



Business Requirements for Measure for Billing

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A. About this document

This document is a Business Requirements Specification (BRS) for the process to exchange measured and validated data for billing energy and grid cost, both for electricity and for gas, as part of the overall exchange of measured data in the European energy market.

In this BRS we use business terms for the actors, and we map them to the terms used in the Harmonised Role Model from ENTSO-E, ebIX® and EFET [3]. A party acts in the capacity of a certain role.

As a general introduction ebIX® has published a separate document “Introduction to ebIX® Business Requirements and Business Information Models” [4]. The introduction also includes the generic model elements that are not specific for a business process.

In line with UN/CEFACT Modelling Methodology version 2 (UMM-2) ebIX® defines the business requirements before starting the actual modelling. These requirements have been specified by the ebIX® Business Group (EBG) and are the basis for the Business Information Model, which is published in a separate document.

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

These Business Requirements, as part of the ebIX® Model for the European Energy Market, see [4] Introduction to ebIX® Business Requirements and Business Information Models (www.ebix.org), are made in a project with the members of EBG, see www.ebix.org. For comments to the document please contact the 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] UML Profile for UN/CEFACT's Modelling Methodology (UMM), Foundation Module, 2.0. ([UN/CEFACT Modelling Methodology \(UMM\)](#))

- [3] The Harmonized Role Model (for the Electricity Market) by ebIX®, ENTSO-E, and EFET (www.ebix.org).

A.2.2. ebIX® Documents

- [4] Introduction to ebIX® Business Requirements and Business Information Models (www.ebix.org)
- [5] Recommended Identification Schemes for the European Energy Market (www.ebix.org)
- [6] ebIX® code lists (www.ebix.org)
- [7] “ebIX® BRS for Validated measured data” and other measure BRSs (www.ebix.org)

A.3. Main changes since last version

Old	New	Clarification	Date
2r1-	3.0.A	Complete recast of the document.	20210907

1. Business Requirements View: Measure for Billing

1.1. Overview

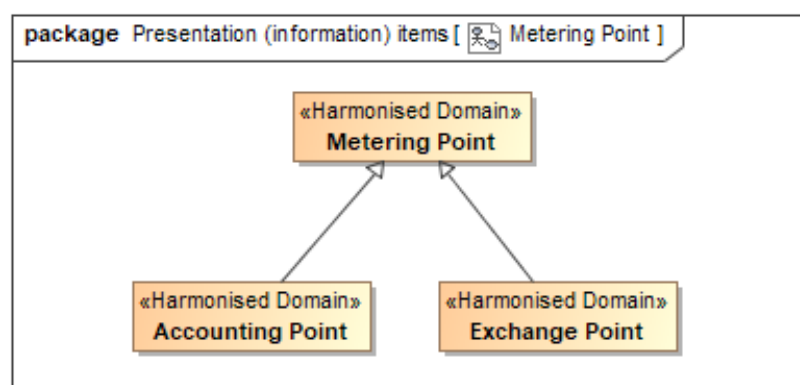
This BRS regards customer related validated measured data for billing of Accounting Points and for billing related to Exchange Points between grids (Metering Grid Areas). Customer privacy protection is supposed to be based on GDPR.

The basis for this BRS is validated measured data that have been exchanged from a Validator (harmonised role: Metered Data Responsible) to the Metered Data Administrator, who is responsible for distribution of the validated measured data to all entitled parties. Normally, validated measured data for billing for Accounting Points are always sent to the Energy Supplier and in addition, depending on national rules, to the Grid Company and Billing Calculator. Also, validated measured data for billing for Exchange Points may be sent to the Grid Companies connected to the Exchange Point.

If applicable, validated measured data for billing of an Accounting Point will also be sent to Consented Parties.

1.2. Basic assumptions

- Exchange of single meter reads, such as opening reads after change of supplier, etc., are documented in BRS for Determine Meter Read.
- 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.
- The conventions for how to use Flow Direction are:
 - The direction is seen from the grid point of view. A flow from the Accounting Point or Exchange Point into the grid is defined as production and a flow from the grid into the Accounting Point or Exchange Point is defined as consumption.

- An Accounting Point relates to only one grid and this relation is defined in master data.
- Exchange Points are linked to multiple grids, hence the “reporting grid” (the point of view) must be defined in the information exchange.

1.3. Measure for Billing (Business Process UseCase)

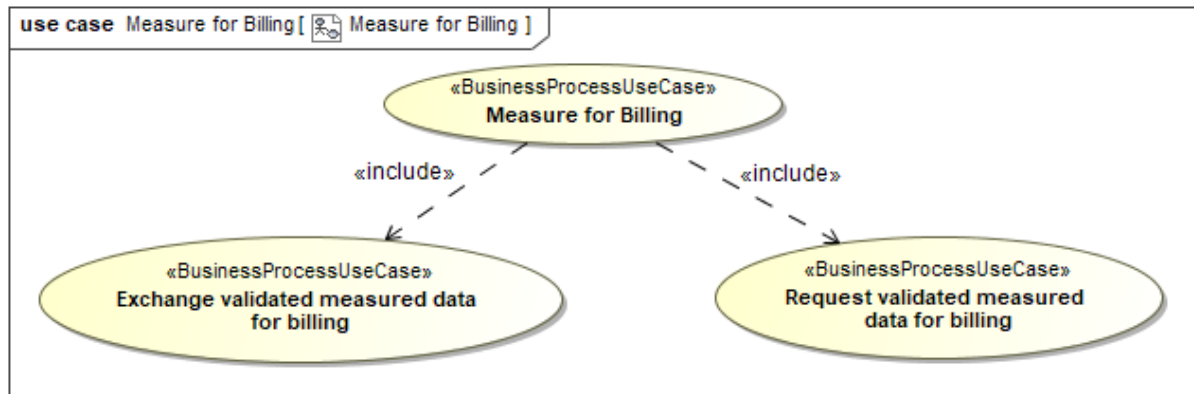


Figure 1 Business Process UseCase: Measure for Billing

1.3.1. Description

UseCase description: Measure for Billing	
definition	This is the process where validated measured data for a Metering Point for the process of billing (energy and/or grid cost) is provided to the Energy Supplier, Grid Company and Billing Calculator, and if applicable to the Consented Party.
beginsWhen	This process is scheduled or requested.
preCondition	Validated measured data for billing for the Metering Point are available.
endsWhen	The validated measured data for billing for the Metering Point have been sent to the recipient(s).
postCondition	Energy Supplier and/or the Grid Company and/or Billing Calculator can use the validated measured data for billing for the Metering Point. If applicable the Consented Party has received the validated measured data for billing for the Metering Point.
Exceptions	For requests, validated measured data for billing for the Metering Point may be unavailable.
actions	Not applicable at this level.

1.3.2. Exchange Validated measured data for billing for a Metering Point (Business Process UseCase)

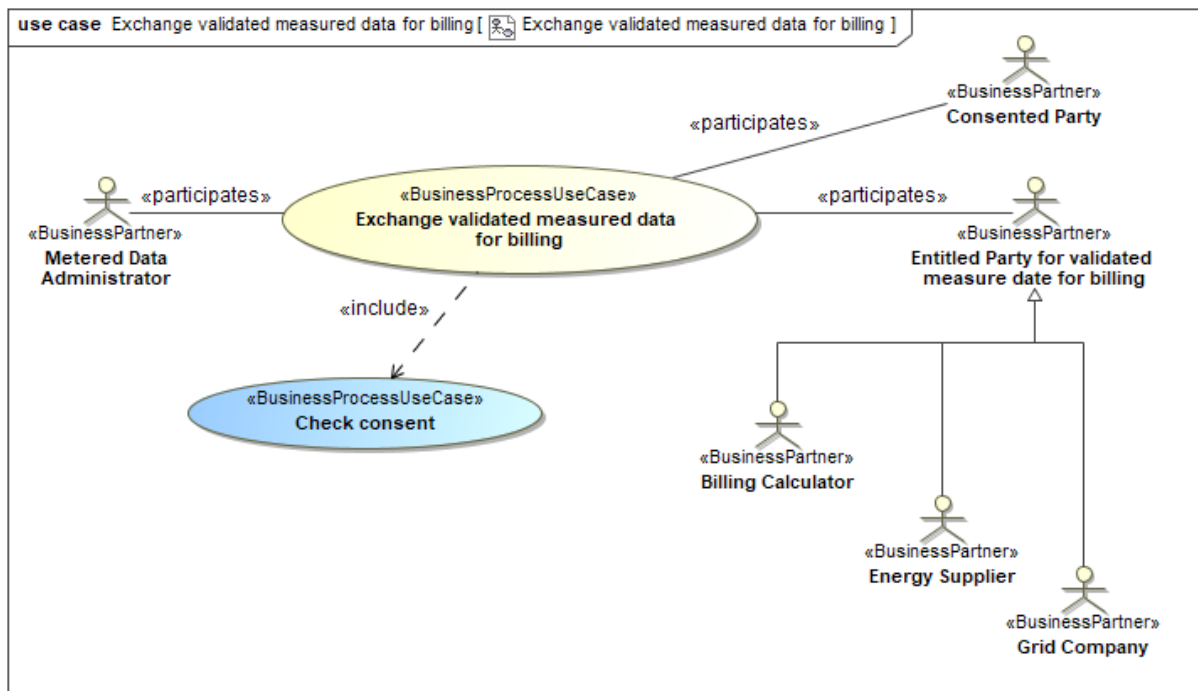


Figure 2 Business Process UseCase: Exchange validated measured data for billing for a Metering Point

1.3.2.1. Description

UseCase description: Exchange validated measured data for billing for a Metering Point	
definition	<p>In this process the Metered Data Administrator sends validated measured data for billing for the Metering Point to the Energy Supplier, the Grid Company and the Billing Calculator.</p> <p>In addition the validated measured data for billing for the Metering Point may be sent to Consented Parties after checking their consent.</p>
beginsWhen	When the Metered data administrator has received new validated measured data for billing for the Metering Point or is scheduled to.
preCondition	<p>The Metered Data Administrator has available validated measured data for billing for the Metering Point.</p> <p>The Metered Data Administrator knows the Energy Supplier, Grid Company and Billing Calculator.</p>
endsWhen	When the Energy Supplier, the Grid Company, the Billing Calculator and if present the Consented Parties have received the validated measured data for billing for the Metering Point.

postCondition	Validated measured data for billing for the Metering Point are available at the Energy Supplier, the Grid Company, the Billing Calculator and if present the Consented Parties.
exceptions	<p>The validated measured data for billing for the Metering Point may also be exchanged directly with the Customer. By lack of (national) rules, this is not modelled.</p> <p>If the consent check fails, no data is sent to the relevant Consented Party.</p>
actions	See 1.3.2.2

1.3.2.2. Business Process

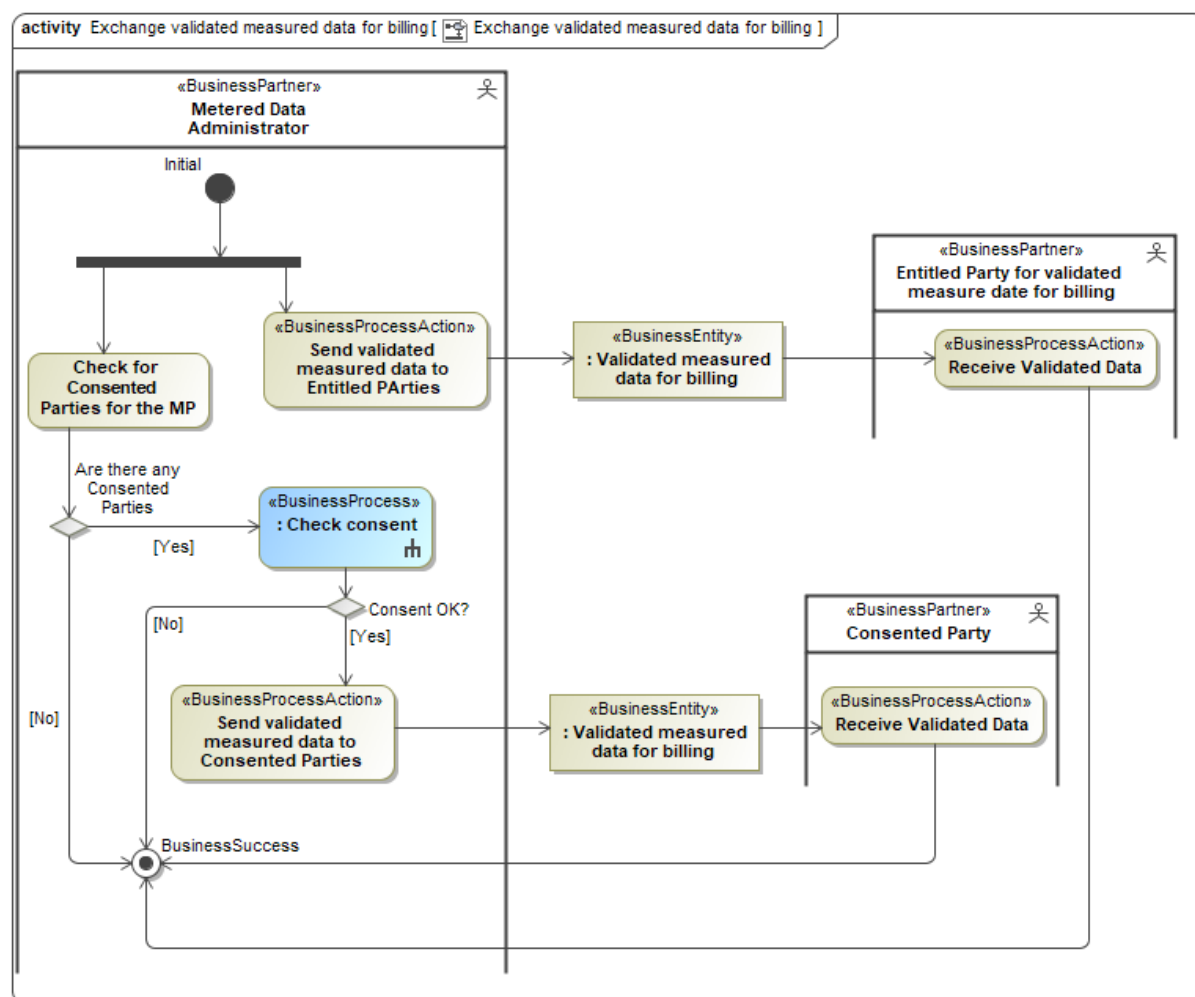


Figure 3 Business Process: Exchange validated measured data for billing

1.3.3. Request validated measured data for billing for a Metering Point (Business Process UseCase)

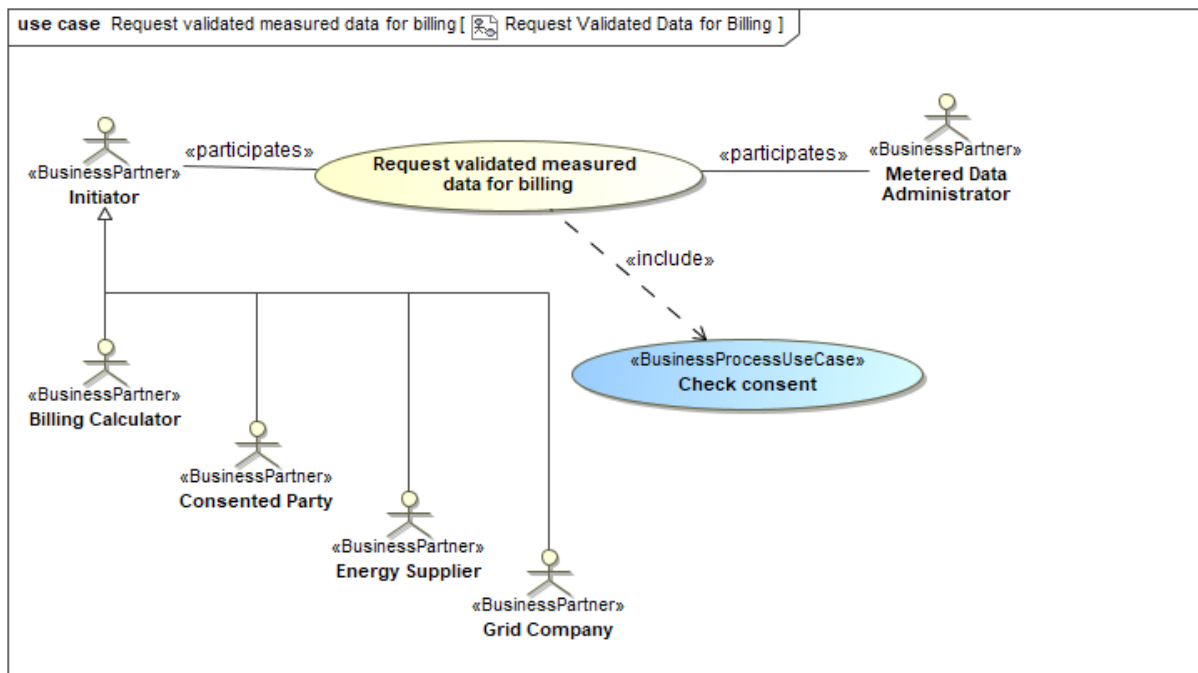


Figure 4 Business Process UseCase: Request validated measured data for billing for a Metering Point

1.3.3.1. Description

UseCase description: Request validated measured data for billing a the Metering Point	
definition	<p>The Initiator (Energy Supplier, Grid Company, Billing Calculator or Consented Party) requests validated measured data for billing for a Metering Point from the Metered Data Administrator.</p> <p>If the request is from a Consented Party, the consent must be checked by the Metered Data Administrator.</p>
beginsWhen	The Initiator has a need for the validated measured data for billing for the Metering Point.
preCondition	<p>The Initiator is authorised or consented to request the validated measured data for the Metering Point.</p> <p>The Metered Data Administrator knows to which data the Initiator is entitled.</p>
endsWhen	The Metered Data Administrator has sent the validated measured data for billing for the Metering Point to the Initiator
postCondition	The Initiator has the requested validated measured data for billing for the Metering Point.

exceptions	The request has been rejected (no data available).
actions	See 1.3.3.2

1.3.3.2. Business Process

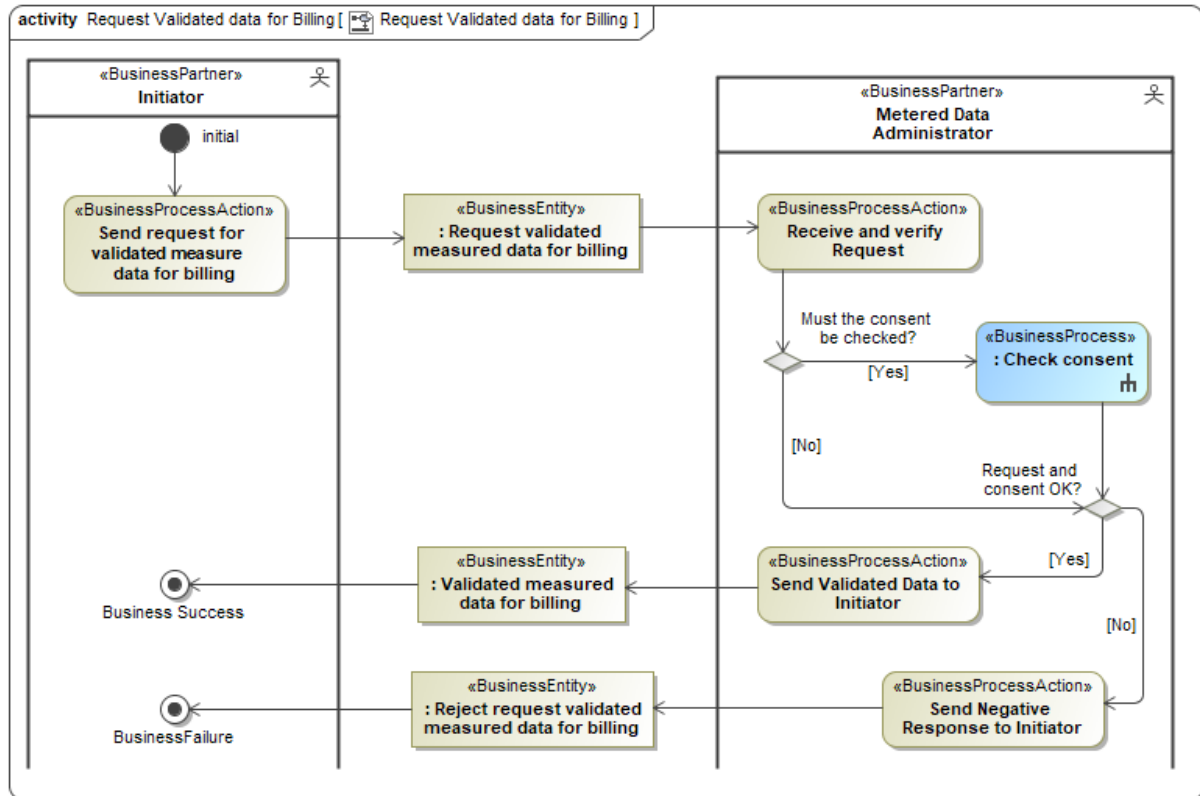


Figure 5 Business Process: Request validated measured data for billing for a Metering Point

1.4. Business Partner View

1.4.1. Business Partners for validated measured data for billing

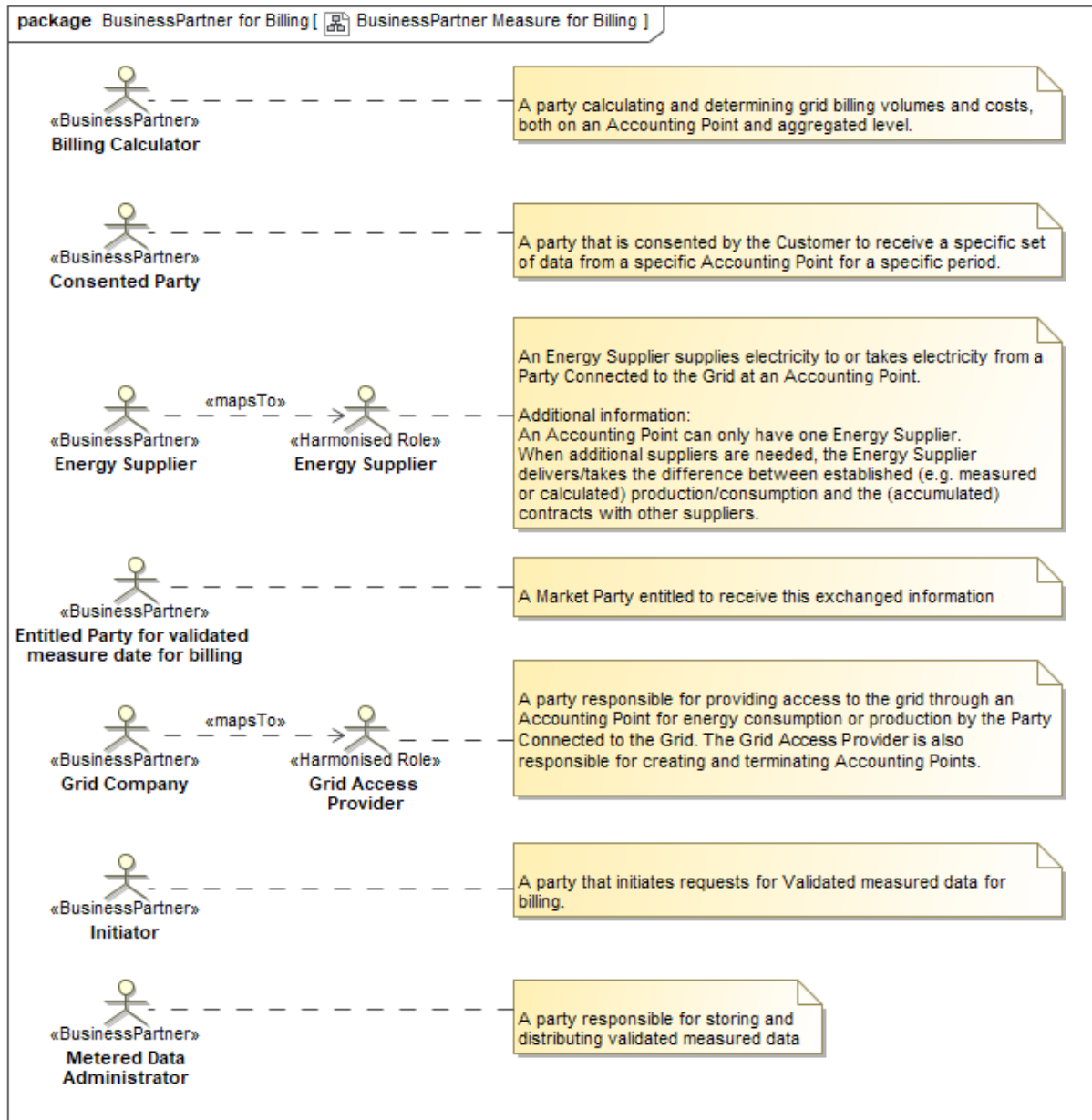


Figure 6 Business Partners: Validated measured data for billing

1.5. Business Entity View

In the business entity view the principles as described in the Introduction to ebIX® Business Requirements and Business Information Models (www.ebix.org), [4], are used. See paragraph 1.2.1.1.3 of that document.

1.5.1. Validated measured data for billing (Class Diagram)

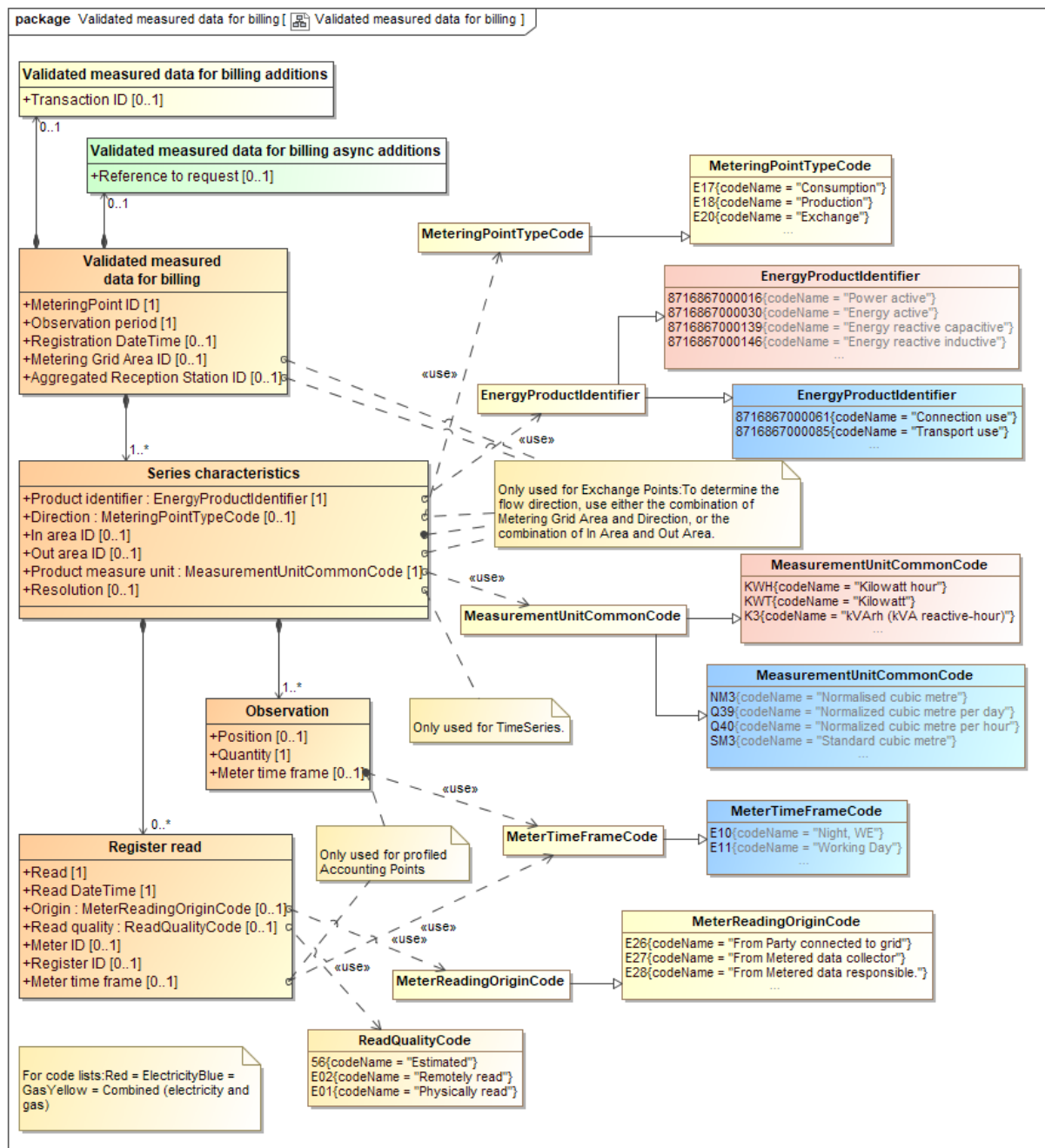


Figure 7 Class diagram: Validated measured data for billing

Remarks for billing energy:

- This specification may be used in case of billing energy based on detail period pricing (as for instance in case of pricing based on prices from a Market Operator such as exchange prices). But it may also be used for periodic volumes derived from meter reading (e.g. periodic billing household customer).

- In the class “Validated measured data for billing”, the Registration date/time reflects the moment of validation and registration of the timeseries into the database of the Metered Data Responsible after validation; this information can be used for “versioning” of the measured data.
- In the class Register read, the Read DateTime reflects the moment of registration of the meter read from the register as added to this by the Metered Data Collector or as defined by national rules; this information is used as a timestamp for data collection.
- In some countries the Energy Supplier may also charge for power (i.e. Estonia). When this proves to be the case in several countries, these products will be added to the list of products measured.

1.5.1.1. Element definitions: Validated measured data for billing

Attribute	Sector ¹	Definition
Validated measured data for billing		The information set sent by a Metered Data Administrator, responsible for the distribution of validated measured data for billing for a Metering Point, in order to enable the billing of energy or grid cost for this Metering Point. The validated measured data for billing may also be sent to a Consented Party consented to these validated measured data for billing.
Metering Point ID		The unique identification of the Metering Point to which the validated measured data for billing are attributed.
Observation period		The specific period of time the validated measured data for billing have been measured, calculated or estimated for.
Registration DateTime		The date and time of the validation and registration of this set of validated measured data for billing.
Metering Grid Area ID		The unique identification of the Metering Grid Area, linked to the Exchange Point, where these measurements are validated for.
Aggregated Reception Station ID	Gas	The unique identification of the Aggregated Reception Station, linked to the Exchange Point, where these measurements are validated for.
Series characteristics		The characteristics of this set of validated measured data, i.e., the product and flow direction.

¹ It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

Product identifier		A code specifying the energy product for the reads and/or the quantities in this set of validated measured data.
Direction		<p>A code specifying the direction of the flow of the energy measured in this Observation period.</p> <p>A flow from the Exchange Point into the Metering Grid Area is defined as production and a flow from the Metering Grid Area into the Exchange Point is defined as consumption.</p>
In area ID		The unique ID of the Metering Grid Area into where the energy flow is from the Exchange Point.
Out area ID		The unique ID of the Metering Grid Area from where the energy flow is into the Exchange Point.
Product measure unit		The unit of measure used for the quantities in this set of validated measured data.
Resolution		<p>The resolution is the time between two observations, leading to the number of observations in this timeseries (calculated from the Observation Period divided by the Resolution).</p> <p>The Observation Period must contain a whole number of observations as derived from the resolution.</p> <p>The resolution is expressed in compliance with ISO 8601 in the following format:</p> <p style="text-align: center;">PnYnMnDTnHnMnS.</p> <p>For example PT15M for 15 minutes resolution.</p>
Register read		A read from the register of the Meter of this Metering point and characteristics of the read. This read is at the basis of the validated measured data for billing in the Observation.
Read ²		The value as read from or calculated for the register, for this Observation period.
Read DateTime		The timestamp of the moment in time when the value was registered in the Register of the Meter or the value was calculated for.
Origin		A code specifying the role of the party delivering the Read.

² If the Register read was missing from the “collected data”, a replacement value shall be sent, where Origin shall be “**E28** From Metered Data Responsible” and Read Quality shall be “**56** Estimated”.

Read quality		The quality of this read, such as estimated, remotely read or physically read.
Meter ID		The unique identification of the Meter, linked to the Exchange Point, which contains this register that has been read.
Register ID		The unique identification of the Register within the Meter, where this data has been read from or is estimated for.
Meter time frame	Elec.	A code specifying the Meter Time Frame for the quantity in question.
Observation		One validated measured value within a timeseries.
Position		The ordinal position of this Observation in this Observation Period for this set of validated measured data.
Quantity		The validated quantity of energy for this Observation.
Meter time frame		A code specifying the Meter Time Frame for the quantity in question.
Validated measured data for billing additions		Additional information, related to validated measured data for billing, 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 Administrator.
Validated measured data for billing async additions		Additional information, related to these validated measured data for billing, 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 for billing, which uniquely identifies it.

1.5.2. Request validated measured data for billing (Class Diagram)

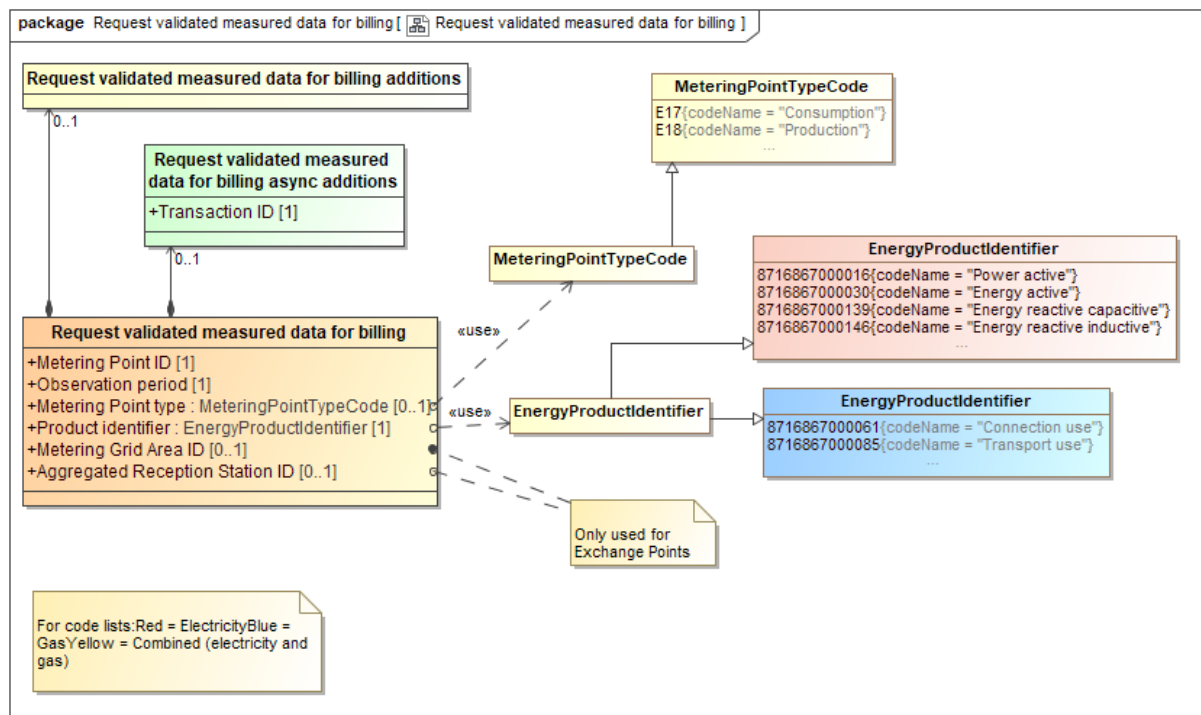


Figure 8 Class diagram: Request validated measured data for billing

1.5.2.1. Element definitions: Request validated measured data for billing

Attribute	Sector ³	Definition
Request validated measured data for billing		The information set to be sent when requesting validated measured data for billing at a Metering Point.
Metering Point ID		The unique identification of the Metering Point from which the validated measured data for billing are requested.
Observation period		A specific period of time describing the duration of the requested set of validated measured data.
Metering Point type		A code specifying the direction of the active energy flow in this Metering Point, such as consumption or production. This type can also indicate that the request regards an Exchange Point.
Product identifier		A code specifying the energy product for the quantity in this time series.

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

Metering Grid Area ID		The unique identification of the Metering Grid Area, linked to the Exchange Point, where these measurements are validated for.
Aggregated Reception Station ID		The unique identification of the Aggregated Reception Station, linked to the Exchange Point, where these measurements are validated for.
Request validated measured data for billing additions		Additional information related to Request validated measured data for billing, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
none		
Request validated measured data for billing async additions		Additional information, related to Request validated measured data for billing, 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 set of information as given by the Initiator.

1.5.3. Reject request validated measured data for billing (Class Diagram)

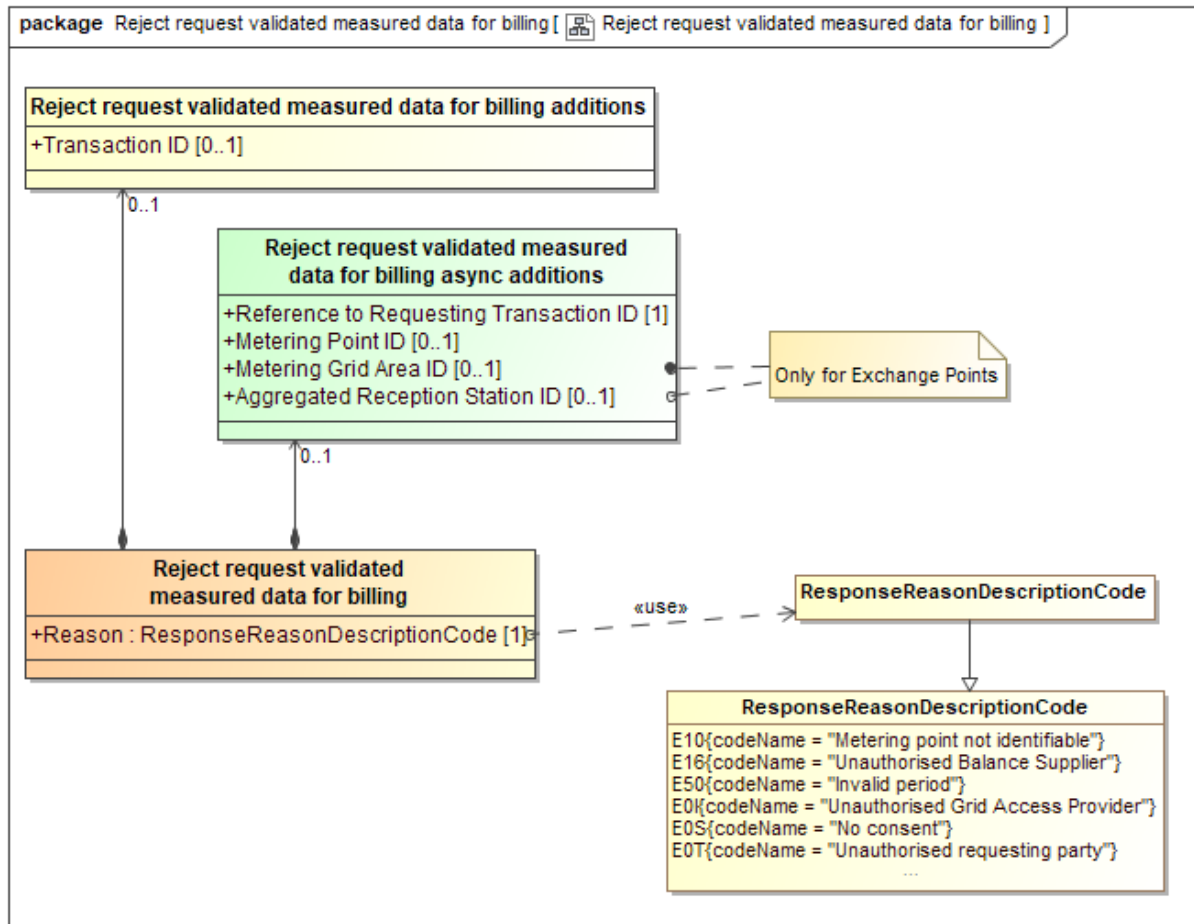


Figure 9 Class diagram: Reject request validated measured data for billing

1.5.3.1. Element definitions: Reject request validated measured data for billing

Attribute	Sector ⁴	Definition
«Business entity» Reject request validated measured data for billing		The information set to be sent when rejecting a request for validated measured data for billing.
Reason		A code specifying the reason for the rejection of the request for validated measured data for billing.

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

Reject request validated measured data for billing additions		Additional information related to the request for validated measured data for billing 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 rejection of request for validated measured data for billing.
Reject request validated measured data for billing async additions		Additional information, related to the rejection of the request for validated measured data for billing, 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		The unique identification of the rejected request for validated measured data for billing as given by the Energy Supplier, Grid Company or Consented Party when acting as the requesting business partner.
Metering Point ID		The unique identification of the Metering Point (Accounting Point or Exchange Point) from which the validated measured data for billing are requested.
Metering Grid Area ID		The unique identification of the Metering Grid Area, linked to the Exchange Point, where these measurements are validated for.
Aggregated Reception Station ID		The unique identification of the Aggregated Reception Station, linked to the Exchange Point, where these measurements are validated for.

Appendix A. Header and Context information for the class diagrams

A.1. Header and Context Information attributes definitions

Class/attribute	Sector ⁵	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 billing

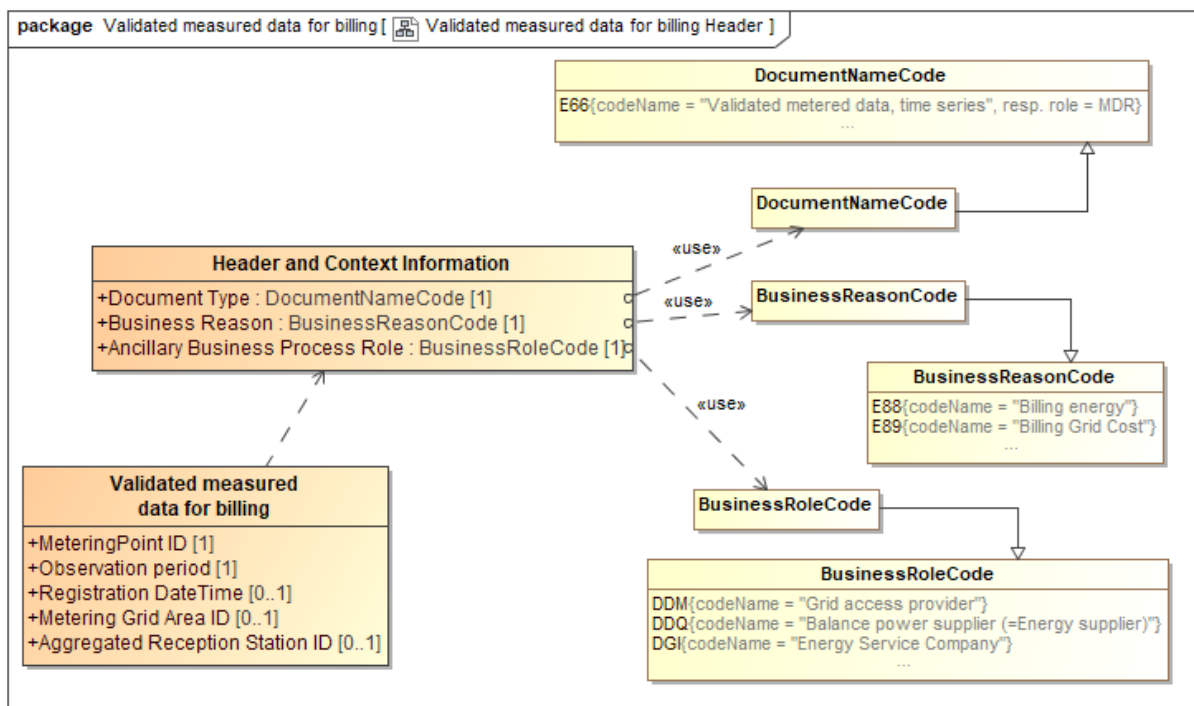


Figure 10 Class diagram: Header and Context Information: Validated measured data for billing

⁵ It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

A.3. Request validated measured data for billing

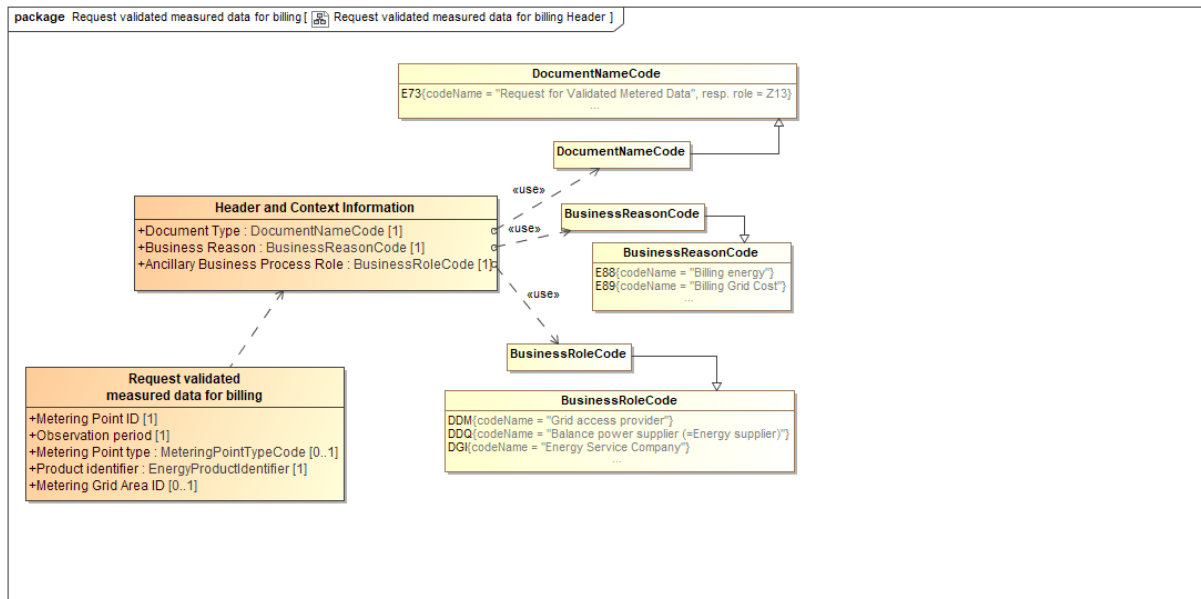


Figure 11 Class diagram: Header and Context Information: Request validated measured data for billing

A.4. Reject request validated measured data for billing

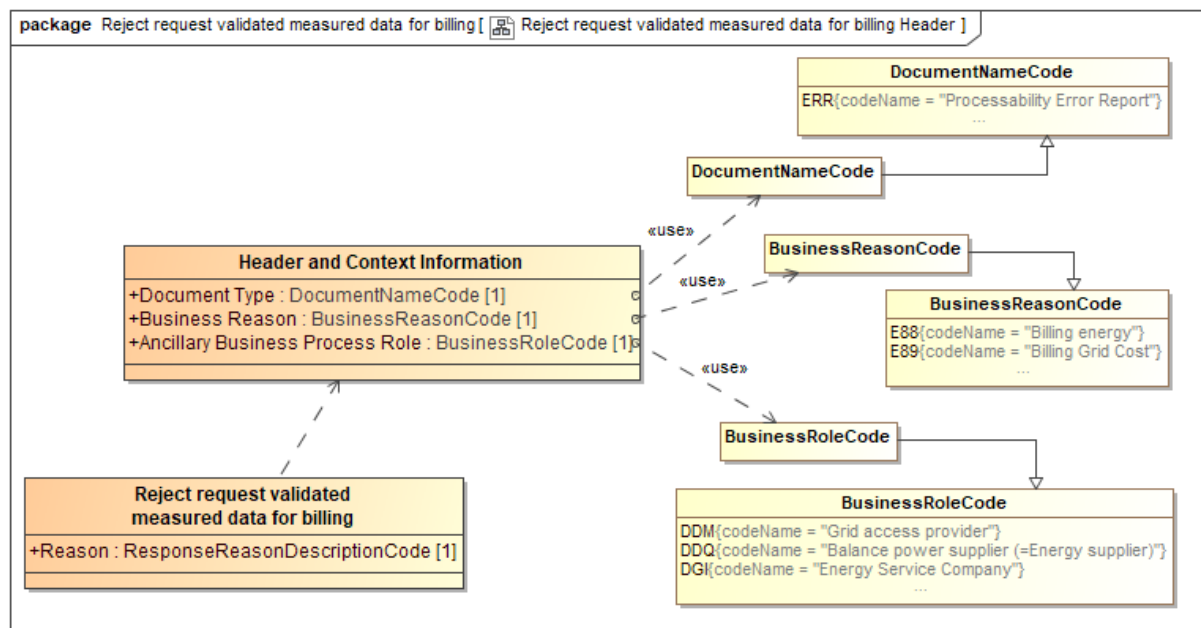


Figure 12 Class diagram: Header and Context Information: Reject request validated measured data for billing