]	The identification of the time series instance.
	businessType	[1]	**A14** Aggregated energy data
Identification (Product Identifier)	product	[1]	**8716867000030** Active energy
	AccountingPoint	[1]	
Metering Point Type	flowCommodityOption	[1]	**E20** Exchange
Metering Grid Area			
Identifier	domain.mRID		Unique identification of the Metering Grid Area. The ID of the MGA responsible for metering the exchange.

NEG Aggregated Data Per Neighbouring Grid for Settlement Responsible classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
In Area / Metering Grid Area on			
Identifier	in_Domain.mRID		One MGA in the MGA exchanges
Out Area / Metering Grid Area			
Identifier	out_Domain.mRID		The other MGA in the MGA exchanges
Registration Date Time	registration_DateAndOrTime.dateTime	[1]	Data and time for registration or update
Unit Type (Pro)duct Measure Unit)	measurement_Unit.name	[1]	**KWH** kilo Watt hour (kWh) **MWH** Mega Watt hour (MWh)
	curveType	[1]	**A01** Sequential fixed size block
	Period	**[1..*]**	
Start and End (Observation period)	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
Resolution Duration (Resolution)	resolution	[1]	The resolution defining the number of periods that the time interval is divided. The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. E.g.: **PT60M** **PT1H** **PT15M**
	Point	**[1..*]**	
Sequence (Position)	position	[1]	A sequential value representing the relative position within a given time interval.
Energy Quantity (Quantity)	quantity	[0..1]	The principal quantity identified for an observation. The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh. Quantity is not used if the quantity is missing.

NEG Aggregated Data Per Neighbouring Grid for Settlement Responsible classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
Quantity Quality	quality	[0..1]	**A02** Not available (maps to "**46** Does not exist") **A03** Estimated (maps to "**56** Estimated, approved for billing") **A07** Temporary, the value will be updated The default quality is *"Metered"*, i.e. quality is only used if ≠ "*Metered*" if the value is missing, the quality code **A02** must be used .

Table 5 Attribute usage: ENTSO-E Measurement data document contextual model, version 1.1

2.4 Confirmation of aggregated data per neighbouring grid

2.4.1 Recommendations

The Energy Account Market Document has been updated with several changes, such as new associations and attributes to fill the Nordic needs.

2.4.2 Class diagram: NEG Confirmation of Aggregated Data Per Neighbouring Grid (A07/A08, Z44)

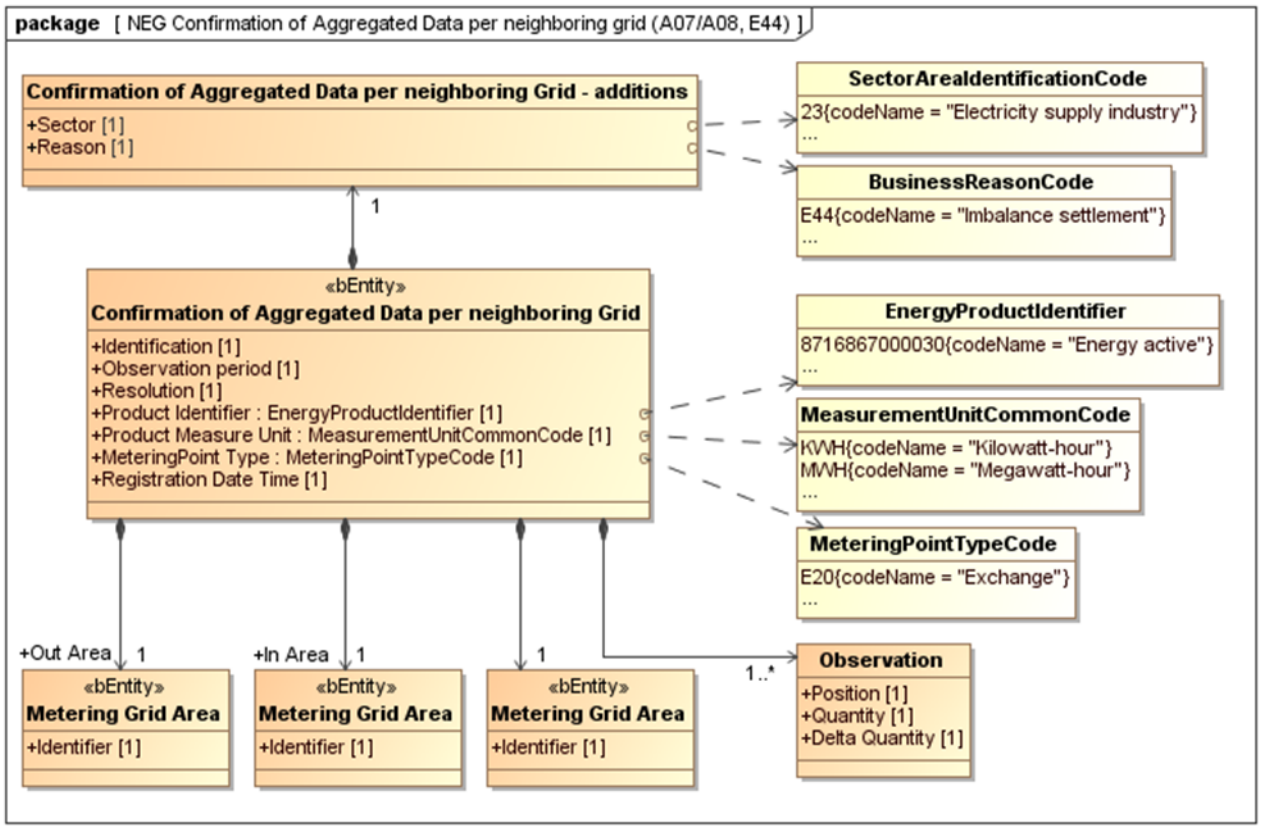

Figure 11 Class diagram: NEG Confirmation of Aggregated Data Per Neighbouring Grid From Settlement Responsible (A07/A08, Z44)

2.4.3 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

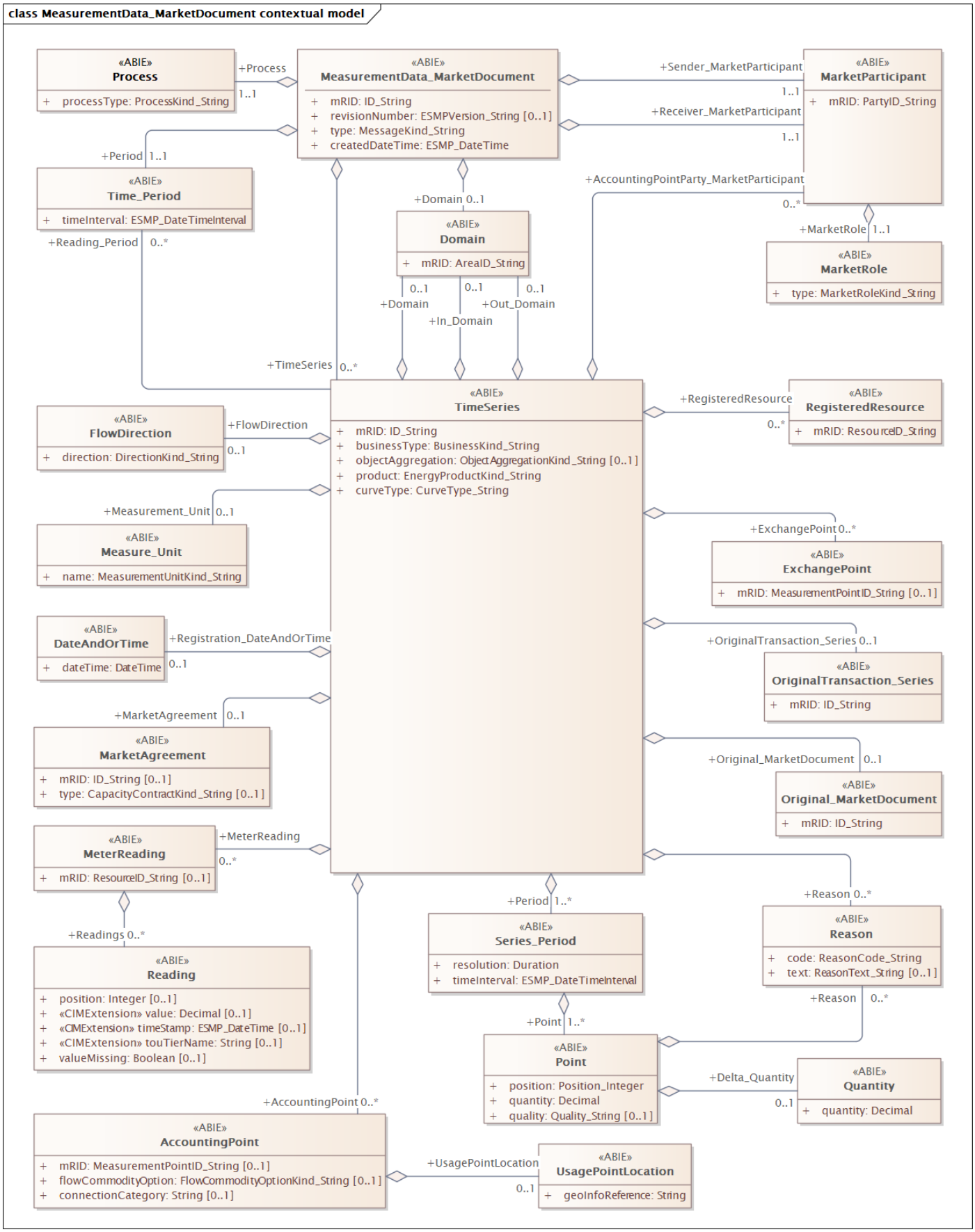

Figure 12 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

2.4.4 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

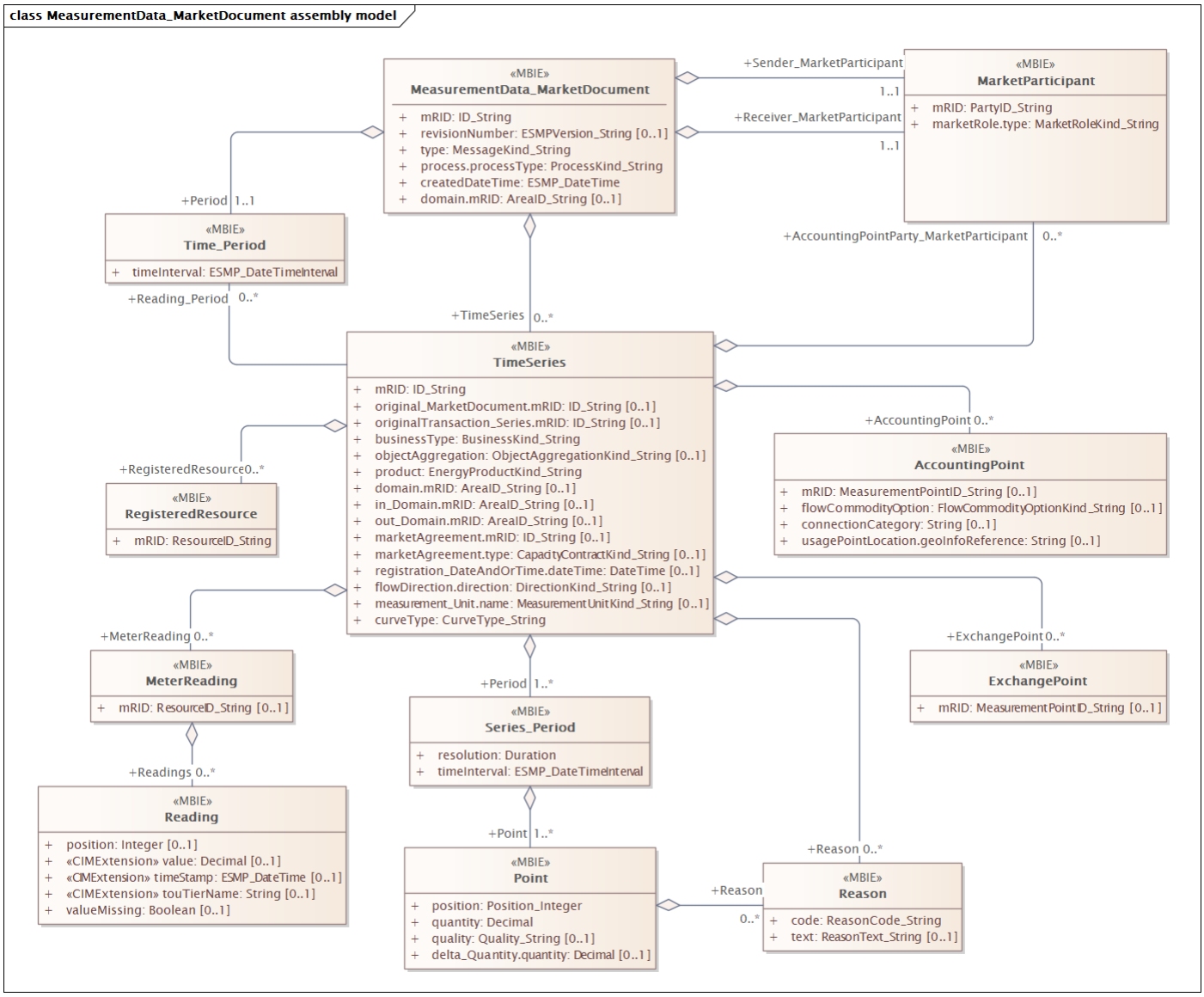

Figure 13 Class diagram: ENTSO-E Measurement data document contextual model, version 1.1

2.4.5 Attribute usage: ENTSO-E Measurement data document contextual model, version 1.1

NEG Confirmation of Aggregated Data Per Neighbouring Grid classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
MeasurementData_MarketDocument			
Identification	mRID	[1]	Unique identification of the document.
	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A07** Intermediate confirmation report **A08** Final confirmation report
Energy Business Process (Reason)	process.processType	[1]	**A06** Imbalance Settlement
Sender Energy Party	sender_MarketParticipant. mRID	[1]	sender_MarketParticipant.mRID
	sender_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Recipient Energy Party	receiver_MarketParticipant. mRID	[1]	receiver_MarketParticipant.mRID
	receiver_MarketParticipant. marketRole.type	[1]	**A09** Metered data aggregator
Creation	createdDateTime	[1]	Date and time for creation of the document.
	period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Energy Industry Classification (Sector)	*Not applicable*		
Payload Energy Time Series	**Series**	**[1..*]**	
Identification	mRID	[1]	The identification of the time series instance.
	businessType	[1]	**A14** Aggregated energy data
Identification (Product Identifier)	product	[1]	**8716867000030** Active energy
	ExchangePoint	**[1]**	
Identification (Identifier)	mRID	[1]	Unique identification of an Accounting Point.
Registration Date Time	registration_DateAndOrTime. dateTime	[1]	Data and time for registration or update
Unit Type (Pro)duct Measure Unit)	measurement_Unit.name	[1]	**KWH** kilo Watt hour (kWh) **MWH** Mega Watt hour (MWh)
	curveType	[1]	**A01** Sequential fixed size block
	Period	**[1..*]**	
Start and End (Observation period)	timeInterval	[1]	The start and end date and time of the time interval of the period in question.

NEG Confirmation of Aggregated Data Per Neighbouring Grid classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
Resolution Duration (Resolution)	resolution	[1]	The resolution defining the number of periods that the time interval is divided. The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. E.g.: **PT60M** **PT1H** **PT15M**
	Point	**[1..*]**	
Sequence (Position)	position	[1]	A sequential value representing the relative position within a given time interval.
Energy Quantity (Quantity)	quantity	[0..1]	The principal quantity identified for an observation. The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh. Quantity is not used if the quantity is missing.
Quantity Quality	quality	[0..1]	**A02** Not available (maps to "**46** Does not exist") **A03** Estimated (maps to "**56** Estimated, approved for billing") **A07** Temporary, the value will be updated The default quality is *"Metered"*, i.e. quality is only used if ≠ "*Metered*" if the value is missing, the quality code **A02** must be used .
	Delta_Quantity	**[0..*]**	
Quantity	Quantity	[1]	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 is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh

Table 6 Attribute usage: ENTSO-E Measurement data document contextual model, version 1.1

3 ENTSO-E NON-CIM documents

3.1 ESP Energy Account Report Document (EAR)

3.1.1 Recommendations

The NON-CIM "NEG ESP Energy Account Report Document (EAR)" should be migrated to the ENTSO-E CIM Energy Account Market Document (EAR), which has all needed attributes and associations.

3.1.2 Class diagram: NEG ESP Energy Account Report Document (EAR)

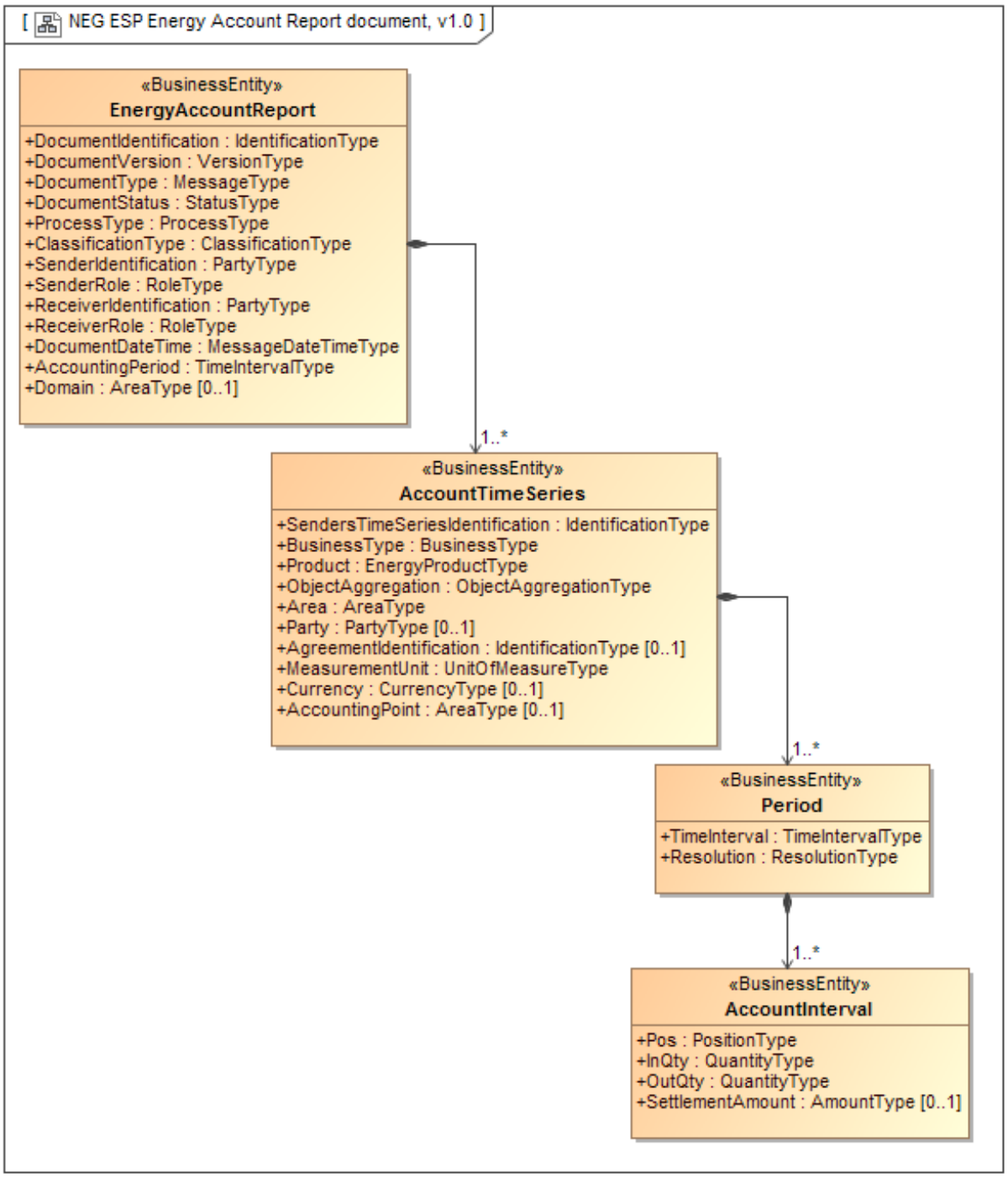

Figure 14 Class diagram: NEG ESP Energy Account Report Document (EAR)

3.1.3 Class diagram: ENTSO-E Energy Account Market Document contextual model, version 4.2

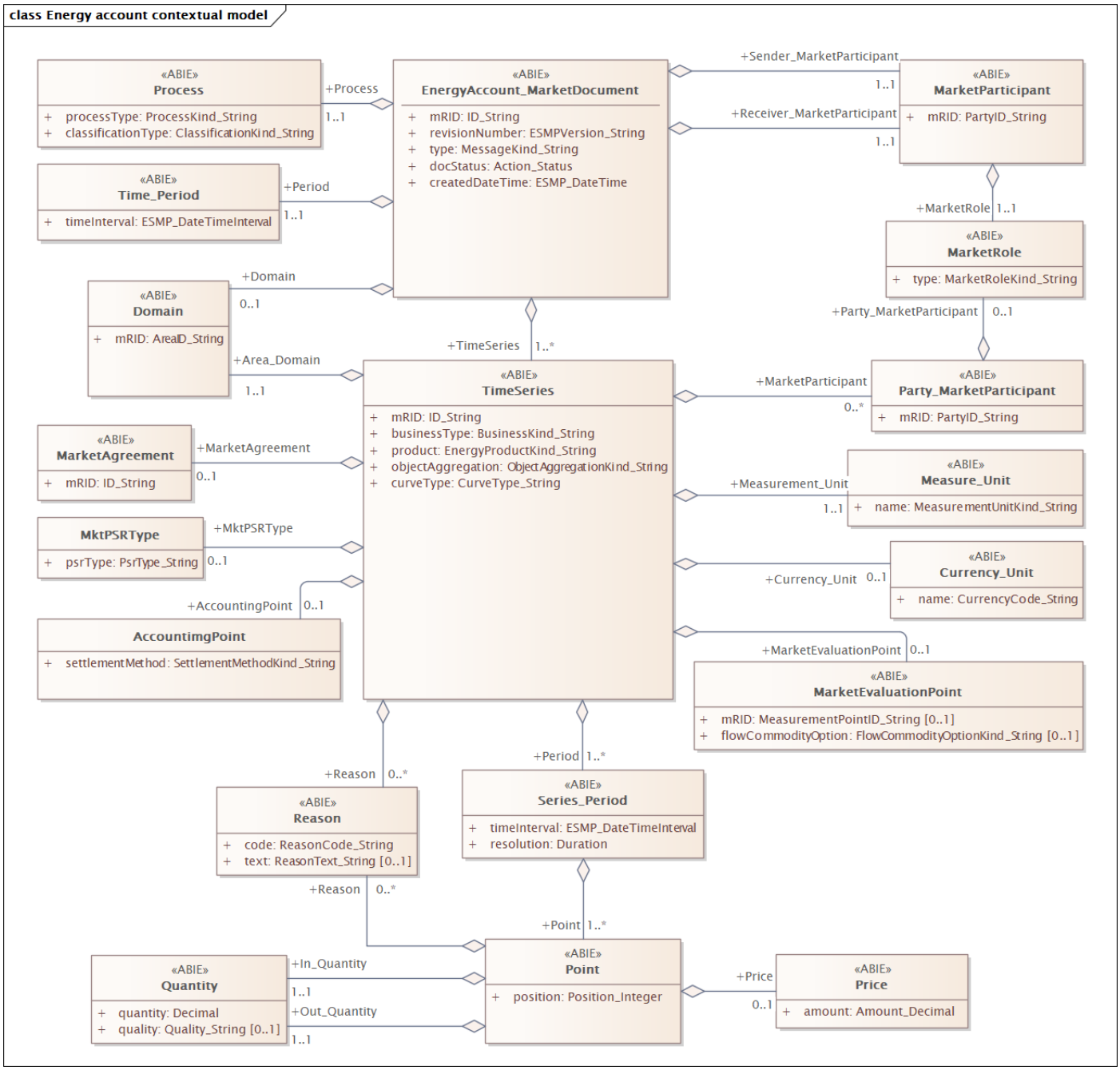

Figure 15 Class diagram: ENTSO-E Energy Account Market Document contextual model, version 4.2

3.1.4 Class diagram: ENTSO-E Energy Account Market Document assembly model, version 4.2

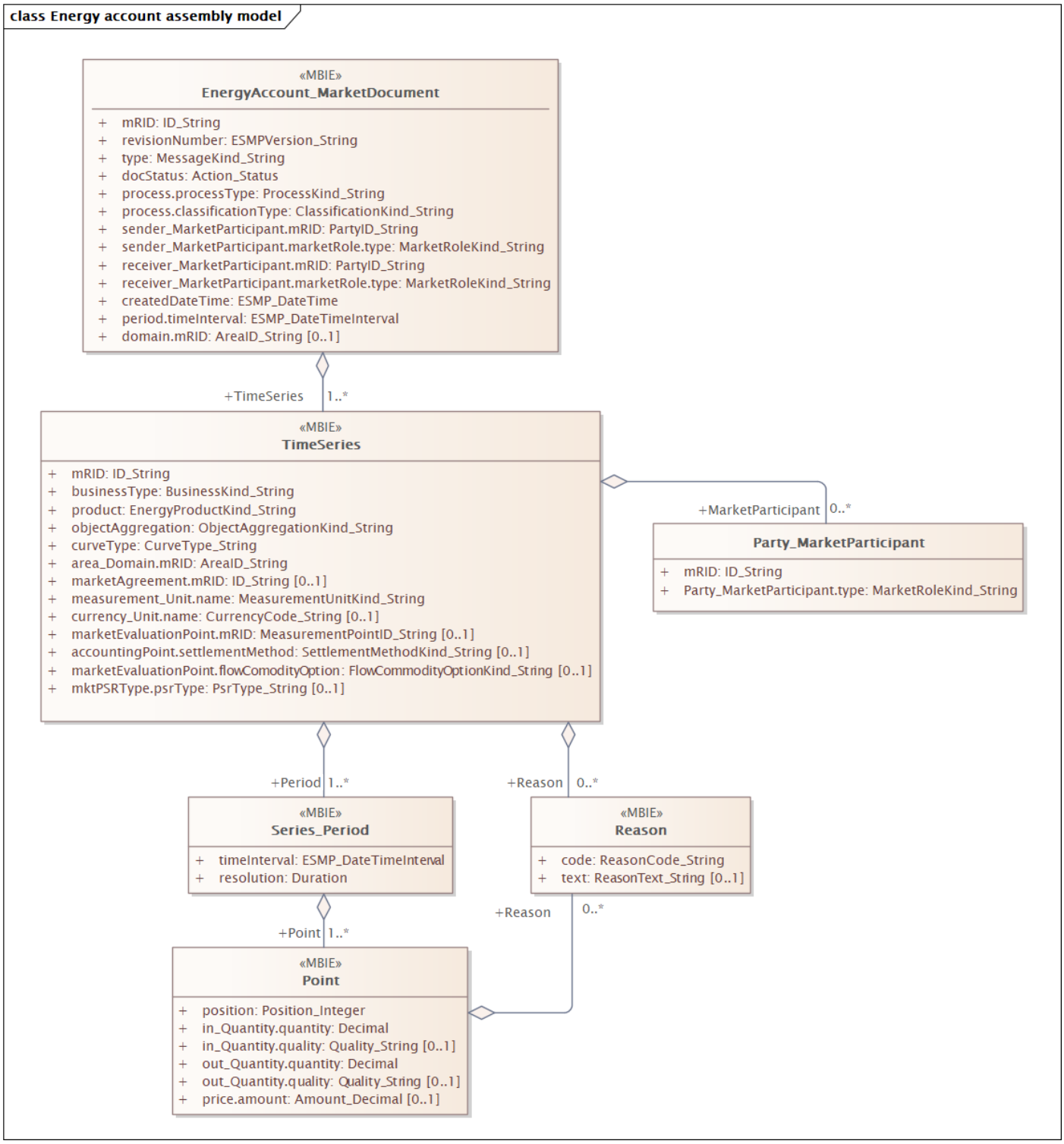

Figure 16 Class diagram: ENTSO-E Energy Account Market Document assembly model, version 4.2

3.1.5 Attribute usage: Energy Account Market Document, version 4.2

NEG ESP Energy Account Report Document (EAR) classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
EnergyAccount_ MarketDocument			
Identification	mRID	[1]	Unique identification of the document.
	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A12** Imbalance report **A56** Compensation Program Schedule
	docStatus	[1]	**A01** Intermediate **A02** Final
Energy Business Process (Reason)	process.processType	[1]	**A06** Imbalance settlement **A27** Reserve resource process
	process.classificationType	[1]	**A02** Summary type
Sender Energy Party	sender_MarketParticipant. mRID	[1]	Unique identification of the sender
	sender_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Recipient Energy Party	receiver_MarketParticipant. mRID	[1]	Unique identification of the Receiver
	receiver_MarketParticipant. marketRole.type	[1]	**A08** Balance Responsible Party **A09** Metered Data Aggregator **A46** Balancing Service Provider (BSP)
Creation	createdDateTime	[1]	Date and time for creation of the document.
	period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Energy Industry Classification (Sector)	*Not applicable*		
Account Time Series	**TimeSeries**	**[1..*]**	
Senders Time Series Identification	mRID	[1]	The identification of the time series instance.
Business Type	businessType	[1]	**A17** Settlement deviation **A23** Balance Management **A95** Frequency containment reserve **A96** Automatic frequency restoration reserve **A97** Manual frequency restoration reserve **B14** Production deviation **B15** Consumption deviation **B29** MGA imbalance **C26** Frequency Containment Reserve-Normal (FCR-N) **C27** Frequency Containment Reserve-Disturbance (FCR-D) **Z85** Fast frequency reserve

NEG ESP Energy Account Report Document (EAR) classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
Product	product	[1]	**8716867000030** Active energy
Object Aggregation	objectAggregation	[1]	**A01** Area
Currency	currency_Unit.name	[0..1]	ISO three digit currency code, e.g.: **DKK** Denmark, krone **EUR** European Union, Euro **NOK** Norway, krone **SEK** Sweden, krona Not used for Business type "**B29 =** MGA imbalance"
Measurement Unit	measurement_Unit.name	[1]	**KWH** kilo Watt hour (kWh) **MWH** Mega Watt hour (MWh)
Area	area_Domain.mRID	[1]	The Bidding Zone or Metering Grid Area to which the settlement result belongs
	curveType	[1]	**A01** Sequential fixed size block
	MarketParticipant	[0..1]	
Party	mRID	[1]	Unique ID of the market participant
	marketRole.type	[1]	**A08** Balance responsible party
Period	**Series_Period**	**[1..*]**	
Time Interval	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
Resolution	resolution	[1]	The resolution defining the number of periods that the time interval is divided. The resolution is expressed in compliance with ISO 8601 in the following format: **PnYnMnDTnHnMnS**. Where nY expresses a number of years, nM a number of months, nD a number of days. The letter "T" separates the date expression from the time expression and after it nH identifies a number of hours, nM a number of minutes and nS a number of seconds. E.g.: **PT60M** **PT1H** **PT15M**
Interval	**Point**	**[1..*]**	
Pos	position	[1]	A sequential value representing the relative position within a given time interval.

NEG ESP Energy Account Report Document (EAR) classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
In Qty	in_Quantity.quantity	[1]	The quantity of the product that enters the area for the position within the account interval in question The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh **NBS:** BRP selling quantity.
Out Qty	out_Quantity.quantity	[1]	The quantity of the product that leaves the area. For the position within the account interval in question The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh **NBS:** BRP buying quantity.
Settlement Amount	price.amount	[0..1]	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). Not used for Business type "**B29 =** MGA imbalance"

Table 7 Attribute usage: Energy Account Market Document, version 4.2

3.2 ENTSO-E ESS Schedule Document

3.2.1 Class diagram: ENTSO-E NON-CIM ESS Schedule Document

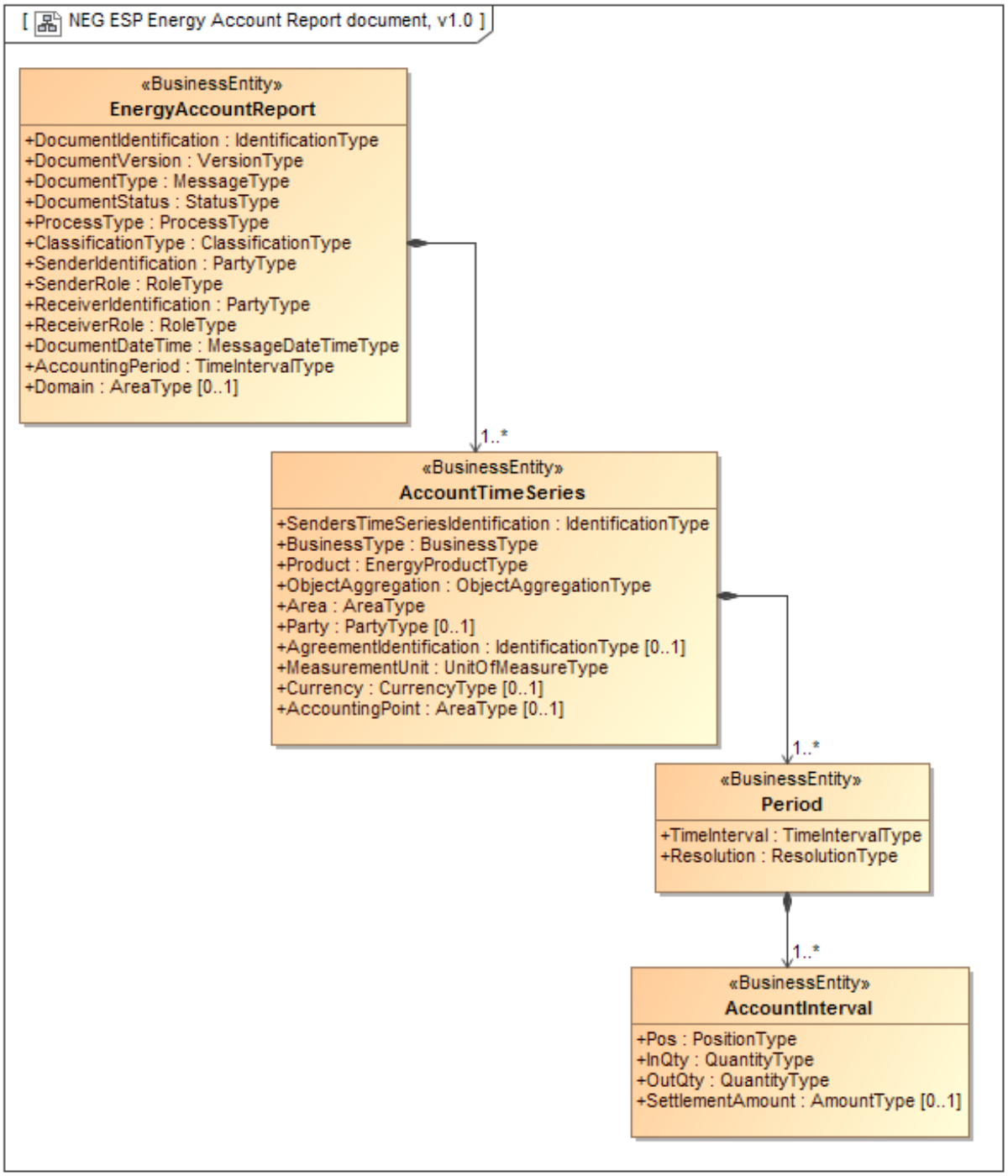

Figure 17 Class diagram: ENTSO-E NON-CIM ESS Schedule Document

3.2.2 Recommendations

The NON-CIM "ENTSO-E ESS Schedule Document" should be migrated to the "ENTSO-E CIM Schedule Market Document (ESS)", which has all needed attributes and associations.

3.2.3 Class diagram: ENTSO-E Schedule Market Document (ESS), version 5.2

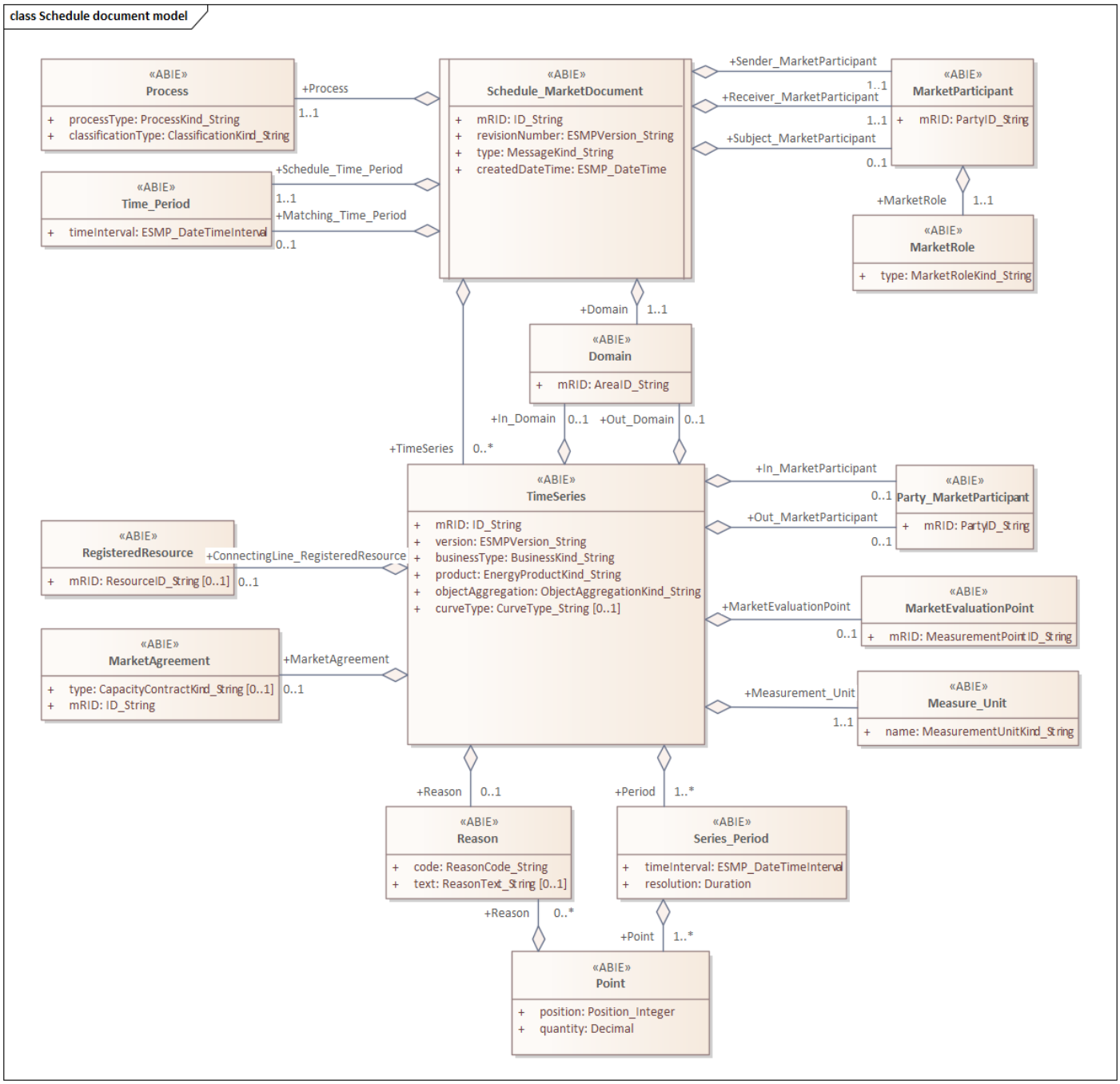

Figure 18 Class diagram: ENTSO-E Schedule Market Document (ESS), version 5.2

3.2.4 Class diagram: ENTSO-E Schedule Market Document (ESS), version 5.2

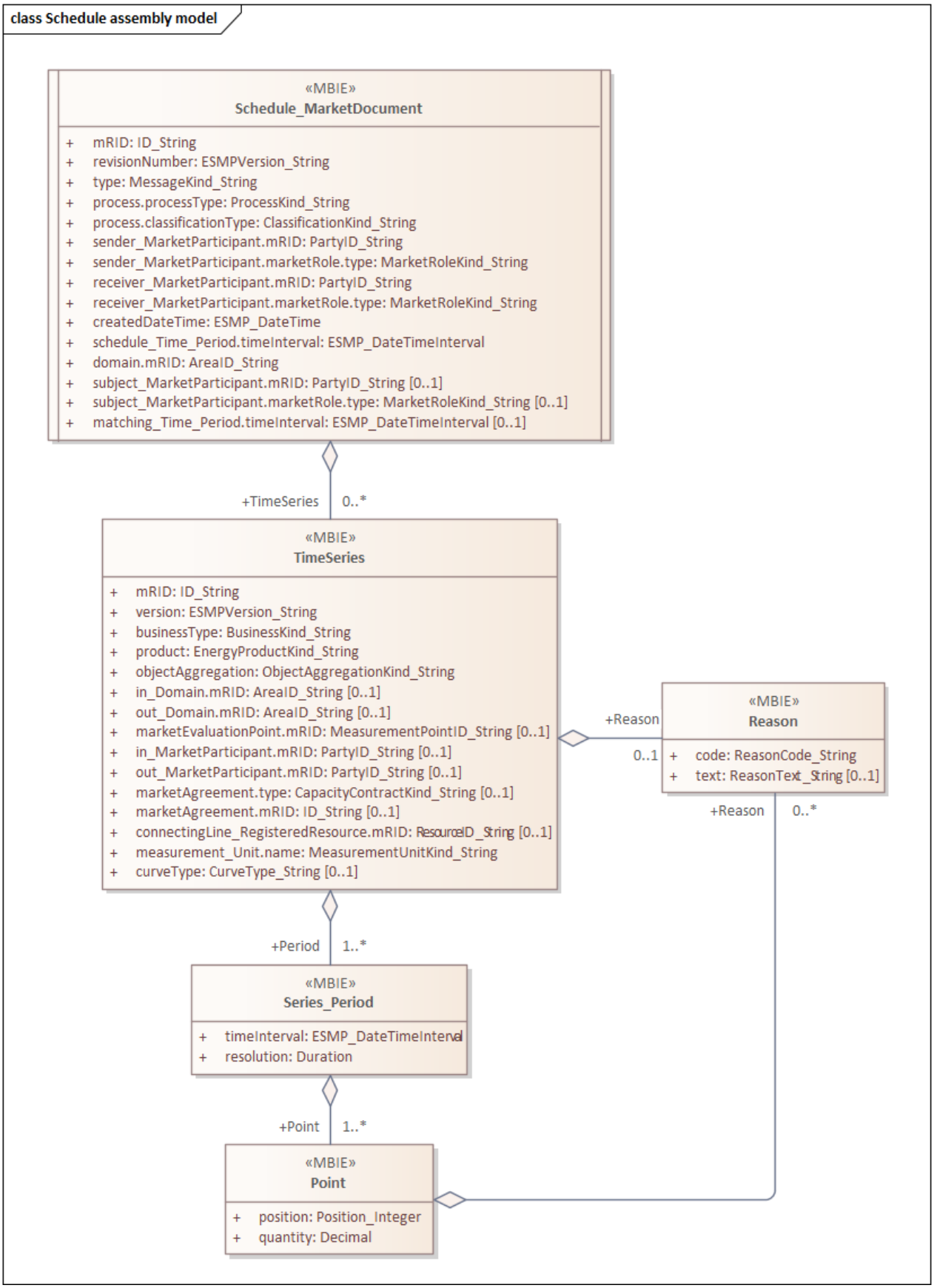

Figure 19 Class diagram: ENTSO-E Schedule Market Document (ESS), version 5.2

3.2.5 Attribute usage: ENTSO-E ESS Schedule Document, version 5.2

ENTSO-E NON-CIM ESS Schedule Document classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
Schedule_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document **Note:** The maximum length of the ID is 60 characters.
Document Version	revisionNumber	[1]	**Fixed 1**
Document Type	type	[1]	**A01** Balance responsible schedule **A55** Summarised Market Schedule (A compilation of all external schedules concerning two Bidding Zones of all balance responsible parties)
Process Type	process.processType	[1]	**A01** Day-ahead **A02** Intraday incremental **A19** Intraday accumulated **A59** Internal trade reporting **Z15** External trade (Trade outside the Capacity Calculation Region)
Schedule Classification Type	process.classificationType	[1]	**A02** Summary type
Sender Identification	sender_MarketParticipant. mRID	[1]	Unique identification of the sender
Sender role	sender_MarketParticipant. marketRole.type	[1]	**A04** System Operator **A08** Balance Responsible Party **A11** Market Operator
Receiver Identification	receiver_MarketParticipant. mRID	[1]	Unique identification of the Receiver
Receiver role	receiver_MarketParticipant.m arketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation Date Time	createdDateTime	[1]	The date and time that the message was prepared for transmission by the application of the sender.
Schedule Time Interval	schedule_Time_Period. timeInterval	[1]	The beginning and ending date and time of the period covered by the message containing the schedule.
Domain	domain.mRID	[1]	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area)
	subject_MarketParticipant.m RID	[0..1]	Not used
	subject_MarketParticipant.ma rketRole. type	[0..1]	Not used
Schedule Time Series	**TimeSeries**	[1..*]	
Senders Time Series Identification	mRID	[1]	Unique identification of the Time Series (unique over time for the sender in question) **Note:** The maximum length of the ID is 60 characters.

ENTSO-E NON-CIM ESS Schedule Document classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
Senders Time Series Version	version	[1]	Fixed 1
Business Type	businessType	[1]	**A06** External trade without explicit capacity (used for the North Sea Link cable). **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). **A66** Energy flow **B67** DC flow with losses - DC flow with losses refers to the values at the importing end of the DC line **B68** DC flow without losses - DC flow without losses refers to the values at the exporting end of the DC line. Business Type **A06** is used together with Process Type **Z15.** Business Type **A08** is used together with Process Type **A01, A02** and **A19.**
Product	product	[1]	**8716867000030** Active energy
Object Aggregation	objectAggregation	[1]	**A01** Area
In Area	in_Domain.mRID	[1]	EIC code of the Bidding Zone where the energy is going to
Out Area	out_Domain.mRID	[0..1]	EIC code of the Bidding Zone where the energy is coming from
In Party	in_MarketParticipant.mRID	[0..1]	The Balance responsible Party acting as the buyer in the bilateral trade.
Out Party	out_MarketParticipant.mRID	[0..1]	The Balance responsible Party acting as the seller in the bilateral trade.
Capacity Agreement Identification	marketAgreement.mRID	[0..1]	An ID used when reporting trade on an Energy Supplier (Retailer) level, identifying the two involved Energy Suppliers and the related Bidding Zone. The Bilateral Trade ID is unique in combination with an In Party, an Out Party and a Bidding Zone.
Measurement Unit	measurement_Unit.name	[1]	**KWH** kWh **MWH** MWh
	curveType	[1]	**A01** Sequential fixed size block
	Period	[1..*]	
	timeInterval	[1]	The start and end date and time of the time interval of the period in question.

ENTSO-E NON-CIM ESS Schedule Document classes/attributes	IEC CIM classes/attributes	Cl.	Code and description
	resolution	[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.**
	Point	[1..*]	
	position	[1]	The position of the observation within the time series. Sequential value beginning with 1.
	quantity	[1]	Quantity The resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh

Table 8 Attribute usage: ENTSO-E ESS Schedule Document, version 5.2

3.2.6 Dependency matrix: ENTSO-E ESS Schedule Document, version 5.2

IEC CIM Attribute	Bilateral Trade	Day-ahead/Intraday trade	Day-ahead/Intraday flow
Schedule_MarketDocument			
mRID			
revisionNumber			
type	**A01** Balance responsible schedule	**A01** Balance responsible schedule	**A55** Summarised Market Schedule
process.processType	**A59** Internal trade reporting	**A01** Day-ahead **A02** Intraday incremental **A19** Intraday accumulated **Z15** External trade	**A01** Day-ahead **A02** Intraday incremental **A19** Intraday accumulated **Z15** External trade
sender_MarketParticipant.marketRole.type	**A04** System Operator **A08** Balance Responsible Party	**A04** System Operator **A11** Market Operator	**A11** Market Operator
TimeSeries			
businessType	**A08** Net internal trade	**A06** External trade without explicit capacity[1] **A08** Net internal trade[2]	**A66** Energy flow **B67** DC flow with losses **B68** DC flow without losses
in_Domain.mRID	EIC code of the BZ where the energy is going to Required	EIC code of the BZ in question Required	One BZ Required
out_Domain.mRID	EIC code of the BZ where the energy is coming from Required	Not used	The other BZ Required
in_MarketParticipant.mRID	The BRP acting as the buyer in the bilateral trade Required	ID of the Retailer in question Optional	
out_MarketParticipant.mRID	The BRP acting as the seller in the bilateral trade Required	Not used	
marketAgreement.mRID	An ID used when reporting trade on an Energy Supplier (Retailer) level, identifying the two involved Energy Suppliers and the related Bidding Zone. The Bilateral Trade ID is unique in combination with an In Party, an Out Party and a Bidding Zone.	Not used	Not used

[1] Business Type **A06** is used together with Process Type **Z15.**

[2] Business Type **A08** is used together with Process Type **A01, A02** and **A19.**

IEC CIM Attribute	Bilateral Trade	Day-ahead/Intraday trade	Day-ahead/Intraday flow
Series_Period			
Point			
quantity	The direction from out party (seller) to in party (buyer) is positive, while the opposite direction is negative (with minus signs)	The direction from out party (seller) to in party (buyer) is positive, while the opposite direction is negative (with minus signs)	Flows will always be reported with positive values. For each connection, flows will be reported as two time series, one for each direction. Positive values for flow from Out Area to In Area and zero in the corresponding position in the other time series.

Table 9 Dependency matrix: ENTSO-E ESS Schedule Document, version 5.2

3.3 ENTSO-E ESS Confirmation Report

3.3.1 Recommendations

The NON-CIM "ENTSO-E ESS Confirmation Report" should be migrated to the "ENTSO-E CIM Confirmation Market Document", which has all needed attributes and associations.

3.3.2 Class diagram: ENTSO-E NON-CIM ESS Confirmation Report

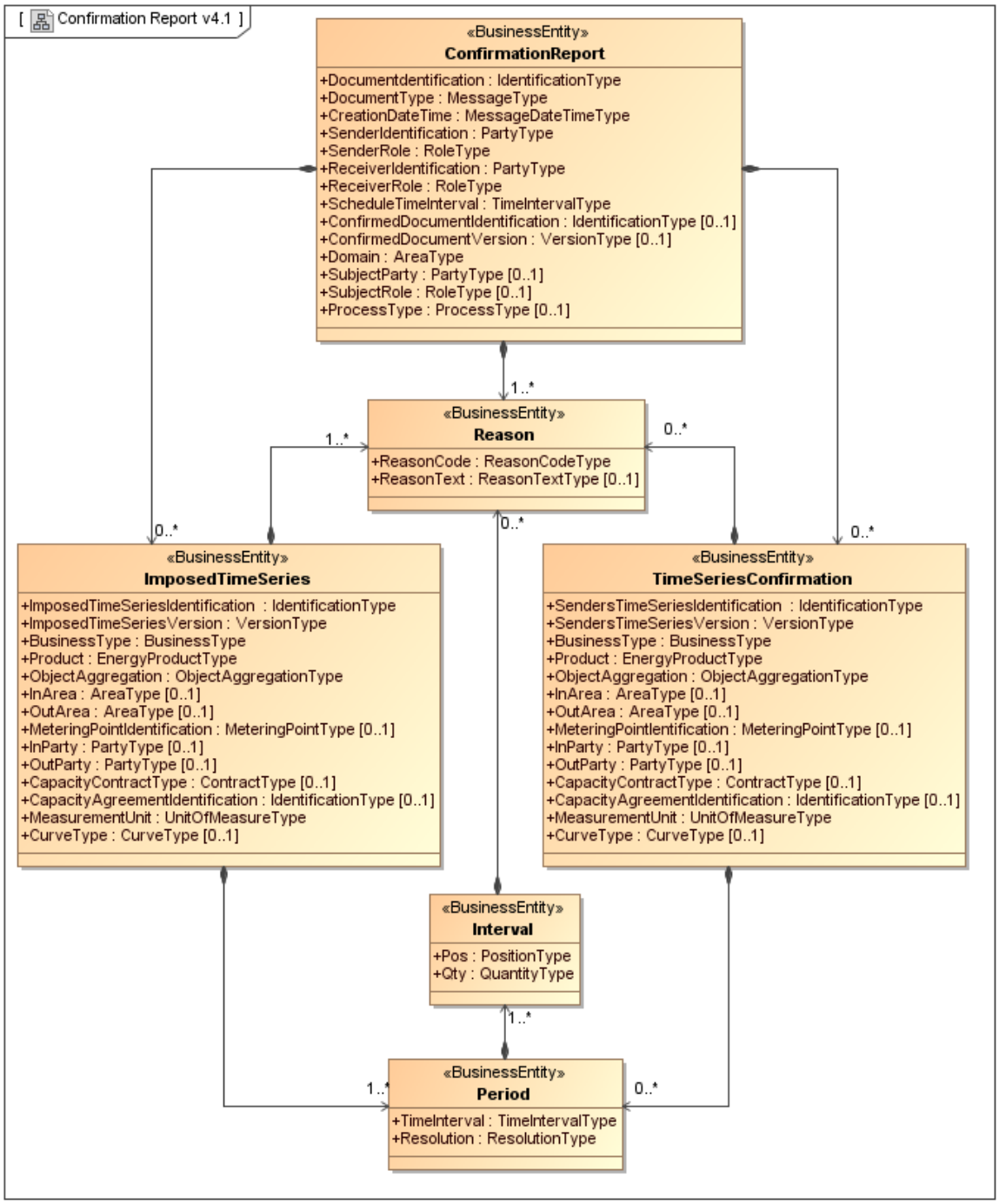

Figure 20 Class diagram: ENTSO-E NON-CIM ESS Confirmation Report

3.3.3 Class diagram: ENTSO-E Confirmation Market Document, version 5.3

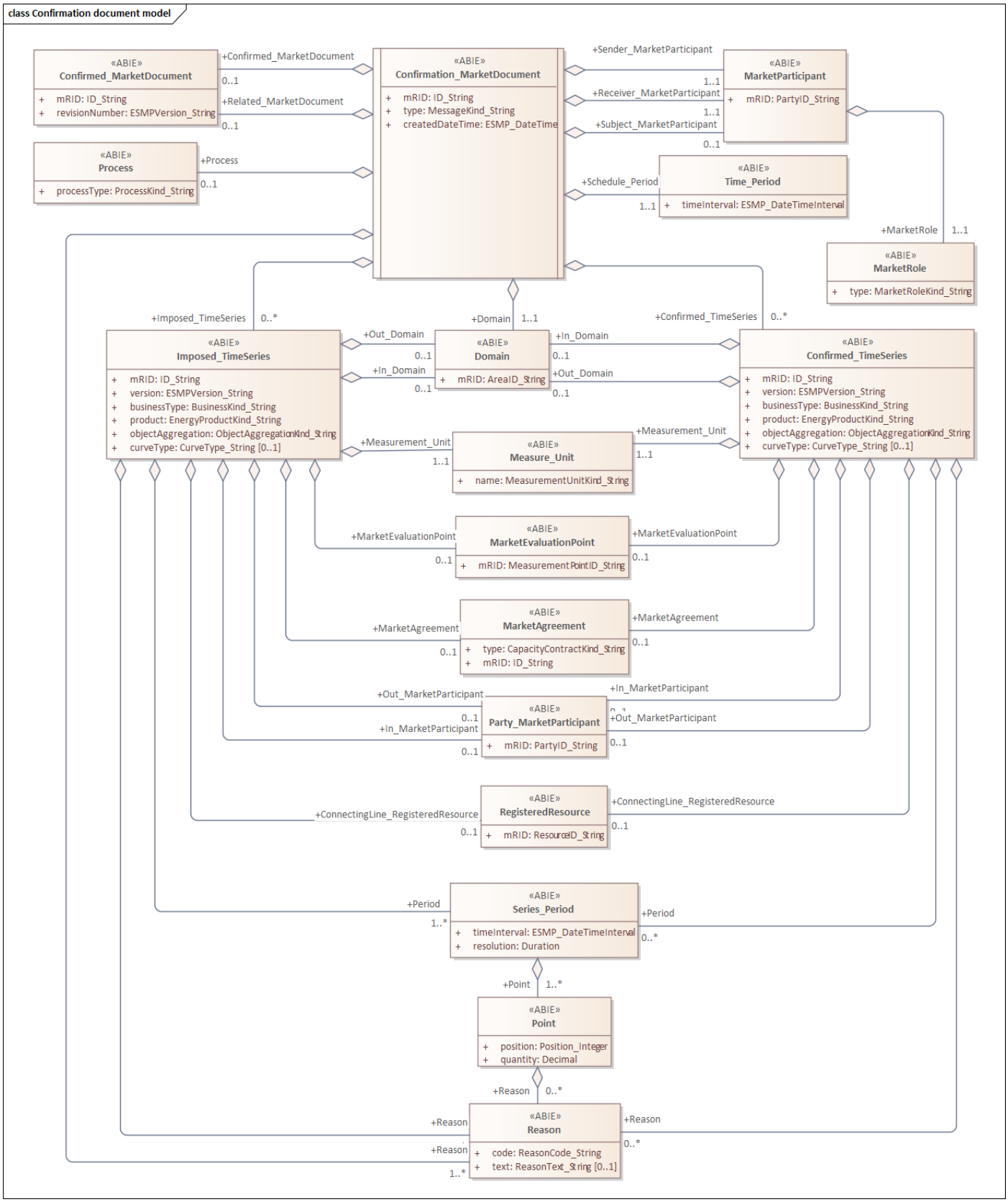

Figure 21 Class diagram: ENTSO-E Confirmation Market Document, version 5.3

3.3.4 Class diagram: ENTSO-E Confirmation Market Document, version 5.3

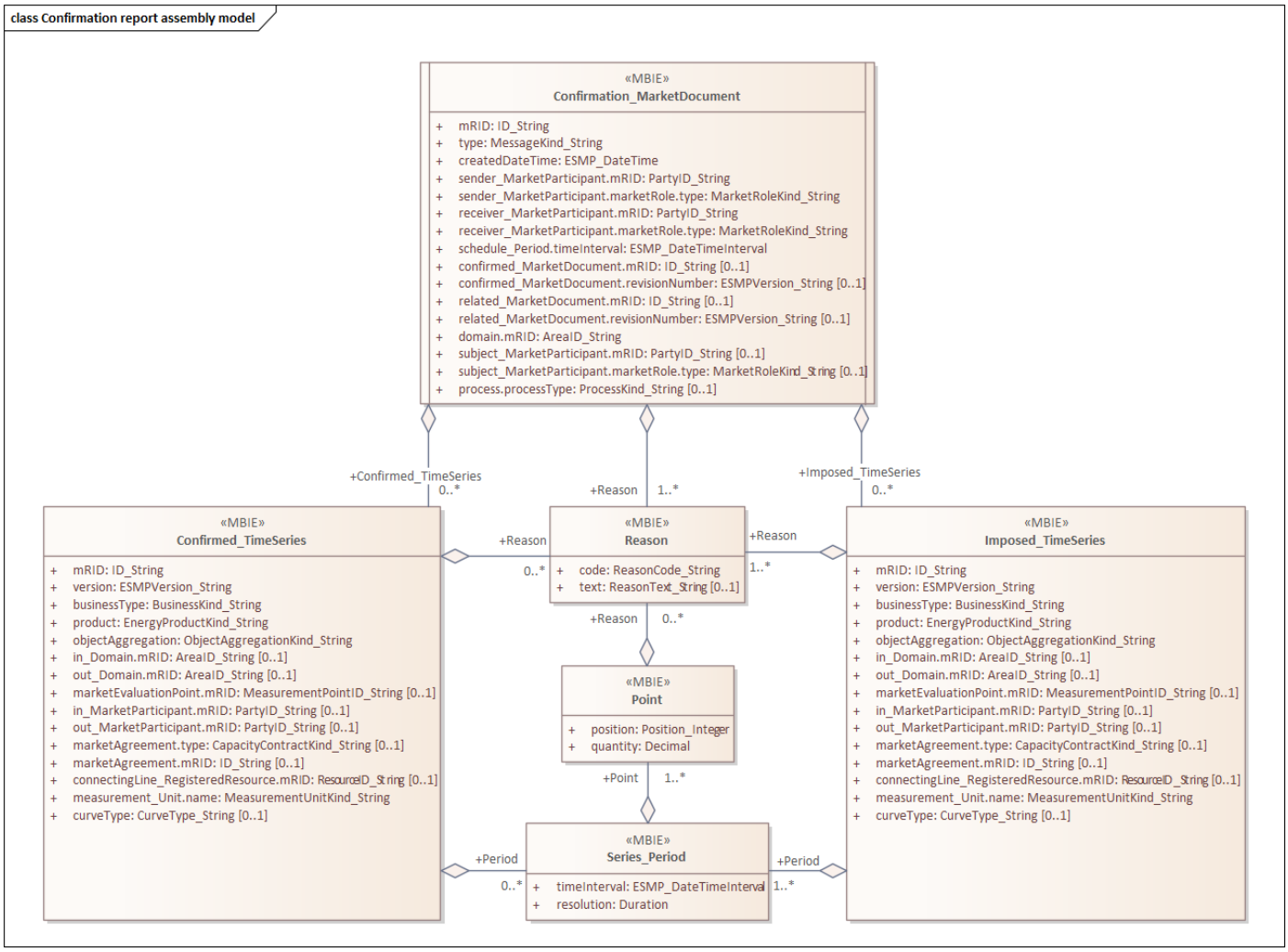

Figure 22 Class diagram: ENTSO-E Confirmation Market Document, version 5.3

3.3.5 Attribute usage: ENTSO-E Confirmation Market Document, version 5.3

ESS Confirmation Report classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
Confirmation_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document **Note:** The maximum length of the ID is 60 characters.
Document Type	type	[1]	**A07** Intermediate confirmation report **A08** Final confirmation report
Creation Date Time	createdDateTime	[1]	Date and time for creation of the document
Sender Identification	sender_MarketParticipant.mRID	[1]	The unique identification of the Imbalance Settlement Responsible, who is sending the document
Sender Role	sender_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Receiver Identification	receiver_MarketParticipant.mRID	[1]	The unique identification of the Balance Responsible Party who is receiving the document
Receiver Role	receiver_MarketParticipant. marketRole.type	[1]	**A08** Balance responsible party
Schedule Time Interval	schedule_Period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document containing the schedule
Domain	domain.mRID	[1]	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area)
Process Type	process.processType	[1]	**A59** Internal trade reporting **Z05** Bilateral trade[3]
Reason (Confirmation Report level)	**Reason**	[1]	
Reason Code	code	[1]	**A06** Schedule accepted **A07** Schedule partially accepted **A06** is used when there are no changes to a received time series, while **A07** is used when there are changes to a received schedule or when sending imposed time series to the counterparty
Time Series Confirmation	**Confirmed_TimeSeries**	[0..*]	At least one **Time Series Confirmation** or one **Imposed time series** must be present in the ESS confirmation report.
Senders Time Series Identification	mRID	[1]	Sender's identification of the time series instance (the same as in the referenced ESS Schedule Document) **Note:** The maximum length of the ID is 35 characters. **Note:** The confirmation report contains two time series for each trade (one with the quantity to be used in the settlement, and another with

[3] The code "**Z05** Bilateral trade" will be valid one year after eSett have announcement its removal, approximately until the end of 2025. In the transition period eSett will continue using **Z05**.

ESS Confirmation Report classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
			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.
Senders Time Series Version	version	[1]	Fixed 1
Business Type	businessType	[1]	**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.
Product	product	[1]	**8716867000030** Active energy
Object Aggregation	objectAggregation	[1]	**A01** Area
In Area	in_Domain.mRID	[1]	The Bidding Zone where the trade has taken place.
Out Area	out_Domain.mRID	[1]	The same Bidding Zone as defined in In Area, i.e. where the trade has taken place.
In Party	in_MarketParticipant.mRID	[1]	The Balance Responsible Party acting as the buyer in the bilateral trade.
Out Party	out_MarketParticipant.mRID	[1]	The Balance Responsible Party acting as the seller in the bilateral trade.
Capacity Agreement Identification	marketAgreement.mRID	[0..1]	An 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 will be unique in combination with In Party, Out Party and BZ.
Measurement Unit	measurement_Unit.name	[1]	**KWH** kWh **MWH** MWh
	curveType	[1]	**A01** Sequential fixed size block
Reason (Time Series Confirmation level)	**Reason (Confirmed Time Series level)**	[1]	
Reason Code	reason	[1]	**A85** Confirmation without adjustment (time series have been matched without change) **A86** Confirmation with adjustment (time series have been modified)
Imposed time series	**Imposed_TimeSeries**	[0..*]	At least one **Time Series Confirmation** or one **Imposed time series** must be present in the ESS confirmation report.

ESS Confirmation Report classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
Imposed Time Series Identification	mRID	[1]	Unique identification of the Time Series (unique over time for the sender in question (eSett)) **Note:** The maximum length of the ID is 35 characters.
Imposed Time Series Version	version	[1]	Fixed 1
Business Type	businessType	[1]	**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.
Product	product	[1]	**8716867000030** Active energy
Object Aggregation	objectAggregation	[1]	**A01** Area
In Area	in_Domain.mRID	[1]	The Bidding Zone where the trade has taken place.
Out Area	out_Domain.mRID	[1]	The same Bidding Zone as defined in In Area, i.e. where the trade has taken place.
In Party	in_MarketParticipant.mRID	[1]	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
Out Party	out_MarketParticipant.mRID	[1]	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
Capacity Agreement Identification	marketAgreement.mRID	[0..1]	An 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 will be unique in combination with In Party, Out Party and BZ. 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

ESS Confirmation Report classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
			level) this has balance responsibility for. The suppliers can then be identified by the Bilateral Trade ID.
Measurement Unit	measurement_Unit.name	[1]	**KWH** kWh **MWH** MWh
	curveType	[1]	**A01** Sequential fixed size block
Reason (Imposed time series level)	**Reason (Imposed time series level)**	[1]	
Reason Code	code	[1]	**A30** Imposed Time series from nominated party's time series
Period	**Period**	[1]	
Time Interval	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
Resolution	resolution	[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.**
Interval	**Point**	[1..*]	
Pos	position	[1]	The relative position of a period within a time interval **Note:** There can be gaps in the sequence of the Position element, i.e. to be able to confirm only single observations of a day.
Qty	quantity	[1]	The quantity of the product for the position within the time interval in question. 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: $\Delta = Value_{BRP\ sale} - Value_{BRP\ purchase}$ • 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 resolution is maximum in Watt, i.e. max 3 decimals for kWh and max 6 decimals for MWh

ESS Confirmation Report classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
Reason (Interval level)	**Reason (Point level)**	[0..1]	
Reason Code	code	[1]	**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.

Table 10 Attribute usage: ENTSO-E ESS Confirmation Report, version 5.3

3.4 ENTSO-E ERRP Planned resource schedule

3.4.1 Recommendations

The NON-CIM "ENTSO-E ERRP Planned resource schedule" should be migrated to the "ENTSO-E CIM ERRP Planned resource schedule", which has all needed attributes and associations.

3.4.2 Class diagram: ENTSO-E NON-CIM ERRP Planned resource schedule Document

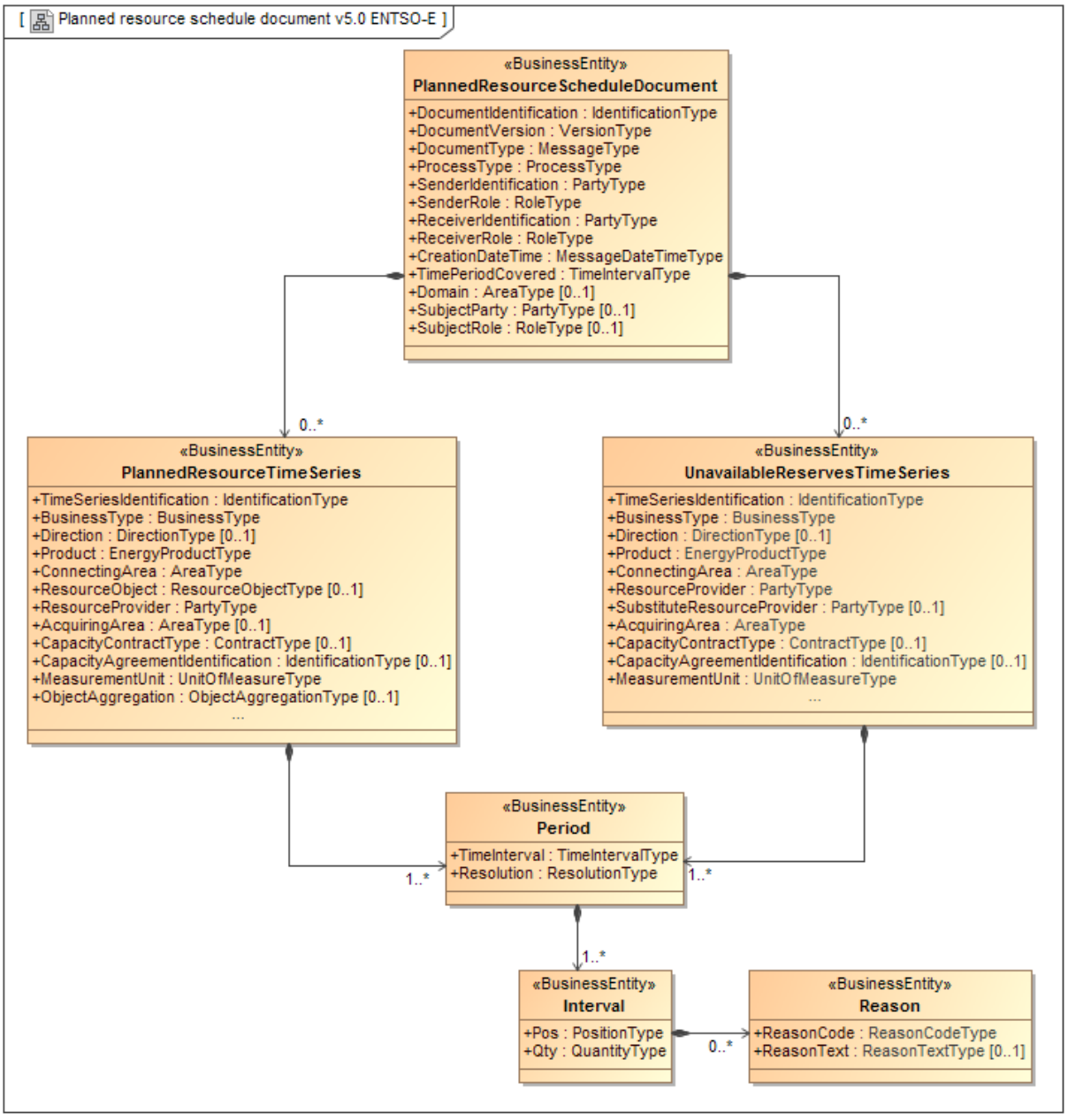

Figure 23: Class diagram: ENTSO-E NON-CIM ERRP Planned resource schedule Document

3.4.3 Class diagram: ENTSO-E ERRP PlannedResourceSchedule_MarketDocument, version 6.3

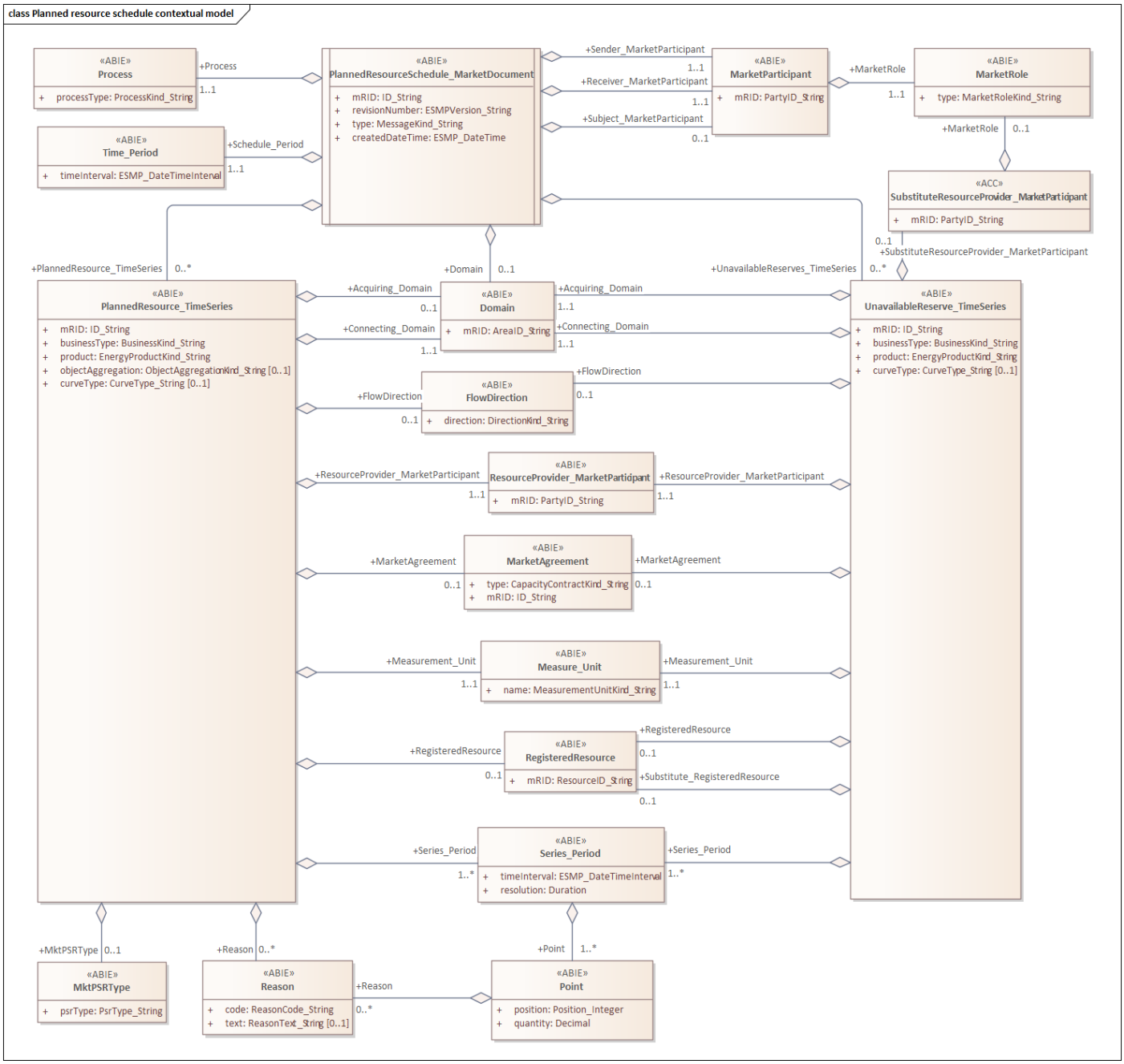

Figure 24 Class diagram: ENTSO-E ERRP PlannedResourceSchedule_MarketDocument, version 6.3

3.4.4 Class diagram: ENTSO-E ERRP PlannedResourceSchedule_MarketDocument, version 6.3

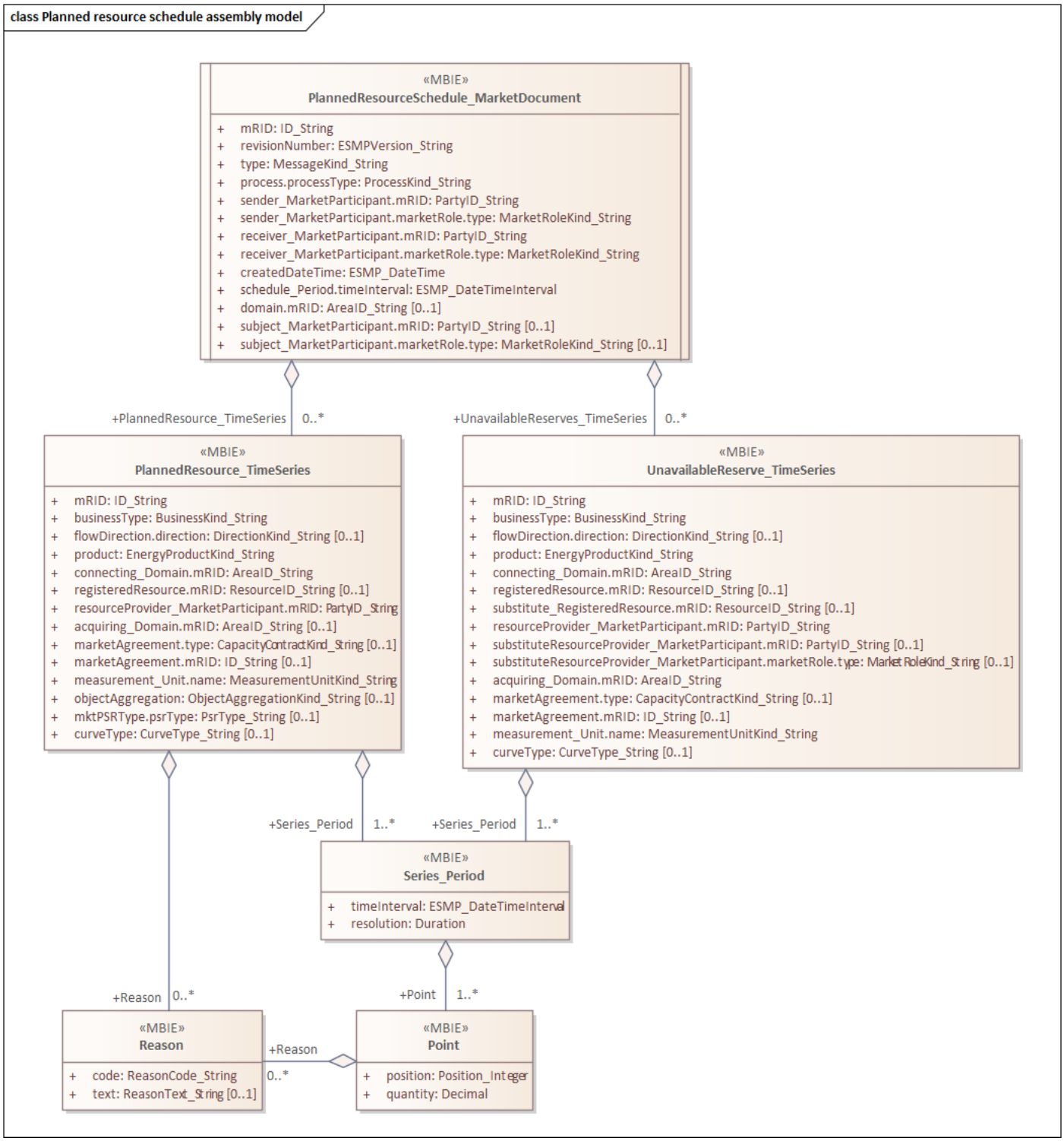

Figure 25 Class diagram: ENTSO-E ERRP PlannedResourceSchedule_MarketDocument, version 6.3

3.4.5 Attribute usage: ENTSO-E ERRP Planned resource schedule, version 6.3

ERRP Planned Resource Schedule classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
PlannedResourceSchedule_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document
Document Version	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A14** Resource Provider Resource Schedule
Process Type	process.processType	[1]	**A17** Schedule day - The process concerns the day ahead, intraday and eventually ex-post scheduling in a single document. The schedule will be transferred within the total position including historic information (The trade balance of a party at a given time)
Sender Identification	sender_MarketParticipant.mRID	[1]	Unique identification of the System Operator, sending the schedule
Sender role	sender_MarketParticipant. marketRole.type	[1]	**A04** System Operator
Receiver Identification	receiver_MarketParticipant.mRID	[1]	Unique identification of the Imbalance Settlement Responsible, receiving the schedule
Receiver role	receiver_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation Date Time	createdDateTime	[1]	The date and time that the document was prepared for transmission by the application of the sender.
Time Period Covered	schedule_Period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Domain	domain.mRID	[1]	Identification of the area covered by the document, i.e., **10Y1001A1001A91G** (Nordic market area)
Subject Party	subject_MarketParticipant.mRID	[0..1]	The Retailer (RE) Only used in Finland
Subject Role	subject_MarketParticipant. marketRole.type	[0..1]	**A12** Energy Supplier (Retailer) Only used in Finland
Planned Resource Schedule Time Series	**PlannedResource_TimeSeries**	[1..*]	
Time Series Identification	mRID	[1]	Unique identification of the Time Series (unique over time for the sender in question)
Business Type	businessType	[1]	**A01** Production **A04** Consumption (general consumption) **Z52** Small scale production
Product	product	[1]	**8716867000030** Active energy
Connecting Area	connecting_Domain.mRID	[1]	Unique identification of the Bidding Zone

ERRP Planned Resource Schedule classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
Resource Object	registeredResource.mRID	[1]	Unique identification of the Resource (Resource Object) of the production plans
Resource Provider	resourceProvider_MarketParticipant.mRID	[1]	Unique identification of the Resource Provider (BRP) of the production plans
Measurement Unit	measurement_Unit.name	[1]	**KWH** kWh **MWH** MWh
Object Aggregation	objectAggregation	[1]	**A06** Resource Object
Period	**Series_Period**	[1..*]	
Time Interval	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
Resolution	resolution	[1]	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. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	**Point**	[1..*]	
Pos	position	[1]	Position
Qty	quantity	[1]	Quantity The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh

Table 11 Attribute usage: ENTSO-E ERRP Planned resource schedule, version 6.3

3.5 ENTSO-E Activation Document

3.5.1 Recommendations

The Activation Document has been updated to cover all needs from the Nordic balance settlement process.

3.5.2 Class diagram: ENTSO-E Activation Document contextual model version 6.4

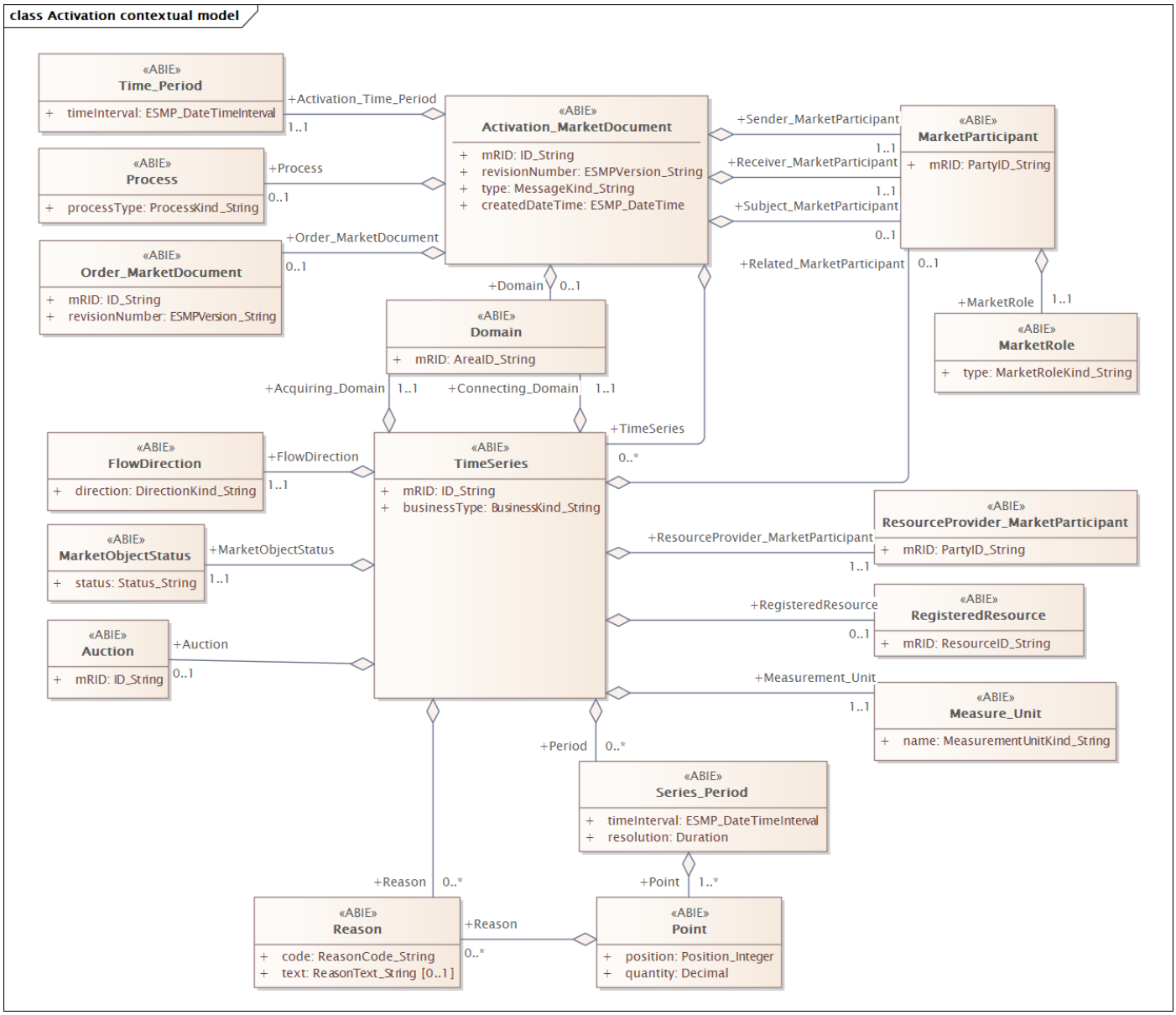

Figure 26 Class diagram: ENTSO-E Activation Document contextual model version 6.4

3.5.3 Class diagram: ENTSO-E Activation Document assembly model version 6.4

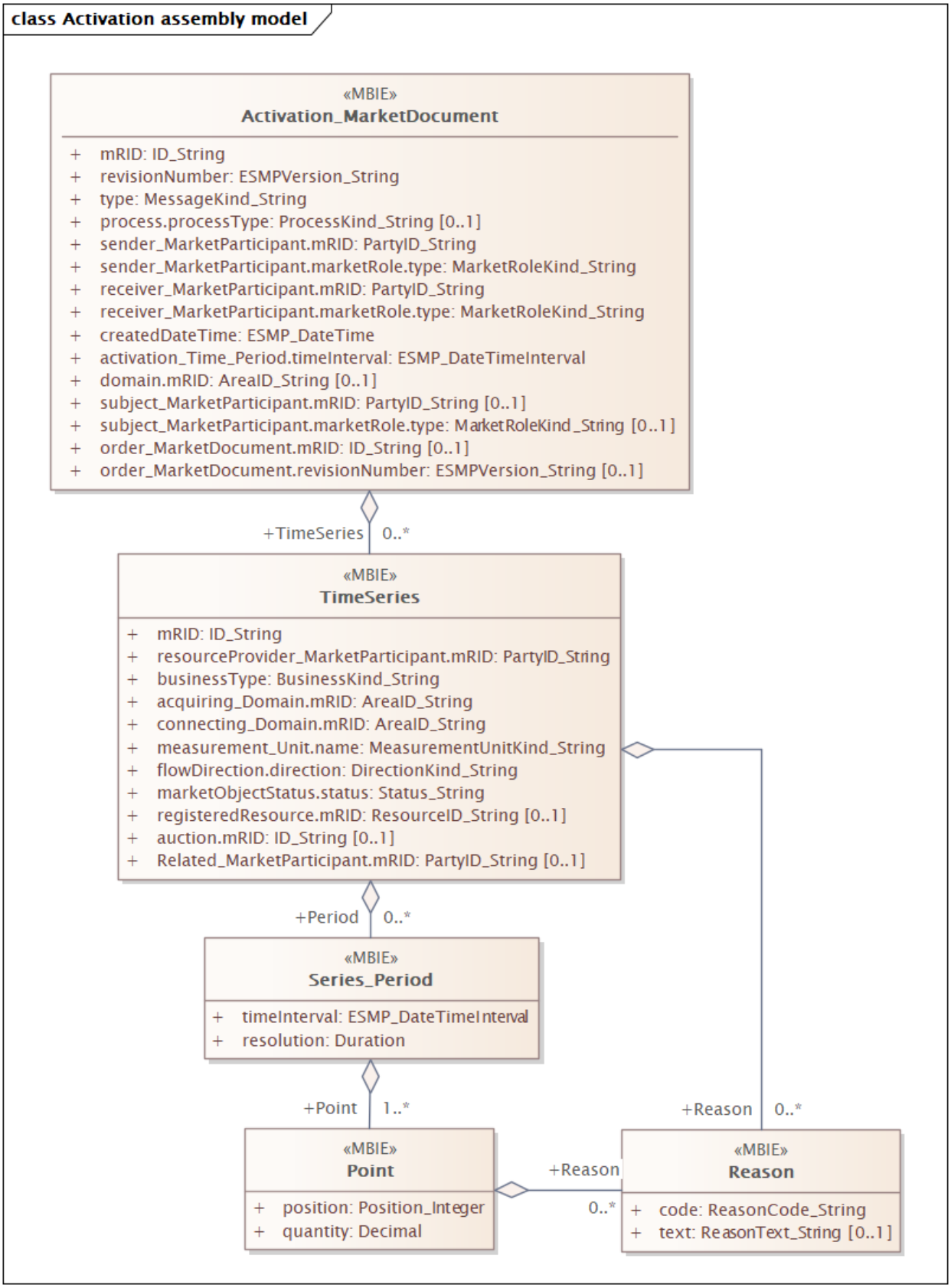

Figure 27 Class diagram: ENTSO-E Activation Document assembly model version 6.4

3.5.4 Attribute usage: ENTSO-E Activation Document, version 6.4

IEC CIM classes/attributes	Cl.	Code and description
Activation_MarketDocument		
mRID	[1]	Unique identification of the document.
revisionNumber	[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	[1]	**A83** Activated balancing quantities
process.processType	[1]	**A16** Realised
sender_MarketParticipant.mRID	[1]	Unique identification of the party who is sending the document.
sender_MarketParticipant. marketRole.type	[1]	**A04** System Operator **A05** Imbalance Settlement Responsible (eSett ID: **44X-00000000004B**) **A09** Metered Data Aggregator **A46** Balancing Service Provider
receiver_MarketParticipant.mRID	[1]	Identification of the party who is receiving the schedules.
receiver_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible **A08** Balance Responsible Party **A46** Balancing Service Provider
createdDateTime	[1]	Date and time for creation of the document.
activation_Time_Period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
domain.mRID	[1]	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area).
subject_MarketParticipant.mRID	[0..1]	Specifies the BSP (**A46**) when a TSO, DSO or someone else is sending on behalf of the BSP
subject_MarketParticipant. marketRole.type	[0..1]	**A46** Balancing Service Provider (BSP)
	[1..*]	**Time Series**
mRID	[1]	Unique identification of the Time Series (unique over time for the sender in question).
resourceProvider_ MarketParticipant.mRID	[1]	The identification of the Balancing Service Provider.
Related_MarketParticipant.mRID	[1]	Unique identification of the party whose resource is activated
Related_MarketParticipant. marketRole.type	[1]	**A08** Balance Responsible Party **A12** Energy Supplier (Retailer)
businessType	[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	[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.
connecting_Domain.mRID	[1]	Unique identification of the Bidding Zone (BZ) or Metering Grid Area (MGA) where the resource is connected.
measurement_Unit.name	[1]	**KWH** kWh (kilowatt hour) **MWH** MWh (megawatt hour)
flowDirection.direction	[1]	**A01** Up **A02** Down
marketObjectStatus.status	[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	[1]	Regulation object code
	1st rep.	**Reason (TimeSeries Level)**
code	[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). **Z54** Activation by AOF (Activation Optimisation Function) **Z55** Manual activation not based on AOF **Z56** Fast Frequency Reserve (FFR) **Z63** Period shift activation
	2nd rep.	**Reason (TimeSeries Level)**
code	[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	[1]	The start and end date and time of the time interval of the period in question.
resolution	[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	[1]	The position of the observation in a time series – Always 1.
quantity	[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: ENTSO-E Activation Document, version 6.4

3.5.5 Dependency matrix: ENTSO-E Activation Document, version 6.4

type	process. processType	businessType	Reason/code (1st repetition)	Used by			
				DK	FI	NO	SE
A83 Activated balancing quantities	**A16** Realised	**A95** Frequency containment reserve	**Z29** FCR (Frequency Containment Reserve)		✓	✓	✓
		Z85 Fast frequency reserve (FFR)	**Z56** Fast Frequency Reserve (FFR)	✓			✓
		A96 Automatic frequency restoration reserve (aFRR)	**Z30** aFRR (Frequency Restoration Reserve - Automatic)	✓	✓	✓	✓
			Z54 Activation by AOF (Activation Optimisation Function)	✓	✓	✓	✓
			Z55 Manual activation not based on AOF	✓	✓	✓	✓
		A97 Manual frequency restoration reserve (mFRR)	**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)	**Z40** Frequency Containment Reserve, Normal operation (FCR-N).	✓			✓
		C27 Frequency Containment Reserve-Disturbance (FCR-D)	**Z41** Frequency Containment Reserve, Disturbance (FCR-D).				✓

Table 13 Dependency matrix: ENTSO-E Activation Document, version 6.4

3.6 ENTSO-E ERRP Reserve Allocation Result Document

3.6.1 Recommendations

The NON-CIM “Ediel ERRP Reserve Allocation Result Document” should be migrated to the “ENTSO-E CIM ReserveAllocationResult_MarketDocument”.

The attributes in the AllocationTimeSeries class that currently are made optional in the NON-CIM “Ediel ERRP Reserve Allocation Result Document” are now also optional in the ENTSO-E ERRP Reserve Allocation Result Document.

3.6.2 Class diagram: Ediel ERRP Reserve Allocation Result Document

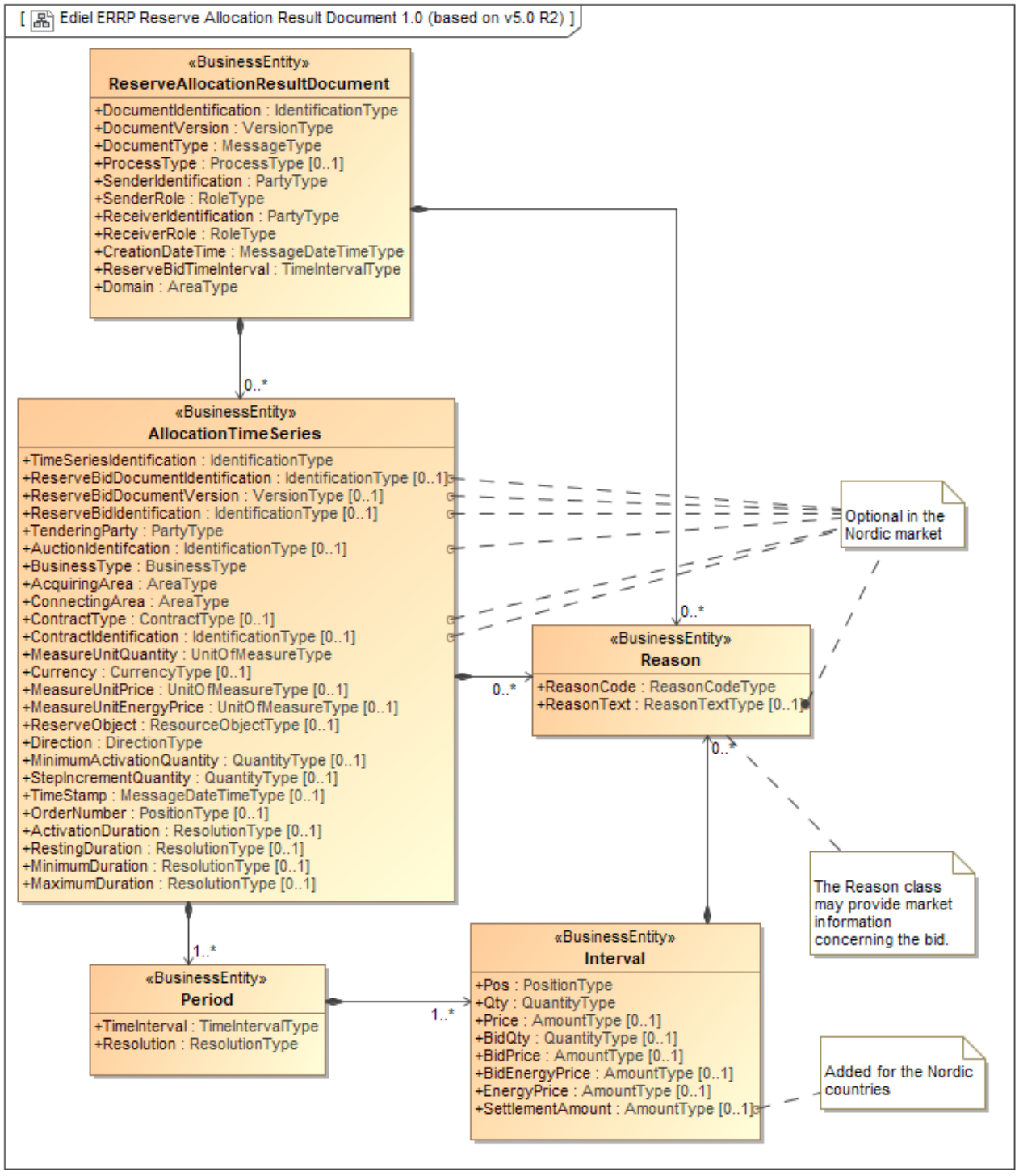

Figure 28 Class diagram: Ediel ERRP Reserve Allocation Result Document

3.6.3 Class diagram: ENTSO-E Reserve Allocation Result Document contextual model, version 6.5

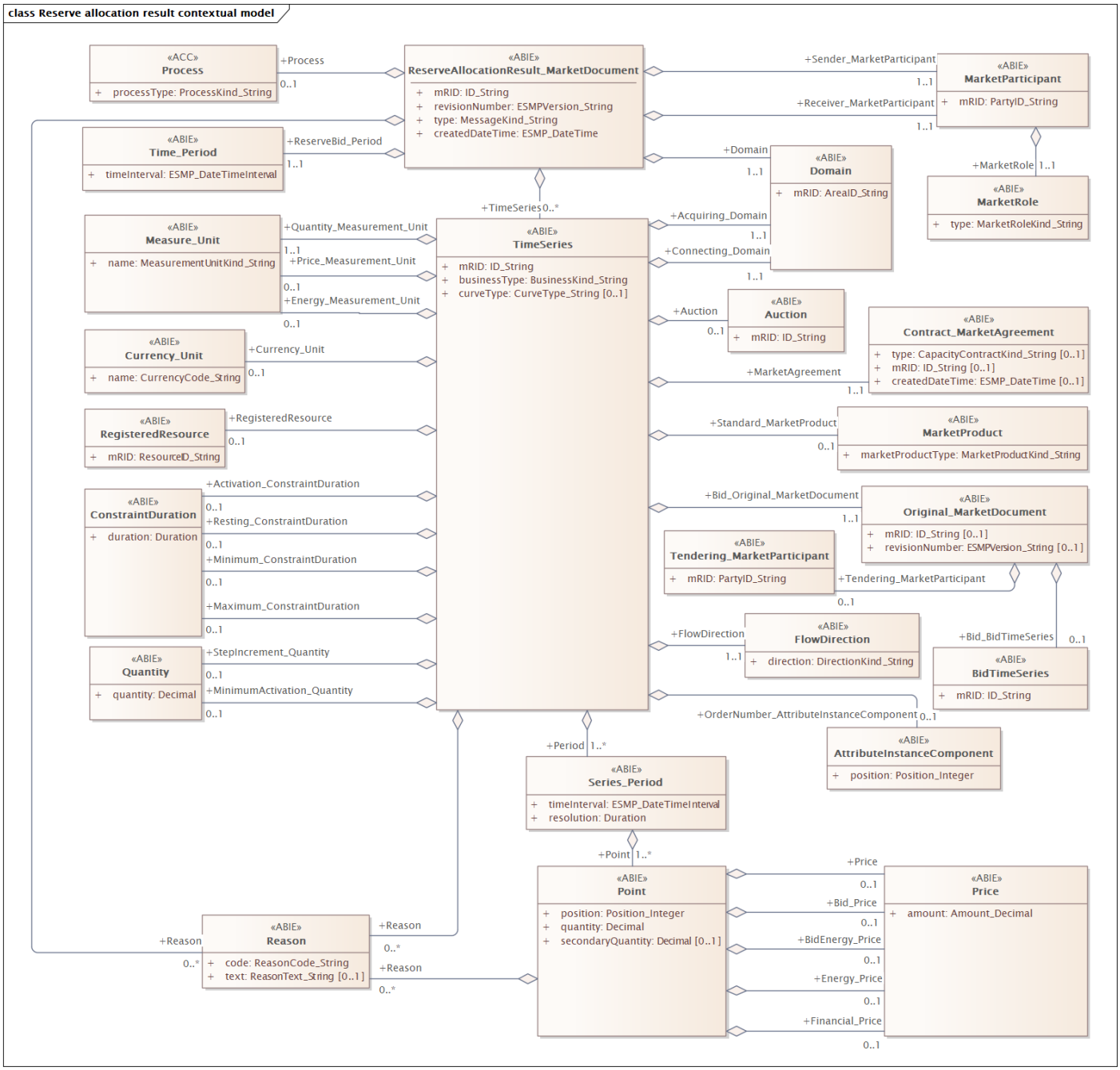

Figure 29 Class diagram: ENTSO-E Reserve Allocation Result Document contextual model, version 6.5

3.6.4 Class diagram: ENTSO-E Reserve Allocation Result Document assembly model, version 6.5

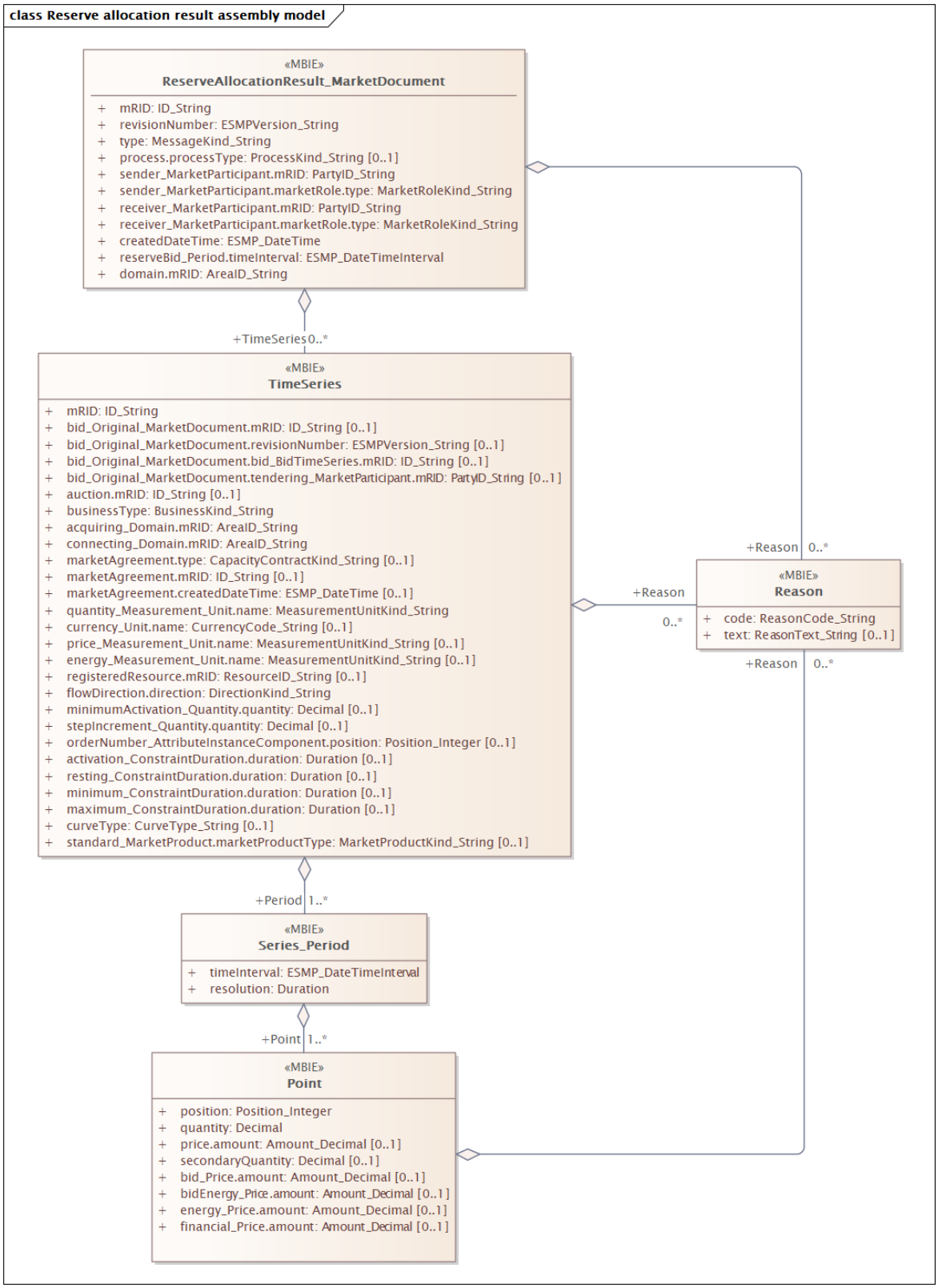

Figure 30 Class diagram: ENTSO-E Reserve Allocation Result Document assembly model, version 6.5

3.6.5 Business rules:

- All valid regulations for a period and Process Type (primary, secondary or tertiary regulations) must be sent in one document.
- If updates are sent, all valid regulations for the relevant period must be sent in the update-document (i.e. all still valid time series from the predecessor). An update-document shall always cover the same period as its predecessor. The latest received message will always replace the previous one.
- All regulations not part of the latest update-document shall be deleted.

3.6.6 Attribute usage: ENTSO-E Reserve Allocation Result Document, version 6.5

Ediel ERRP Reserve Allocation Result Document classes/attributes	**IEC CIM classes/attributes**	**Cl.**	**Descriptions and comments**
ReserveAllocationResult_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document
Document Version	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A38** Reserve Allocation Result **A81** Contracted reserves
Process Type	process.processType	[1]	**A28** Primary reserve process **A29** Secondary reserve process **A30** Tertiary reserve process
Sender Identification	sender_MarketParticipant.mRID	[1]	Unique identification of the System Operator, sending the document
Sender role	Sender_MarketParticipant. marketRole.type	[1]	**A04** System Operator **A05** Imbalance Settlement Responsible
Receiver Identification	receiver_MarketParticipant.mRID	[1]	Unique identification of the Imbalance Settlement Responsible, receiving the schedule
Receiver role	receiver_MarketParticipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible **A46** Balancing Service Provider (BSP)
Creation Date Time	createdDateTime	[1]	The date and time that the document was prepared for transmission by the application of the sender.
Reserve Bid Time Interval	reserveBid_Period.timeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Domain	Domain.mRID	[1]	Identification of the area covered by the document, i.e. **10Y1001A1001A91G** (Nordic market area)
Allocation Time Series	**TimeSeries**	[0..*]	
Time Series Identification	mRID	[1]	Unique identification of the Time Series (unique over time for the sender in question)
Tendering Party	bid_Original_MarketDocument.tendering_MarketParticipant.mRID	[1]	See dependency matrix below
Business Type	businessType	[1]	**A10** Tertiary control **A11** Primary control **A12** Secondary control

Ediel ERRP Reserve Allocation Result Document classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
Acquiring Area	acquiring_Domain.mRID	[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.
Connecting Area	connecting_Domain.mRID	[1]	Unique identification of the Bidding Zone (BZ) where the resource is connected.
Measure Unit Quantity	currency_Unit.name	[1]	**KWH** kWh (kilowatt hour) **MWH** MWh (megawatt hour) **KWT** kW (kilowatt) **MAW** MW (megawatt)
Currency	currency_Unit.name	[1]	ISO three-digit currency code, e.g.: **DKK** Denmark, krone **EUR** European Union, Euro **NOK** Norway, krone **SEK** Sweden, krona
Reserve Object	registeredResource.mRID	[0..1]	See dependency matrix below
Direction	flowDirection.direction	[1]	**A01** Up **A02** Down **A03** UP and DOWN (symmetrical) For supportive power (incl. transit) the Direction is related to Up- or Down-regulation in the Connecting Area. When reporting Capacity Reserves (Document Type = **A81**) and Reason Code from **Z42** to **Z45**, the direction **A03** (UP and DOWN (symmetrical)) shall be used.
Reason (Allocation Result Time Series Level)	**Reason (Time Series Level)**	[1]	**1st REPETITION**
Reason Code	code	[1]	**Z22** Supportive power **Z26** Transit triangle **Z27** Transit redispatch **Z28** Transit SB Loop Long **Z29** FCR (Frequency Containment Reserve (FCR) is an automatic and momentarily regulation, to adjust the physical balance in the power system) **Z30** aFRR (Frequency Restoration Reserve - Automatic (aFRR) is an automatic reserve, activated continuously by the frequency) **Z31**[4] mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves (mFRR), Balancing Power) **Z34** mFRR, Quarter regulation (Frequency Restoration Reserve - Manual activated reserves (mFRR), Quarter regulation when TSO

[4] Balancing power (**Z31**) can be direct activation (**Z59**) in case forecasted need for Balancing Power is not correct.

Ediel ERRP Reserve Allocation Result Document classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
			need transfer of production (usually start 15 min earlier)) **Z35**[5] mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves (mFRR), Special Regulation where regelation does not affect the regulation price) **Z36** Hour Change Regulation (to reduce problems encountered at the turn of the hour in the Nordic countries or in Finland, Fingrid reserves the right to transfer the planned changes to begin 15 minutes before or after the planned moment) **Z37** Power Transaction (Fixed price transaction used for specific purposes outside of ordinary regulation) **Z38** TSO Internal Countertrades (The time series concern TSO Internal Countertrades) **Z39** Day Ahead Production Adjustment **(**Energy (production) moved from one hour to another to avoid major changes between hours) **Z40** Frequency Containment Reserve, Normal operation (FCR-N). **Z41** Frequency Containment Reserve, Disturbance (FCR-D). **Z42** Frequency Containment Reserve, Normal operation, day minus one (FCR-N, late) **Z43** Frequency Containment Reserve, Normal operation, day minus one (FCR-N, early) **Z44** Frequency Containment Reserve, Normal operation, day minus one, correction (FCR-N, late correction) **Z45** Frequency Containment Reserve, Normal operation, day minus one, correction (FCR-N, early correction) **Z46** Frequency Containment Reserve, Disturbance, day minus one (FCR-D, late) **Z47** Frequency Containment Reserve, Disturbance, day minus one (FCR-D, early) **Z48** Frequency Containment Reserve, Disturbance, day minus one, correction (FCR-D, late correction) **Z49** Frequency Containment Reserve, Disturbance, day minus one, correction (FCR-D, early correction) **Z54** Activation by AOF (Activation Optimisation Function) **Z55** Manual activation not based on AOF **Z56** Fast Frequency Reserve (FFR) **Z63** Period shift activation **Z74** Disturbance reserve mFRR-D

[5] In many cases Special/system Regulations (**Z35**) can be scheduled since they are known early. In those cases, the activation is scheduled activation (**Z58**). If the special/system regulation need comes suddenly, then the activation will be direct activation (**Z59**)

Ediel ERRP Reserve Allocation Result Document classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
			Z75 aFRR, correction **Z76** mFRR, correction **Z83** Unspecified non-standard bids **Z89** Base load **Z93** mFRR-D correction
Reason (Allocation Result Time Series Level)	**Reason (Time Series Level)**	[0..1]	**2ND REPETITION** ***Dependency:*** Shall be used if the following reason codes is specified in the first repetition of the Reason class: **Z31** mFRR, Balancing Power (Frequency Restoration Reserve - Manual activated reserves (mFRR), Balancing Power) **Z35** mFRR, Special Regulation (Frequency Restoration Reserve - Manual activated reserves (mFRR), Special Regulation where regelation does not affect the regulation price)
Reason Code	code	[1]	**Z58** Scheduled activation **Z59** Direct activation **Z60** Faster activation **Z61** Faster deactivation **Z62** Slower activation
Period	**Period**	[1..*]	
Time Interval	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
Resolution	resolution	[1]	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. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	**Point**	[1..*]	
Pos	position	[1]	Position
Qty	quantity	[1]	Quantity The resolution is maximum in Watt, i.e., max 3 decimals for kWh and max 6 decimals for MWh
Settlement Amount	financial_Price.amount	[1]	Rules for the supportive power (incl. transit) – Reason Codes Z22, Z26, Z27 and Z28

<table>
<tr><th>Ediel ERRP Reserve Allocation Result Document classes/attributes</th><th>IEC CIM classes/attributes</th><th>Cl.</th><th>Descriptions and comments</th></tr>
<tr><td></td><td></td><td></td><td>

The Acquiring Area is always related to the Buyer and the Connecting Area is always related to the Seller.
Positive values are used when the energy direction is from the Connecting Area to the Acquiring Area, i.e., up-regulation.
Negative values are used when the energy direction is from the Acquiring Area to the Connecting Area, i.e., down-regulation.

Rules for other Reason Codes:

Settlement Amount is always Quantity multiplied with price.
The table below shows the sign convention to be used:

<table>
<tr><th></th><th>Price</th><th>Sign when sending from TSO to eSett</th></tr>
<tr><td>Up regulation (A01)</td><td>Positive</td><td>Negative</td></tr>
<tr><td>Up regulation (A01)</td><td>Negative</td><td>Positive</td></tr>
<tr><td>Down regulation (A02)</td><td>Positive</td><td>Positive</td></tr>
<tr><td>Down regulation (A02)</td><td>Negative</td><td>Negative</td></tr>
</table>

When positive prices, up-regulation means negative Settlement Amount while down-regulation means positive Settlement Amount. Opposite sign occurs when prices are negative.

</td></tr>
</table>

Table 14 Attribute usage: ENTSO-E Reserve Allocation Result Document, version 6.5

3.6.7 Dependency matrix: ENTSO-E Reserve Allocation Result Document, version 6.5

process. Process Type	Business Type	type	Direc-tion	Reason/code, 1st repetition	Reason/code, 2nd repetition	tendering_ Market Participant. mRID	Registered Resource. mRID	Used in			
								DK	FI	NO	SE
A30 (Tertiary reserve process)	**A10** (Tertiary control)	**A38**	**A01** or **A02**	**Z22** Supportive power	N/A	**TSO**	N/A		✓		
				Z26 Transit triangle	N/A	**TSO**	N/A			✓	
				Z27 Transit redispatch	N/A	**TSO**	N/A			✓	
				Z28 Transit SB Loop Long	N/A	**TSO**	N/A			✓	
				Z31 mFRR, Balancing Power (**NO**: Ordinary regulation)	**Z58** Scheduled activation	**BRP**	✓	✓	✓	✓	✓
					Z59 Direct activation	**BRP**	✓	✓	✓	✓	✓
					Z60 Faster activation	**BRP**	✓	✓		✓	
					Z61 Faster deactivation	**BRP**	✓	✓		✓	
					Z62 Slower activation	**BRP**	✓	✓		✓	
				Z34 mFRR, Quarter regulation	N/A	**BRP**	✓			✓	
				Z35 mFRR, Special Regulation (**NO:** Specially regulation)	**Z58** Scheduled activation	**BRP**	✓	✓	✓	✓	✓
					Z59 Direct activation	**BRP**	✓	✓	✓	✓	✓
					Z60 Faster activation	**BRP**	✓	✓		✓	
					Z61 Faster deactivation	**BRP**	✓	✓		✓	
					Z62 Slower activation	**BRP**	✓	✓		✓	
				Z36 Hour Change Regulation (**NO:** Move of production	N/A	**BRP**	✓		✓	✓	✓
				Z37 Power Transaction	N/A	**BRP**	✓		✓		
				Z38 TSO Internal Countertrades (Only used in Finland)	N/A	**BRP**	✓		✓		
				Z39 Day Ahead Production Adjustment (**NO:** Production smoothing)	N/A	**BRP**	✓			✓	
				Z54 Activation by AOF (Activation Optimisation Function)	N/A	**BSP**	✓	✓	✓	✓	✓

process. Process Type	Business Type	type	Direc-tion	Reason/code, 1st repetition	Reason/code, 2nd repetition	tendering_ Market Participant. mRID	Registered Resource. mRID	Used in			
								DK	FI	NO	SE
				Z55 Manual activation not based on AOF	N/A	**BSP**	✓	✓	✓	✓	✓
				Z63 Period shift activation	N/A	**BRP**	✓			✓	
				Z74 Disturbance reserve mFRR-D	N/A	**BRP**	✓			✓	✓
				Z83 Unspecified non-standard bids	N/A	**BRP**	✓			✓	
				Z89 Bidless activation (Activation without BSP bid)	N/A	**BRP**	✓			✓	✓
		A81	**A01 or A02**	**Z31** mFRR, Balancing Power (**NO**: Ordinary regulation)	N/A	**BRP or BSP**	**N/A**	✓		✓	✓
				Z35 mFRR, Special Regulation (**NO:** Specially regulation)	N/A	**BRP or BSP**	N/A	✓			✓
				Z74 Disturbance reserve mFRR-D	N/A	**BRP or BSP**	N/A			✓	
				Z76 mFRR, correction	N/A	BRP or BSP	N/A			✓	✓
				Z93 mFRR-D correction	N/A	**BRP or BSP**	N/A			✓	
A28 (Primary reserve process)	**A11** (Primary control)	**A38**	**A01** or **A02**	**Z29** FCR	N/A	**BRP**	✓		✓	✓	✓
		A38	**A01** or **A02**	**Z40** Frequency Containment Reserves, Normal (**FCR-N**)	N/A			✓			✓
		A38	**A01** or **A02**	**Z41** Frequency Containment Reserves, Disturbance (**FCR-D**)	N/A						✓
A28 (Primary Reserve process)	**A11** (Primary control)	**A81**	**A01**, **A02** or **A03**	**Z29** FCR	N/A	**BRP or BSP**	**N/A**	✓			✓
			A03	**Z42** FCR-N, late	N/A			✓			✓
				Z43 FCR-N, early	N/A			✓			✓
				Z44 FCR-N, late correction	N/A			✓			✓
				Z45 FCR-N, early correction	N/A			✓			✓

process. Process Type	Business Type	type	Direc-tion	Reason/code, 1st repetition	Reason/code, 2nd repetition	tendering_ Market Participant. mRID	Registered Resource. mRID	Used in			
								DK	FI	NO	SE
			A01 or A02	**Z46** FCR-D, late	N/A			✓			✓
				Z47 FCR-D, early	N/A			✓			✓
				Z48 FCR-D, late correction	N/A			✓			✓
				Z49 FCR-D, early correction	N/A			✓			✓
			A01 or **A02**	**Z56** FFR	N/A			✓			✓
A29 (Secondary reserve process)	**A12** (Secondary control)	**A38**	**A01** or **A02**	**Z30** aFRR	N/A	**BRP**	✓	✓	✓	✓	✓
				Z54 Activation by AOF	N/A	**BSP**	✓	✓	✓	✓	✓
				Z55 Manual activation not based on AOF	N/A	**BSP**	✓	✓	✓	✓	✓
A29 (Secondary reserve process)	**A12** (Secondary control)	**A81**	**A01** or **A02**	**Z30** aFRR	N/A	**BRP or BSP**	**N/A**	✓		✓	✓
				Z75 aFRR, correction	N/A	**BRP or BSP**	**N/A**			✓	✓

Table 15 Dependency matrix: ENTSO-E Reserve Allocation Result Document, version 6.5

3.7 Ediel ECAN Publication Document (mapped to ENTSO-E CIM Balancing Market Document)

3.7.1 Recommendations

The NON-CIM "Ediel ECAN Publication Document" should be migrated to the ENTSO-E CIM Balancing Market Document (ECAN)".

3.7.2 Class diagram: ENTSO-E NON-CIM Ediel ECAN Publication Document

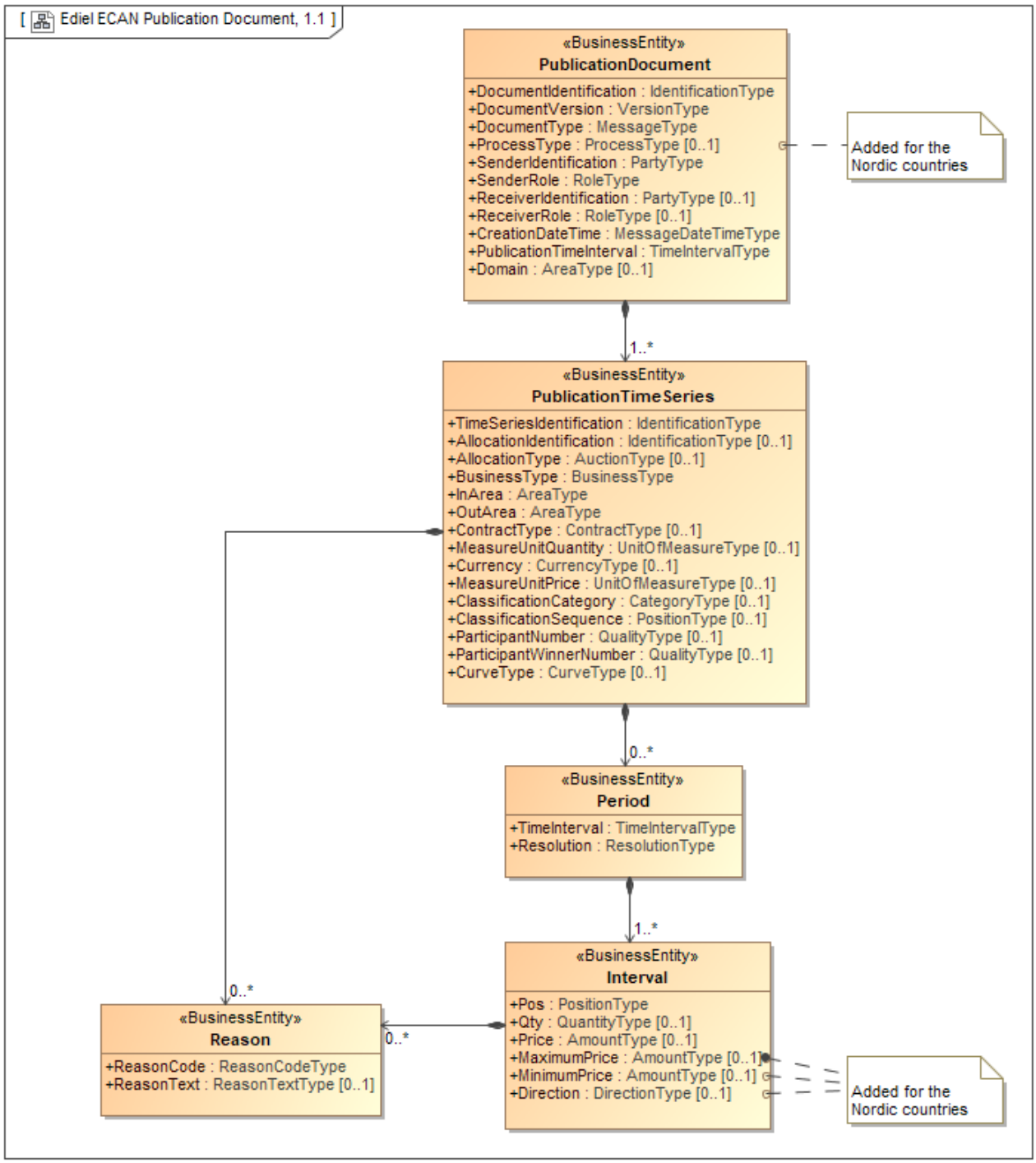

Figure 31 Class diagram: ENTSO-E NON-CIM Ediel ECAN Publication Document

3.7.4 Class diagram: ENTSO-E Balancing Market Document contextual model, version 4.5

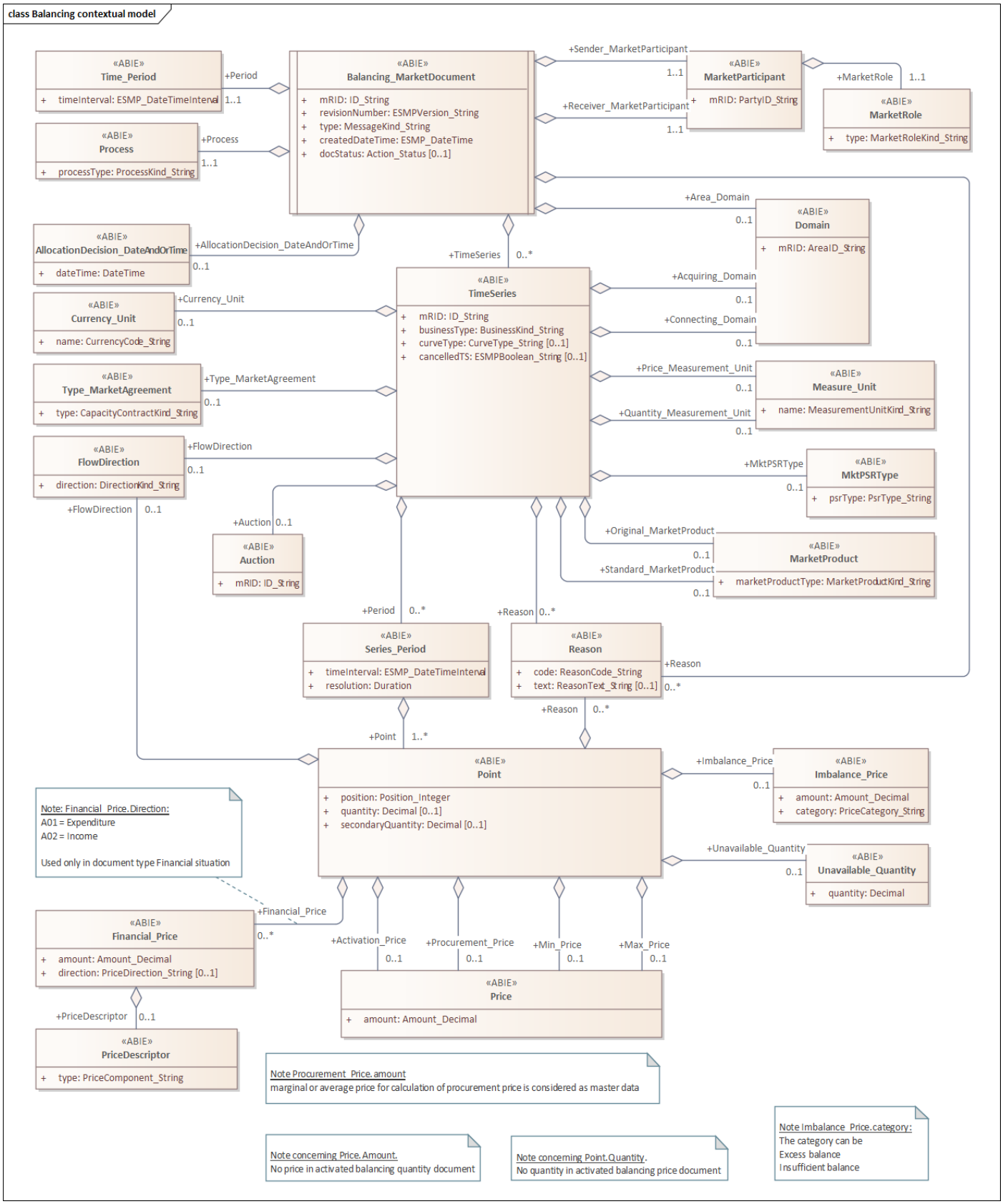

Figure 32 Class diagram: ENTSO-E Balancing Market Document contextual model, version 4.5

3.7.5 Class diagram: ENTSO-E Balancing Market Document assembly model, version 4.5

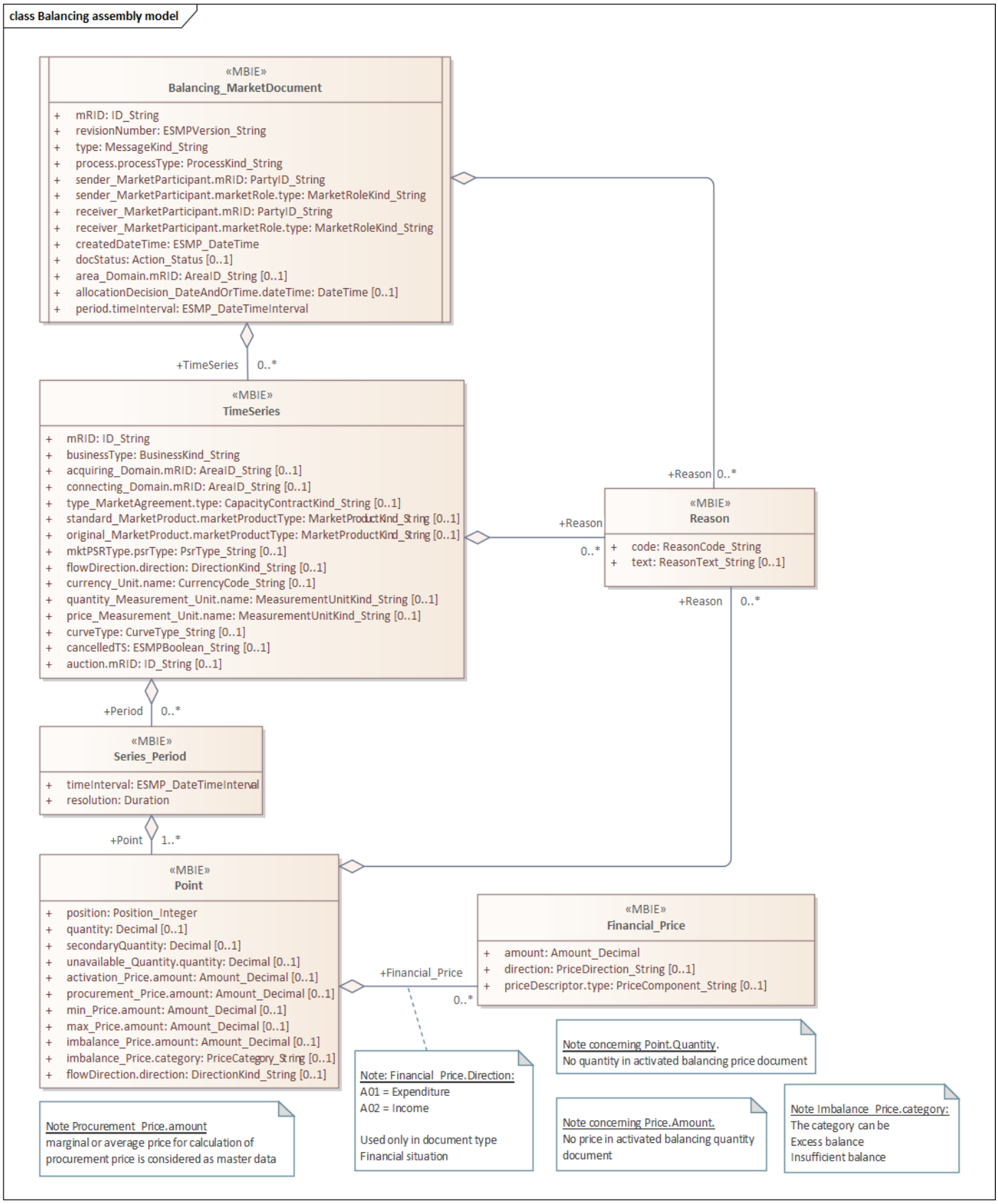

Figure 33 Class diagram: ENTSO-E Balancing Market Document assembly model, version 4.5

3.7.6 Attribute usage: ENTSO-E CIM Balancing Market Document, version 4.5

Ediel ECAN Publication Document classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
Balancing _MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document
Document Version	revisionNumber	[1]	Fixed 1
Document Type	type	[1]	**A44** Price document
Process Type	process.processType	[1]	**A01** Day-ahead **A30** Tertiary reserves process **A51** Automatic frequency restoration reserve **Z15** External trade (Trade outside the Capacity Calculation Region)
Sender Identification	sender_MarketParticipant. mRID	[1]	Identification of the party who is sending the document
Sender role	sender_MarketParticipant. marketRole.type	[1]	**A04** System Operator **A11** Market Operator
Receiver Identification	receiver_Market Participant. mRID	[1]	Identification of the Imbalance Settlement Responsible, who is receiving the document
Receiver role	receiver_MarketP articipant. marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation Date Time	createdDateTime	[1]	The date and time that the message was prepared for transmission by the application of the sender.
Publication Time Interval	period. TimeInterval	[1]	The beginning and ending date and time of the period covered by the document.
Domain	area_Domain.mRID	[1]	Identification of the area covered by the document, i.e., **10Y1001A1001A91G** (Nordic market area)
Publication Time Series	**TimeSeries**	[1..*]	
Time Series Identification	mRID	[1]	Unique identification of the Time Series (unique over time for the sender in question)
Business Type	businessType	[1]	**A06** External trade without explicit capacity (used for the North Sea Link cable). **A62** Spot price **B20** Balance up regulation price **B21** Balance down regulation price **B22** Main direction (no price) **B23** Consumption imbalance price **B24** Production sales imbalance price **B25** Production purchase imbalance price **B26** BZs prices between Bidding Zones (inter-TSO exchange) **Z74** Imbalance sales price **Z75** Imbalance purchase price

Ediel ECAN Publication Document classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
			Note regarding Business Type B24 and B25: The view for reporting of sales and purchases is seen from the Imbalance Settlement Responsible (not the BRP). Business Type **A06** is used together with Process Type **Z15.**
In Area	acquiring_Domain.mRID	[1]	Relevant Bidding Zone (BZ) for the market
Out Area	connecting_Domain.mRID	[1]	Same as In Area for all Business Types, except "**B26** BZs prices between Bidding Zones", where the second border-BZ is used
ContractType	type_marketAgreement.type	[0..1]	Contract types: **A14** First intraday auction contract **A15** Second intraday auction contract **A16** Third intraday auction contract **Z07** Intraday Auction Combined
Currency	currency_Unit.name	[1]	ISO three-digit currency code, e.g.: **DKK** Denmark, krone **EUR** European Union, Euro **NOK** Norway, krone **SEK** Sweden, krona
Measurement Unit Price	price_Measure_Unit.name	[1]	**MWH** MWh
Period	**Period**	[1..*]	
Time Interval	timeInterval	[1]	The start and end date and time of the time interval of the period in question.
Resolution	resolution	[1]	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. In NBS hourly or quarterly resolution is used, i.e., **PT1H**, **PT60M** or **PT15M.**
Interval	**Point**	[1..*]	
Pos	position	[1]	Position
Price	imbalance_Price.amount	[0..1]	Price
Direction	flowDirection.direction	[0..1]	**A01** Up **A02** Down **A04** Stable Only used if Business Type is ***B22*** *Main direction*

Table 16 Attribute usage: ENTSO-E CIM Balancing Market Document, version 4.5

4 Master data documents

4.1 Area Configuration Document (NEG Area Specification Document)

4.1.1 Recommendations

The NON-CIM “NEG Area Specification Document” should be migrated to the ENTSO-E CIM Area Configuration Market Document, which has most of the needed attributes and associations as the NEG Area Specification Document. The ENTSO-E CIM Area Configuration Market Document is missing the “Type of area” and “ MGA type” attributes.

Note: The structure of the currently used “NEG Area Specification Document” is slightly different from the CIM Area Configuration Market Document, i.e. the validity period (start and end date) is in the new structure under the area details and not representing the root class of the detailed part of the massage. The only consequence of this is that area relations cannot be grouped by the validity period.

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4.1.2 Class diagram: NEG Area Specification Document

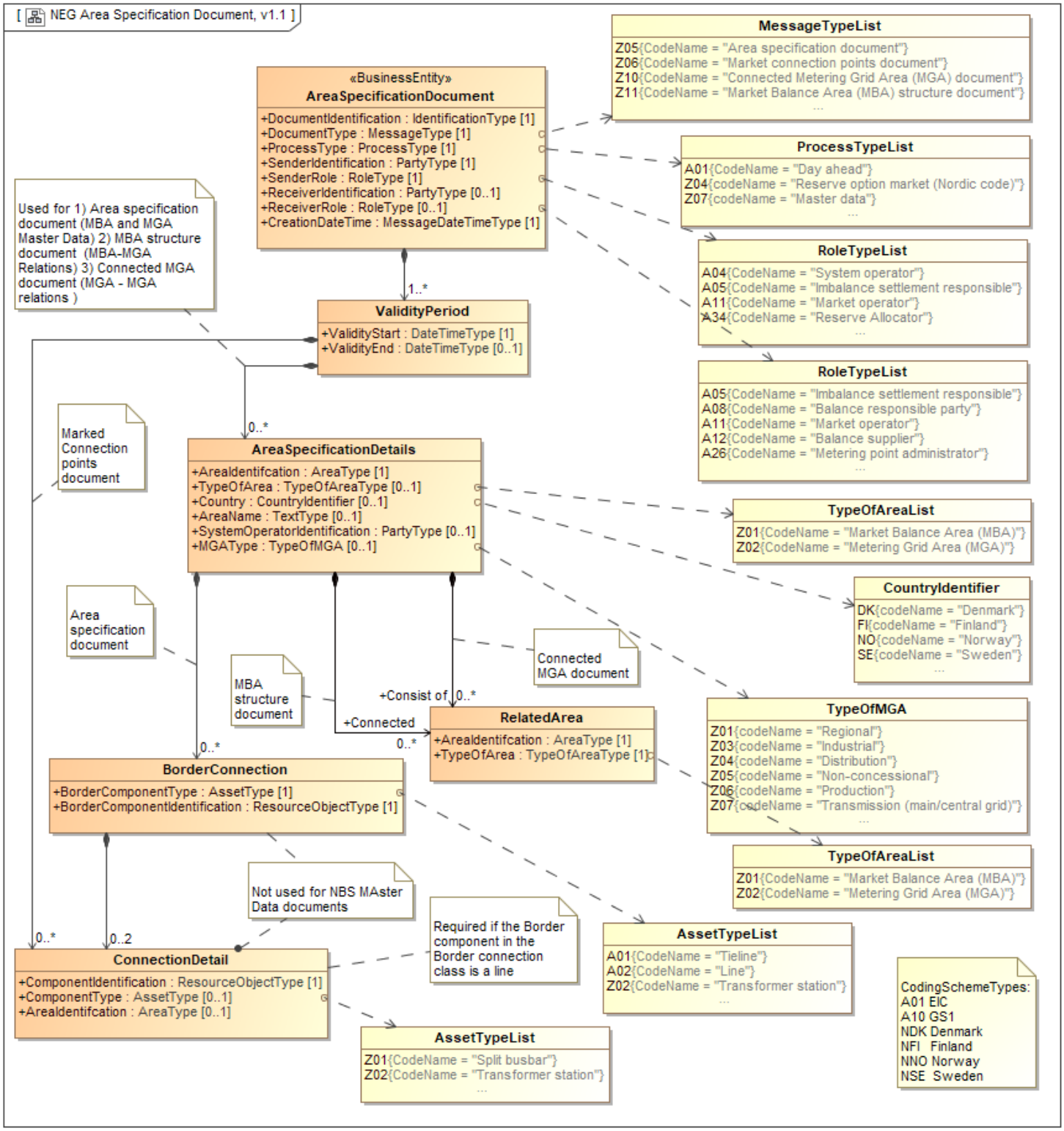

Figure 34 Class diagram: NEG Area Specification Document

4.1.3 Class Diagram: ENTSO-E Area Configuration Market Document contextual model, version 1.2

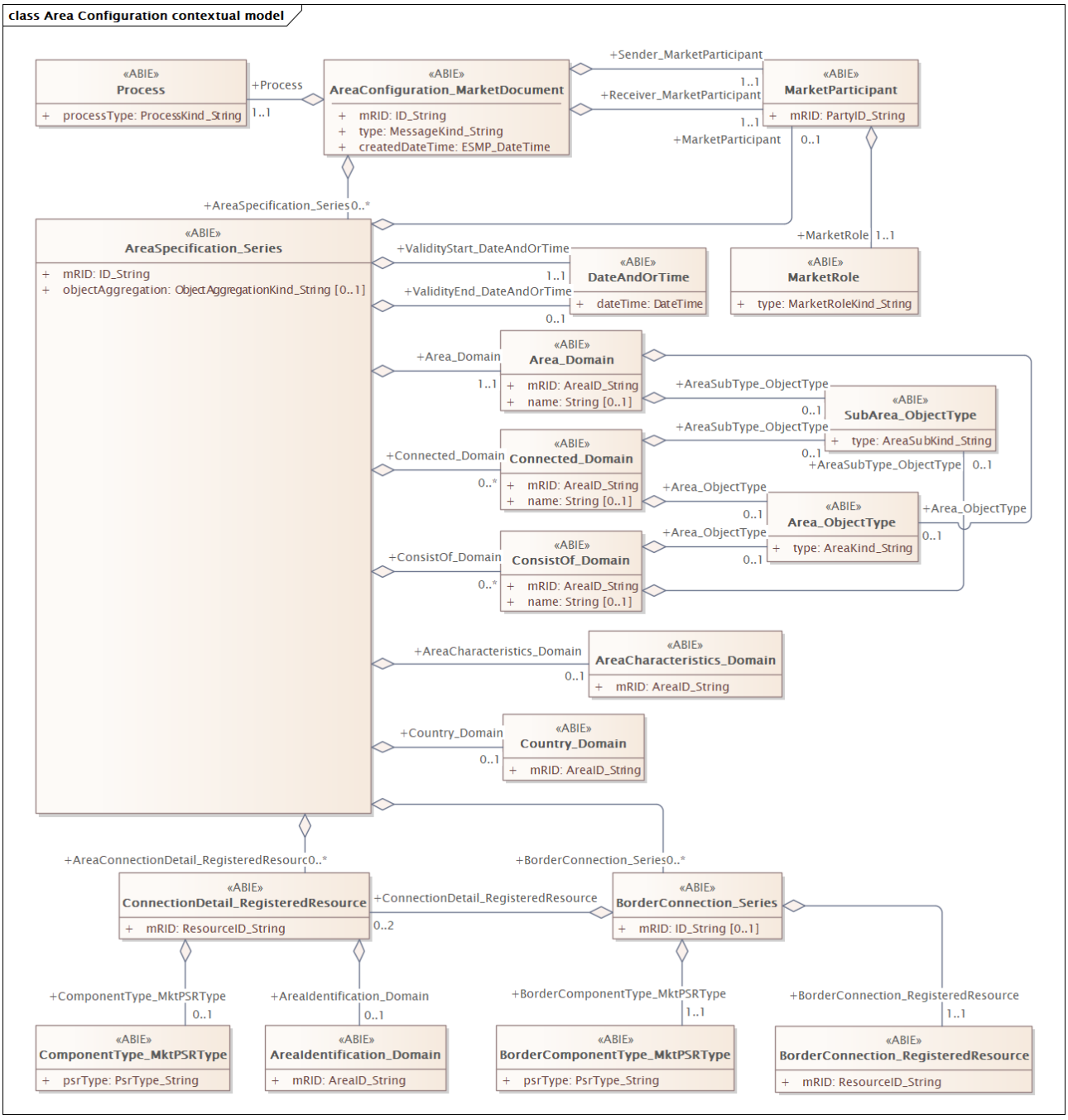

Figure 35 Class diagram: ENTSO-E Area Configuration Market Document contextual model, version 1.2

4.1.4 Class Diagram: ENTSO-E Area Configuration Market Document assembly model, version 1.2

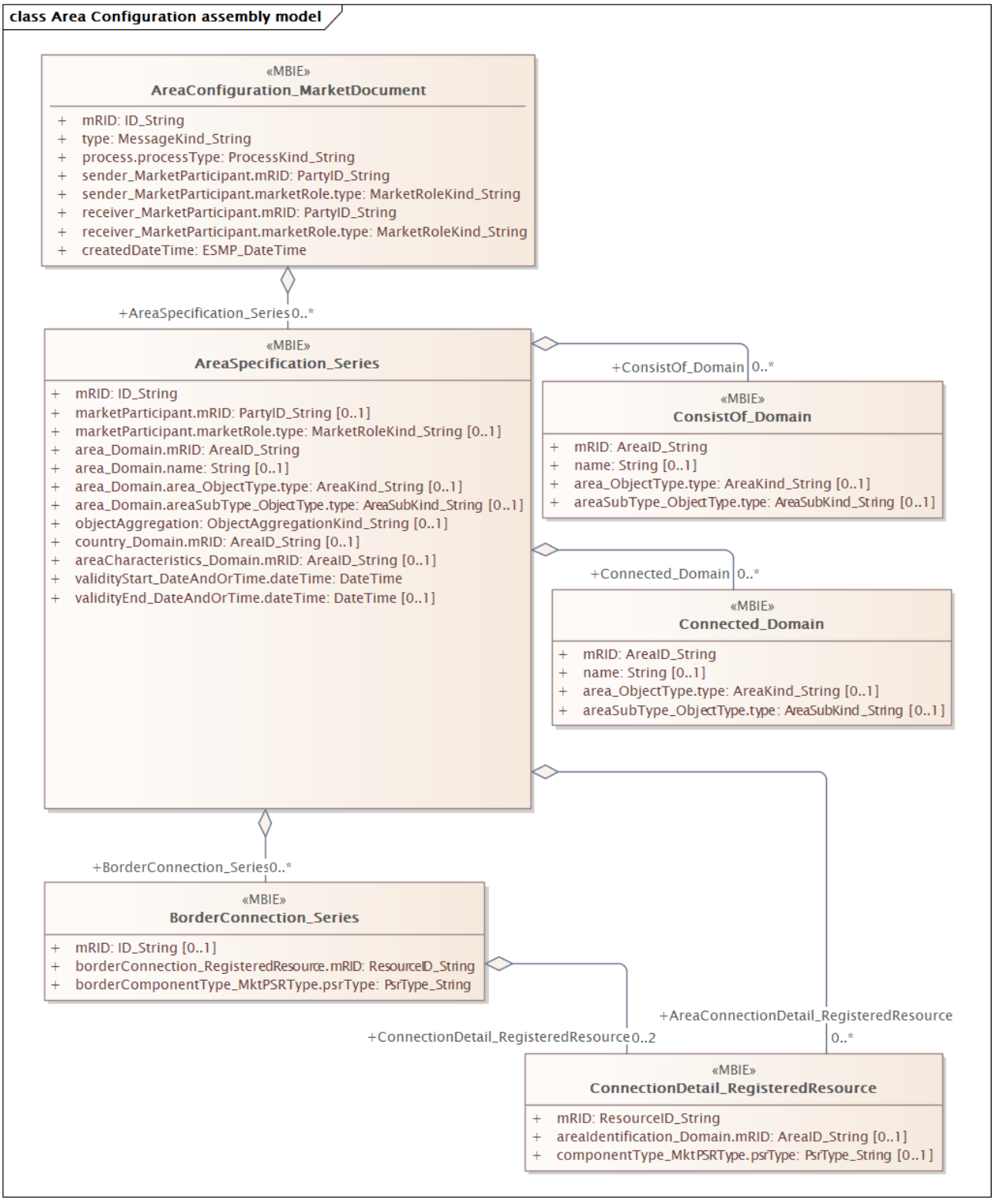

Figure 36 Class diagram: ENTSO-E Area Configuration Market Document assembly model, version 1.2

4.1.5 Attribute usage: ENTSO-E Area Configuration Market Document, version 1.2

NEG Area Specification Document classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
AreaConfiguration_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document
Document Type	type	[1]	**B35** Area Configuration document
Process Type	Process.processType	[1]	**A55** Master data
Sender Identification	Sender_MarketParticipant.mRID	[1]	Identification of the party who is sending the document (and codingScheme)
Sender Role	sender_MarketParticipant.marketRole.type	[1]	**A04** System Operator
Receiver Identification	Reciever_MarketParticipant.mRID	[1]	Identification of the party who is receiving the master data (and codingScheme)
Receiver Role	receiver_MarketParticipant.marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation Date Time	createdDateTime	[1]	Date and time for creation of the document
AreaSpecificationDetails	**AreaSpecification_Series**	[1..*]	
	mRID	[1]	Unique ID of this transaction.
A: System Operator Identification	marketParticipant.mRID	[0..1]	The unique identification of the System Operator responsible for the area or domain
	marketParticipant.market Role.type	[0..1]	**A04** System Operator
Area Identification	area_Domain.mRID	[0..1]	Unique ID of the area
Area Name	area_Domain.name	[0..1]	Name of the BZ or MGA in clear text
Type of Area	area_Domain.area_ObjectType.type	[1]	**Znn codes to be updated when published by ENTSO-E:** **Z01** Bidding Zone (BZ) **Z02** Metering Grid Area (MGA)
MGA Type	area_Domain.areaSubType_ObjectType.type	[0..1]	**Znn codes to be updated when published by ENTSO-E:** **Z01** Regional **Z03** Industrial **Z04** Distribution **Z05** Non-concessional **Z06** Production **Z07** Transmission (main/central grid)

NEG Area Specification Document classes/attributes	IEC CIM classes/attributes	Cl.	Descriptions and comments
Country	country_Domain.mRID	[0..1]	**DK** Denmark **FI** Finland **NO** Norway **SE** Sweden codingScheme = **A03** (ISO)
Validity Start	validityEnd_DateAndOrTime.dateTime	[1]	Validity start date and time
Validity End	validityEnd_DateAndOrTime.dateTime	[0..1]	Validity end date and time
Consist of Related Area	**ConsistOf_Domain**	[0..*]	
Area Identification	mRID	[1]	Unique identification of the area
	area_ObjectType.type	[0..1]	**Znn codes to be updated when published by ENTSO-E:** **Z02** Metering Grid Area (MGA)
Connected Related Area	**Connected_Domain**	[0..*]	
Area Identification	mRID	[1]	Unique identification of the connected area
Type of Area	area_ObjectType.type	[0..1]	**Znn codes to be updated when published by ENTSO-E:** **Z01** Bidding Zone (BZ) **Z02** Metering Grid Area (MGA)

Table 17 Attribute usage: ENTSO-E Area Configuration Market Document, version 1.2

4.1.6 Dependency matrix: ENTSO-E Area Configuration Market Document, version 1.2

Class/Attribute	Area Configuration for BZ and MGA Master Data	Area Configuration for BZ-MGA Relations	Area Configuration for MGA-MGA Relations
AreaConfiguration_ MarketDocument			
AreaSpecification_Series			
marketParticipant.mRID	Required	Not used	Not used
marketParticipant.market Role.type	**A04** System Operator	Not used	Not used
area_Domain.name	Required	Not used	Not used
area_Domain.area_ ObjectType.type	**Z01** Bidding Zone (BZ) **Z02** Metering Grid Area (MGA)	**Z01** Bidding Zone (BZ)	**Z02** Metering Grid Area (MGA)
area_Domain.areaSubType_ ObjectType.type	Required for MGA Not used for BZ	Not used	Not used
country_Domain.mRID	Required for BZ	Not used	Not used
Consist of Related Area	Not used		Not used
mRID	Not used	Required	Not used
area_ObjectType.type	Not used	**Z02** Metering Grid Area (MGA)	Not used
Connected Related Area	Optional for MGA Not used for BZ	Not used	Not used
mRID	Required	Not used	Required
area_ObjectType.type	**Z01** Bidding Zone (BZ)	Not used	**Z02** Metering Grid Area (MGA)

Table 18 Dependency matrix: ENTSO-E Area Configuration Market Document, version 1.2

4.2 NEG Party Master Data Document

4.2.1 Recommendations

NMEG drafted in 2024 two master data documents, “Ediel CIM Party Master Data Market Document” and “Ediel CIM Resource Master Data Market Document” based on requirements from NBS and NBM (Nordic Balancing Model).

The “NEG Party Master Data Document” can be migrated to the “Ediel CIM Party Master Data Market Document” directly.

4.2.2 Class diagram: NEG Party Master Data Document

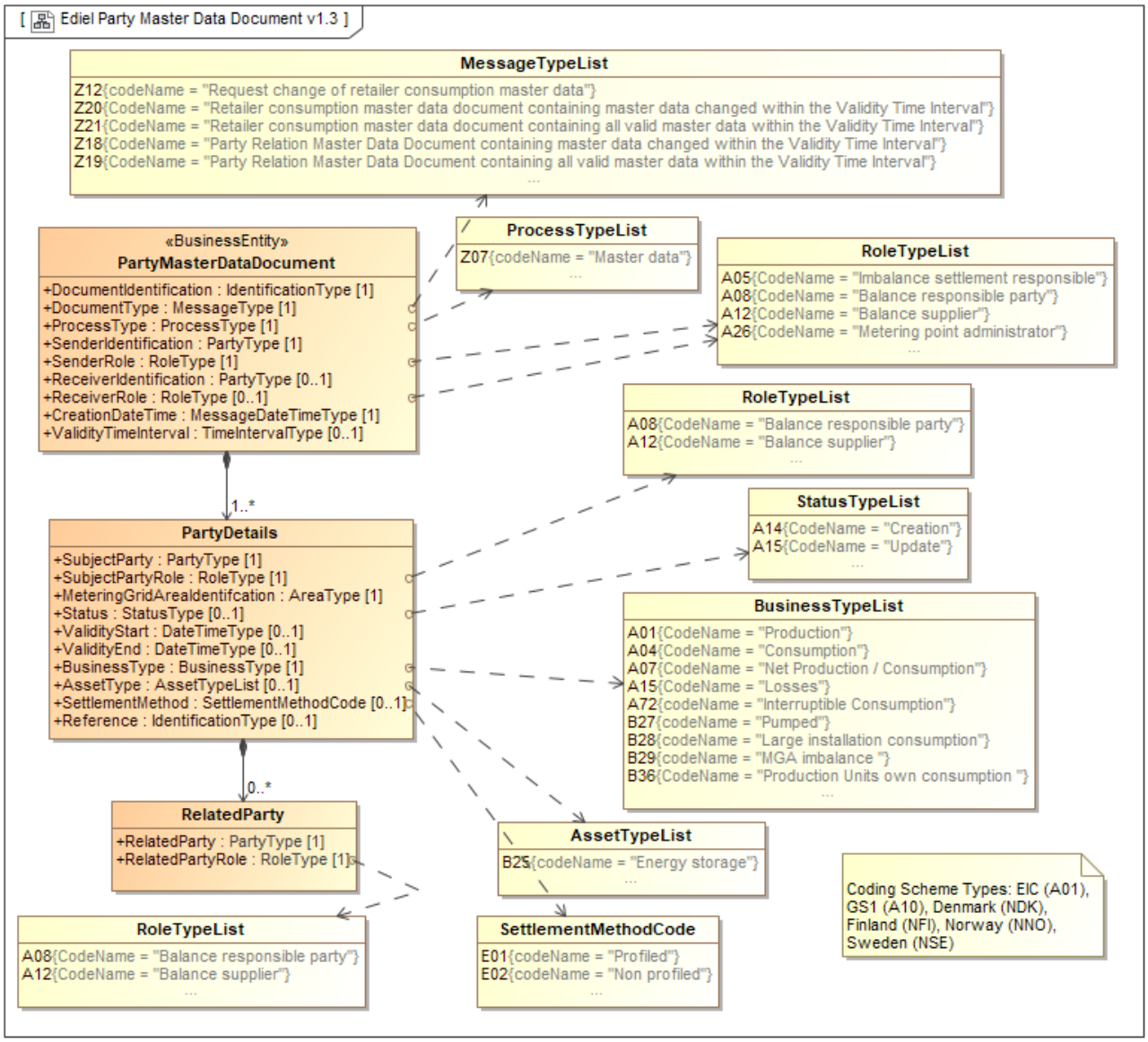

Figure 37 Class diagram: NEG Party Master Data Document

4.2.3 Class diagram: Ediel CIM Party Master Data Market Document, version 1.1

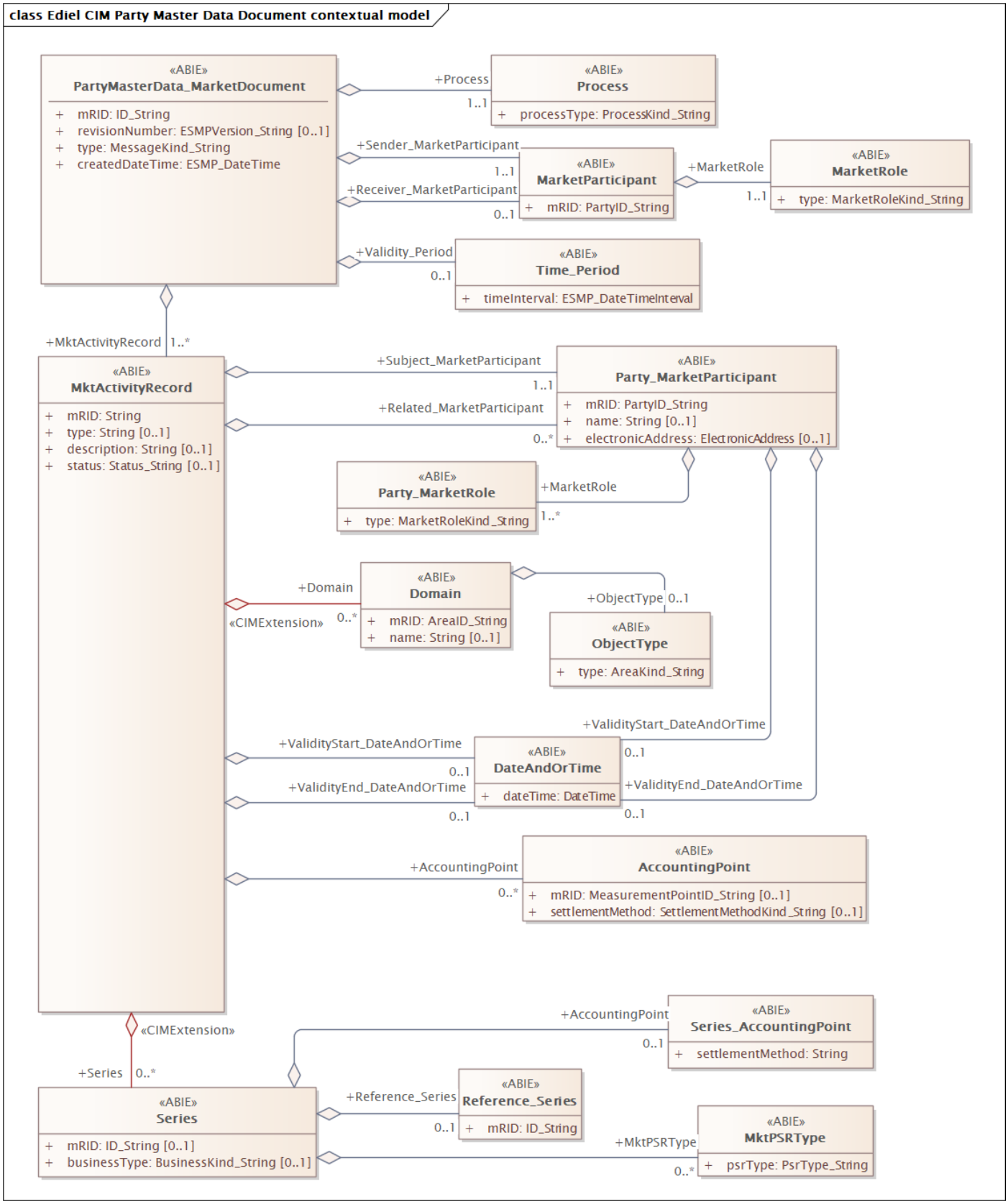

Figure 38 Class diagram: Ediel CIM Party Master Data Market Document, version 1.1

4.2.4 Class Diagram: Ediel CIM Party Master Data Market Document, version 1.1

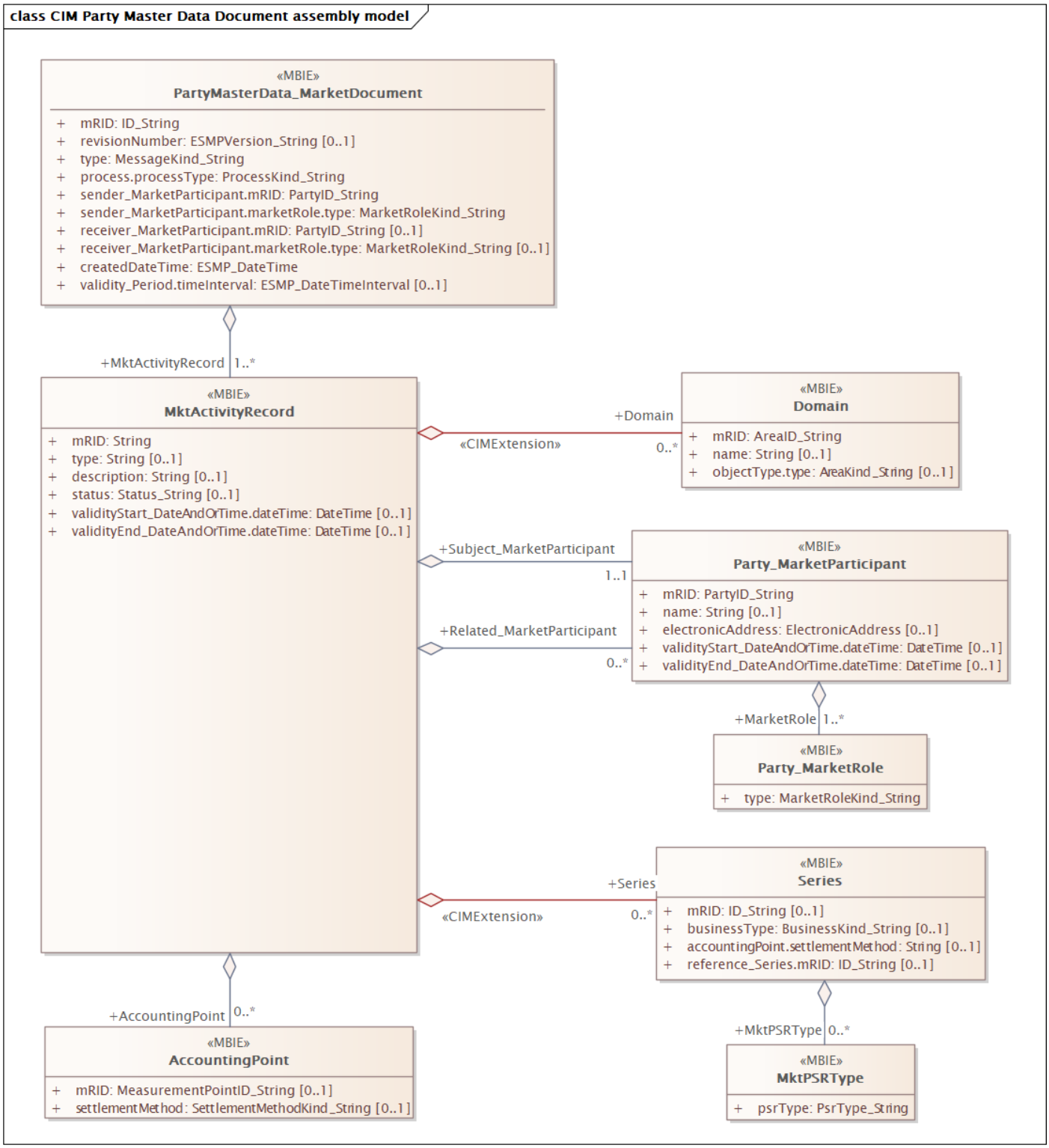

Figure 39 Class diagram: Ediel CIM Party Master Data Market Document, version 1.1

4.2.5 Attribute usage: Ediel CIM Party Master Data Market Document, version 1.1

NEG Party Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
PartyMasterData_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document. Global uniqueness is easily achieved by using a UUID for the mRID. It is strongly recommended to do this.
Document Type	type	[1]	**A95** Configuration document **Z12** Request change of retailer consumption master data **Z18** Party Relation Master Data Document containing master data changed within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z19** Party Relation Master Data Document containing all valid master data within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z20** Retailer consumption master data document containing master data changed within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z21** Retailer consumption master data document containing all valid master data within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) *NBS business rules:* • **Z12** is used for requests (create and update) to Imbalance Settlement Responsible. • **Z18**, **Z19**, **Z20** and **Z21** are used for reporting from Imbalance Settlement Responsible.
Process Type	process.processType	[1]	**A55** Exchange of Master data
Sender Identification	sender_MarketParticipant.mRID	[1]	Identification of the party who is sending the document (and Coding Scheme).
Sender Role	sender_MarketParticipant.marketRole.type	[1]	**A04** System Operator **A05** Imbalance settlement responsible **A26** Metering Point Administrator (DSO)
Receiver Identification	receiver_MarketParticipant.mRID	[0..1]	Identification of the party who is receiving the master data (and Coding Scheme) *NBS business rules:* • **Required** unless used for “broadcast” (same document to several recipients).
Receiver Role	receiver_MarketParticipant.marketRole.type	[0..1]	**A05** Imbalance Settlement Responsible **A08** Balance Responsible Party **A26** Metering Point Administrator (DSO) *NBS business rules:* • Required unless used for “broadcast” (same document to several recipients)

NEG Party Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
Creation Date Time	createdDateTime	[1]	Date and time for creation of the document
Validity Time Interval	Validity_Period. timeInterval	[0..1]	The period for which this Party Master Data document details are valid.
Party details	**MktActivityRecord**	**[1..*]**	*Business rules when sending request for structure change to eSett:* • One MktActivityRecord represents one request • There cannot be more than one MktActivityRecord with the same Subject Party document.
	mRID	[1]	Unique ID of this transaction.
Status	status	[0..1]	**A14** Creation **A15** Update *Nordic MMS business rules:* • **A09** is only used when the party under the given MktActivityRecord is to be deleted. The party cannot be deleted if it already has a user, a portfolio or if it is part of an agent–principal relation.
	Domain	**[0..*]**	
Metering Grid Area Id.	mRID	[1]	Unique ID of the Metering Grid Area in question.
	ObjectType.type	[0..1]	**A14** Metering Grid Area (MGA)
	Subject_Market Participant	**[1]**	
Subject Party	mRID	[1]	Unique ID of the Party in question (and Coding Scheme).
	MarketRole	**[1..*]**	
Subject Party Role	type	[1]	*NBS usage:* A08 Balance Responsible Party **A12** Energy Supplier (Retailer)
Validity Start	ValidityStart_Date AndOrTime. dateTime	[0..1]	The validity start date and time for this market participant. *NBS business rules:* • At least one of Validity Start or Validity End must be present, with one exception; The Validity End can be extended to "unlimited" (i.e. no Validity End) by sending a Party Detail with Status = "**A15** Update" and no Validity Start or Validity End.
Validity End	ValidityEnd_Date AndOrTime. dateTime	[0..1]	The validity end date and time for this market participant. *NBS business rules:* • At least one of Validity Start or Validity End must be present, with one exception; The Validity End can be extended to "unlimited" (i.e. no Validity End) by sending a Party Detail with Status = "A15 Update" and no Validity Start or Validity End.

NEG Party Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
	Related_MarketParticipant	**[0..*]**	*NBS business rules:* • Only used for "Party relation master data document" (Document Type **Z18** and **Z19**).
Related Party	mRID	[1]	Unique ID of the Party in question (and Coding Scheme).
	MarketRole	**[1..*]**	
	type	[1]	**A08** Balance Responsible Party **A12** Energy Supplier (Retailer)
	Series	**[0..1]**	
Business Type	businessType	[0..1]	**A01** Production **A04** Consumption (general consumption) **A07** Net production/ consumption (combined pumped storage) **A15** Losses **A72** Interruptible Consumption **B27** Pumped **B28** Large installation consumption **B29** MGA imbalance **B36** Production Units own consumption (Only used in Finland)
	accountingPoint.settlementMethod	[0..1]	**E01** Profiled **E02** Non-profiled **E15** Non-profiled with special rules (Flex settled)
Reference	reference_Series.mRID	[0..1]	*NBS business rules:* • Reference to a set of "Party Details" • MEC (Market Entity Connection) ID, see eSett handbook [3]. The element is only used if an entity has several MEC IDs and the MEC ID is needed to identify the correct MEC
	Series/ MktPSRType	**[0..*]**	
Asset Type	psrType	[1]	**B25** Energy storage
	AccountingPoint	**[0..*]**	
Settlement Method	settlementMethod	[0..1]	**E01** Profiled **E02** Non-profiled **E15** Non-profiled with special rules (Flex settled)

Table 19 Attribute usage: Ediel CIM Party Master Data Market Document, version 1.1

4.2.6 Dependency matrix: Ediel CIM Party Master Data Market Document, version 1.1

type (Document Type)	businessType	settlementMethod	Sent from[6]	Sent to
Z12 Request change of retailer consumption master data	**A04** Consumption (general consumption)	**E01** Profiled	DSO	eSett
		E02 Non-profiled	DSO	eSett
		E15 Non-profiled with special rules (Flex settled)	DSO	eSett
	A15 Losses	**E01** Profiled	DSO	eSett
		E02 Non-profiled	DSO	eSett
		E15 Non-profiled with special rules (Flex settled)	DSO	eSett
	B27 Pumped	**E01** Profiled	DSO	eSett
		E02 Non-profiled	DSO	eSett
	A07 Net production/ consumption	**E02** Non-profiled	DSO	eSett
	A72 Interruptible Consumption	**E02** Non-profiled	DSO	eSett
	B28 Large installation consumption	**E02** Non-profiled	DSO	eSett
	B29 MGA Imbalance	**E02** Non-profiled	DSO	eSett
	B36[7] Production Units own consumption	**E02** Non-profiled	DSO	eSett
Z20 Retailer consumption master data document containing master data changed within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z21** Retailer consumption master data document containing all valid master data within the Validity Time Interval (Start date/time inclusive and End date/time exclusive)	**A04** Consumption (general consumption)	**E01** Profiled	DSO	eSett
		E02 Non-profiled	DSO	eSett
		E15 Non-profiled with special rules (Flex settled)	DSO	eSett
	A15 Losses	**E01** Profiled	DSO	eSett
		E02 Non-profiled	DSO	eSett
		E15 Non-profiled with special rules (Flex settled)	DSO	eSett
	B27 Pumped	**E01** Profiled	DSO	eSett
		E02 Non-profiled	DSO	eSett
	A07 Net production/ consumption	**E02** Non-profiled	eSett	DSO
	A72 Interruptible Consumption	**E02** Non-profiled	eSett	DSO
	B28 Large installation consumption	**E02** Non-profiled	eSett	DSO

[6] In Sweden, the profiled consumption will be sent from Svenska kraftnät

[7] Only used in Finland

type (Document Type)	businessType	settlementMethod	Sent from[6]	Sent to
	B29 MGA Imbalance	**E02** Non-profiled	eSett	DSO, BRP
	B36[8] Production Units own consumption	**E02** Non-profiled	eSett	DSO
Z18 Party Relation Master Data Document containing master data changed within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z19** Party Relation Master Data Document containing all valid master data within the Validity Time Interval (Start date/time inclusive and End date/time exclusive)	**A01** Production **A04** Consumption (general consumption)	Not used	eSett	DSO, BRP, BS

Table 20 **Dependency matrix:** Ediel CIM Party Master Data Market Document, version 1.1

[8] Only used in Finland

4.3 Ediel (NEG) Resource (Production Unit) Master Data Document

4.3.1 Recommendations

NMEG drafted in 2024 two master data documents, “Ediel CIM Party Master Data Market Document” and “Ediel CIM Resource Master Data Market Document” based on requirements from NBS and NBM (Nordic Balancing Model).

The “Ediel (NEG) Resource (Production Unit) Master Data Document” can be migrated to the “Ediel CIM Resource Master Data Market Document” directly.

4.3.2 Class diagram: Ediel (NEG) Resource (Production Unit) Master Data Document

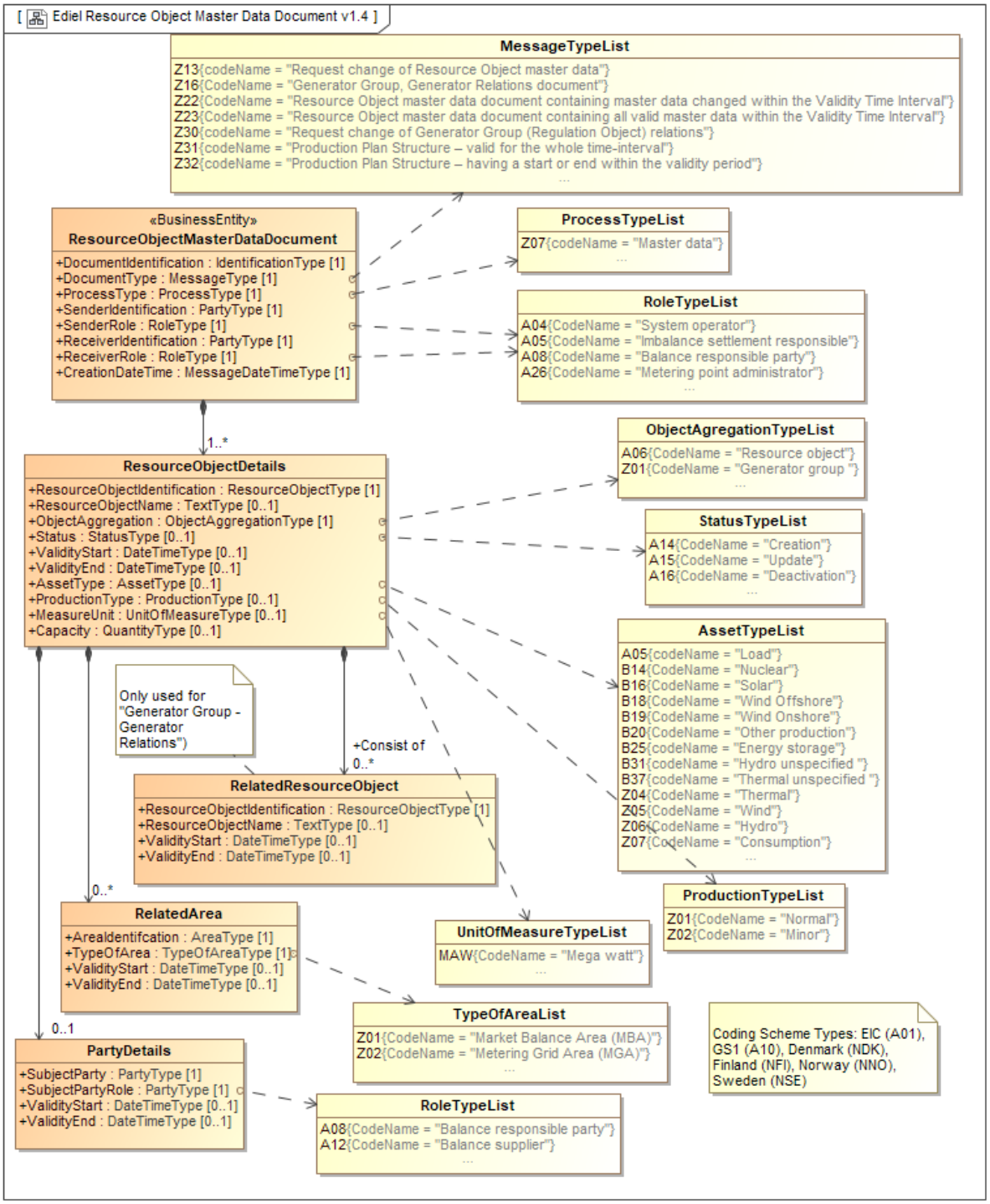

Figure 40 Class diagram: Ediel (NEG) Resource (Production Unit) Master Data Document

4.3.3 Class diagram: Ediel CIM Resource Master Data Market Document, version 1.1

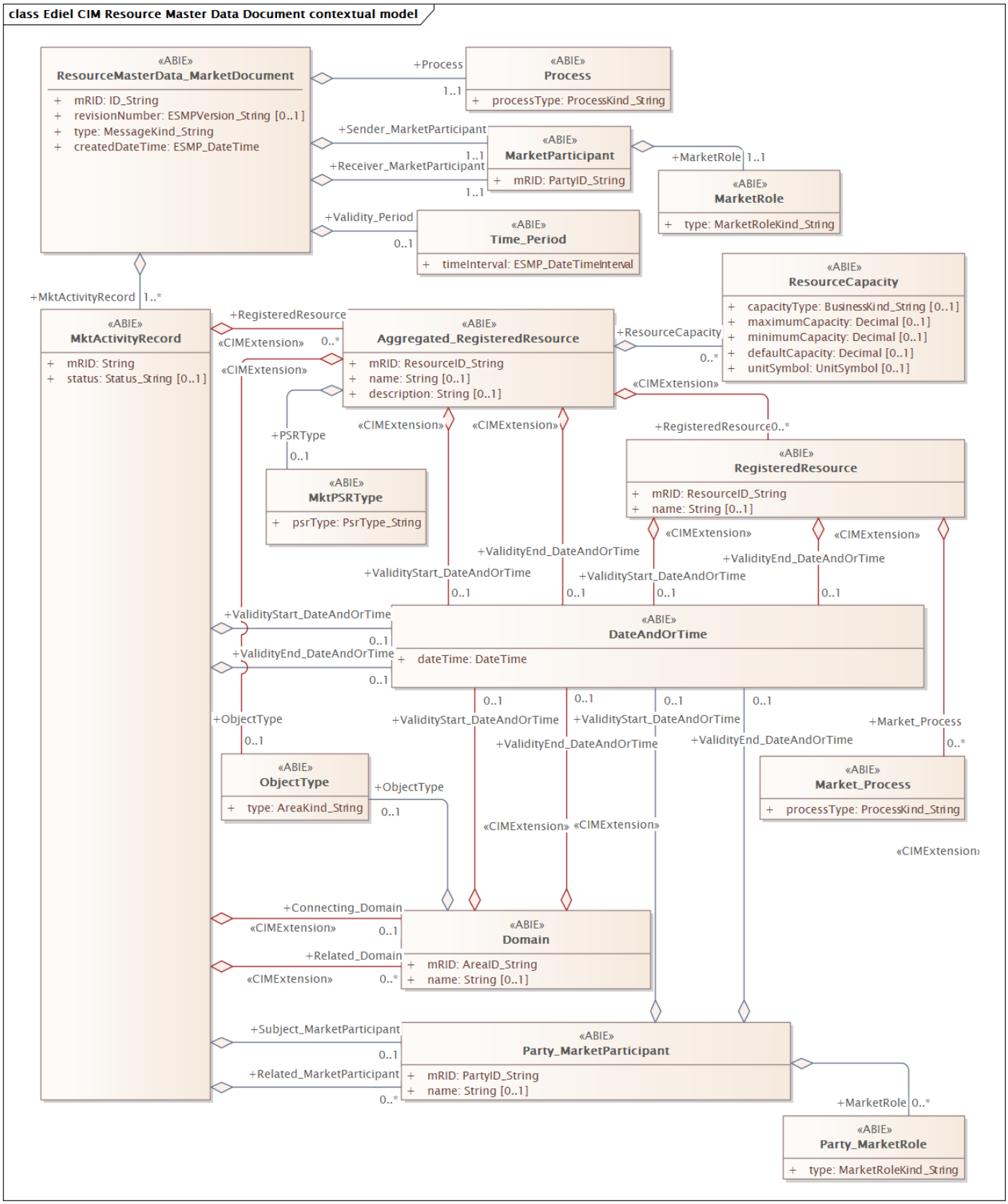

Figure 41 Class diagram: Ediel CIM Resource Master Data Market Document, version 1.1

4.3.4 Class Diagram: Ediel CIM Resource Master Data Market Document, version 1.1

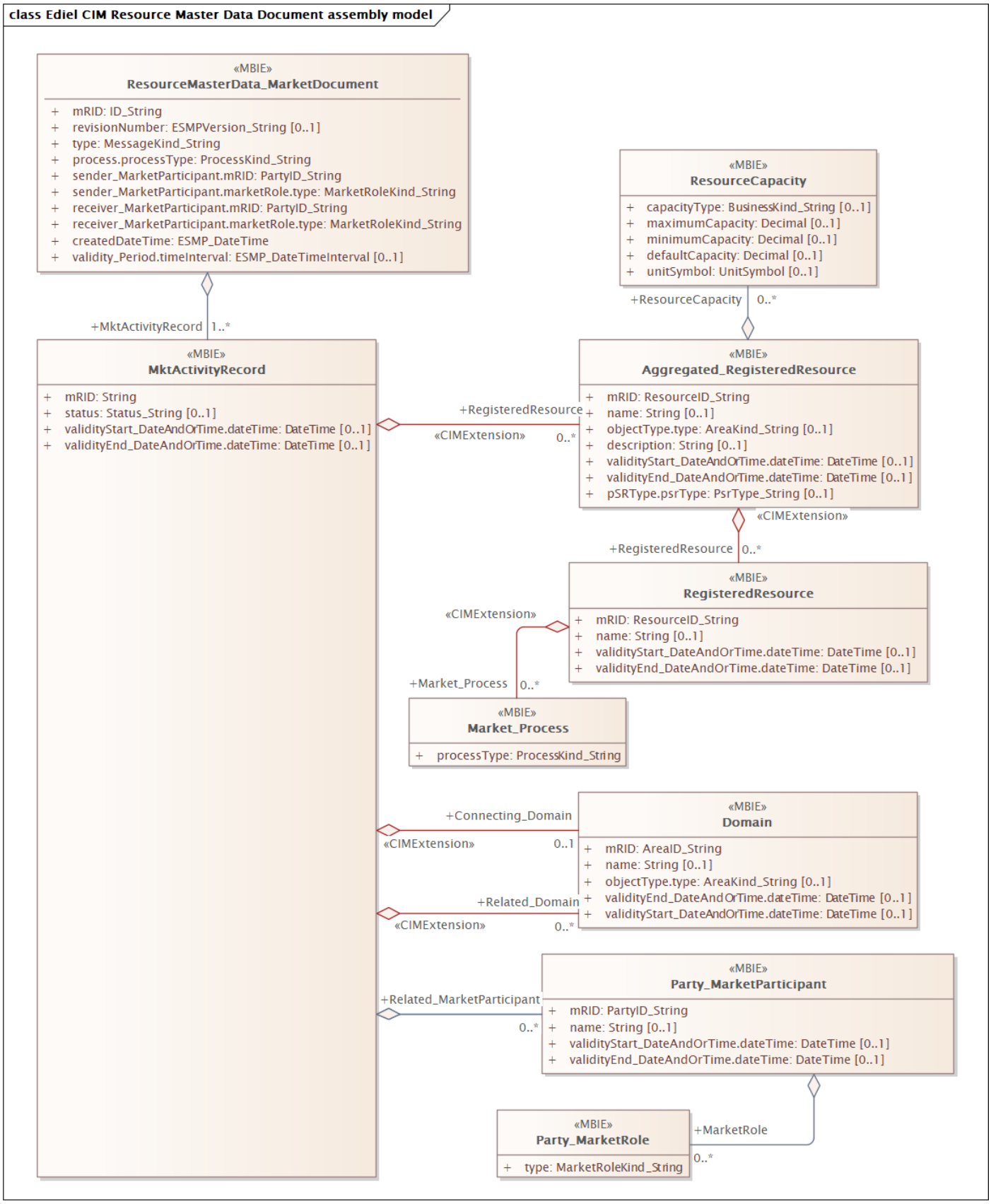

Figure 42 Class diagram: Ediel CIM Resource Master Data Market Document, version 1.1

4.3.5 Attribute usage: Ediel (NEG) Resource (Production Unit) Master Data Document, version 1.1

- Used by DSO for managing all Production Unit (PU) attributes except connecting Regulation Object (Generator Group):
  - Inbound Production Unit Data-flow (only changes);
  - Outbound Production Unit Data-flow (All, Delta).
- Used by BRP for managing connections between Production Unit and Regulation Object (Generator Group):
  - Inbound Production Unit - Regulation Object Relation Data-flow (only changes);
  - Outbound Production Unit - Regulation Object Relation Data-flow (All, Delta).

NEG Resource (Production Unit) Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
ResourceMasterData_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document
Document Type	type	[1]	**Z13** Request change of Resource master data **Z22** Resource master data document containing master data changed within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z23** Resource master data document containing all valid master data within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z30** Request change of Generator Group (Regulation Object) relations *Business rules:* • **Z13** is used for requests (create, update and deactivate) to Imbalance Settlement Responsible • **Z22** and **Z23** are used for reporting from Imbalance Settlement Responsible
Process Type	Process.processType	[1]	**Z07** Master data
Sender Identification	Sender_MarketParticipant. mRID	[1]	Identification of the party who is sending the document (and Coding Scheme)
Sender Role	Sender_MarketParticipant. MarketRole. type	[1]	**A05** Imbalance settlement responsible **A26** Metering Point Administrator (DSO)
Receiver Identification	Receiver_MarketParticipant. mRID	[1]	Identification of the party who is receiving the master data (and Coding Scheme)
Receiver Role	Receiver_MarketParticipant. MarketRole.type	[1]	**A05** Imbalance settlement responsible **A08** Balance responsible party (BRP) **A26** Metering Point Administrator (DSO)
Creation Date Time	createdDateTime	[1]	Date and time for creation of the document
Resource Object Details	**MktActivityRecord**	[1..*]	*Business rules for Resource Details when sending request for structure change:* • One Resource Details represents one request • There cannot be more than one Resource Details with the same object identification

NEG Resource (Production Unit) Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
			present in one xml file (multiple requests for more than one Production Unit will be rejected) *Business rules for Resource Details when distributed from Imbalance Settlement Responsible:* • Resource Details will repeat for each change of a time-dependent attribute • Resource Details contain all attributes
	mRID	[1]	Unique ID of this transaction.
Status	status	[0..1]	**A14** Creation **A15** Update **A16** Deactivation *Business rules:* • Only used when requesting a change to an object. Not used for information notifications • Deactivation is used to remove a linked party (Energy Supplier, Retailer or Balance Responsible Party) from a Resource. To reactivate a deactivation, **A15** Update is used • For "**A14** Creation", all time-dependent attributes have the same validity as the Production Unit • An "**A14** Creation" for a Resource already crated, will be rejected • An "**A15** Update", for a not existing Resource, will be rejected • An "**A16** Deactivation", for an already deactivated Resource, will be rejected
	RegisteredResource		
Resource Object Identification	mRID	[1]	Unique ID of the Resource or Generator Group in question
Resource Object Name	name	[0..1]	Name of the Resource in clear text *Business rules:* • Resource Name and Asset Type for Production Units are not time-dependent, hence Validity Start and Validity End are NOT used when updating these attributes.
Object Aggregation	ObjectType	[1]	**Z03** Resource (used for detailed units) **Z04** Generator group
Asset Type[9]	pSRType.psrType	[0..1]	**A05** Load (replaces **Z07**) **B14** Nuclear **B16** Solar **B18** Wind offshore

[9] 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".

NEG Resource (Production Unit) Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
			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 *Business rules:* • Resource Name and Asset Type for Production Units are not time dependent; hence Validity Start and Validity End are NOT used when updating these attributes. • Not required when updating Resource (Production Units)
Validity Start	validityStart_DateAndOrTime.dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present, except for Status = "**A15** Update", for not time-dependent attributes (Resource Name and Asset Type)
Validity End	validityEnd_DateAndOrTime.dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present, except for Status "**A15** Update" for not time-dependent attributes (Resource Name and Asset Type)
	ResourceCapacity		
Production Type	capacityType	[0..1]	**Z01** Normal **Z02** Minor *Business rules:* • Production Type is only used for creation of Production Units and for structure information sent from Imbalance Settlement Responsible to Market Parties, i.e. the Production Type cannot be changed
Capacity	defaultCapacity	[0..1]	Capacity of the Resource *Business rules:* • Not used for Generator Groups
Measure Unit	unitSymbol	[0..1]	**MAW** Megawatt *Business rules:* • Not used for Generator Groups
Related Resource Object	**RegisteredResource**	***[0..*]***	*Business rules:*

NEG Resource (Production Unit) Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
			• Only used for "Generator Group – Generator Relations", i.e. Document Type **Z30**
Resource Object Identification	mRID	[1]	Unique ID of the Resource (Generator) in question
Related Area	**Related_Domain**	[0..*]	*Business rules:* • Required for Generators • Required for Generator Groups in Sweden • May be repeated if a Generator or a Generator group covers more than one area • Related Area is only used for creation of Production Units and for structure information sent from Imbalance Settlement Responsible to Market Parties, i.e. the Related Area cannot be changed
Area Identification	mRID	[1]	Unique ID of the MGA or BZ (and Coding Scheme)
Type of Area	objectType.type	[1]	**Znn codes to be updated when published by ENTSO-E:** **Z01** Bidding Zone (BZ) **Z02** Metering Grid Area (MGA)
Party Details	**Subject_MarketParticipant**	[0..1]	
Subject Party	mRID	[1]	Unique ID of the Energy Supplier (Retailer) or Balance Responsible Party in question (and codingScheme)
	MarketRole	[0..*]	
Subject Party Role	type	[1]	*Role Type enumeration:* **A08** Balance Responsible Party **A12** Energy Supplier

Table 21 Attribute usage: Ediel (NEG) Resource (Production Unit) Master Data Document, version 1.1

4.3.6 Attribute usage: Ediel (NEG) Resource Object (Generator Group Relations) Master Data Document, version 1.1

Used by TSO for managing Regulation Object (Generator Group) Structure - Name, type, code, BRP and Location (Bidding Zone), not connection to production unit (generator relations, which is managed by BRP only):

- Inbound Regulation Object Dataflow.
  Note:

  It is under discussion if the inbound (to eSett) Regulation Object Dataflow should contain the full set of Resources or only those that have been created, updated, or deactivated. If the latter option is chosen, a Status element (**A14** Creation, **A15** Update, **A16** Deactivation) will be added.
- Outbound Regulation Object Dataflow (All, Delta).
- Outbound Production Plan Structure (All, Delta).

NEG Resource (Generator Group Relations) Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
ResourceMasterData_MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document
Document Type	type	[1]	**Z16** Generator Group Relations document **Z22** Resource master data document containing master data changed within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z23** Resource master data document containing all valid master data within the Validity Time Interval (Start date/time inclusive and End date/time exclusive) **Z31** Production Plan Structure – valid for the whole time-interval **Z32** Production Plan Structure – having a start or end within the validity period *Business rules:* • **Z16** is only used for updates of BRP and/or Bidding Zone. • **Z22** and **Z23** contains a list of all "MACs" identifying production plans and are only sent to the System Operators. The documents are without the Generator Group and Generator relations.
Process Type	Process.processType	[1]	**Z07** Master data
Sender Identification	Sender_MarketParticipant. mRID	[1]	Identification of the party who is sending the document (and codingScheme)
Sender Role	Sender_MarketParticipant. MarketRole. type	[1]	**A05** Imbalance settlement responsible **A08** Balance Responsible Party
Receiver Identification	Receiver_MarketParticipant. mRID	[1]	Identification of the party who is receiving the master data (and codingScheme)

NEG Resource (Generator Group Relations) Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
Receiver Role	Receiver_MarketParticipant. MarketRole.type	[1]	**A05** Imbalance settlement responsible **A08** Balance Responsible Party
Creation Date Time	createdDateTime	[1]	Date and time for creation of the document
Resource Object Details	**MktActivityRecord**	**[1..*]**	
	mRID	[1]	Unique ID of this transaction.
	RegisteredResource		
Resource Object Identification	mRID	[1]	Unique ID of the Resource (Generator Group) in question
Resource Object Name	name	[0..1]	Name of the Resource (Generator Group) in clear text
Object Aggregation	ObjectType	[1]	**Z03** Resource (used for detailed units) **Z04** Generator group
Asset Type	pSRType.psrType	[0..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
Validity Start	validityStart_DateAndOrTime. dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present
Validity End	validityEnd_DateAndOrTime. dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present
	ResourceCapacity		
Production Type	capacityType	[0..1]	**Z01** Normal **Z02** Minor
Related Area	**Related_Domain**	[0..*]	*Business* rules: • Required for Generators • Required for Generator Groups in Sweden • May be repeated if a Generator or a Generator group covers more than one area

NEG Resource (Generator Group Relations) Master Data Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
Area Identification	mRID	[1]	Unique ID of the MGA or BZ (and codingScheme)
Type of Area	objectType.type	[1]	**Z01** Bidding Zone (BZ) **Z02** Metering Grid Area (MGA)
Validity Start	validityStart_DateAndOrTime.dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present
Validity End	validityEnd_DateAndOrTime.dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present
Party Details	**Subject_MarketParticipant**	[0..*]	
Subject Party	mRID	[1]	Unique ID of the Balance Responsible Party in question (and codingScheme)
	MarketRole	[0..*]	
Subject Party Role	type	[1]	**A08** Balance Responsible Party
Validity Start	validityStart_DateAndOrTime.dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present
Validity End	validityEnd_DateAndOrTime.dateTime	[0..1]	Date Time *Business rules:* • At least one of Validity Start or Validity End must be present

Table 22 Attribute usage: Ediel (NEG) Resource Object (Generator Group Relations) Master Data Document, version 1.1

4.4 Ediel Request Trade Structure Document

4.4.1 Recommendations

eSett has been evaluating the relevance and use of Request Trade Structure Documents within eSett.

Request trade structure document is a valid use case for eSett. It can be used by BRPs and NEMOs to report new trade structures to eSett. eSett also see value for it in the future. Hence, NMEG has made a CIM version of the Ediel Request Trade Structure Document.

4.4.2 Class diagram: Ediel Request Trade Structure Document

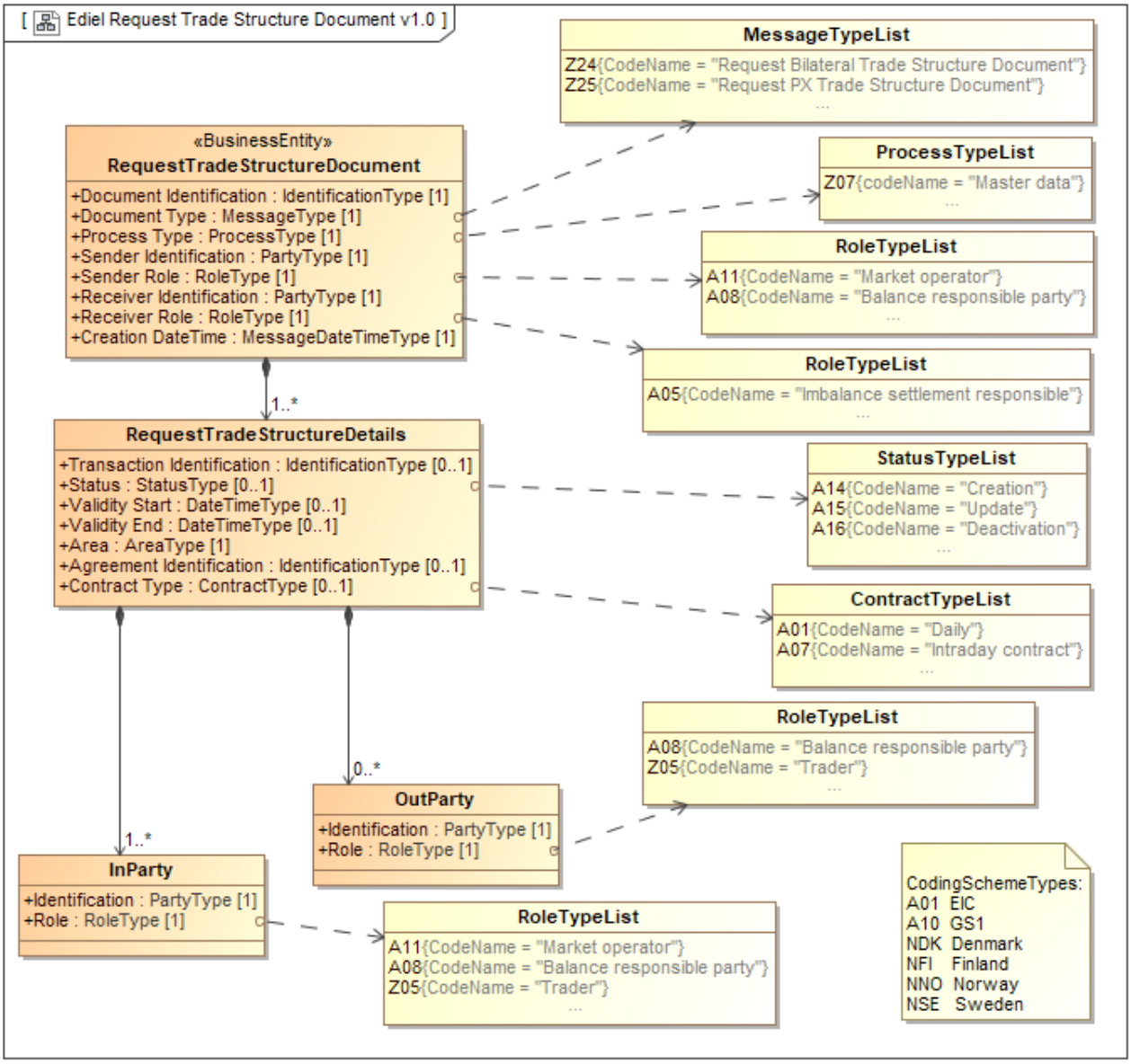

Figure 43 Class diagram: Ediel Request Trade Structure Document

4.4.3 CIM assembly model class diagram: Ediel Request Trade Structure Document

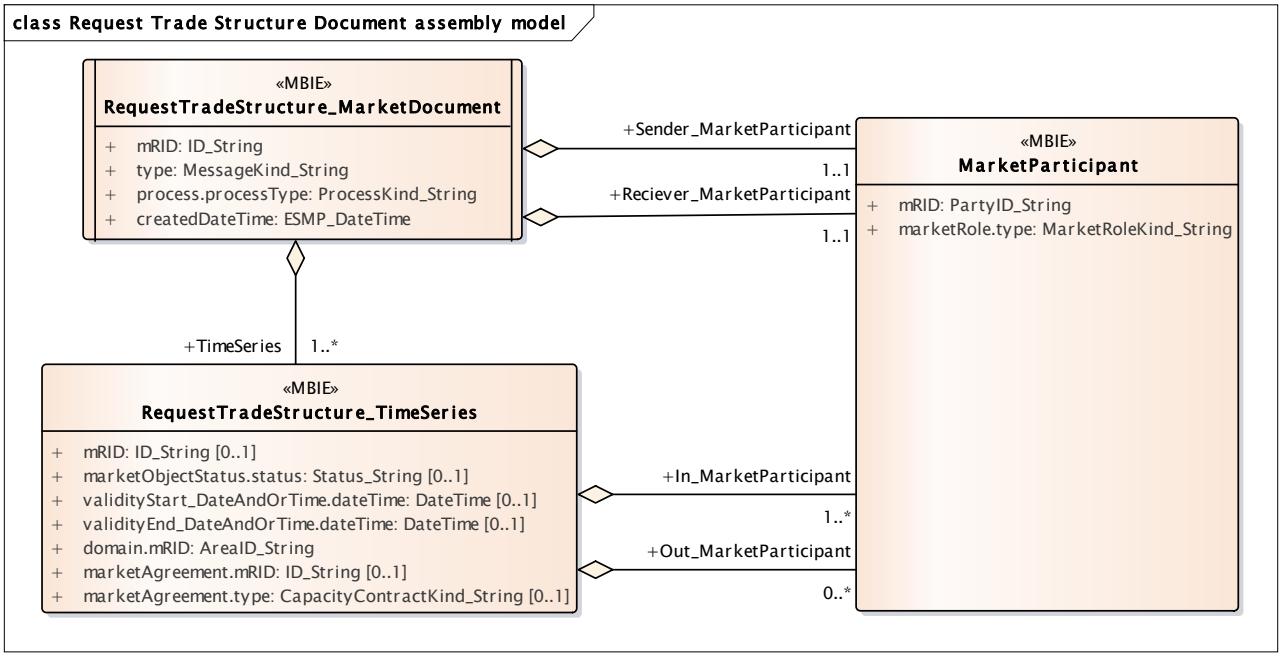

Figure 44 CIM assembly model class diagram: Ediel Request Trade Structure Document

4.4.4 Class diagram: Ediel CIM Request Trade Structure Market Document

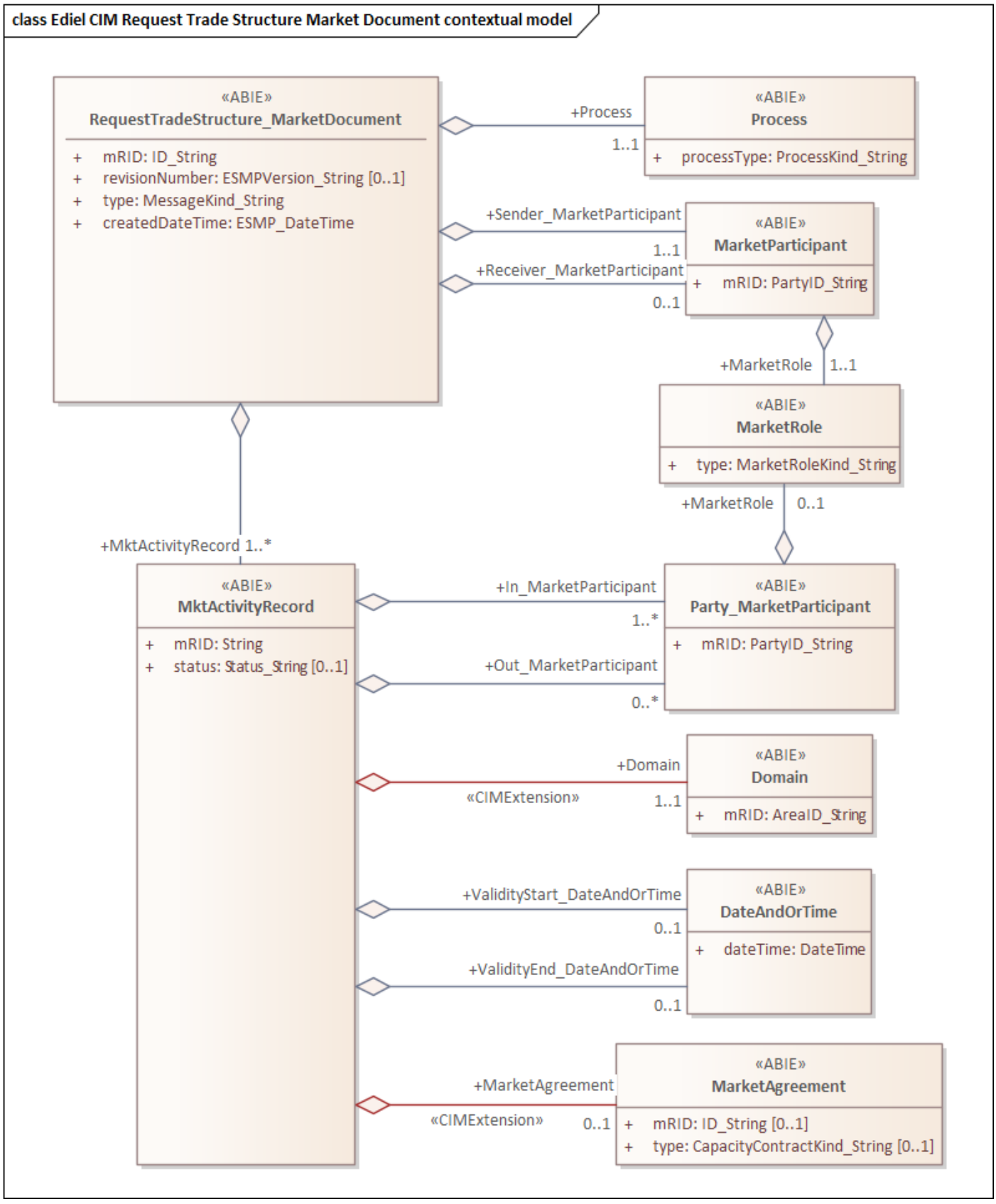

Figure 45 Class diagram: Ediel CIM Request Trade Structure Market Document

4.4.5 Class Diagram: Ediel CIM Notify Trade Structure Market Document

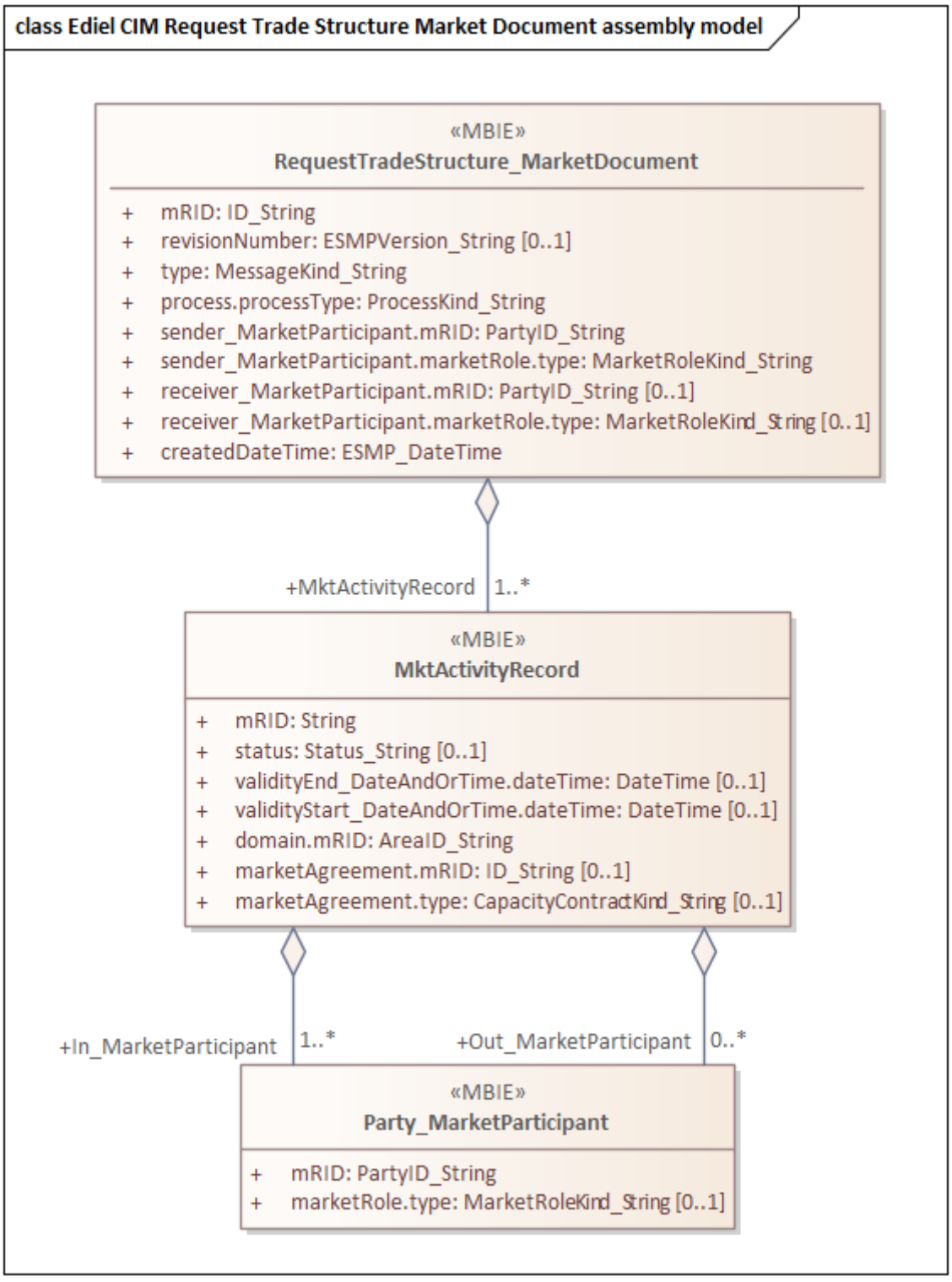

Figure 46 Class diagram: Ediel CIM Notify Trade Structure Market Document

4.4.6 Attribute usage: Ediel Request Bilateral Trade Structure Document

Ediel Request Trade Structure Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
RequestTradeStructure_ MarketDocument			
Document Identification	mRID	[1]	Unique identification of the document
Document Type	type	[1]	**Z24** Request Bilateral Trade Structure Document **Z25** Request PX Trade Structure Document
Process Type	Process.processType	[1]	**Z07** Master data
Sender Identification	Sender_MarketParticipant.mRID	[1]	Identification of the party who is sending the document (and codingScheme)
Sender Role	sender_MarketParticipant.marketRole.type	[1]	**A08** Balance Responsible Party
Receiver Identification	Reciever_MarketParticipant.mRID	[1]	Identification of the party who is receiving the master data (and codingScheme)
Receiver Role	receiver_MarketParticipant.marketRole.type	[1]	**A05** Imbalance Settlement Responsible
Creation Date Time	createdDateTime	[1]	Date and time for creation of the document
Request Trade Structure Details	**MktActivityRecord**	[1..*]	
Transaction Identification	mRID	[1]	Unique ID of this transaction.
Status	MarketObjectStatus.status	[0..1]	**A14** Creation **A15** Update **A16** Deactivation (delete)
Validity Start	validityStart_DateAndOrTime.dateTime	[0..1]	Date Time **Note:** At least one of Validity Start or Validity End must be present
Validity End	validityEnd_DateAndOrTime.dateTime	[0..1]	Date Time **Note:** At least one of Validity Start or Validity End must be present
Area	domain.mRID	[1]	The Bidding Zone (BZ) where trade can take place.
Agreement Identification	marketAgreement.mRID	[0..1]	MEC (Market Entity Connection) ID
Contract type	marketAgreement.type	[0..1]	Power Exchange market, i.e.: **A01** Daily (Day Ahead) **A06** Long term contract **A07** Intraday contract
In Party	**In_MarketParticipant**	[1..2]	
Identification	mRID	[1]	The identification of the In Party (and codingScheme).

Ediel Request Trade Structure Document classes/attributes	CIM classes/attributes	Cl.	Descriptions and comments
Role	marketRole.type	[1]	The role of the in party, i.e. **A08** Balance Responsible Party **A47** Energy Trader
Out Party	**Out_MarketParticipant**	[1..2]	
Identification	mRID	[1]	The identification of the Out Party (and codingScheme).
Role	marketRole.type	[1]	The role of the party **A08** Balance Responsible Party **A47** Energy Trader

Table 23 Attribute usage: Ediel Request Bilateral Trade Structure Document

4.4.7 Dependency matrix: Ediel Request Bilateral Trade Structure Document

Class/Attribute	Request Bilateral Trade Structure	Request PX Trade Structure
RequestTradeStructure_MarketDocument		
type	**Z24** Request Bilateral Trade Structure Document	**Z25** Request PX Trade Structure Document
sender_MarketParticipant.marketRole.type	**A08** Balance Responsible Party	**A08** Balance Responsible Party **A11** Market operator
MarketObjectStatus.status	**A14** Creation **A15** Update **A16** Deactivation (delete)	**A14** Creation **A15** Update
marketAgreement.mRID	The Agreement ID is only used when updating an existing Bilateral Trade Structure with an existing Agreement ID.	MEC ID of the PX trade structure In case of multiple occurrence of MEC IDs with the same attributes but with different validity start or end, the MEC ID may be sent to be able identify the trade uniquely for the validity date change.
marketAgreement.type	Not used	Power Exchange market, i.e.: **A01** Daily (Day Ahead) **A06** Long term contract **A07** Intraday contract
In_MarketParticipant	The party being the **buyer** in the bilateral trade **Note:** The BRP is required for Bilateral Trade Structure, while the Energy Trader is optional.	The BRP and MO are required for PX Trade Structure. The Energy Trader is optional.
marketRole.type	**A08** Balance Responsible Party **A47** Energy Trader	**A08** Balance Responsible Party **A11** Market operator **A47** Energy Trader
Out_MarketParticipant	The party being the **seller** in the bilateral trade **Note**: The BRP is required for Bilateral Trade Structure, while the Energy Trader is optional.	Not used
marketRole.type	**A08** Balance Responsible Party **A47** Energy Trader	Not used

Table 24 Dependency matrix: Ediel Request Bilateral Trade Structure Document

4.5 Ediel Notify Trade Structure Document

4.5.1 Recommendations

eSett has been evaluating the relevance and use of Notify Trade Structure Documents within eSett.

The *Notify trade structure document* is not used, and eSett estimate is that the effort to implement it is higher than the expected value received. Hence, NMEG will NOT migrate the currently used “Ediel Notify Trade Structure Document” to a CIM version.