Business requirements for

Measure

for

imbalance settlement

C O N T E N T

A. About this document

This document contains ebIX® Business Requirements for the processes regarding exchange of measured data for imbalance settlement for electricity and gas.

As a general introduction ebIX® has published a separate document "Introduction to ebIX® Business Requirements and Business Information Models" *(see [3])*. The introduction also includes the generic model elements that are not specific for a particular business process.

In line with UN/CEFACT Modelling Methodology version 2 (UMM-2) ebIX® defines the business requirements as the first step in modelling energy market processes. This document specifies an UMM Business Requirements View, which consist of the three sub views: Business Domain View, Business Partner View and Business Entity View.

The Business Information Model is in turn the basis for the creation of XML schema's and is the basis for the specification of web services. The Business Information Model and the syntax specific structures are specified by the "ebIX® Technical Committee" (ETC).

Since the ebIX® model is open for national customisation, some attributes are added as optional for usage for regional/national customisation. If used, these attributes must be specified nationally.

A.1.   Comments to the ebIX® model

If you have comments or suggestions to the requirements, please contact ebIX® secretary at secretary@ebix.org.

A.2.   References

A.2.1. Standards

[1] UML Profile for UN/CEFACT's Modelling Methodology (UMM), Base Module, 2.0. (UN/CEFACT Modelling Methodology (UMM))

[2] The Harmonized Role Model (for the Electricity Market) by ebIX®, ENTSO-E, and EFET (https://www.ebix.org/artikel/role_model)

A.2.2. ebIX® Documents

[3] Introduction to ebIX® Business Requirements and Business Information Models (https://www.ebix.org/artikel/documents)

[4] Recommended Identification Schemes for the European Energy Market (https://www.ebix.org/artikel/documents)

[5] ebIX® code lists (https://www.ebi.x.org/artikel/documents)

[6] ebIX® BRS for Validate and exchange measured data and other measure BRSs
(https://www.ebix.org/artikel/documents)

A.3. Main changes since last version

Old	New	Clarification	Date
		Version 3.0	
2.0.-	3.0.A	This is a recast of the previous version; hence changes are not tracked.	20220809

1   Business Requirements View: Measure for imbalance settlement

This BRS regards validated measured data used for imbalance settlement, both data for individual Metering Points (Accounting Points and Exchange Points), aggregated data for areas and for exchange between areas. Customer privacy protection is supposed to be based on GPDR.

The basis for this BRS is validated measured data from a Metered Data Responsible, who is responsible for the validation of measured data for imbalance settlement, sent to the Metered Data Administrator, who is responsible for the distribution of the validated measured data for imbalance settlement. The starting point for this BRS is the Metered Data Administrator distributing validated measured data used for imbalance settlement to "entitled roles for validated measured data for imbalance settlement", i.e. Balance Responsible Parties, Metered Data Aggregators and Consented Parties.

The Metered Data Aggregators are thereafter responsible for the aggregation of the individual validated measured data used for imbalance settlement. The validated measured data used for imbalance settlement may be aggregated based on different aggregation criteria, such as:

- For all validated measured data in an area.
- For all Exchange Points between two areas.
- For a certain Balance Responsible Party in an area.
- For a certain Balance Responsible Party and Energy Supplier in an area.
- Etc.

Aggregated validated measured data used for imbalance settlement is sent from the Metered Data Aggregator to "entitled roles for aggregated validated measured data per area", i.e. Balance Responsible Parties, Energy Suppliers and Imbalance Settlement Responsible.

Aggregated validated measured data of the energy exchanged between two areas is sent per neighbouring area to the Imbalance Settlement Responsible involved and the neighbouring Metered Data Aggregator. In some countries, such as the four Nordic countries, the Imbalance Settlement Responsible is responsible for confirmation of the received aggregated validated measured data for Exchange Points for a neighbouring area to the two concerned Metered Data Aggregators. The confirmation includes a matching of the aggregated validated measured data per neighbouring area from the other Metered Data Aggregator and may be split into an intermediate and a final confirmation, the latter to be sent after gate closure.

If needed, all entitled roles can request validated measured data used for imbalance settlement for Metering Points, aggregated for an area or for exchanged energy between areas.

1.1   Basic assumptions

- Accounting Point and Exchange Point are specialisations of a Metering Point. In this BRS, Accounting Point and Exchange Point are used when applicable. Metering Point is used if the "point" can be either an Accounting Point or an Exchange Point.
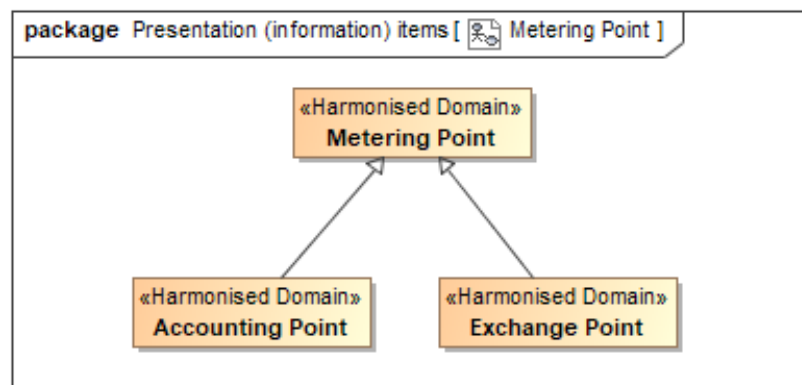
- The characteristics of a Metering Point (Accounting Point or Exchange Point) are exchanged as master data; hence these are not part of the measured data documents.
- When using the term area in this BRS we mean Metering Grid Area for the electricity market. For the gas[1] market the area may be an Aggregated Reception Station, a Calorific Value Area and/or Metering Grid Area.
- In case the validated measured data have been updated, the same version shall be made available to all Entitled Roles.
- The implementation of a process where Balance Responsible Parties can propose measured data to the Metered Data Responsible is up to national decision (and the conditions under which it works).

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[1] Where applicable, in the class diagrams, codes for gas are shown with blue background and codes for electricity are shown with red background.

2   Business Domain View: Measure for imbalance settlement (Business Process UseCase)
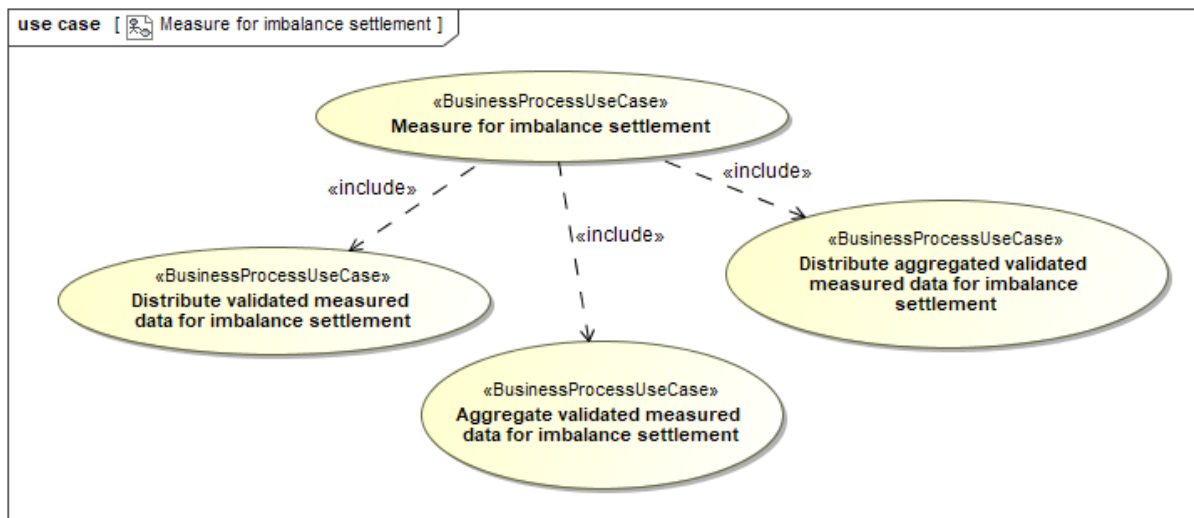
Figure 1 Business Process UseCase: Measure for imbalance settlement

2.1   Description

UseCase description: **Measure for imbalance settlement**	
definition	This is the process where validated measured data for Metering Points are provided for imbalance settlement from the Metered Data Administrator to the Metered Data Aggregator and other Entitled Roles.
	The Metered Data Aggregator aggregates the validated measured data, per area, according to national rules and distributes the aggregated measured data.
beginsWhen	The process is scheduled or requested.
preCondition	Validated measured data for the Metering Points for imbalance settlement are available.
endsWhen	The aggregated validated measured data for imbalance settlement have been sent to the Entitled Roles.
postCondition	All involved roles have validated and aggregated measured data available so that the imbalance settlement process can be executed, and the results can be verified.
Exceptions	None.
actions	Not applicable at this level.

2.2   Distribute validated measured data for imbalance settlement (Business Process UseCase)

Figure 2 Business Process UseCase: Distribute validated measured data for imbalance settlement

2.2.1   Description

UseCase description: **Distribute validated measured data for imbalance settlement**	
definition	In this process the Metered Data Administrator sends validated measured data for imbalance settlement for a relevant set of Metering Points to the Metered Data Aggregator and, dependent on national rules, to related Balance Responsible Parties, Metered Data Aggregator(s) for neighbouring area(s) and Consented Parties.
	In addition, Entitled Roles for validated measured data for imbalance settlement may request validated measured data for imbalance settlement.
beginsWhen	When it is scheduled to notify validated measured data for imbalance settlement according to national rules, there has been changes to validated measured data for imbalance settlement or an Entitled Role requests validated measured data for imbalance settlement.
preCondition	The Metered Data Administrator has available the relevant set of validated measured data for imbalance settlement.
endsWhen	When the Metered Data Aggregator, and other Entitled Roles, have received the validated measured data for imbalance settlement.
postCondition	The Metered Data Aggregator and the other Entitled Roles have the validated measured data for imbalance settlement for the observation period available.
exceptions	None.
actions	Not relevant at this level.

2.3   Notify validated measured data for imbalance settlement (Business Process UseCase)
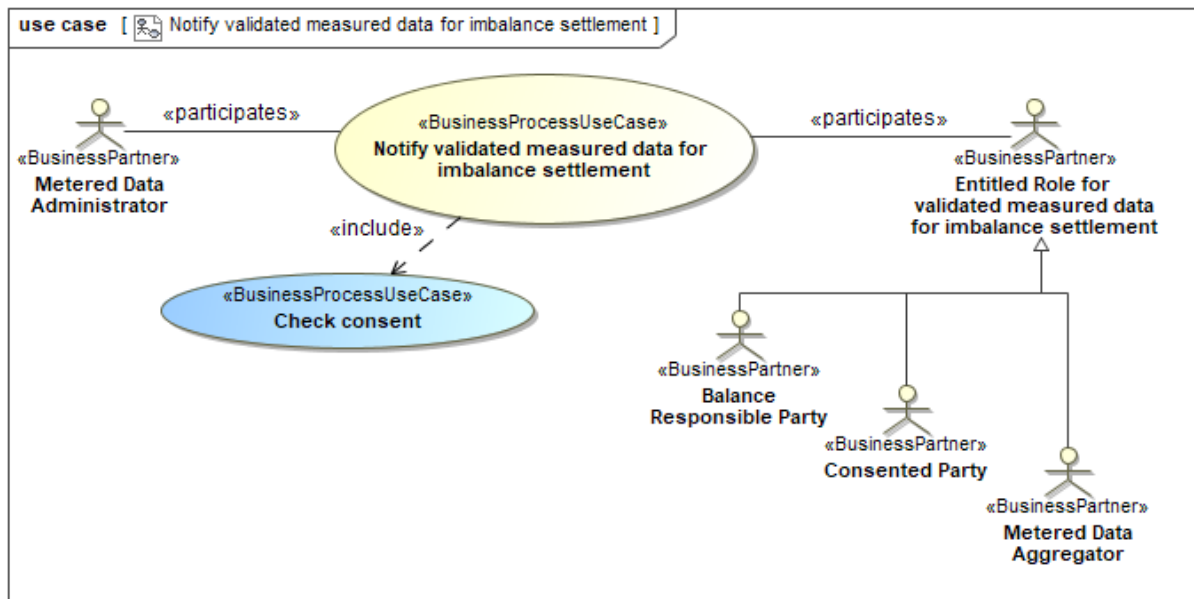
Figure 3 Business Process UseCase: Notify validated measured data for imbalance settlement

2.3.1   Description

UseCase description: **Notify validated measured data for imbalance settlement**	
definition	In this process the Metered Data Administrator sends validated measured data for imbalance settlement for a set of Metering Points to the Metered Data Aggregator and, dependent on national rules, to related Balance Responsible parties and Consented Parties.
beginsWhen	According to national rules, when it is scheduled to notify validated measured data for imbalance settlement or there has been changes to validated measured data for imbalance settlement.
preCondition	The Metered Data Administrator has available (the relevant set of) validated measured data for Metering Points within the area for imbalance settlement.
endsWhen	When the Metered Data Aggregator, and if required the Balance Responsible Parties and Consented Parties, have received the validated measured data for imbalance settlement for the area.
postCondition	The Metered Data Aggregator and if relevant the Balance Responsible Parties and Consented Parties have validated measured data for Metering Points in the area for imbalance settlement for the observation period available.
exceptions	None.
actions	See 2.3.2.

2.3.2   Business Process
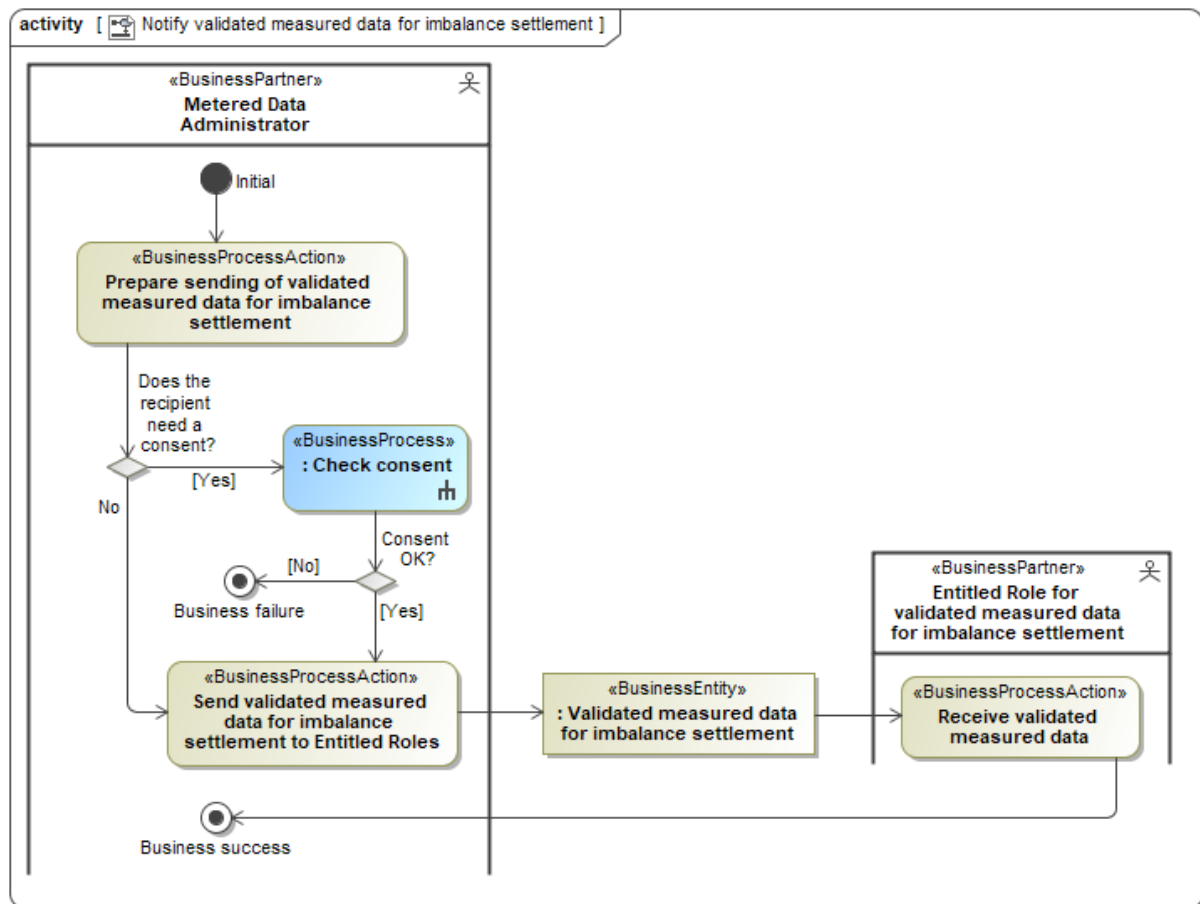
Figure 4 Business Process: Notify validated measured data for imbalance settlement

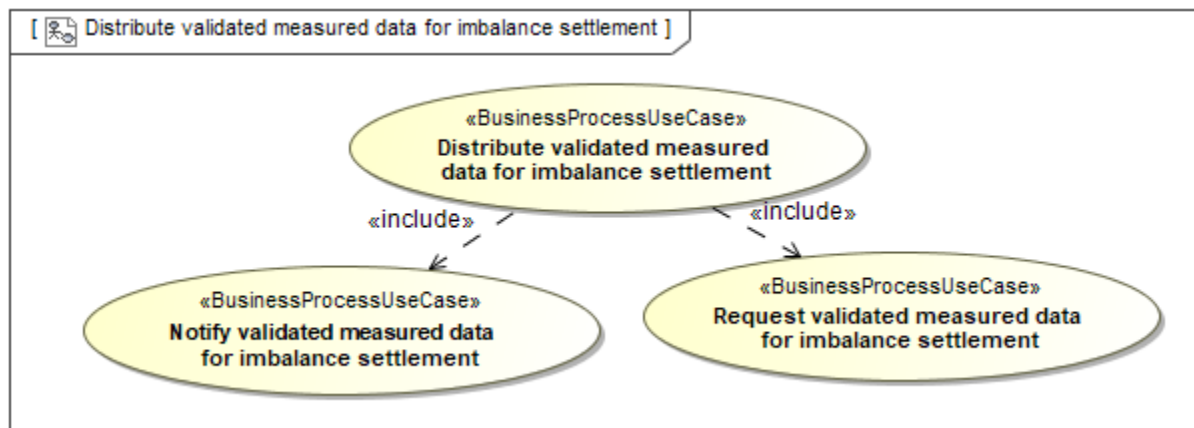## 2.4   Request validated measured data for imbalance settlement (Business Process UseCase)

Figure 5 Business Process UseCase: Request validated measured data for imbalance settlement

2.4.1   Description

UseCase description: **Request validated measured data for imbalance settlement**	
definition	The "Initiator for requesting validated measured data for imbalance settlement", i.e. Balance Responsible Party, Consented Party or Metered Data Aggregator, requests validated measured data, for an area and an observation period, for imbalance settlement from the Metered Data Administrator.
beginsWhen	The Initiator has a need for the validated measured data, for an area and an observation period, for imbalance settlement.
preCondition	The Initiator is authorised or consented to request the validated measured data for imbalance settlement.
endsWhen	The Metered Data Administrator has sent the requested validated measured data for imbalance settlement to the Initiator.
postCondition	The Initiator has available the validated measured data, for the area and the observation period, for imbalance settlement.
exceptions	None.
actions	See 2.4.2

2.4.2   Business Process

Figure 6 Business Process: Request validated measured data for imbalance settlement

2.5   Aggregate validated measured data for imbalance settlement (Business Process UseCase)
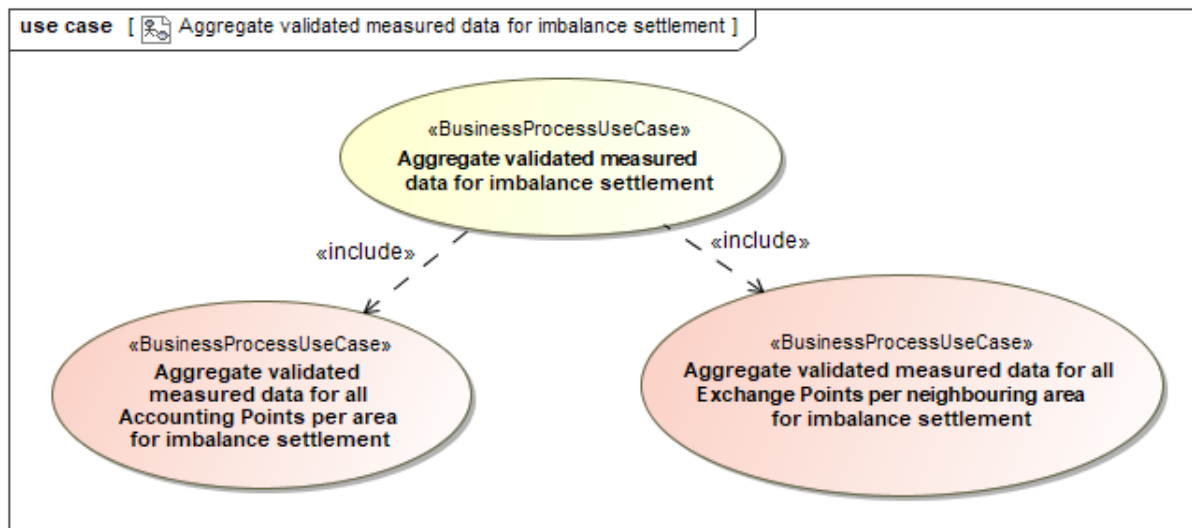
Figure 7 Business Process UseCase: Aggregate validated measure data for imbalance settlement

2.5.1   Description

UseCase description: **Aggregate validated measure data for imbalance settlement**	
definition	In this process the Metered Data Aggregator aggregates according to national rules validated measured data for all Metering Points, for an area and an observation period, received from the Metered Data Administrator. Since there are different rules for aggregation of Accounting Points and Exchange Points, the UseCase is split into one UseCase for "Aggregate validated measured data for all Accounting Points per area for imbalance settlement" and another UseCase for "Aggregate validated measured data for all Exchange Points per neighbouring areas for imbalance settlement".
beginsWhen	When the process is scheduled to start based on national rules or triggered by a request for aggregated measured data from an entitled party.
preCondition	The Metered Data Aggregator has available: • validated measured data • master data for the Metering Points within the area.
endsWhen	Validated measured data have been aggregated per area or per neighbouring area.
postCondition	Aggregated validated measured data are available for the Aggregator and ready to be sent.
exceptions	• Not all validated measured data available • No master data of Metering Points available.
actions	Not relevant at this level.

2.5.2   Aggregate validated measured data for all Accounting Points per area for imbalance settlement (Business Process UseCase)
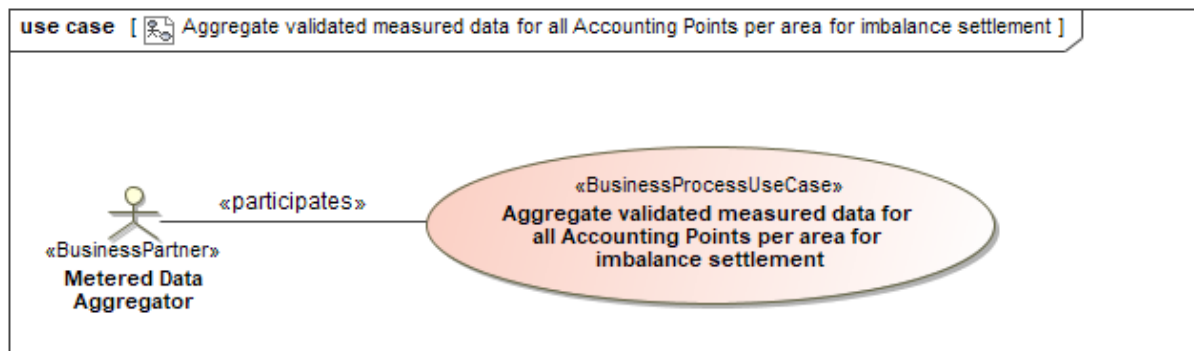
Figure 8 Business Process UseCase: Aggregate validated measured data for all Accounting Points per area for imbalance settlement

2.5.2.1   Description

UseCase description:	**Aggregate validated measured data for all Accounting Points per area for imbalance settlement**
definition	This is the process where the Metered Data Aggregator aggregates validated measured data within an area for an observation period, using the national imbalance settlement rules. Examples of aggregation rules are area, Energy Supplier and Balance Responsible Party, product, direction, fuel type, technology etc.
beginsWhen	When the process is scheduled to start based on national rules or triggered by a request for aggregated measured data.
preCondition	The Metered Data Aggregator: • has available validated measured data. • has available master data for the Accounting Points within the area.
endsWhen	When the measured data for all Accounting Points in the area is aggregated for the intended observation period.
postCondition	The aggregated measured data for all Accounting Points for the intended observation period is ready for distribution.
exceptions	None.
actions	This is an internal process within the Metered Data Aggregator, hence not further elaborated.

2.5.3 Aggregate validated measured data for all Exchange Points per neighbouring area for imbalance settlement (Business Process UseCase)
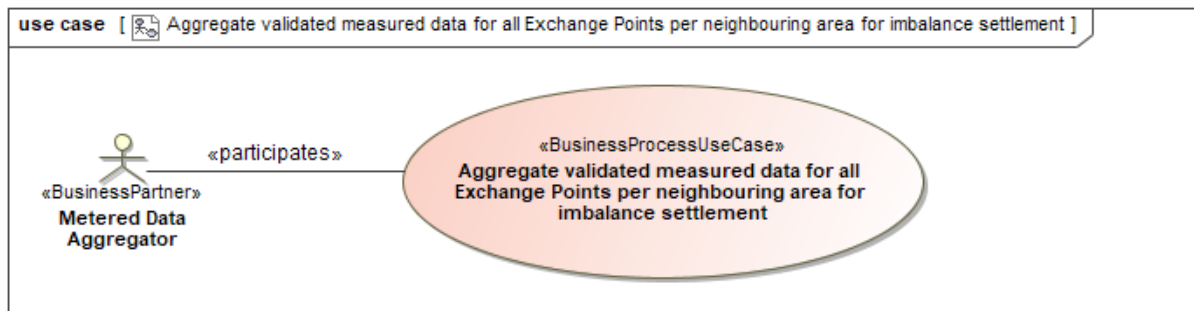
Figure 9 Business Process UseCase: Aggregate validated measured data for all Exchange Points per neighbouring area for imbalance settlement

2.5.3.1 Description

UseCase description:	**Aggregate validated measured data for all Exchange Points per neighbouring area for imbalance settlement**
definition	This is the process where the Metered Data Aggregator aggregates validated measured data for all Exchange Points for the intended observation period of an area per neighbouring area, i.e. for the energy exchanged between areas.
beginsWhen	When the process is scheduled to start based on national rules or triggered by a request for aggregated validated measured data for all Exchange Points per neighbouring area for imbalance settlement.
preCondition	The Metered Data Aggregator: • has available validated measured data for the intended observation period. • has available master data for the Exchange Points within the area.
endsWhen	When the validated measured data for all Exchange Points per neighbouring area for imbalance settlement has been aggregated for the intended observation period.
postCondition	The measured data for all Exchange Points per neighbouring area is aggregated for the intended observation period and ready for distribution.
exceptions	None.
actions	This is an internal process within the Metered Data Aggregator, hence not further elaborated.

2.6 Distribute aggregated validated measured data for imbalance settlement (Business Process UseCase)
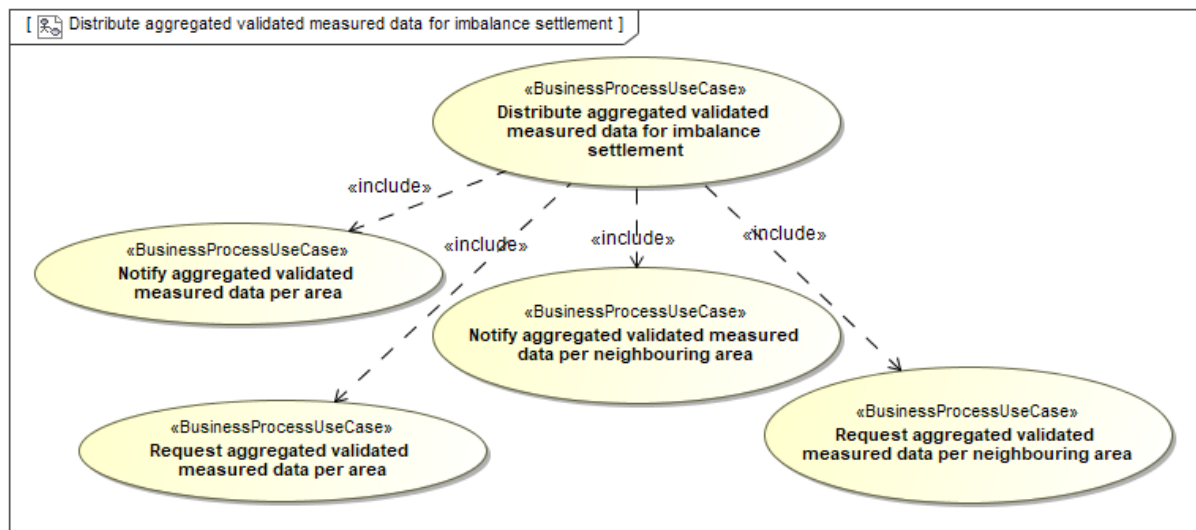
Figure 10 Business Process UseCase: Distribute aggregated validated measured data for imbalance settlement

2.6.1 Description

UseCase description:	**Distribute aggregated validated measured data for imbalance settlement**
definition	In this process the Metered Data Aggregator distributes aggregated validated measured data, per area and observation period, for imbalance settlement to the Imbalance Settlement Responsible parties and, dependent on national rules, to entitled roles for aggregated validated measured data for imbalance settlement. Further, the aggregated validated measured data per neighbouring area is sent to the Imbalance Settlement Responsible and the Metered Data Aggregator for the neighbouring area. In addition, entitled roles for aggregated validated measured data for imbalance settlement may request aggregated validated measured data for imbalance settlement.
beginsWhen	When the validated measured data, per area and observation period, is aggregated for imbalance settlement according to national rules or an Entitled Role requests aggregated validated measured data for imbalance settlement.
preCondition	The Metered Data Aggregator has available the relevant set of aggregated validated measured data, per area and observation period, for imbalance settlement.
endsWhen	When the aggregated validated measured data for imbalance settlement is distributed.
postCondition	All entitled roles have aggregated validated measured data for an area for imbalance settlement for the observation period available.

exceptions	None.
actions	Not relevant at this level.

2.6.2 Notify aggregated validated measured data per area (Business Process UseCase)
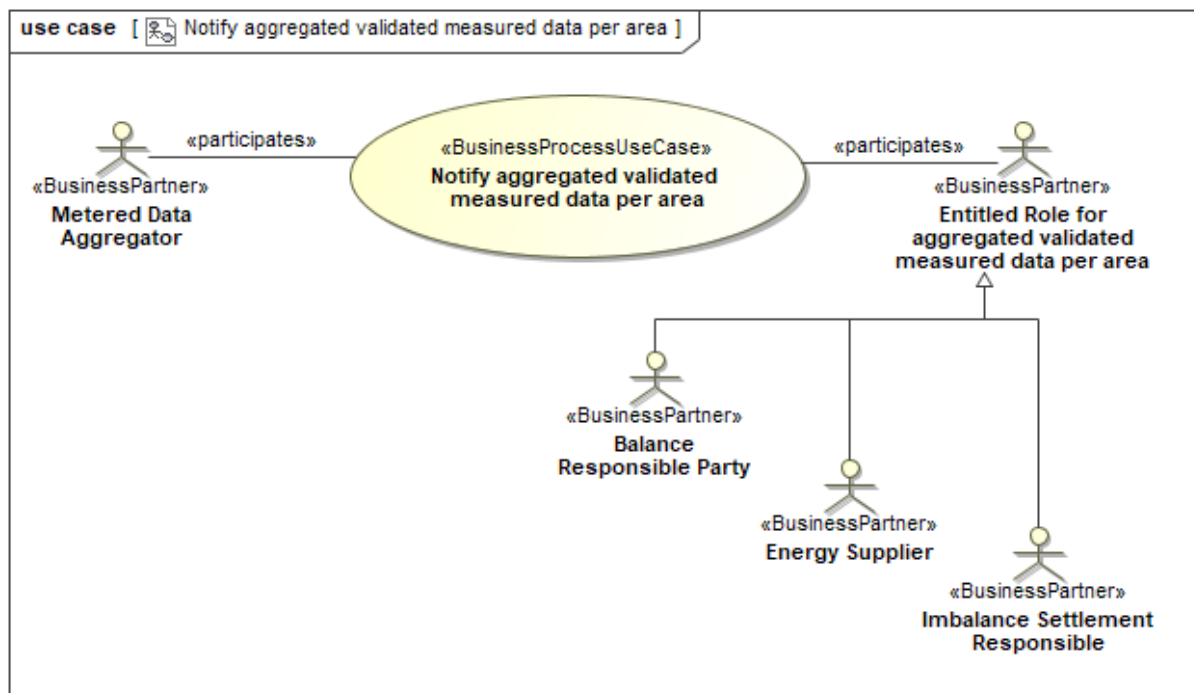
Figure 11 Business Process UseCase: Notify aggregated validated data per area

2.6.2.1 Description

UseCase description: Notify aggregated validated measured data per area	
definition	In this process the Metered Data Aggregator notifies aggregated validated measured data for an observation period for imbalance settlement for a set of Accounting Points to an "Entitled Role for aggregated validated measured data per area", i.e. Balance Responsible Party, Energy Supplier and Imbalance Settlement Responsible.
beginsWhen	When the validated measured data are aggregated for the area.
preCondition	Aggregated validated measured data are available. Master data for the parties entitled to the data are available.
endsWhen	The notify of the aggregated validated measured data has been accomplished.
postCondition	The Balance Responsible Party, Energy Supplier and Imbalance Settlement Responsible have the aggregated validated measured data for the intended observation period and for the area available.
exceptions	None.
actions	See 2.6.2.2

2.6.2.2　Business Process
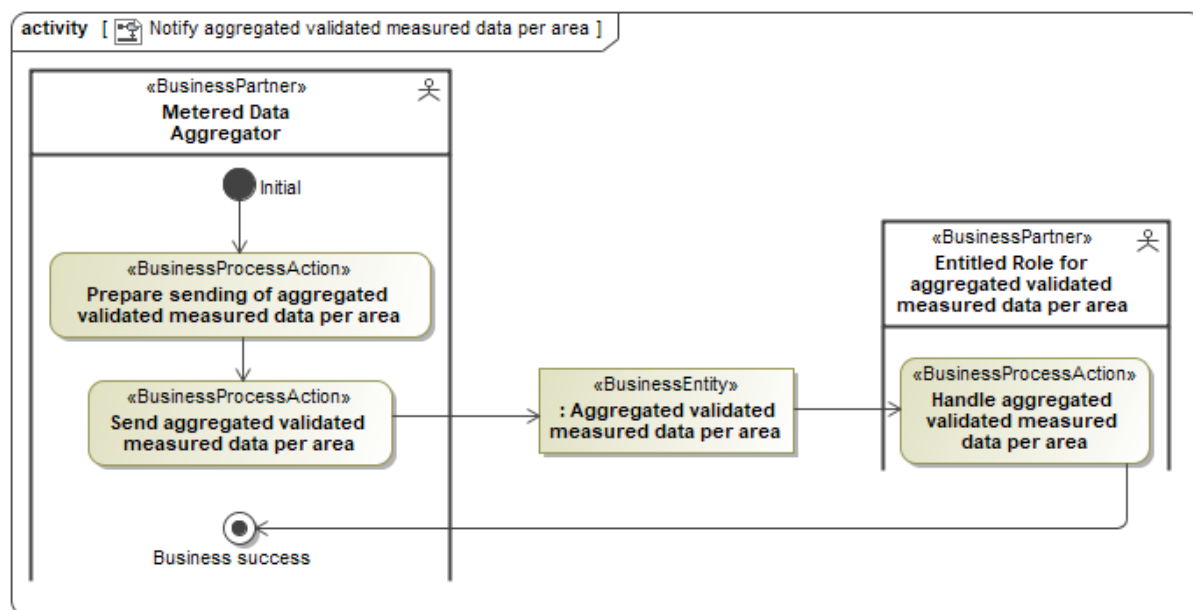
Figure 12 Business Process: Notify Aggregated validated measured data per area

2.6.3   Request aggregated validated measured data per area (Business Process UseCase)
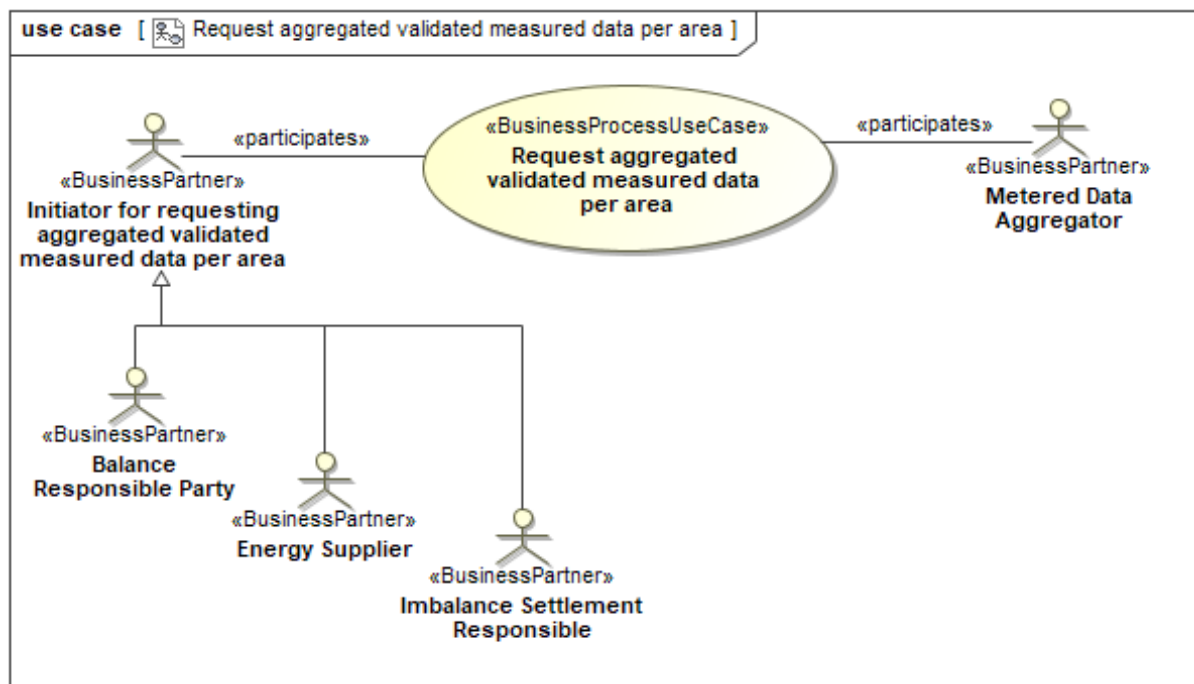
Figure 13 Business Process UseCase: Request aggregated validated measured data per area

2.6.3.1   Description

UseCase description:	**Request aggregated validated measured data per area**
definition	The "Initiator for requesting aggregated validated measure data per area" (Balance Responsible Party, Energy Supplier or Imbalance Settlement Responsible) requests aggregated validated measured data for imbalance settlement for an area for an observation period from the Metered Data Aggregator. The aggregation may be per area, Energy Supplier, Balance Responsible Party, Product and/or other relevant characteristics.
beginsWhen	The "Initiator for requesting aggregated validated measured data per area" has a need for the aggregated validated measured data for the intended observation period for imbalance settlement.
preCondition	The "Initiator for requesting aggregated validated measured data per area" is authorised to request the aggregated validated measured data for imbalance settlement. The Metered Data Aggregator knows to which data the Initiator is entitled.
endsWhen	The Metered Data Aggregator has sent the aggregated validated measured data for imbalance settlement to the Initiator.

postCondition	The "Initiator for requesting aggregated validated measured data per area" has the aggregated validated measured data for the intended observation period per area available.
exceptions	None.
actions	See 2.6.3.2

2.6.3.2 Business Process
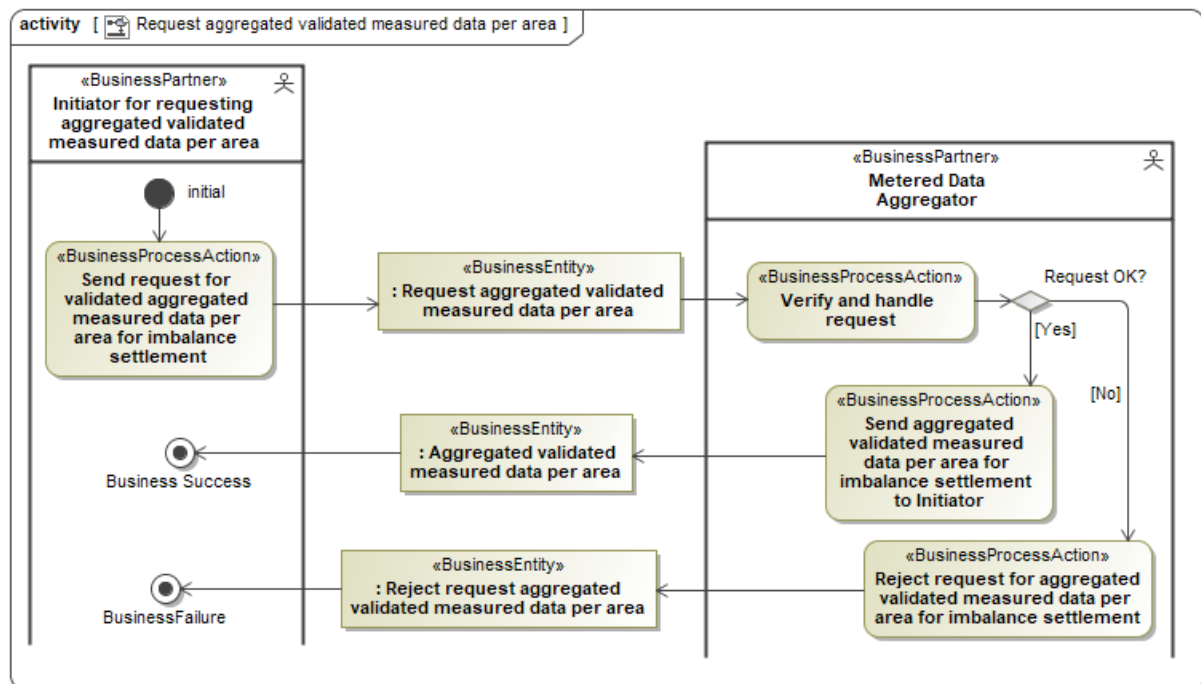
Figure 14 Business Process: Request aggregated measured data per area

2.6.4 Notify aggregated validated measured data per neighbouring area (Business Process UseCase)

Figure 15 Business Process UseCase: Notify aggregated validated measured data per neighbouring area

2.6.4.1 Description

UseCase description: **Notify aggregated validated measured data per neighbouring area**	
definition	In this process the Metered Data Aggregator notifies aggregated validated measured data for all Exchange Points per neighbouring area for an observation period to the Imbalance Settlement Responsible. Dependent on national rules, either: 1. The Metered Data Aggregator also sends aggregated validated measured data for all Exchange Points per neighbouring area to the neighbouring Metered Data Aggregator(s) or 2. The Imbalance Settlement Responsible confirms the aggregated validated measured data for all Exchange Points per neighbouring area to the neighbouring Metered Data Aggregator(s).
beginsWhen	When the aggregated validated measured data are available
preCondition	Master data for the parties entitled to the data are available.
endsWhen	The distribution and if required the confirmation of the aggregated validated measured data per neighbouring area and for the intended observation period has been accomplished.
postCondition	The Imbalance Settlement Responsible and the neighbouring Metered Data Aggregators have the aggregated validated measured data per neighbouring area and for the intended observation period available.
exceptions	None.
actions	See 2.6.4.2

2.6.4.2   Business Process

Figure 16 Business Process: Notify aggregated validated measured data per neighbouring area

2.6.4.3   Confirm aggregated validated measured data per neighbouring area (Business Process UseCase)
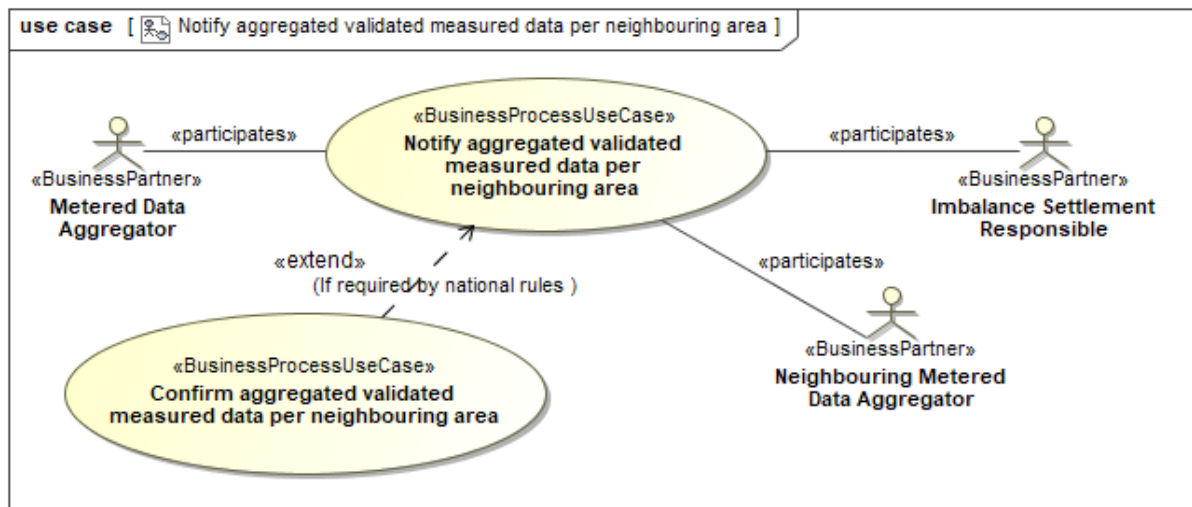

Figure 17 Business Process UseCase: Confirm aggregated validated measured data per neighbouring area

2.6.4.3.1   Description

UseCase description: **Confirm aggregated validated measured data per neighbouring area[2]**	
definition	In this process the Imbalance Settlement Responsible confirms aggregated validated measured data for Exchange Points for a neighbouring area for an observation period to the two concerned Metered Data Aggregators.
	The confirmation includes a matching of the aggregated validated measured data per neighbouring area from the other Metered Data Aggregator.
	Further, the confirmation of aggregated validated measured data per neighbouring area may be split into an intermediate and a final confirmation, the latter to be sent after gate closure.
beginsWhen	The Imbalance Settlement Responsible has matched the aggregated validated measured data of a neighbouring area.
preCondition	The Imbalance Settlement Responsible has received aggregated validated measured data per neighbouring area for the intended observation period.
endsWhen	When the (final) confirmation of aggregated validated measured data per neighbouring area for the intended observation period has been sent from the Imbalance Settlement Responsible to the Metered Data Aggregators.
postCondition	The Imbalance Settlement Responsible and the two concerned Metered Data Aggregators agree upon the same aggregated validated measured data for the neighbouring area for the intended observation period.

[2] This UseCase is an extended UseCase to the UseCase "Exchange aggregated validated measured data per neighbouring grid", only run if agreed at national level.

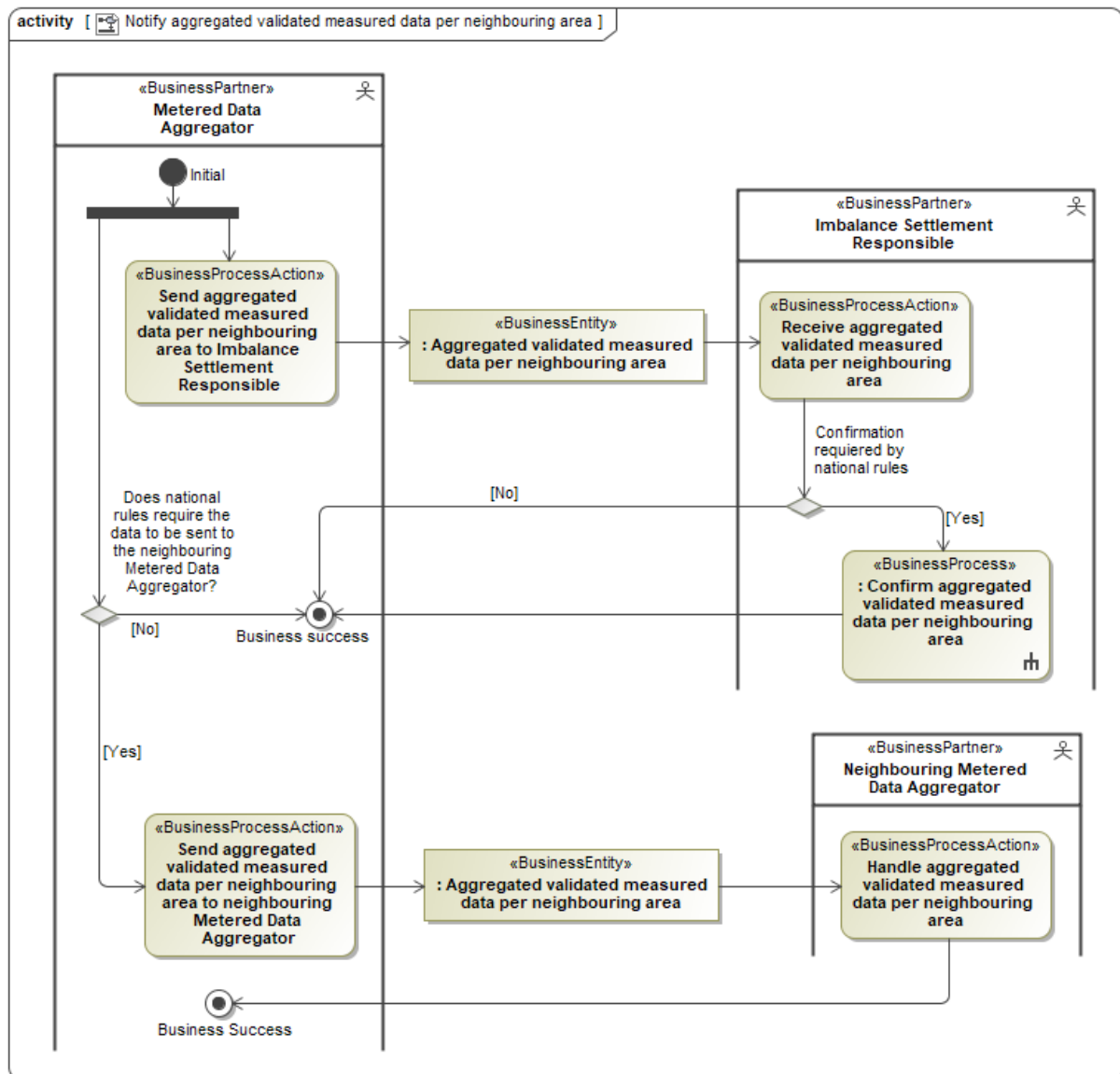| exceptions	None.
actions	See 2.6.4.3.2

2.6.4.3.2 Business Process
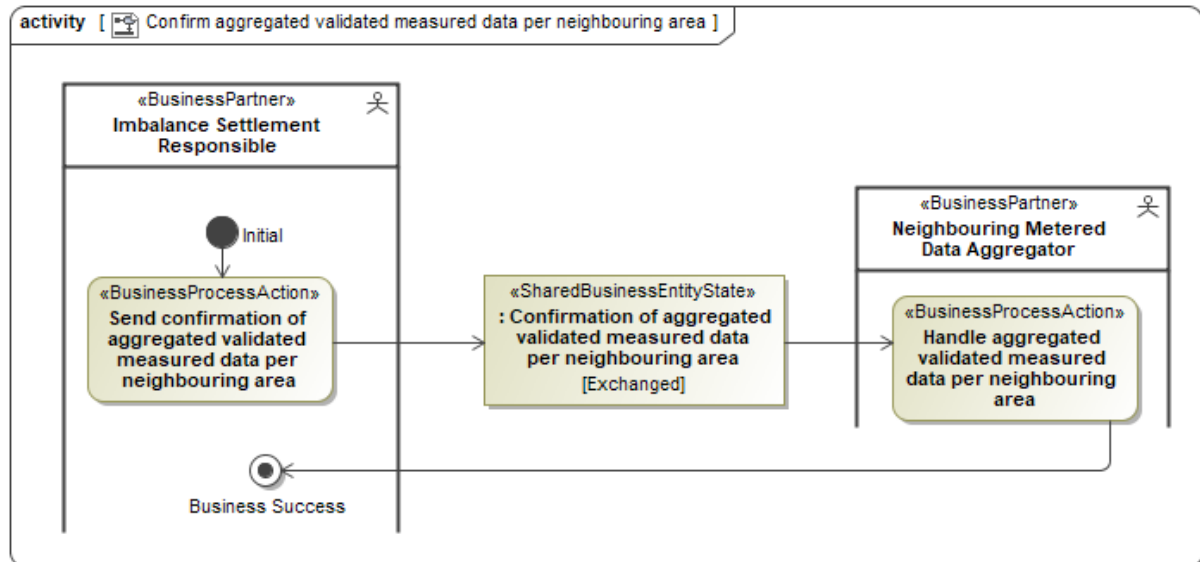
Figure 18 Business Process: Confirm aggregated validated measured data per neighbouring area

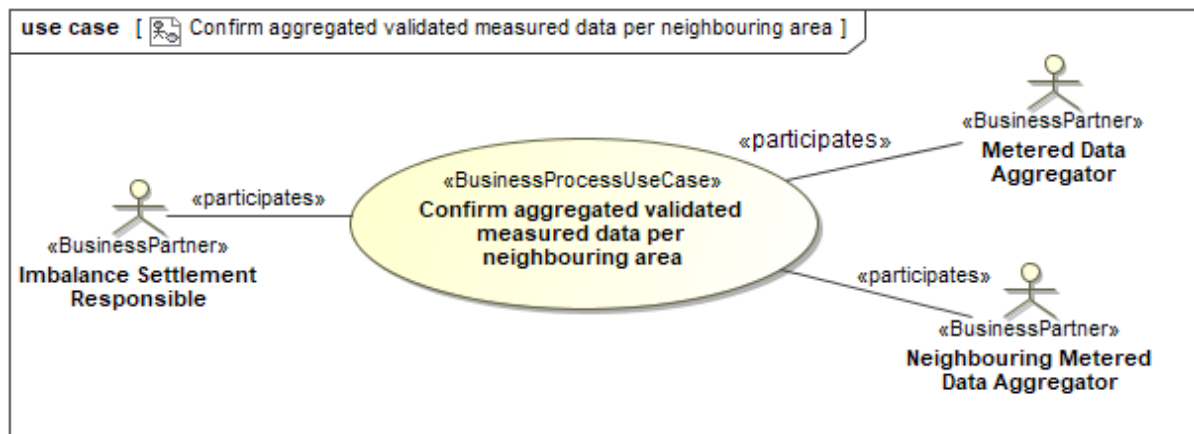### 2.6.5   Request aggregated validated measured data per neighbouring area (Business Process UseCase)
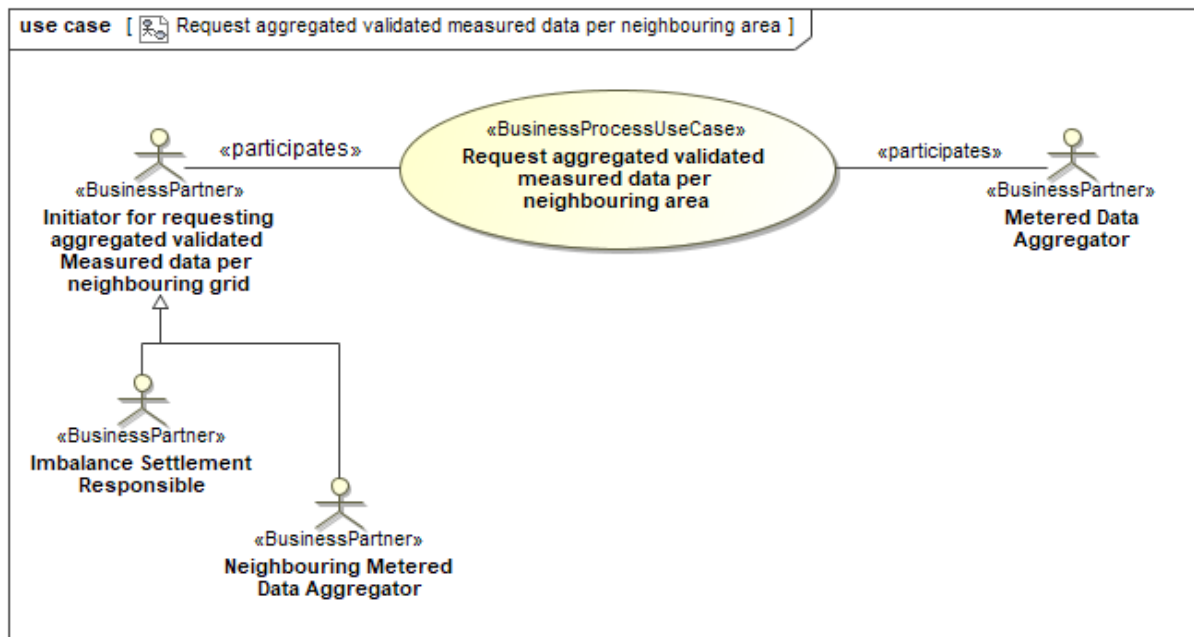
Figure 19 Business Process UseCase: Request aggregated validated measured data per neighbouring area

2.6.5.1   Description

UseCase description: **Request aggregated validated measured data per neighbouring area**	
definition	In this process the "Initiator for requesting aggregated validated measured data per neighbouring area" (Imbalance Settlement Responsible or neighbouring Metered Data Aggregator) requests aggregated validated measured data for a neighbouring area for an observation period from the Metered Data Aggregator.
beginsWhen	When the "Initiator for requesting aggregated validated measured data per neighbouring area" has a need for aggregated validated measured data per neighbouring area for an observation period.
preCondition	The "Initiator for requesting aggregated validated measured data per neighbouring area" is authorised to request the aggregated validated measured data per neighbouring area. The Metered Data Aggregator knows to which data the Initiator is entitled.
endsWhen	The Metered Data Aggregator has sent the aggregated validated measured data for per neighbouring area for the intended observation period to the Initiator.
postCondition	The "Initiator for requesting aggregated validated measured data per neighbouring area" has the aggregated validated measured data for the neighbouring area for the intended observation period.
exceptions	None
actions	See 2.6.5.2

2.6.5.2   Business Process
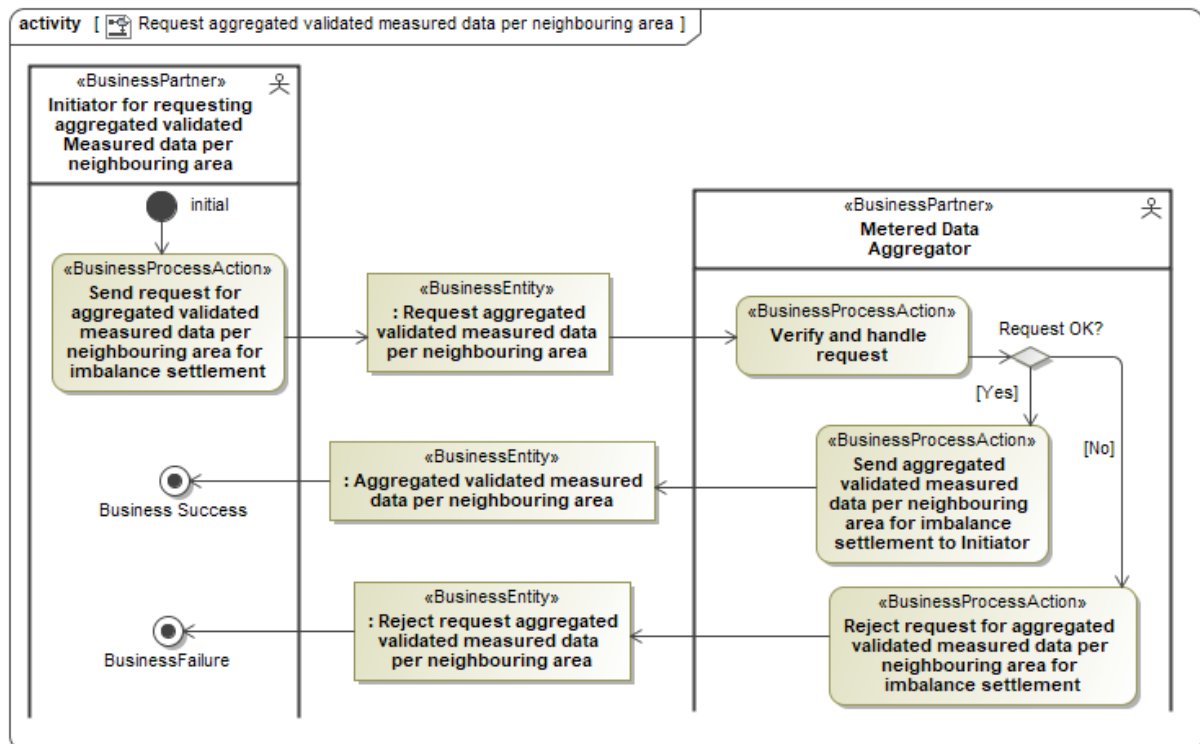
Figure 20 Business Process: Request aggregated measured data per neighbouring area

3　Business Partner View: Measure for imbalance settlement

Figure 21 Business Partner View: Measure for imbalance settlement

4   Business Entity View

A general introduction to the Business Entity View can be found in the Introduction to ebIX® Business Requirements and Business Information Models (https://www.ebix.org/artikel/documents) [3].

4.1 Validated measured data for imbalance settlement (Class Diagram)

Figure 22 Class diagram: Validated measured data for imbalance settlement

4.1.1   Element definitions: Validated measured data for imbalance settlement

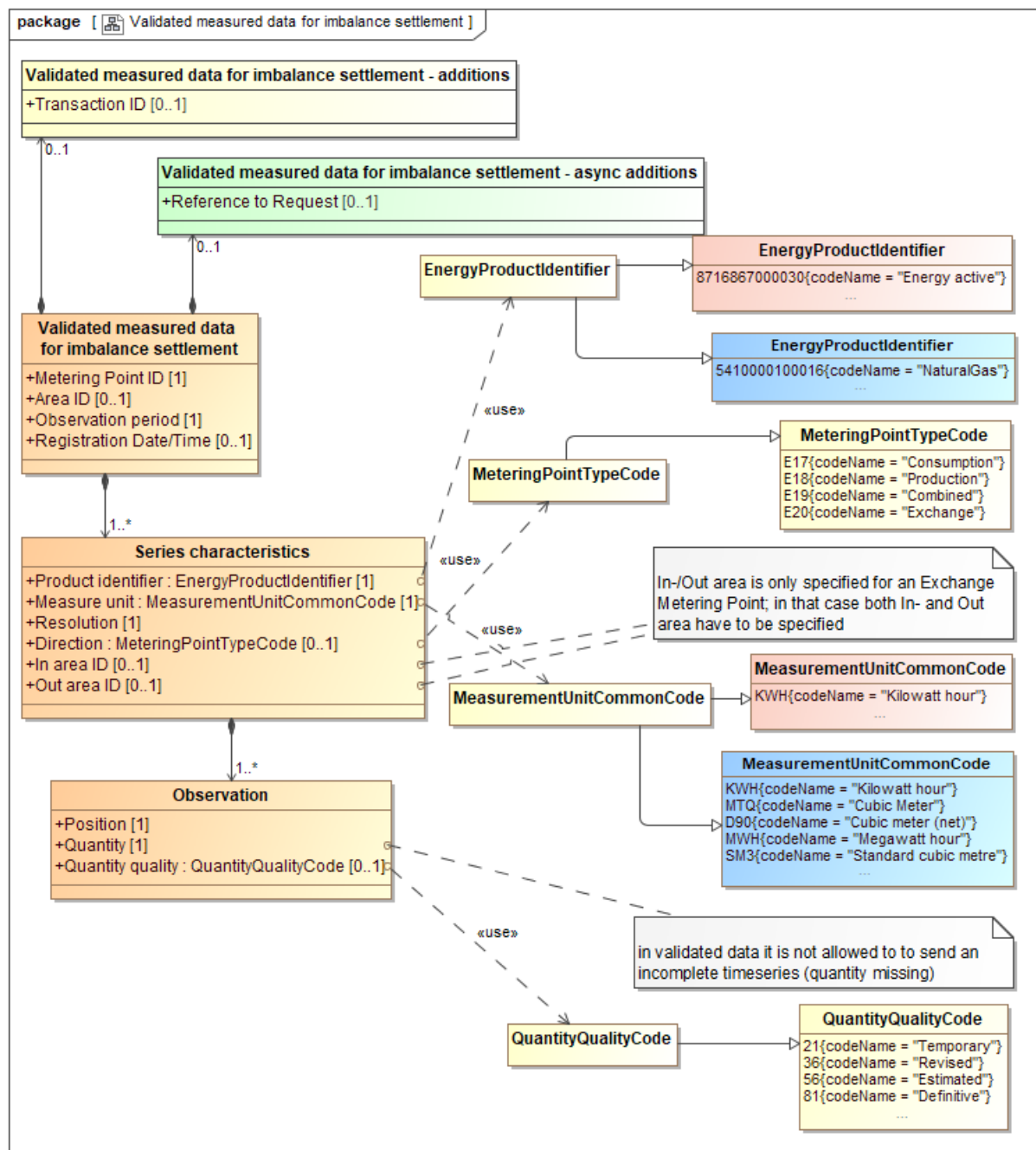| Attribute	Sector[3]	Definition
«Business entity» Validated measured data for imbalance settlement		The information set sent by a Metered Data Administrator to the Metered Data Aggregator and, dependent on national rules, to related Balance Responsible parties and Consented Parties.
Metering Point ID		The unique identification of the Metering Point (Accounting Point or Exchange Point) to which the validated measured data are attributed.
Area ID		The unique identification of the area where the Metering Point is linked to.
Observation Period		The specific period of time for the validated measured data for imbalance settlement.
Registration Date/Time		The date time of the validation (and storage in the database) of this set of validated measured data.
Series characteristics		The characteristics of this set of validated measured data, such as product and flow direction.
Product Identifier		A code specifying the energy product for the quantity in this observation.
Measure unit		The unit of measure used for the quantity in this observation.
Resolution		The resolution of this set of validated measured data expressed as a duration between the start and end of subsequent observations within this set of validated measured data.
Direction		A code specifying the direction of the flow of the energy measured in this Observation period. A flow from the Exchange Point into the area is defined as production and a flow from the area into the Exchange Point is defined as consumption.
In area ID		The unique identification of the "In area", the area where the measured energy was fed in to.
Out area ID		The unique identification of the "Out area", the area from which the measured energy was fed out .

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[3] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Attribute	Sector[3]	Definition
Observation		One validated value as part of this set of validated measured data.
Position		The ordinal position of this observation in this set of validated measured data.
Quantity		The validated measured quantity of energy for this observation.
Quantity Quality		A code specifying the quality of this quantity.
Validated measured data for imbalance settlement Additions		Additional information, related to Validated measured data for imbalance settlement, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction D		The unique identification of this set of information as given by the Metered Data Administrator.
Validated measured data for imbalance settlement Async additions		Additional information, related to validated measured data for imbalance settlement, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Reference to Request		Information about the request for this set of validated measured data which uniquely identifies it.

4.2   Request validated measured data for imbalance settlement (Class Diagram)
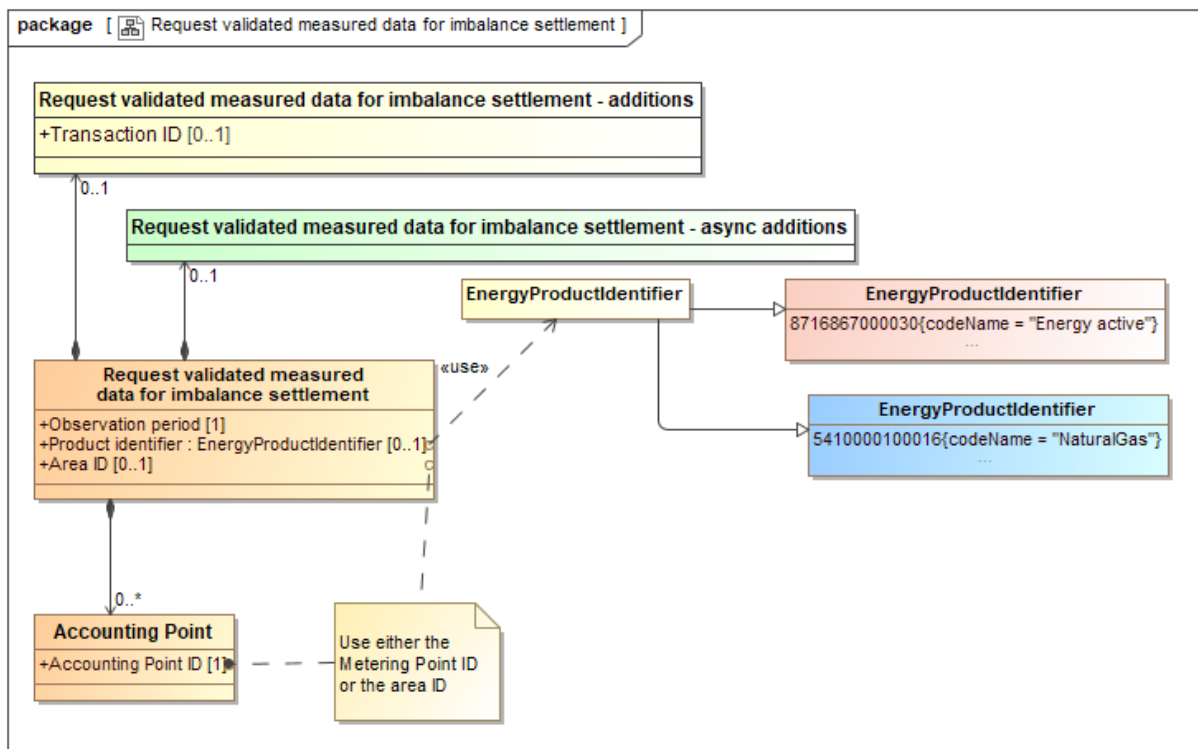

Figure 23 Class diagram: Request validated measured data for imbalance settlement

4.2.1   Element definitions: Request validated measured data for imbalance settlement

	Sector[4]	
«Business entity» Request validated measured data for imbalance settlement		The information set to be sent by an "Initiator for requesting validated measured date for imbalance settlement" (Balance Responsible Party, Consented Party or Metered Data Aggregator) to the Metered Data Aggregator in charge of the Metering Point (Accounting Point or Exchange Point) when requesting validated measured data for imbalance settlement.
Observation Period		The specific period of time for the requested validated measured data for imbalance settlement.
Product Identifier		A code specifying the energy product for the measured quantity in the requested observation.
Measure unit		The unit of measure used for the quantity in the requested observation period.
Area ID		The unique identification of the area where the validated measured data for imbalance settlement is requested for.
«Business entity» Metering Point		An entity where energy products are measured or computed.
Metering Point ID		The unique identification of the Metering Point for which the validated measured data for imbalance settlement are requested for.
Request validated measured data for imbalance settlement - Additions		Additional information, related to request validated measured data for imbalance settlement the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction ID		The unique identification of this request as given by the Requesting Role ("Initiator for requesting validated measured date for imbalance settlement").
Request validated measured data for imbalance settlement - Async Additions		Additional information, related to request validated measured data for imbalance settlement, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.

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[4] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

4.3   Reject request validated measured data for imbalance settlement (Class Diagram)
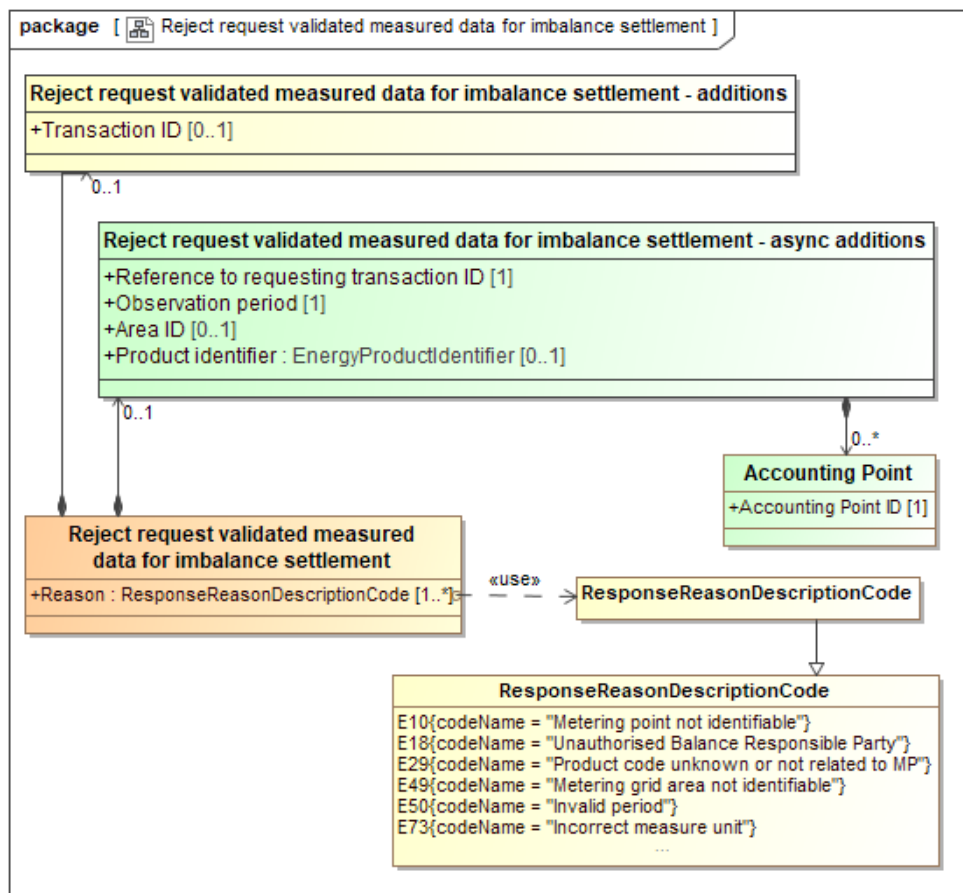
Figure 24 Class diagram: Reject request validated measured data for imbalance settlement

4.3.1   Element definitions: Reject request validated measured data for imbalance settlement

«Business entity» Reject request validated measured data for imbalance settlement	Sector[5]	The response sent by a Metered Data Administrator to an "Initiator for requesting validated measured date for imbalance settlement" when not in the position to respond with the requested validated measured data.
Reason		A code specifying (one of) the reason(s) for rejecting the request for validated measured date for imbalance settlement.

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[5] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Reject request validated measured data for imbalance settlement - Additions		Additional information, related to the rejection of the request for validated measured data for imbalance settlement, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction ID		The unique identification of this response as given by the Metered Data Administrator.
Reject request validated measured data for imbalance settlement - Async additions		Additional information, related to the rejection of the request for validated measured data for imbalance settlement, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Reference to requesting transaction ID		Information about the request leading to this response, which uniquely identifies it.
Observation Period		The specific period of time for the requested validated measured data for imbalance settlement.
Product Identifier		A code specifying the energy product for the measured quantity in the requested observation.
Area ID		The unique identification of the area where the validated measured data for imbalance settlement was requested for.
«Business entity» Metering Point		An entity where energy products are measured or computed.
Metering Point ID		The unique identification of the Metering Point for which the validated measured data for imbalance settlement were requested for.

4.4   Aggregated validated measured data per area (Class Diagram)
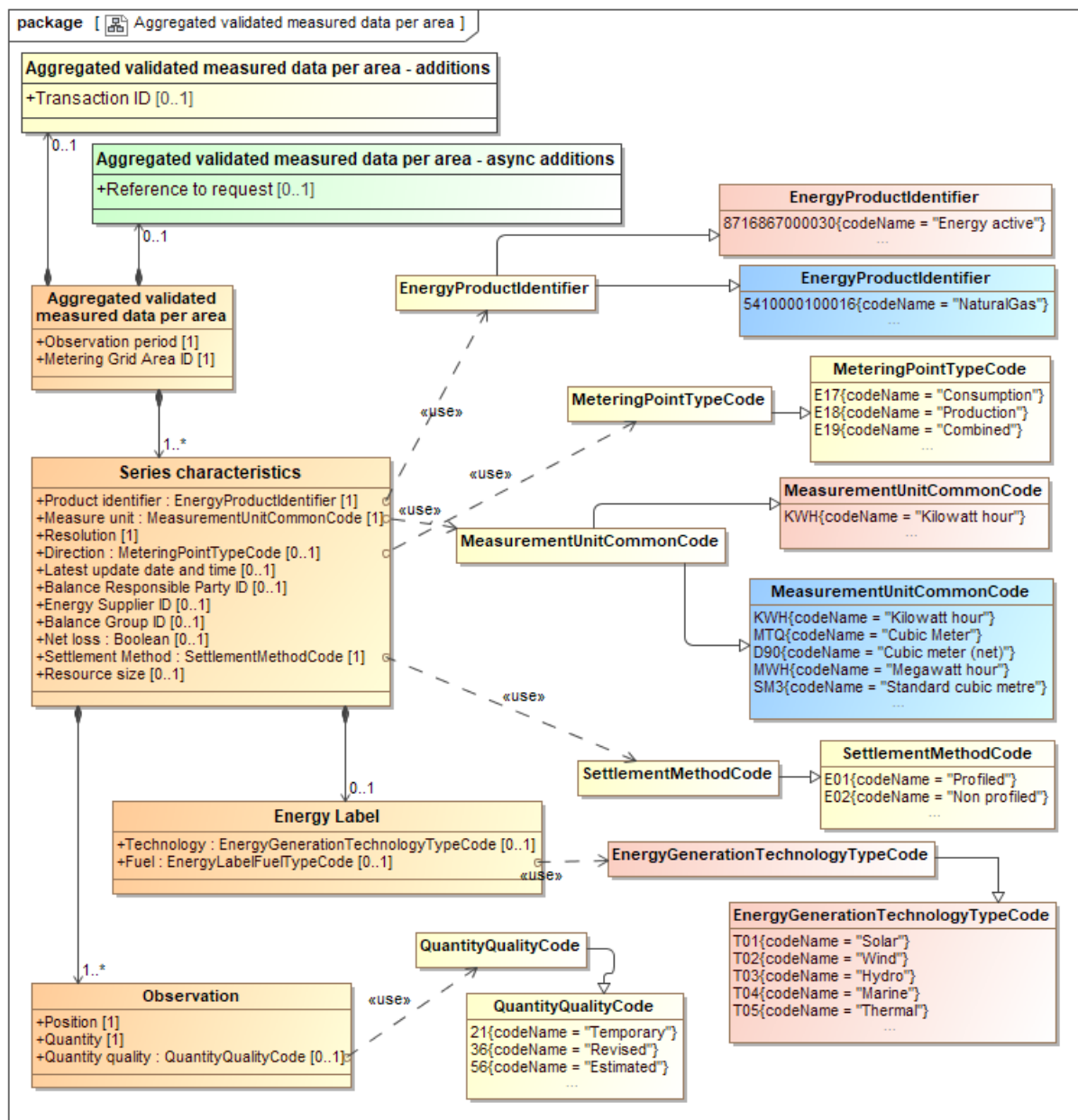

Figure 25 Class diagram: Aggregated validated measured data per area for imbalance settlement to balance responsible

Remark:

- When a balance group is specified, there is no need for specifying the Balance Responsible Party.

4.4.1 Element definitions: Aggregated validated measured data per area for imbalance settlement

Attribute	Sector[6]	Definition
«Business entity» Aggregated validated measured data per area for imbalance settlement		The information set sent by a Metered Data Aggregator in charge of an area, to the "Entitled Role for aggregated validated measured data per area", i.e. Balance Responsible Party, Energy Supplier and Imbalance Settlement Responsible.
Observation Period		The specific period of time for the aggregated validated measured data for imbalance settlement.
Area ID		The unique identification of the area that is the basis for these Aggregated validated measured data.
Series characteristics		The characteristics of this set of validated measured data, such as product and flow direction.
Product identifier		A code specifying the energy product for the quantity in this observation.
Measure Unit		The unit of measure used for the quantity in this observation.
Resolution		The resolution of this set of aggregated validated measured data expressed as a duration between the start and end of subsequent observations within this set of aggregated validated measured data.
Direction		A code specifying the direction of the flow of the energy measured in this Observation period. A flow from the Exchange Point into the area is defined as production and a flow from the area into the Exchange Point is defined as consumption.
Latest update date and time		The latest date and time on which one or more of the volumes of validated measured data included in the aggregation have been updated.
Balance Responsible Party ID		The unique identification of the Balance Responsible Party, here used as aggregation criterium.
Energy Supplier ID		The unique identification of an Energy Supplier, here used as aggregation criterium.

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[6] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Attribute	Sector[6]	Definition
Balance Group ID		The unique identification of the Balance Group the aggregation is done for.
Net loss		Indicates if the aggregated validated measured data per area for imbalance settlement concerns net loss, here used as an aggregation criterium.
Settlement Method		A code specifying how the energy volumes are treated for settlement for this Accounting Point, such as profiled or non-profiled, here used as an aggregation criterion.
Resource size		A code for indicating the size of a resource, used as an aggregation criterium.
Energy Label		A class indicating the origin of energy produced
Technology		An indication of the technology of energy production.
Fuel		An indication of the fuel used for energy production.
Observation		One aggregated validated measured volume as part of this set of aggregated validated measured data.
Position		The ordinal position of this observation in this set of aggregated validated measured data.
Quantity		The aggregated validated measured quantity of energy for this observation.
Quantity Quality		A code specifying the quality of this quantity.
Aggregated validated measured data per AREA for imbalance settlement to balance responsible – Additions		Additional information, related to aggregated validated measured data per area for imbalance settlement to Balance Responsible, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction ID		The unique identification of this set of information as given by the Aggregator.
Aggregated validated measured data per area for imbalance settlement to balance responsible - Async additions		Additional information, related to aggregated validated measured data per area for imbalance settlement to Balance Responsible, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Reference to Request		Information about the request for this set of aggregated validated measured data which uniquely identifies it.

4.5   Aggregated validated measured data per neighbouring area (Class Diagram)
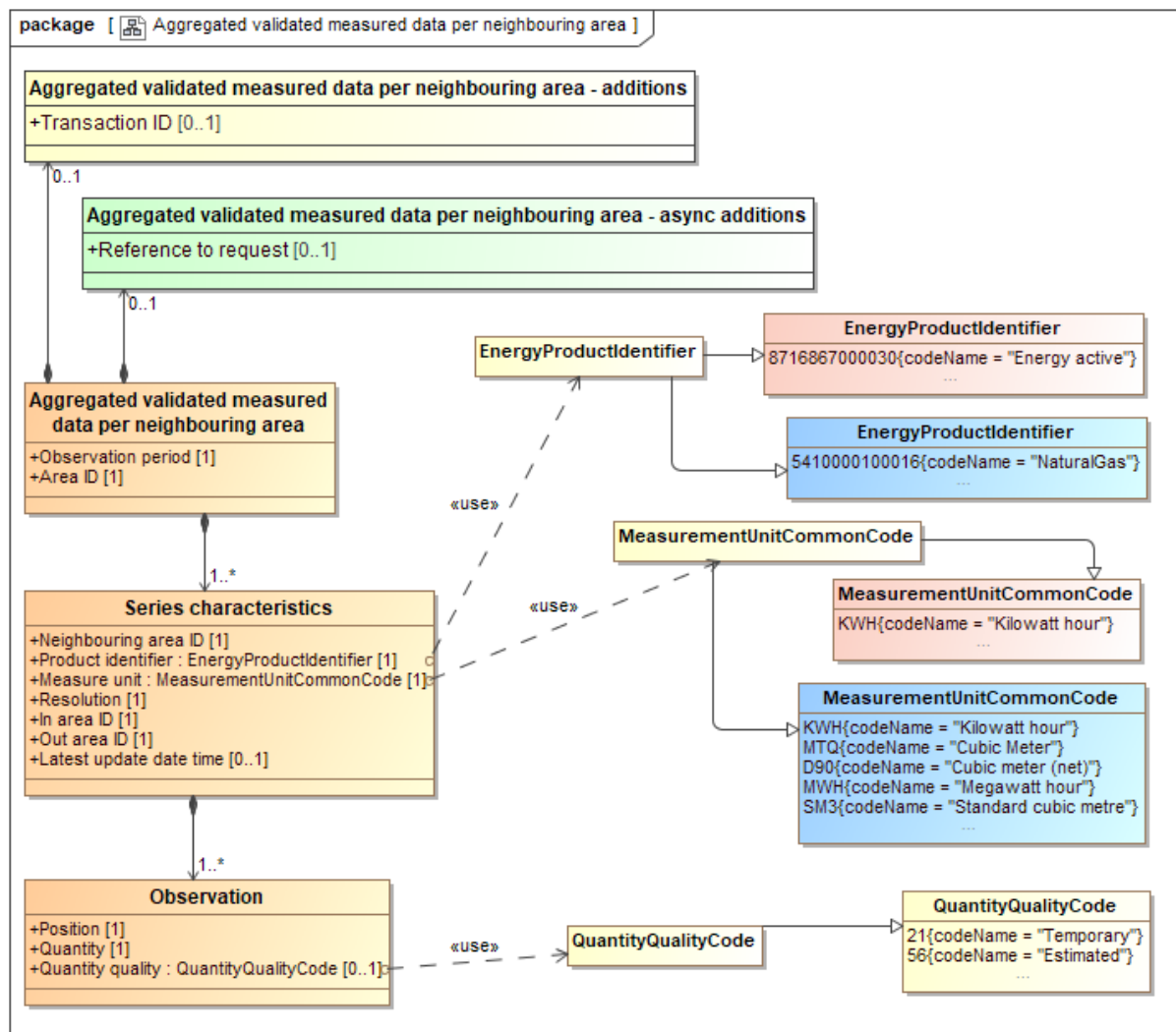

Figure 26 Class diagram: Aggregated validated measured data per neighbouring area

4.5.1   Element definitions: Aggregated validated measured data per neighbouring area

«Business entity» Aggregated validated measured data per neighbouring area	Sector[7]	The information set sent from a Metered Data Aggregator, containing the aggregated validated measured data for exchange of energy between his area and a neighbouring area. The recipient is the Imbalance Settlement Responsible of the neighbouring area and the Metered Data Aggregator of the neighbouring area. The latter exchange may, dependent on national rules, be sent as a "confirmation report" from the Imbalance Settlement Responsible instead of from the Metered Data Aggregator.
Observation period		The specific period of time for the aggregated validated measured data per neighbouring area for imbalance settlement.
Area ID		The unique identification of the area that is the basis for these aggregated validated measured data.
Series characteristics		The characteristics of this set of validated measured data, such as product and flow direction.
Neighbouring area ID		The unique identification of the neighbouring area that these aggregated measurements are validated for.
Product identifier		A code specifying the energy product for the quantity in this observation.
Measure Unit		The unit of measure used for the quantity in this observation.
Resolution		The resolution of this set of aggregated validated measured data expressed as a duration between the start and end of subsequent observations within this set of aggregated validated measured data.
In area ID		The unique identification of the "In area", i.e. the area where the measures energy is fed into.
Out area ID		The unique identification of the "Out area", i.e. the area where the measured energy is taken from.
Latest update date and time		The latest date and time on which one or more of the volumes of validated measured data included in the aggregation have been updated.

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[7] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Observation		One aggregated volume as part of this set of aggregated validated measured data.
Position		The ordinal position of this observation in this set of aggregated validated measured data.
Quantity		The aggregated validated measured quantity of energy for this observation.
Quantity Quality		A code specifying the quality of this quantity.
Aggregated validated measured data per neighbouring area - Additions		Additional information, related to aggregated validated measured data per neighbouring area, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction ID		The unique identification of this set of information as given by the Metered Data Aggregator.
Aggregated validated measured data per neighbouring area – Async additions		Additional information, related to aggregated validated measured data per neighbouring area, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Reference to request		Information about the request for this set of aggregated validated measured data which uniquely identifies it.

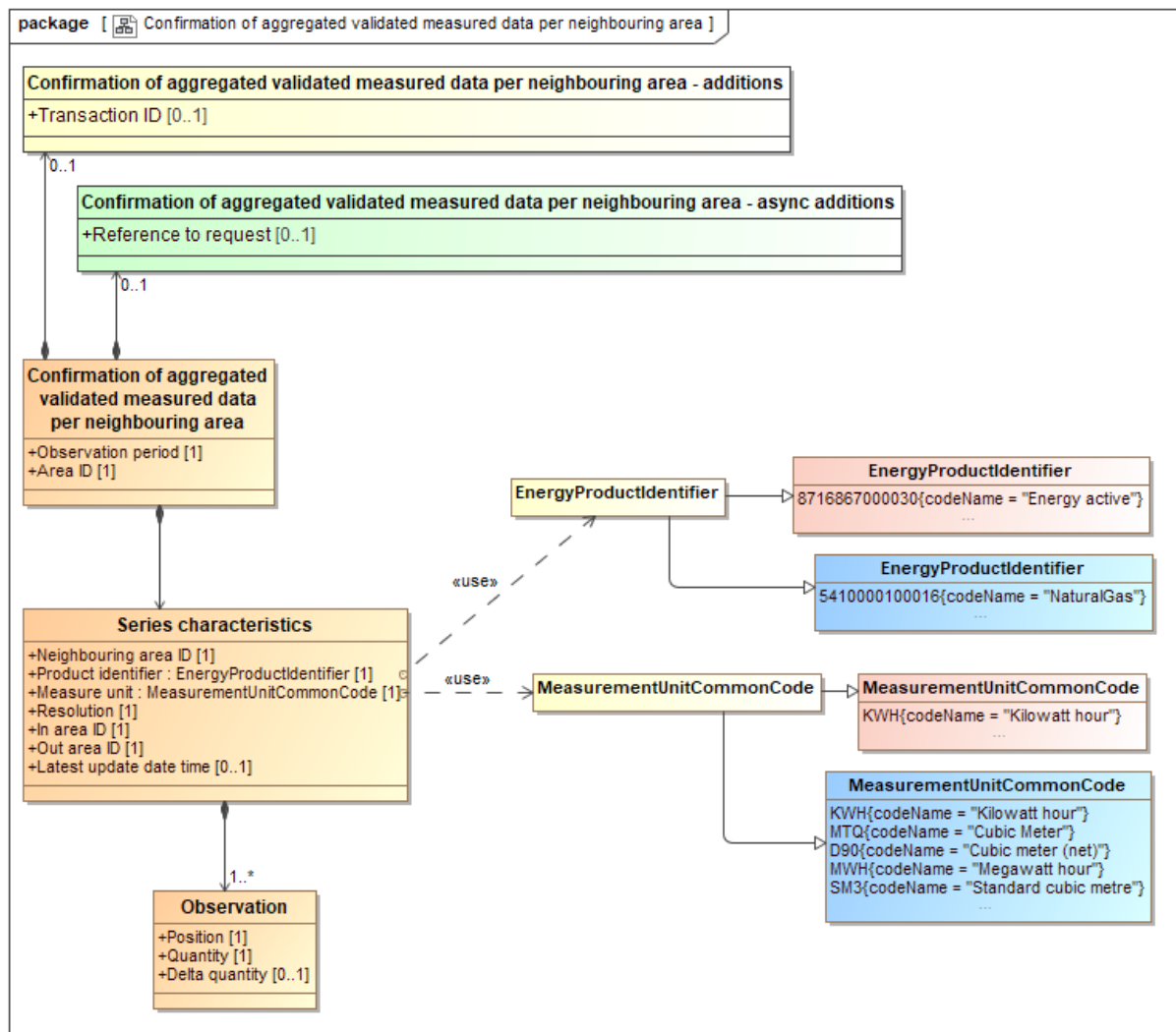## 4.6   Confirmation of aggregated validated measured data per neighbouring area

Figure 27 Class diagram: Confirmation of aggregated validated measured data per neighbouring area

4.6.1   Element definitions: Confirmation of aggregated validated measured data per neighbouring area

«Business entity» Confirmation of aggregated validated measured data per neighbouring area	Sector[8]	The information set containing the confirmation of aggregated validated measured volumes for exchange of energy between two areas, sent by the Imbalance Settlement Responsible to the Metered Data Aggregator in charge of the concerned areas.
Observation period		The specific period of time for the confirmed aggregated validated measured data per neighbouring area for imbalance settlement.
Area ID		The unique identification of the area that is the basis for these Aggregated validated measured data.
Series characteristics		The characteristics of this set of validated measured data, such as product and flow direction.
Neighbouring area ID		The unique identification of the neighbouring area that these aggregated measurements are confirmed for.
Product identifier		A code specifying the energy product for the quantity in this observation.
Measure Unit		The unit of measure used for the quantity in this observation.
Resolution		The resolution of this set of aggregated validated measured data expressed as a duration between the start and end of subsequent observations within this set of aggregated validated measured data.
In area ID		The unique identification of the "In area", i.e. the area where the energy is fed into. It is either the area or the neighbouring area.
Out area ID		The unique identification of the "Out area", i.e. the area where the energy is taken from.
Latest update date and time		The latest date and time on which one or more of the volumes of validated measured data included in the aggregation have been updated.

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[8] It is assumed that measured energy from Accounting Points is uniquely dedicated to either electricity or to gas.

Observation		One aggregated validated measured volume as part of this set of aggregated validated measured data.
Position		The ordinal position of this observation in this set of aggregated validated measured data.
Quantity		The aggregated validated measured quantity of energy for this observation.
Delta quantity		The delta quantity in question. The delta quantity is the difference between the quantities reported from the two areas where an energy exchange has taken place. Unless there are corrections in the original reported exchanged quantities from the two areas, 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).
Confirmation of aggregated validated measured data per neighbouring area Additions		Additional information, related to aggregated validated measured data per neighbouring area, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction ID		The unique identification of this set of information as given by the Metered Data Aggregator.
Confirmation of aggregated validated measured data per neighbouring area Async Additions		Additional information, related to aggregated validated measured data per neighbouring area, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Reference to request		Information about the request for this set of aggregated validated measured data which uniquely identifies it.

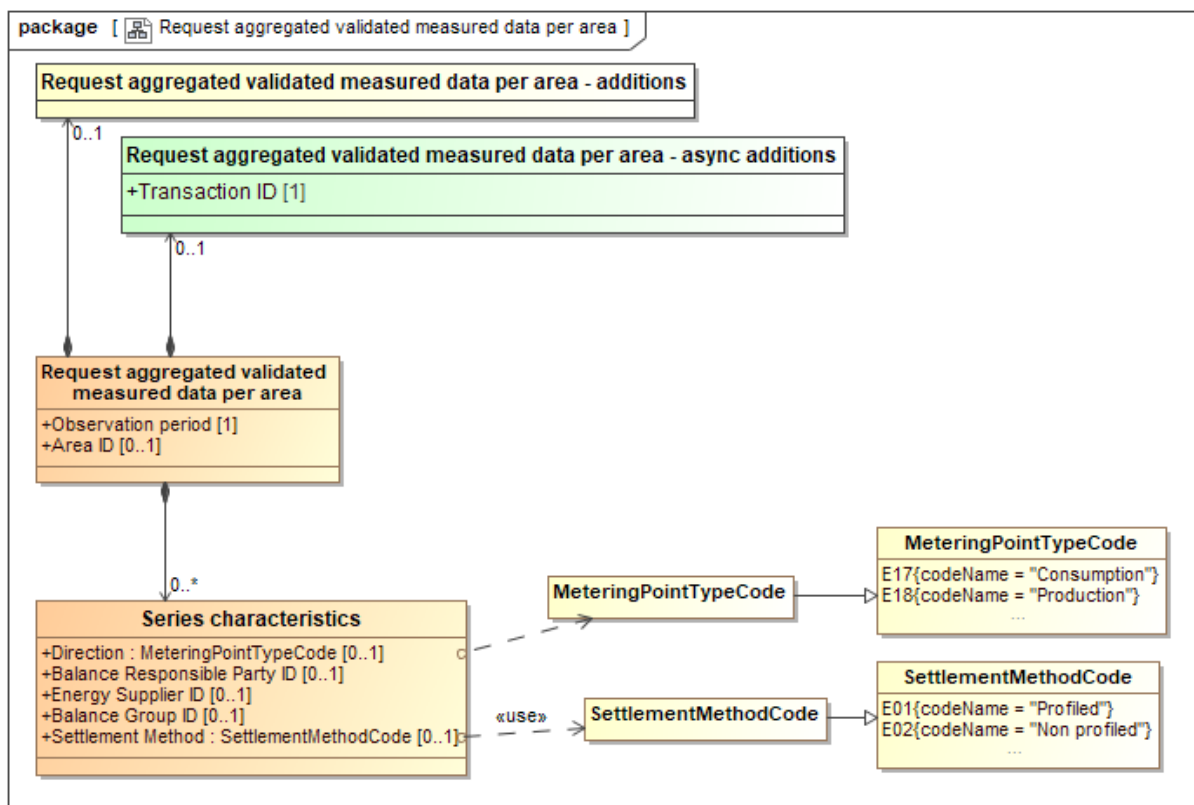## 4.7   Request aggregated validated measured data per area (Class Diagram)

Figure 28 Class diagram: Request aggregated validated measured data for imbalance settlement

Remark:

- Balance Group is only to be used for a request for aggregated validated measured data per area.
- When a Balance Group is specified, there is no need for specifying the Balance Responsible Party.

4.7.1   Element definitions: Request aggregated validated measured data for imbalance settlement

«Business entity» Request aggregated validated measured data per area	Sector[9]	The information set to be sent by an "initiator for requesting aggregated validated measured data per area", i.e. Balance Responsible Party, Energy Supplier and Imbalance Settlement Responsible, to the Metered Data Aggregator in charge of an area, when requesting aggregated validated measured data per area.
Observation Period		The specific period of time for the requested aggregated validated measured data for imbalance settlement.
Area ID		The unique identification of the area that the aggregation is valid for.
Series Characteristics		The characteristics of this set of aggregated validated measured data per area, such as flow direction, Balance Responsible Party and/or Energy Supplier.
Direction		A code specifying the direction of the flow of the energy measured in this Observation period.
Balance Responsible Party ID		The unique identification of the Balance Responsible, here used as an aggregation criterion.
Energy Supplier ID		The unique identification of an Energy Supplier, here used as an aggregation criterion.
Balance Group ID		The unique identification of this Balance Group, here used as an aggregation criterion.
Settlement Method		A code specifying how the energy volumes are treated for settlement for this Accounting Point, such as profiled or non-profiled, here used as an aggregation criterion.
Request aggregated validated measured data per area – additions		Additional information, related to request for Request aggregated validated measured data per area, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Request aggregated validated measured data per area - async additions		Additional information, related to the request for aggregated validated measured data per area, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.

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[9] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Transaction ID		The unique identification of this response as given by the "Initiator for requesting aggregated validated measured data per area".

4.8   Request aggregated validated measured data per neighbouring area (Class Diagram)
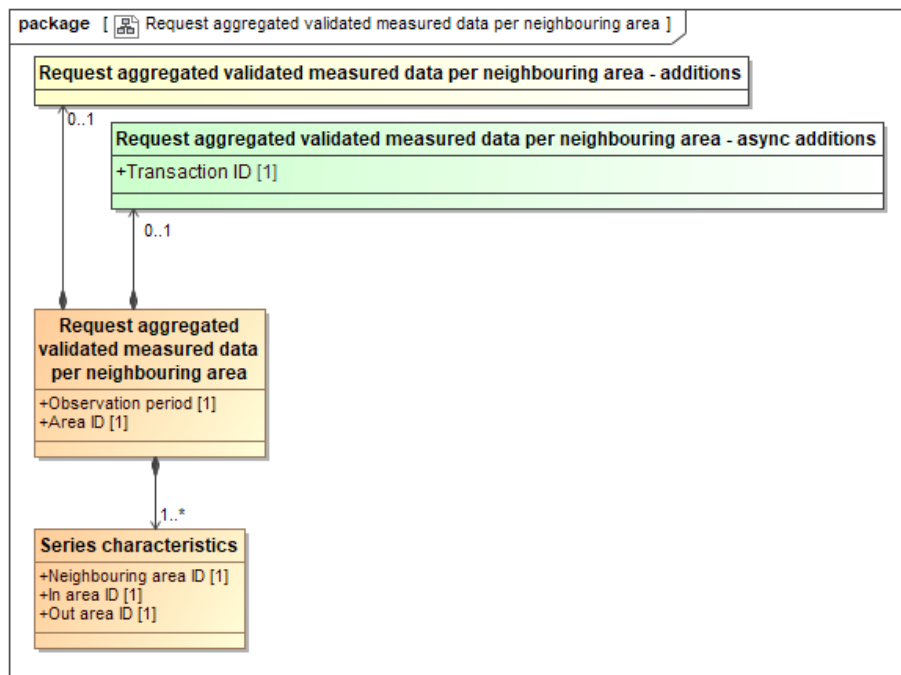

Figure 29 Class diagram: Request aggregated validated measured data per neighbouring area

4.8.1   Element definitions: Request aggregated validated measured data per neighbouring area

«Business entity» Request aggregated validated measured data per neighbouring area	Sector[10]	The information set to be sent by an "Initiator for requesting aggregated validated measured data per neighbouring area", i.e. Imbalance Settlement Responsible or neighbouring Metered Data Aggregator to the Metered Data Aggregator in charge of an area, when requesting aggregated validated measured data per neighbouring area.
Observation Period		The specific period of time for the requested aggregated validated measured data per neighbouring area for imbalance settlement.
Area ID		The unique identification of the area that the aggregation is valid for.

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[10] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Series characteristics		The characteristics of this set of validated measured data, such as product and flow direction.
Area ID		The unique identification of the neighbouring area that these aggregated measurements are validated for.
In area ID		The unique identification of the "In area", i.e. the area where the energy is to be put.
Out area ID		The unique identification of the "Out area", i.e. the area where the energy is taken from.
Request aggregated validated measured data per neighbouring area - additions		Additional information, related to request aggregated validated measured data per neighbouring area, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Request aggregated validated measured data per neighbouring area - async Additions		Additional information, related to request aggregated validated measured data per neighbouring area, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Transaction ID		The unique identification of this response as given by the "Initiator for requesting aggregated validated measured data per neighbouring area".

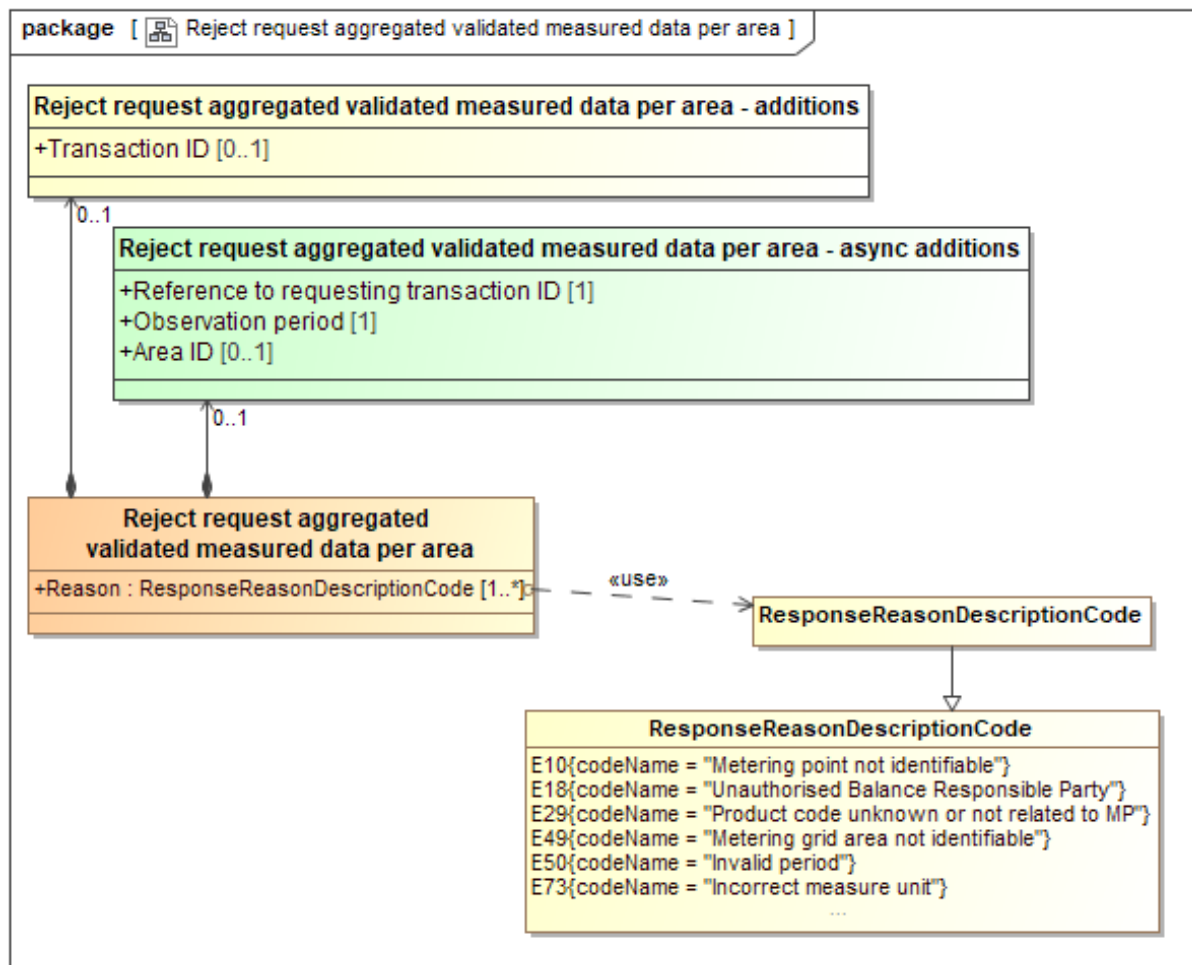## 4.9   Reject request aggregated validated measured data per area (Class Diagram)

Figure 30 Class diagram: Reject request aggregated validated measured data per area

4.9.1   Element definitions: Reject request aggregated validated measured data per area

«Business entity» Reject request aggregated validated measured data per area	Sector[11]	The response sent by a Metered Data Aggregator to the "Initiator for requesting aggregated validated measured data per area" when the Metered Data Aggregator is not in the position to respond with the requested aggregated validated measured data.
Reason		A code specifying (one of) the reason(s) for this rejection.

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[11] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Reject request aggregated validated measured data per area - additions		Additional information, related to the rejection of a request for aggregated validated measured data per area, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction ID		The unique identification of this response as given by the Metered Data Aggregator.
Reject request aggregated validated measured data per area - async additions		Additional information, related to the rejection of a request for aggregated validated measured data per area, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Reference to requesting transaction ID		Information about the request leading to this response, which uniquely identifies it.
Observation Period		The specific period of time for the requested aggregated validated measured data for imbalance settlement.
Area ID		The unique identification of the area where the aggregated validated measured data for imbalance settlement was requested for.

4.10 Reject request aggregated validated measured data per neighbouring area (Class Diagram)
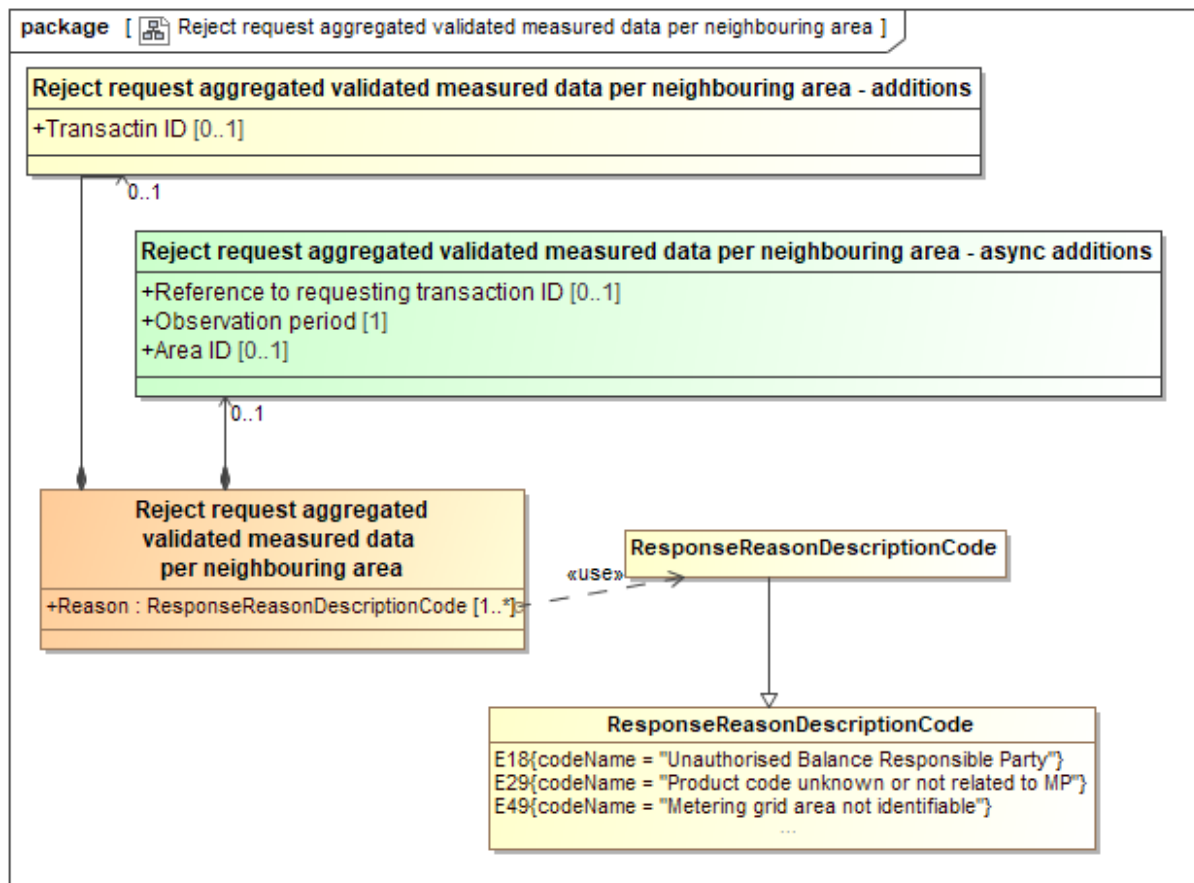

Figure 31 Class diagram: Reject request aggregated validated measured data per neighbouring area

4.10.1 Element definitions: Reject request aggregated validated measured data per neighbouring area

«Business entity» Reject request aggregated validated measured data per neighbouring area		The response sent by a Metered Data Aggregator to the "Initiator for requesting aggregated validated measured data per neighbouring area", i.e. Imbalance Settlement Responsible or neighbouring Metered Data Aggregator, when the Metered Data Aggregator is not in the position to respond with the requested aggregated validated measured data.
Reason		A code specifying (one of) the reason(s) for this rejection.
Reject request aggregated validated measured data per neighbouring area - additions		Additional information, related to the rejection of a request for aggregated validated measured data per neighbouring area, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Transaction ID		The unique identification of this response as given by the Metered Data Aggregator.
Reject request aggregated validated measured data per neighbouring area - async Additions		Additional information, related to the rejection of a request for aggregated validated measured data per neighbouring area, needed when using asynchronous communication. This is however not used when specifying the payload in the ebIX® model but is used when specifying the document in the ebIX® model.
Reference to requesting transaction ID		Information about the request leading to this response, which uniquely identifies it.
Observation Period		The specific period of time for the requested aggregated validated measured data for imbalance settlement.
Area ID		The unique identification of the area where the aggregated validated measured data for imbalance settlement was requested for.

Appendix A.   Header and Context information for the class diagrams

A.1. Header and Context Information attributes definitions

Class/attribute	Sector[12]	Description
Header and Context Information		The set of information specifying the information to be added to this payload to enable the exchange as a document.
Document Type		A code representing the document type used for the exchange of this set of information.
Business Reason		A code representing the business reason for the exchange of this set of information.
Ancillary Business Process Role		A code representing the market role taking part in this exchange together with the Responsible Role, responsible for the process/this exchange.

A.2. Validated measured data for imbalance settlement
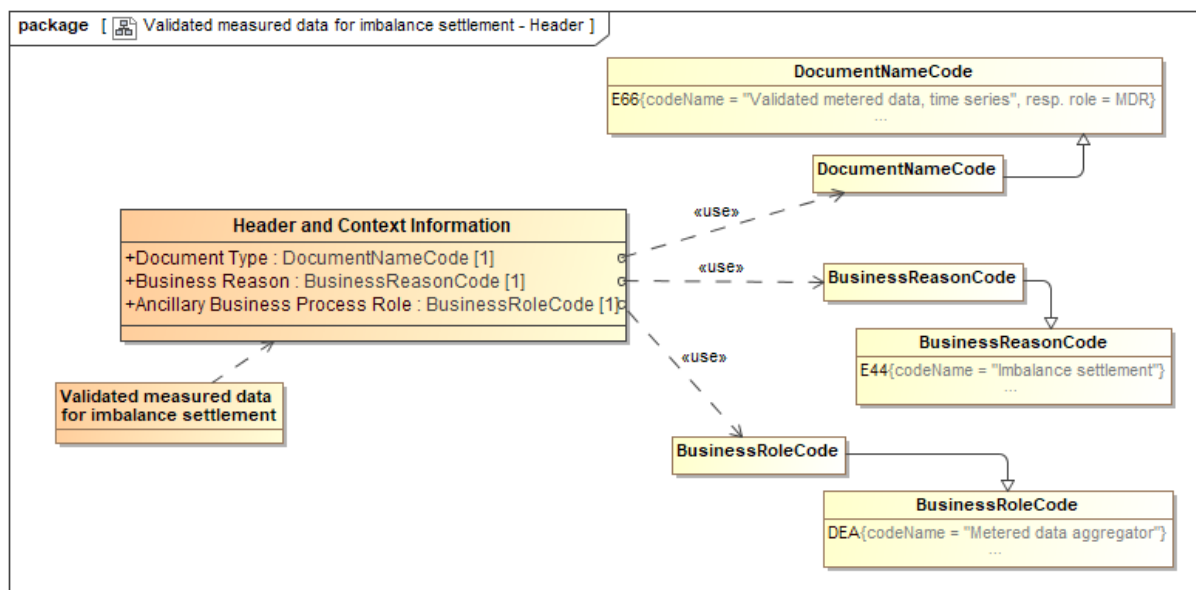
Figure 32 Class diagram: Header and Context Information: Validated measured data for imbalance settlement

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[12] It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

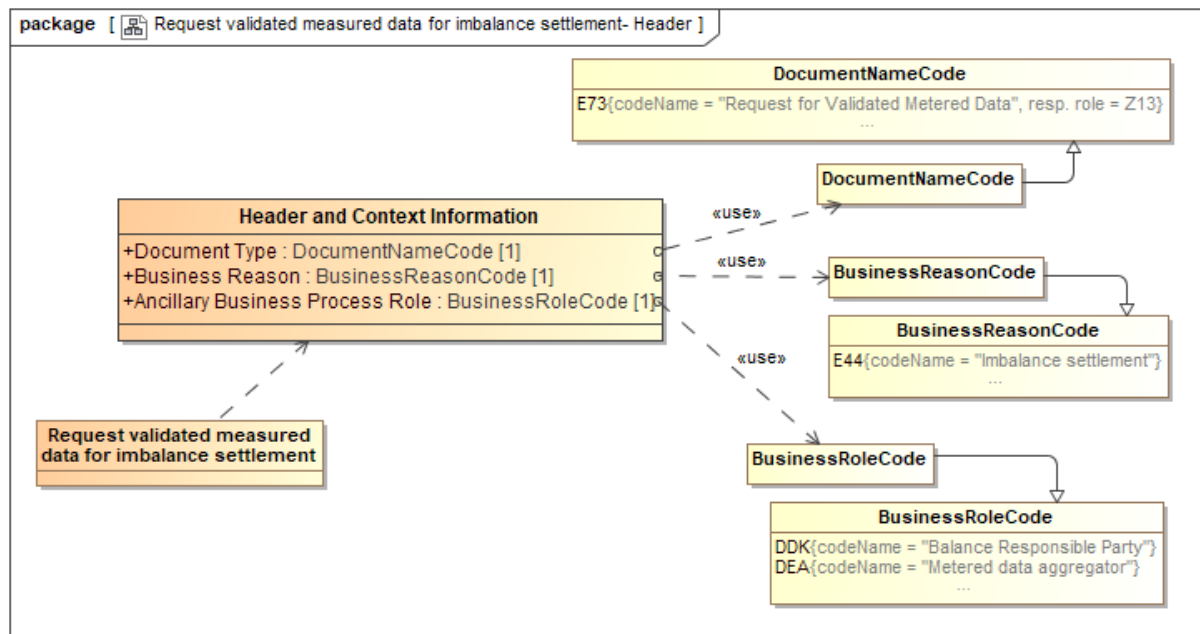## A.3.   Request validated measured data for imbalance settlement

Figure 33 Class diagram: Header and Context Information: Request validated measured data for imbalance settlement

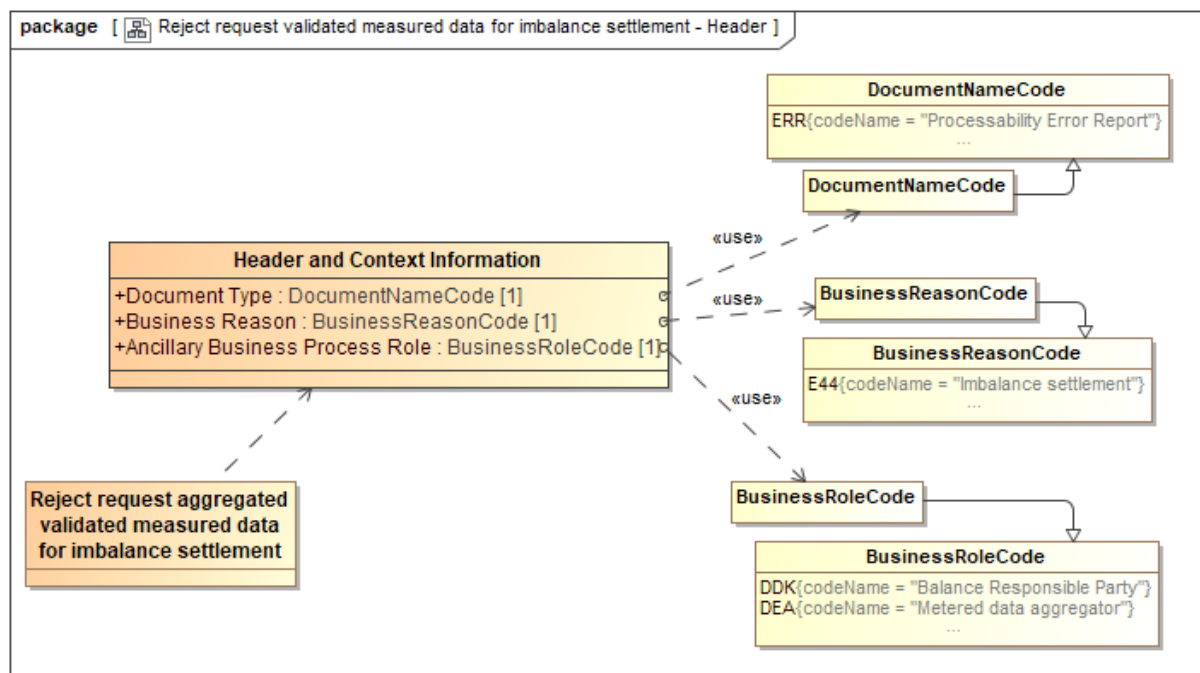## A.4.   Reject request validated measured data for imbalance settlement

Figure 34 Class diagram: Header and Context Information: Reject request validated measured data for imbalance settlement

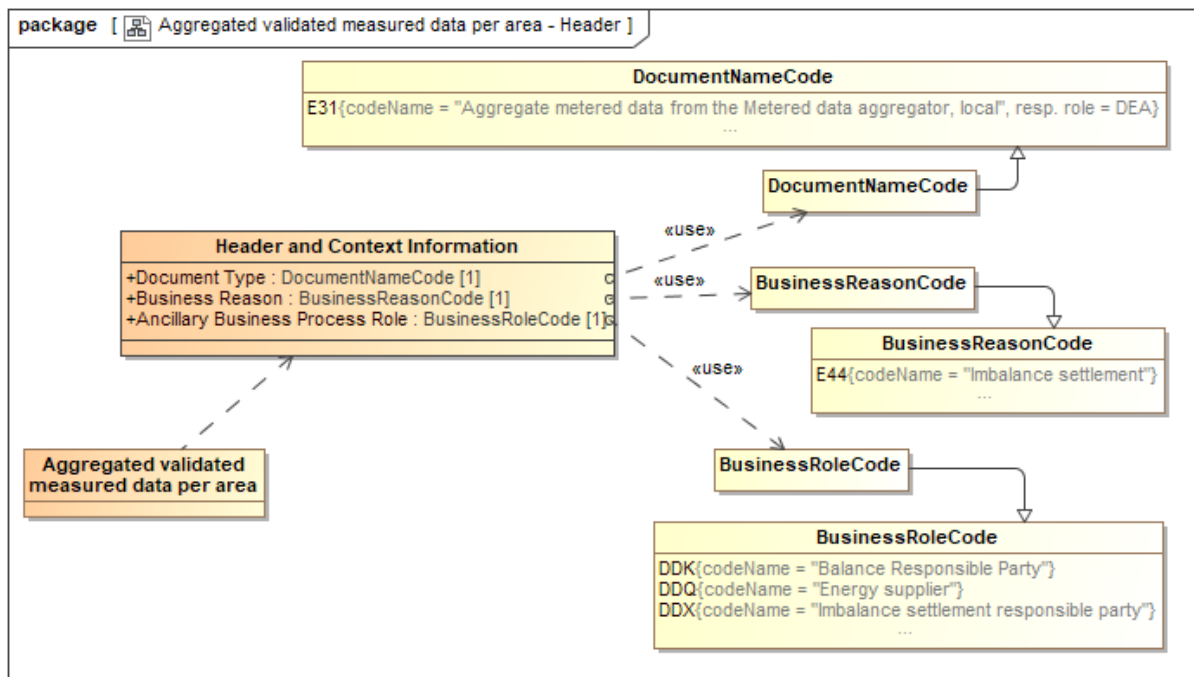## A.5. Aggregated validated measured data per area

Figure 35 Class diagram: Header and Context Information: Aggregated validated measured data per area

A.6. Aggregated validated measured data per neighbouring area
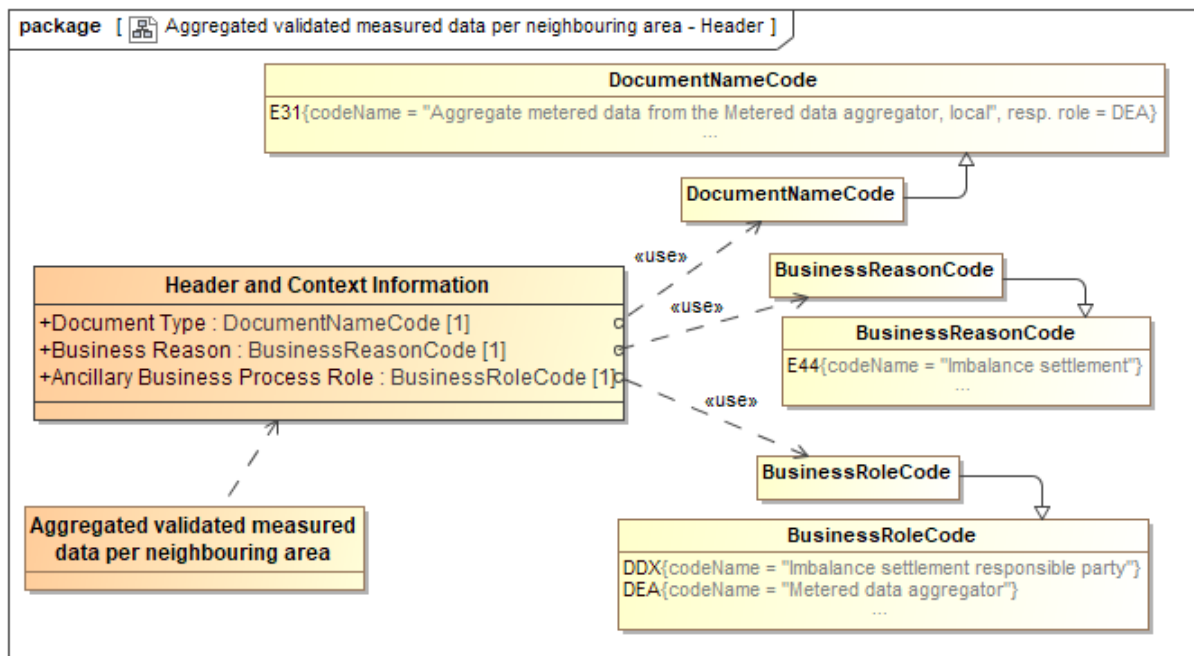
Figure 36 Class diagram: Header and Context Information: Aggregated validated measured data per neighbouring area

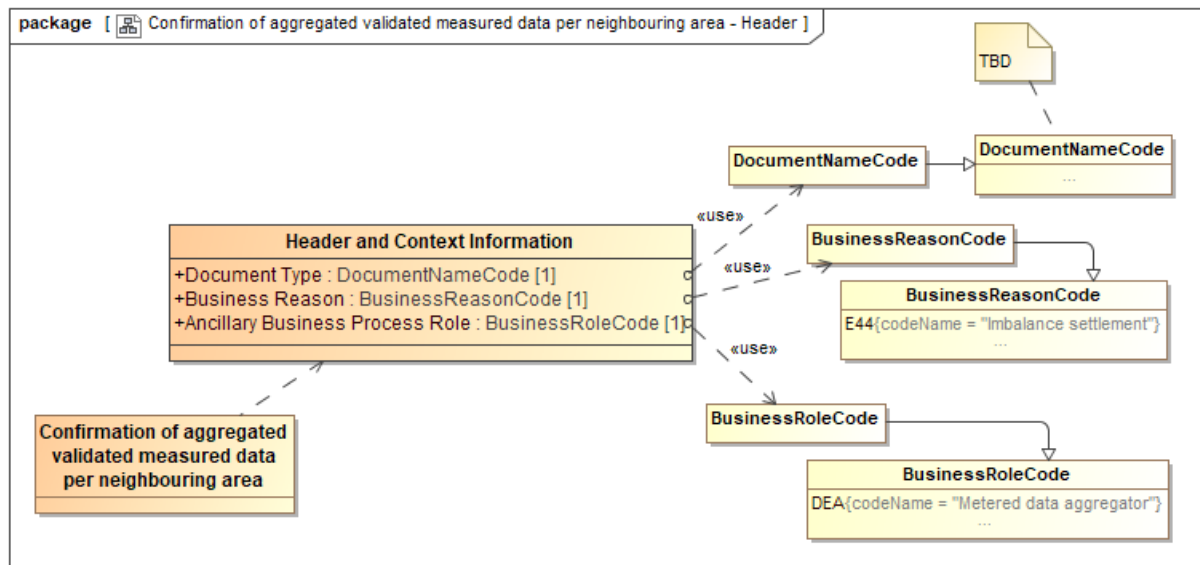## A.7.   Confirmation of aggregated validated measured data per neighbouring area

Figure 37 Class diagram: Header and Context Information: Confirmation of aggregated validated measured data per neighbouring area

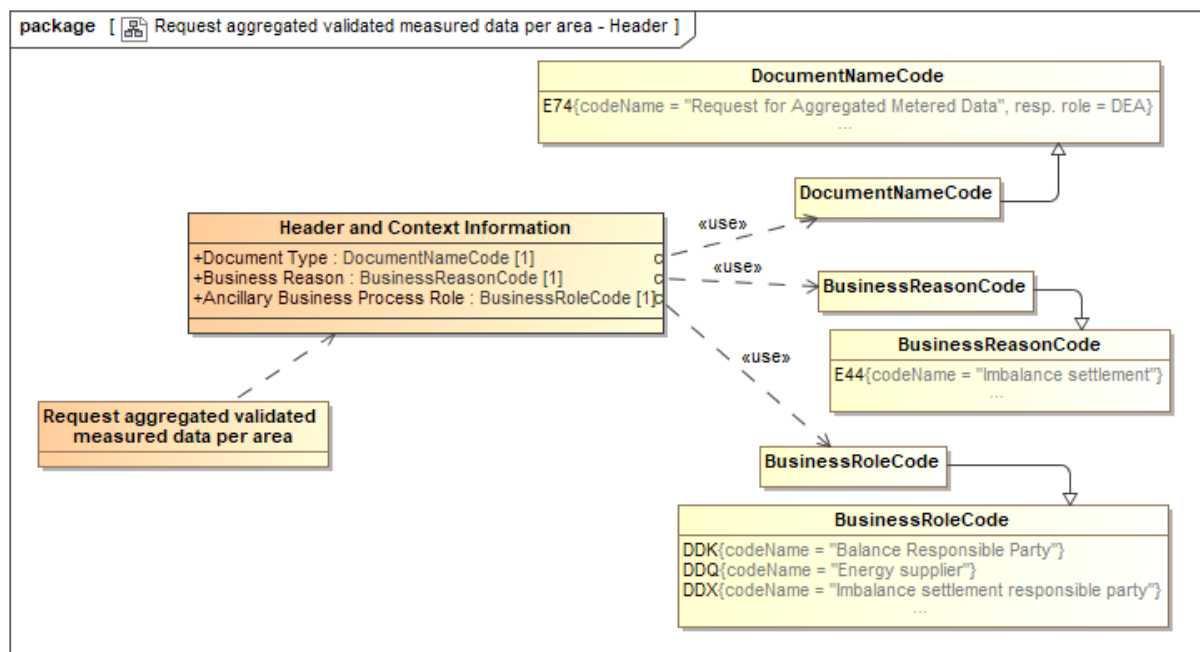## A.8.   Request aggregated validated measured data per area

Figure 38 Class diagram: Header and Context Information: Request aggregated validated measured data per area

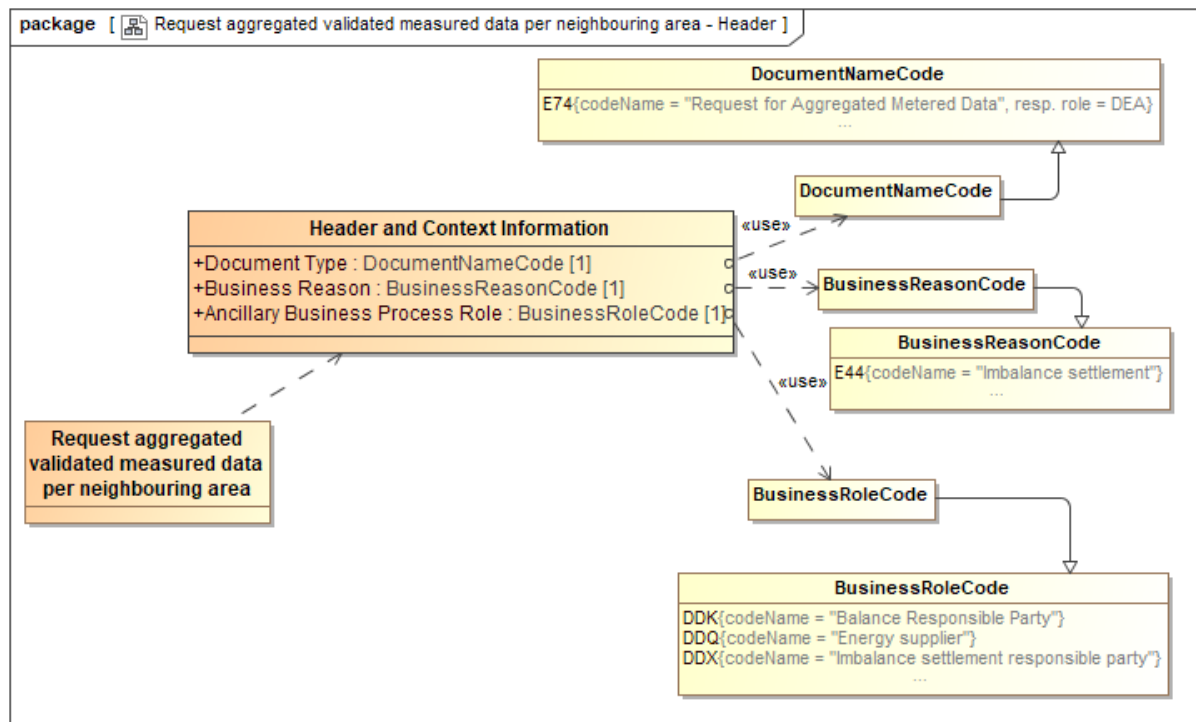## A.9.　Request aggregated validated measured data per neighbouring area

Figure 39 Class diagram: Header and Context Information: Request aggregated validated measured data per neighbouring area

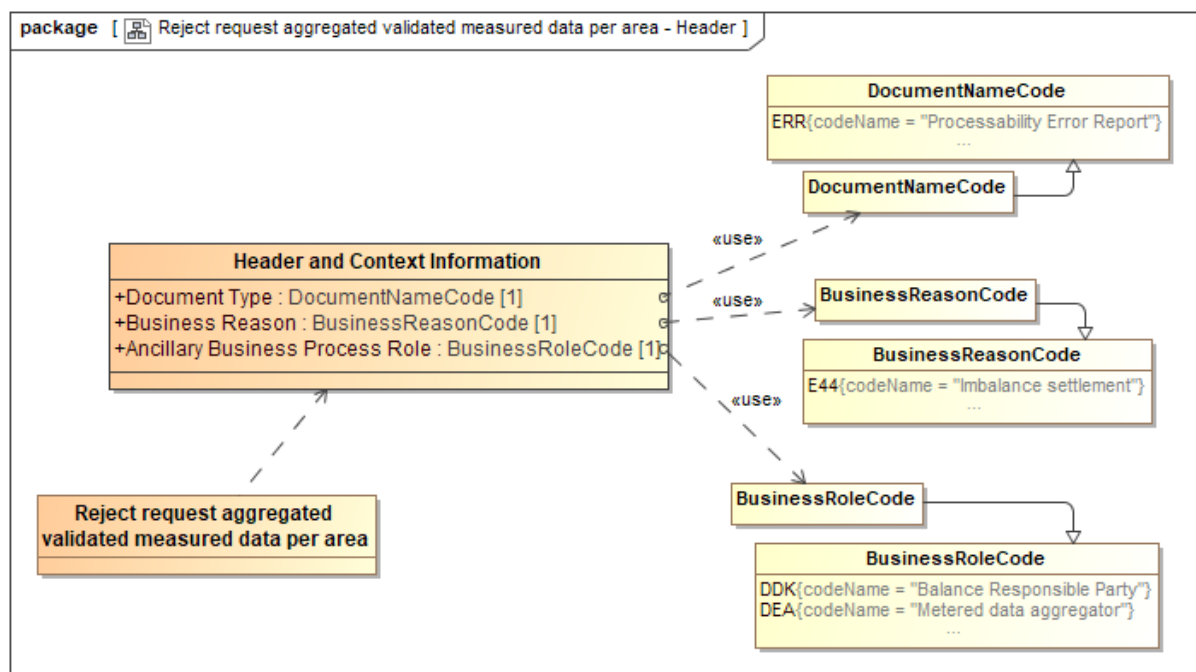## A.10. Reject request aggregated validated measured data per area

Figure 40 Class diagram: Header and Context Information: Reject request aggregated validated measured data per area

A.11. Reject request aggregated validated measured data per neighbouring area
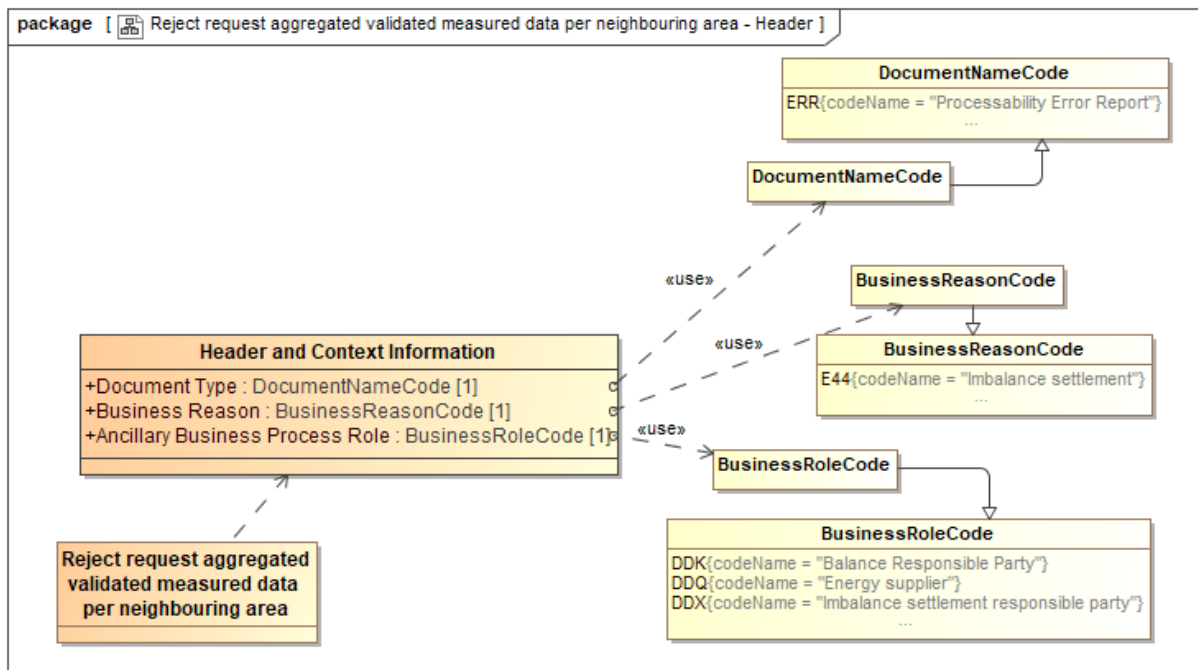

Figure 41 Class diagram: Header and Context Information: Reject request aggregated validated measured data per neighbouring area