Business Requirements for

Measure Collected Data

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A. About this document

This document contains ebIX® Business Requirements for the processes regarding collected data, both for electricity and for gas.

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

In line with UN/CEFACT Modeling Methodology version 2 (UMM-2) ebIX® defines the business requirements before starting the actual modeling. The requirements have been specified by the ebIX® work group "Exchange Metered Data" 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 expected to be the basis for the specification of web services in a next version of the model document. Since ebIX® supports both Edifact and XML the model will also serve as the basis for the creation of Message Implementation Guides for the mapping to Edifact UNSM's. The Business Information Model and the syntax specific structures are specified by the ebIX® "Technical Committee" (ETC).

A.1. Comments to the ebIX® model

If you have comments or suggestions to the model please contact any member of the project group or directly to Kees Sparreboom, kees.sparreboom@capgemini.com .

A.2. References

A.2.1. Standards

[1] UML Profile for UN/CEFACT's Modelling Methodology (UMM), Base Module, 2.0. (http://www.unece.org/cefact/umm/umm_index.html)

[2] UML Profile for UN/CEFACT's Modelling Methodology (UMM), Foundation Module, 2.0. (http://www.unece.org/cefact/umm/umm_index.html)

[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)

A.3. Participants in the project

These Business Requirements as part of the ebIX® Model for the European Energy Market *(see [4])* are made in a project with the members of EMD. For a list of members of EMD see www.ebix.org .

A.4. Main changes since last version

		Old	New	Clarification	Date
Start of updates for Version 2.0.B					
1.	§ 1.1.5.2. Business Process Request Collected Data		Brought in line with other Activity Diagrams for requests		2010-09-22
2.	§ 1.3.1. Class Diagram Collected Data		Updated comment on observation period in the Class Diagram		2010-09-22
3.	§ 1.2 Business Partners		Added the Harmonized Roles and their definition		2010-09-22
End of updates for Version 2.0.B					
4.				Lay-out for document has been updated	2010-10-22
End of updates for Version 2.0.C					
5.	§ 1.3.1. Class Diagram Collected Data		Added reason code for labeling		2011-01-28
6.	§ 1.3.2. Class Diagram Request Collected Data		Added reason code for labeling		2011-01-28

7.	§ 1.3.3. Class Diagram Negative Response Collected Data		Added reason code for labeling		2011-01-28
End of updates for Version 2.0.D					
8.	Paragraph on references			The list of references has been limited to references directly relevant for a document containing business requirements	2013-07-02
9.	Various UseCase diagrams		Various include-relations have been replaced by extensions	In order to do justice to the conditionality of processes.	2013-07-02
10.	Various activity diagrams		Various forks have been replaced by decision nodes	In order to do justice to the conditionality of processes and in line with the updates for UseCases (see above)	2013-07-02
11.	All activity diagrams have been brought in line with the rules stated in the Introduction to ebIX models			One-way processes have final node in receiving swim lane; two-way processes have final node in triggering (sending) swim lane	2013-07-02
12.	All activity diagrams have been brought in line with the rules stated in the Introduction to ebIX models			In case of optional “Failure” for processes, the upper level processes in which these processes are used will also show the option for “Failure”	2013-07-02

13.	For all class diagrams		A table with semantic definitions of classes and properties has been added	To bring model documents for ebIX® CuS and ebIX® EMD in line	2013-07-02
14.	All class diagrams, all classes for "….-additions"		The properties Sector and Reason have been deleted	As a consequence of modeling for web services as one of the implementation options	2013-07-02
15.	Class diagram for "Negative Response …."		The list of error codes has been reviewed and updated		2013-07-02
End of updates for Version 2r0E					
16.	Class diagram for "Negative Response …."		The list of error codes has been corrected	Error code E0L has been removed	2013-09-16
17.	Class diagrams			A class "Header and context information" has been added	2014-04-16
End of updates for Version 2r0F					
18.	References			References have been updated	2015-02-11
19.	§ 1.3.1. Class Diagram Collected Data		Added meter reading origin code	E35 for "From data-logger" has been added because of gas requirements	2015-02-11
20.	§ 1.1.3.2. Additional information gas meter reading		Added paragraph		2015-02-11

End of updates for Version 2r1-

1. Business Requirements View: Collect

1.1. Collect (Business Process UseCase)

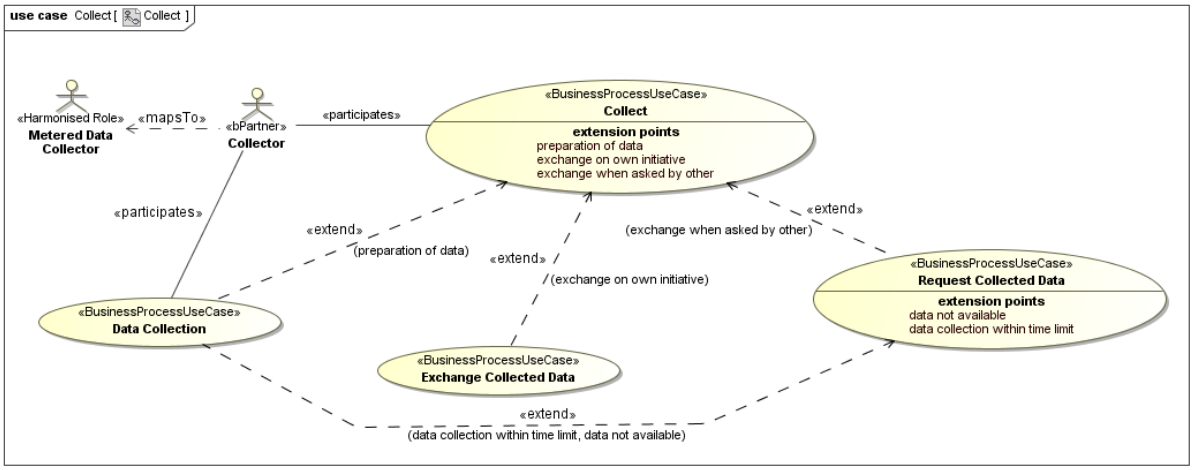

Figure 1. Collect

1.1.1. Description

UseCase description: Collect	
definition	Providing collected data by a Collector to other partners in the energy sector.
beginsWhen	The Collector decides to or is requested to.
preCondition	Collector should know which register to read and therefore have access to relevant master data
endsWhen	• Data collection has been ended successfully (no need for exchange) or • The distribution of the Collected Data has been accomplished or • the request for collected data has been (positively or negatively) answered.
postCondition	• Collected are available for the register or • Collected data have been exchanged or • The request is rejected.
Exceptions	• No data available within time limit • Collected data delivered to the wrong addressee
actions	*See 1.1.2*

1.1.2. Business Process

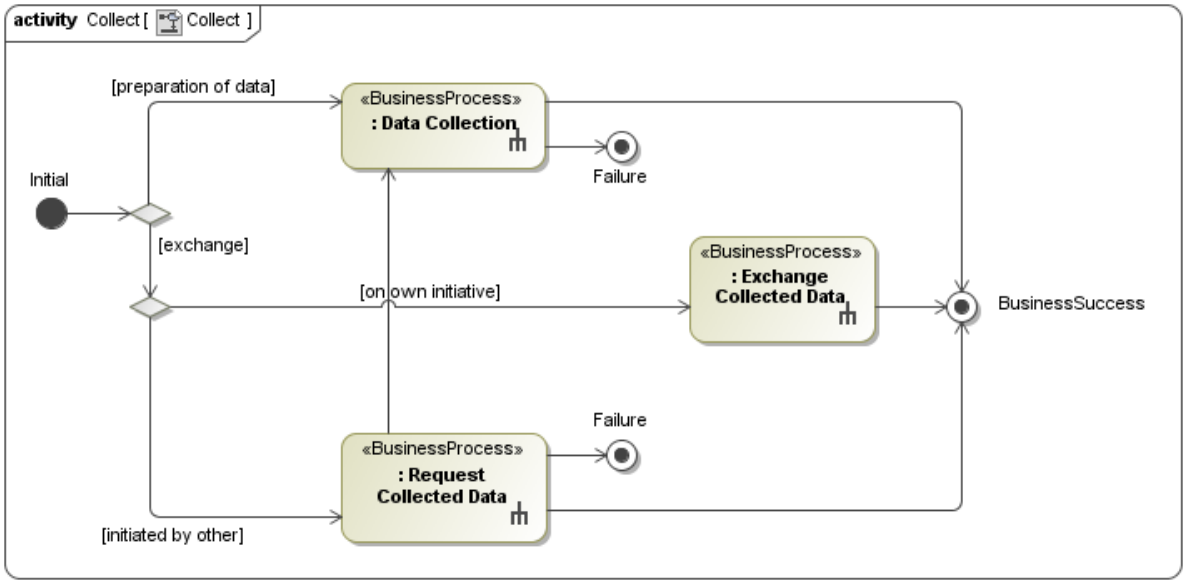

Figure 2. BP Collect

1.1.3. Data Collection (Business Process UseCase)

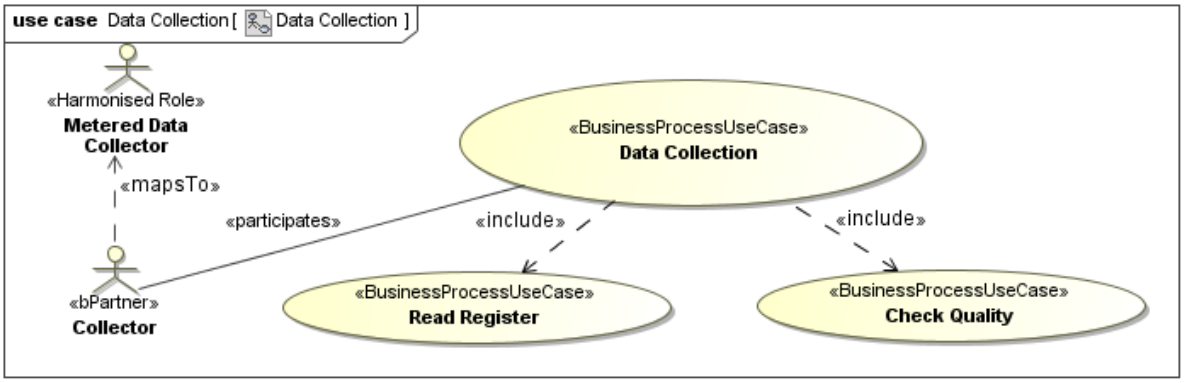

Figure 3. Data Collection

1.1.3.1. Description

UseCase description: Data Collection	
definition	A Collector collects and processes data in order to make these available to others.
beginsWhen	The Collector decides to (though may it be on request of others)
preCondition	Collector has knowledge about the register to read and the relevant quality standards.
endsWhen	• The checked data have been stored into a system or • The process is aborted because the register is not accessible.
postCondition	• The checked data are available for others or • No data have been collected.
exceptions	Data collection failed because of inaccessibility of the register
actions	*See 1.1.3.3*

1.1.3.2. Additional information gas meter reading

The technical characteristics of a (mechanical) gas meter may lead to the need for an additional data-logger to facilitate remote reading. The options that have been taken into account when drafting these business requirements are included in the table below.

	Mechanical	Additional data-logger	Electronic (data-logger included in device)	Remarks
A	X			A mechanical meter requires a data-logger for remote reading.
B	X	X		When a data-logger is added to the mechanical meter, a difference between metered values and logged values may arise. Especially in case of low volumes to be measured in combination with high meter capacity.
C			X	In an electronic meter, the data-logger is included in the meter device. A difference between metered values and logged values is highly unlikely.

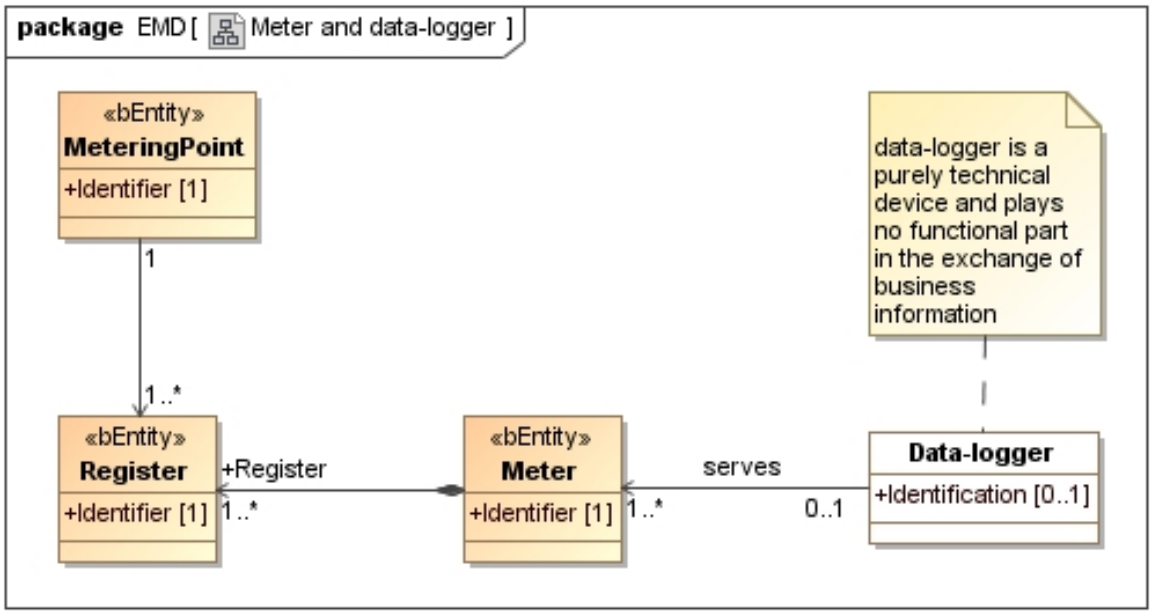

Figure 4. BP Data-logger

1.1.3.3. Business Process

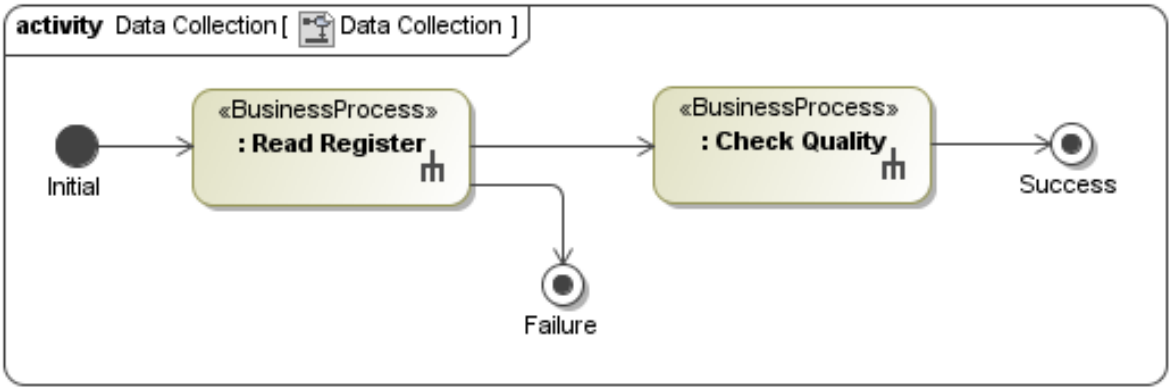

Figure 5. BP Data Collection

1.1.3.4. Read Register (Business Process UseCase)

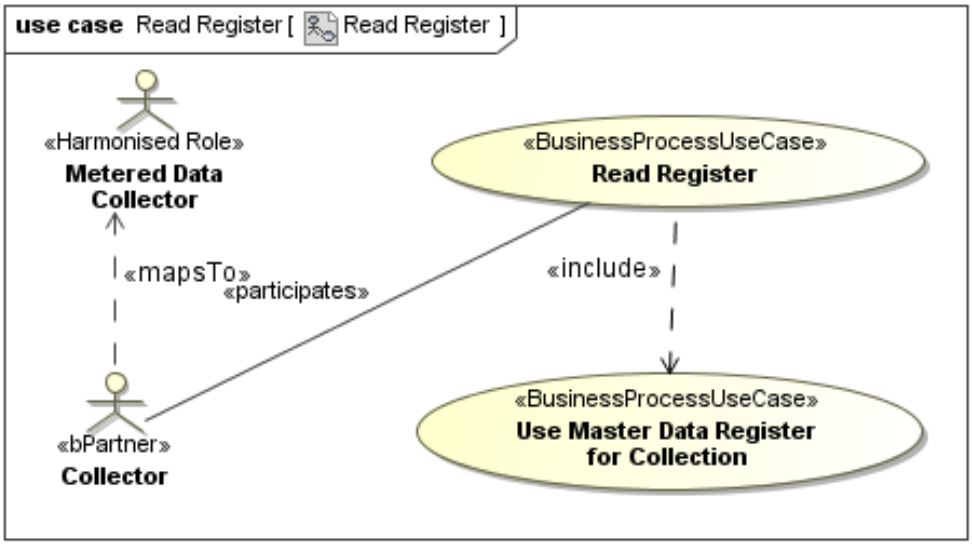

Figure 6. Read Register

1.1.3.4.1. Description

UseCase description: Read Register	
definition	A Collector reads one or more registers located at a metering point. The Collector is physically represented by a person or by a data collection system.
beginsWhen	The Collector decides to.
preCondition	Collector should know which register to read and have access to relevant master data
endsWhen	The data have been collected and stored into a system.
postCondition	The collected data are available for quality check.

exceptions	• No data available • No connection available from the data collection system • No entry to the location of the physical register
actions	*See 1.1.3.4.2*

1.1.3.4.2. Business Process

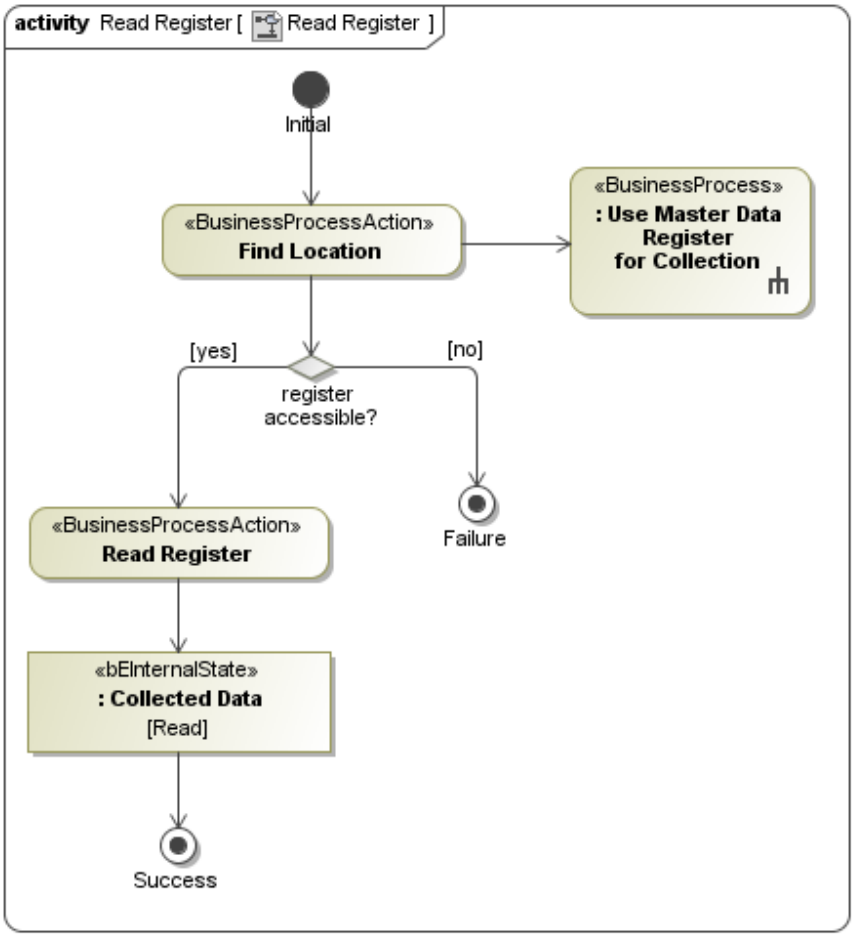

Figure 7. BP Read Register

1.1.3.4.3. Use Master Data Register for Collection (Business Process UseCase)

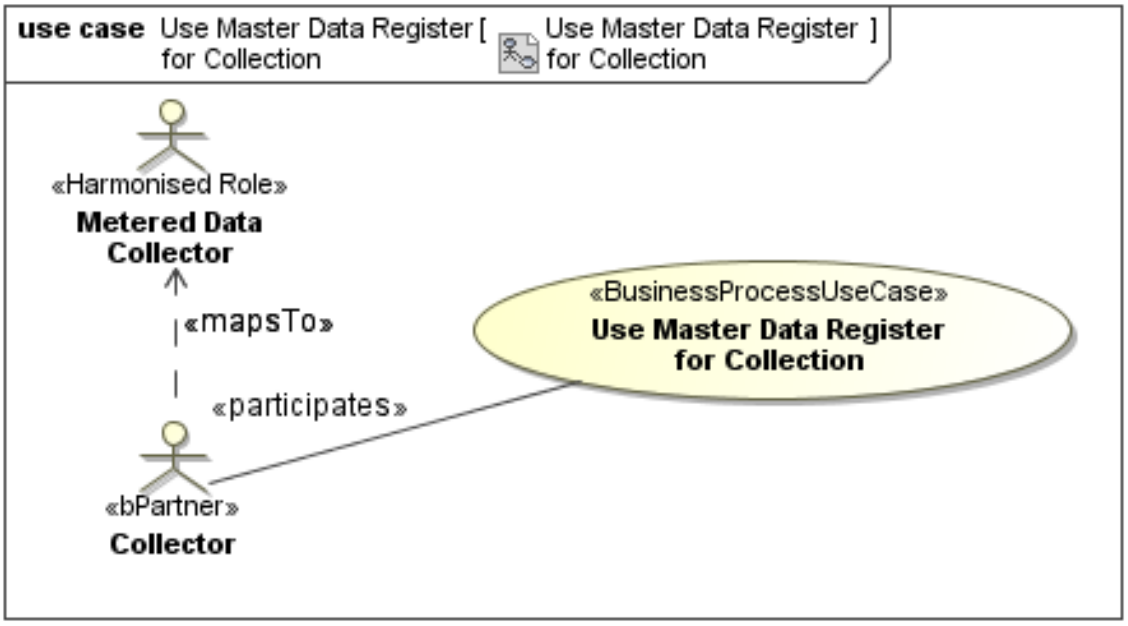

Figure 8. Use Master Data Register for Collection

1.1.3.4.3.1. Description

UseCase description: Use Master Data Register for Collection	
definition	Master Data Register are used to facilitate the meter reading.
beginsWhen	Master Data Register are needed to prepare the meter reading.
preCondition	Master Data Register have been made available.
endsWhen	Meter reading has been adequately prepared.
postCondition	Meter reading can be initiated.
exceptions	• Master Data Register not available
actions	*See 1.1.3.4.3.2*

1.1.3.4.3.2. Business Process

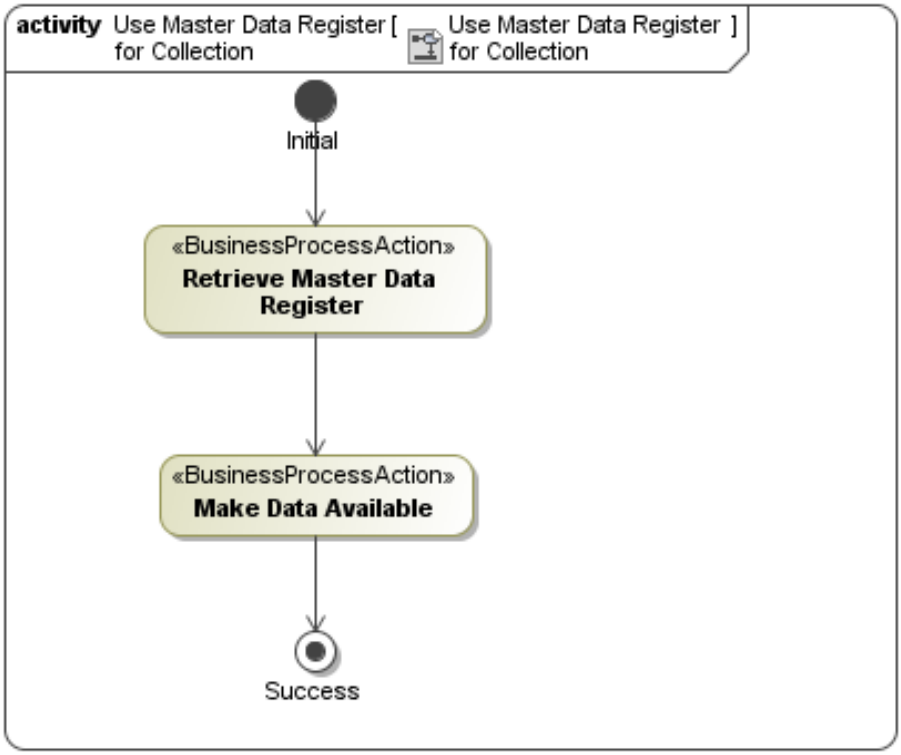

Figure 9. BP Use Master Data Register for Collection

1.1.3.5. Check Quality (Business Process UseCase)

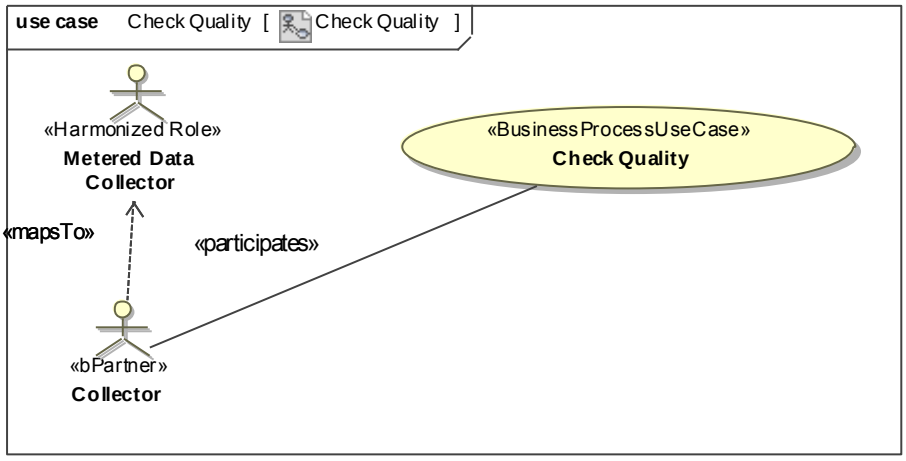

Figure 10. Check Quality

1.1.3.5.1. Description

UseCase description: Check Quality	
definition	Check on read data whether these are within the limits from given quality standards.
beginsWhen	Data have been read and stored into a system
preCondition	Availability of national rules and quality standards
endsWhen	Data have passed the check
postCondition	Data have been checked and are available for exchange.
exceptions	• Data beyond limits requiring an extra improvement cycle in the process
actions	*See 1.1.3.5.2*

1.1.3.5.2. Business Process

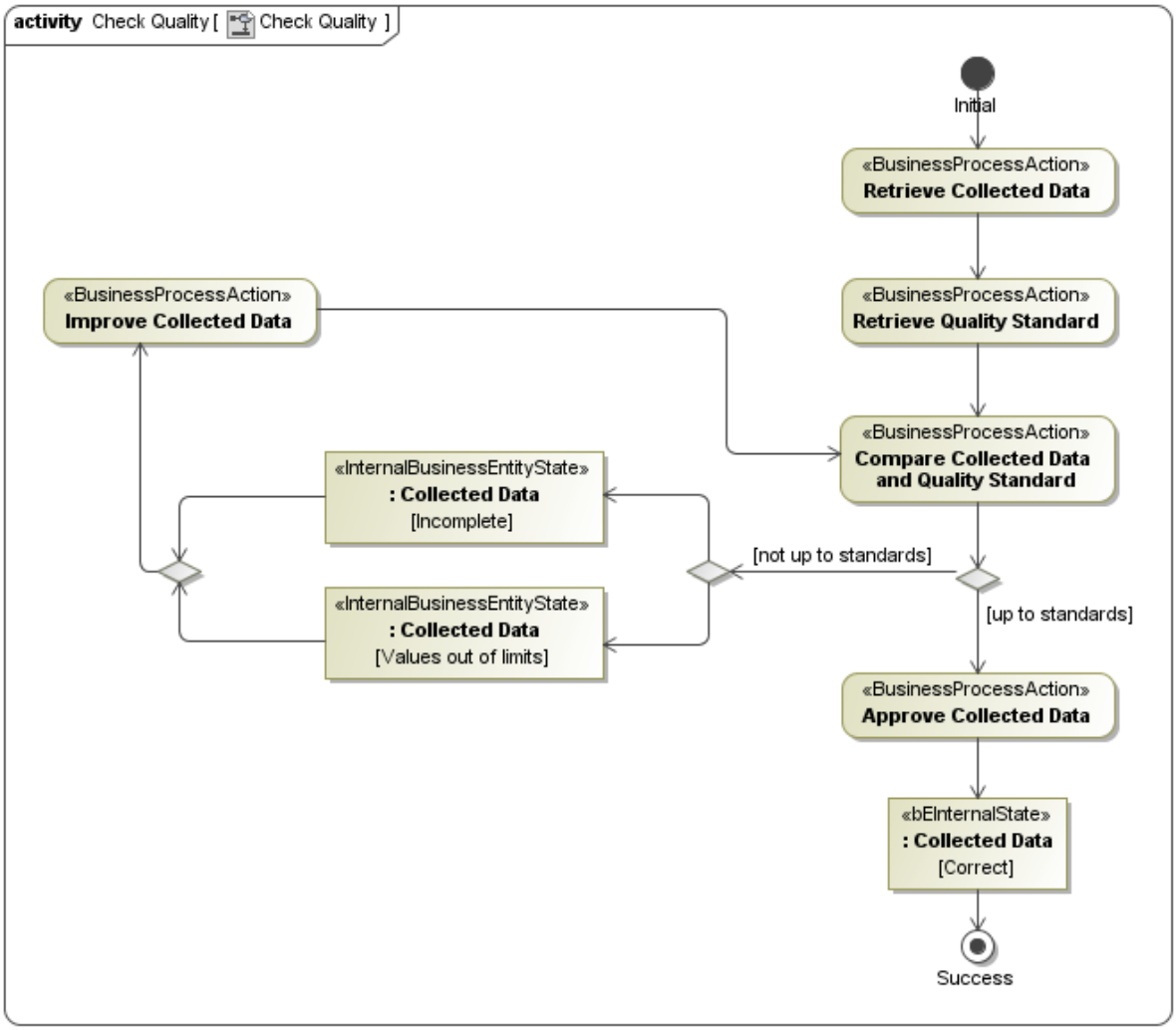

Figure 11. BP Check Quality

Note:

- The action for "Check Quality" may be further detailed for any given implementation. Since ebIX models are focused on exchange of data (and not on internal processes) the ebIX® detailing stops here.
- This process doesn't represent validation. Validation will be the next step and is done by the Validator (= Metered Data Responsible).

1.1.4. Exchange Collected Data (Business Process UseCase)

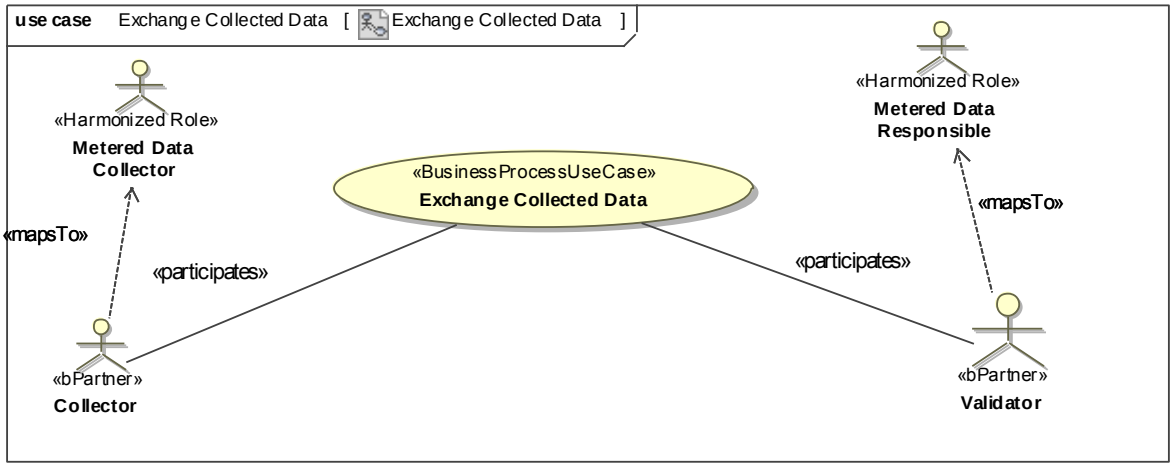

Figure 12. Exchange Collected Data

1.1.4.1. Description

UseCase description: Exchange Collected Data	
definition	Collector sends collected data to Metering Responsible
beginsWhen	Collector decides to.
preCondition	Correct Collected Data are available.
endsWhen	The reception of the collected data has been acknowledged by the Metering Responsible.
postCondition	Collected Data are available for the Metering Responsible.
exceptions	none
actions	*See 1.1.4.2*

1.1.4.2. Business Process

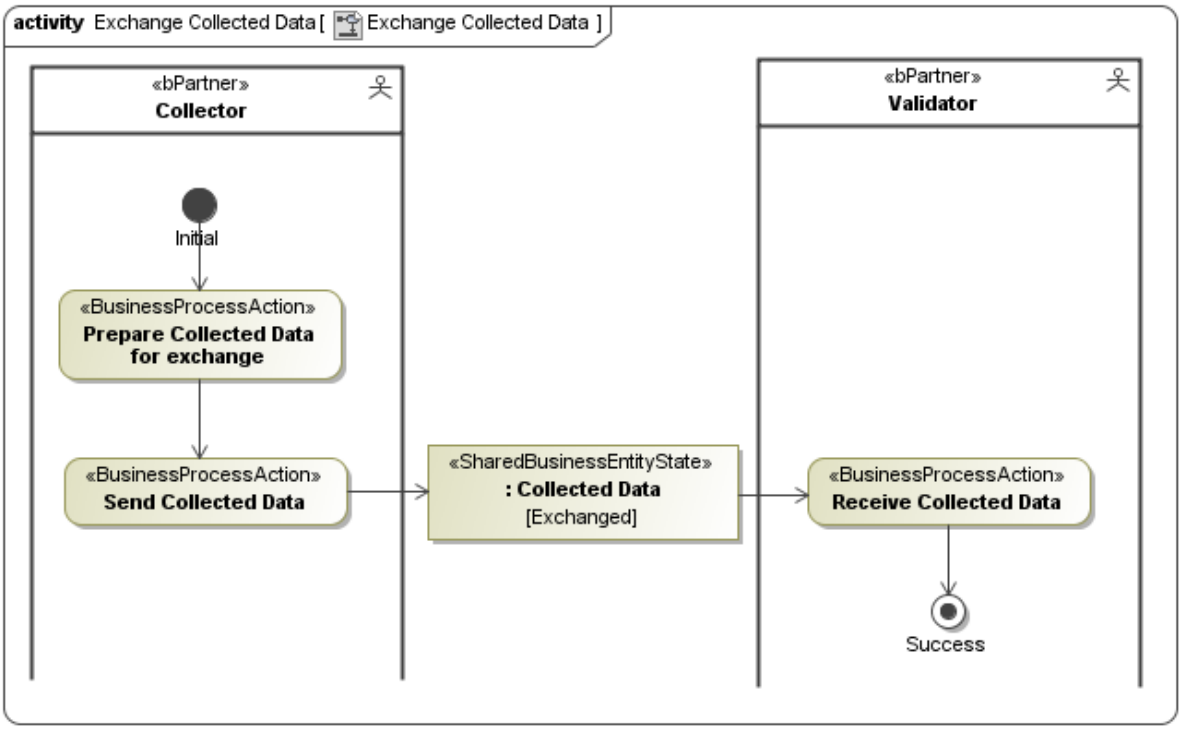

Figure 13. BP Exchange Collected Data

1.1.5. Request Collected Data (Business Process UseCase)

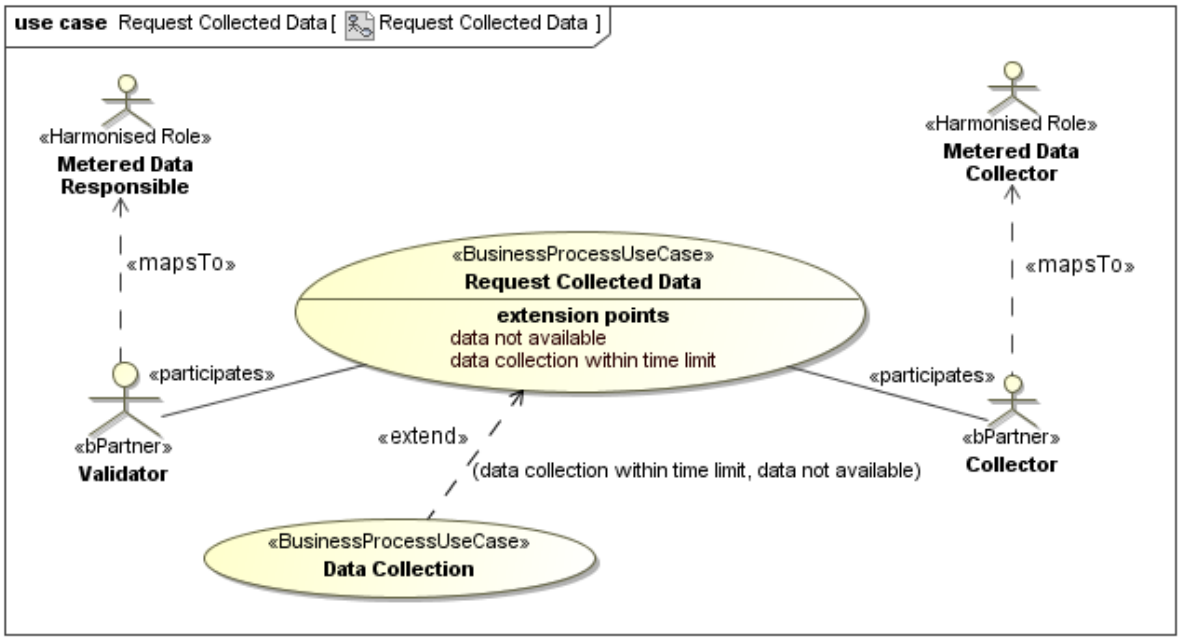

Figure 14. Request Collected Data

1.1.5.1. Description

UseCase description: Request Collected Data	
definition	Metering Responsible requests Collected Data from the Collector
beginsWhen	Metering Responsible decides to.
preCondition	Relation between Collector and Metering Responsible.
endsWhen	The reception of the collected data has been acknowledged by the Metering Responsible.
postCondition	Collected Data are available for the Metering Responsible.
exceptions	No Collected Data available at the Collectors.
actions	*See 1.1.5.2*

1.1.5.2. Business Process

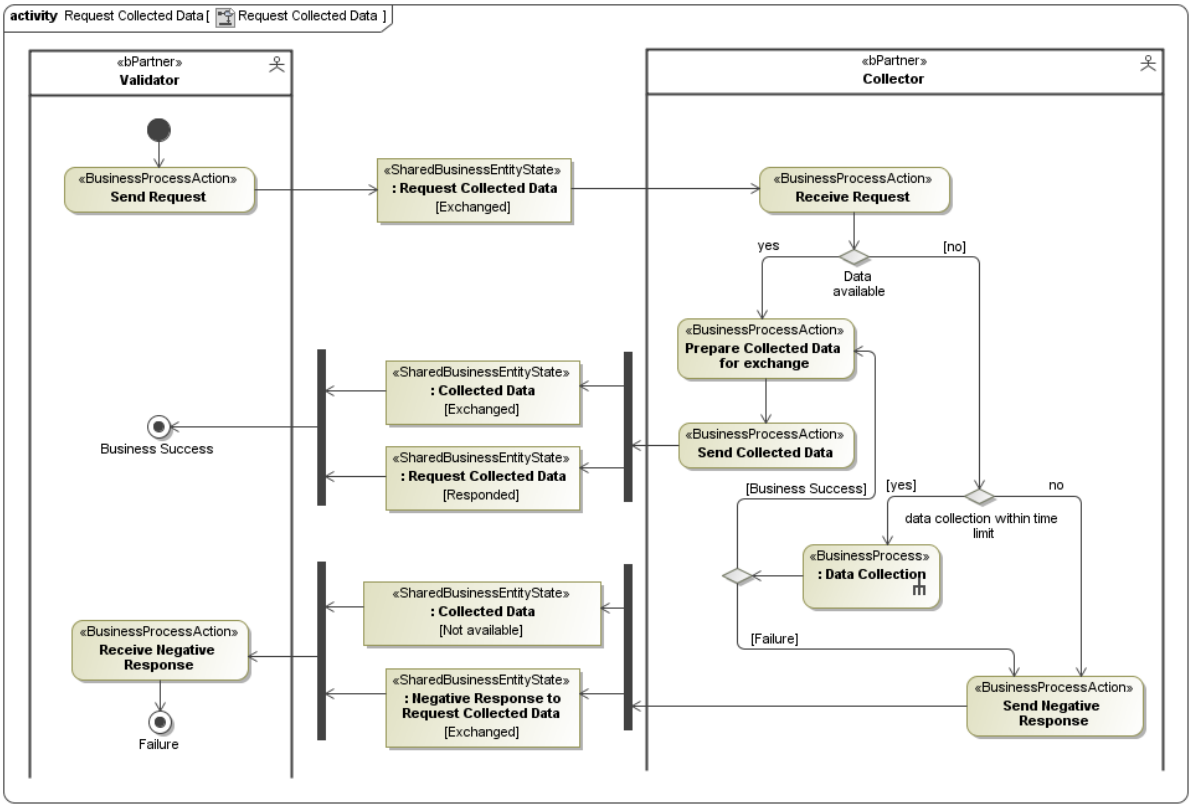

Figure 15. BP Request Collected Data

1.2. Business Partner View

1.2.1. Business Partners Collect

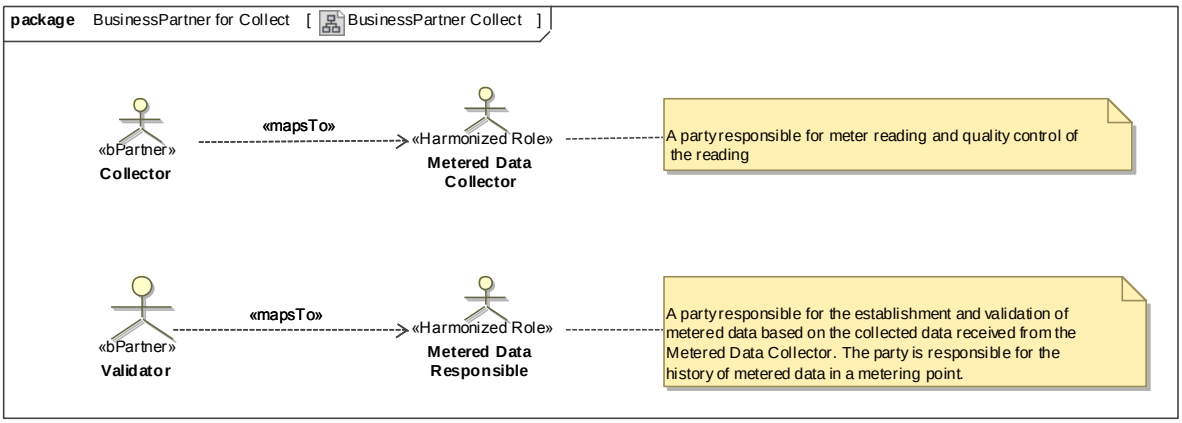

Figure 16. Business Partners Collect

1.3. 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.

1.3.1. Collected Data (Class Diagram)

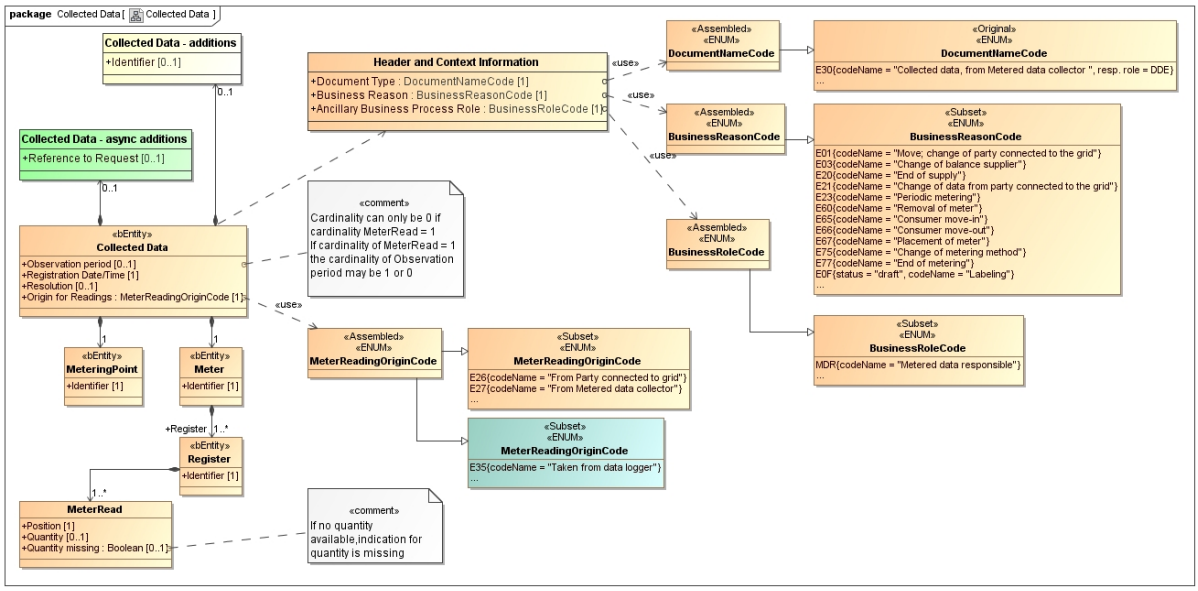

Figure 17. Collected Data

Element definitions, Collected Data	
«Business entity» Collected Data	The information set sent by a Collector responsible for the data collection from a meter, to the Validator in charge of the Metering Point to which this Meter belongs.
Observation Period	A specific period of time describing the duration of this set of collected data.
Registration Date/Time	The date time of the registration of this set of collected data.
Resolution	The resolution of this set of collected data expressed as a duration between the start and end of subsequent MeterReads within this set of collected data.
Origin for Readings	A code specifying the origin of this meter reading
«Business entity» Metering Point	An entity where energy products are metered or computed.
Identifier	The unique identification of the Metering Point to which the collected data are attributed.

«Business entity» Meter	A physical device containing one or more registers.
Identifier	The unique identification of the Meter that contains the register that has been read.
«Business entity» Register	A physical or logical counter measuring energy products.
Identifier	The unique identification of the Register that has been read.
MeterRead	One meter read as part of this set of collected data.
Position	The ordinal position of this observation in this set of collected data.
Quantity	The character string as read from the register for this observation. MeterRead, Quantity is dependent: either “Quantity” or “Quantity Missing” is to be used.
Quantity Missing	The indication of whether or not the quantity of this observation is missing. MeterRead, Quantity Missing is dependent: either “Quantity” or “Quantity Missing” is to be used.
Collected Data Additions	Additional information, related to Collected Data the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Identifier	The unique identification of this set of information as given by the Collector.
Collected Data Async Additions	Additional information, related to Collected Data, 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 collected data which uniquely identifies it.
Header and Context Information	The set of information specifying the information to be added to this payload “Collected Data” in order 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 role taking part in this exchange together with the role responsible for the process/this exchange.

1.3.1.1. Collected Data (State Diagram)

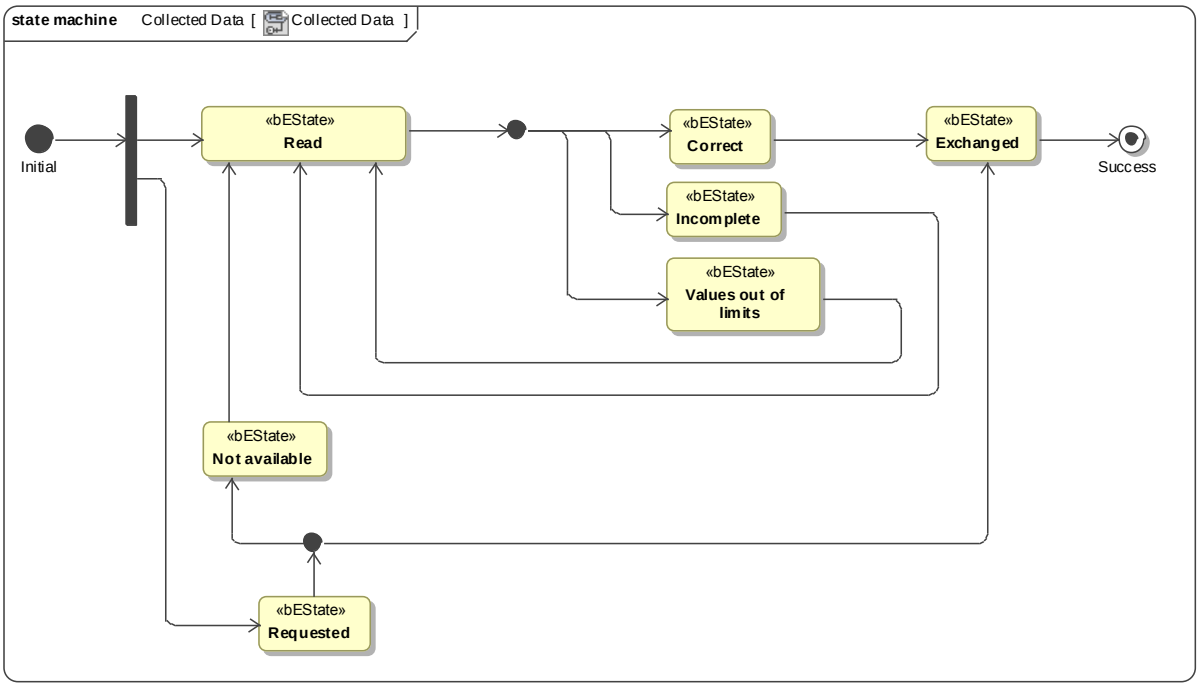

Figure 18. SD Collected Data

1.3.2. Request Collected Data (Class Diagram)

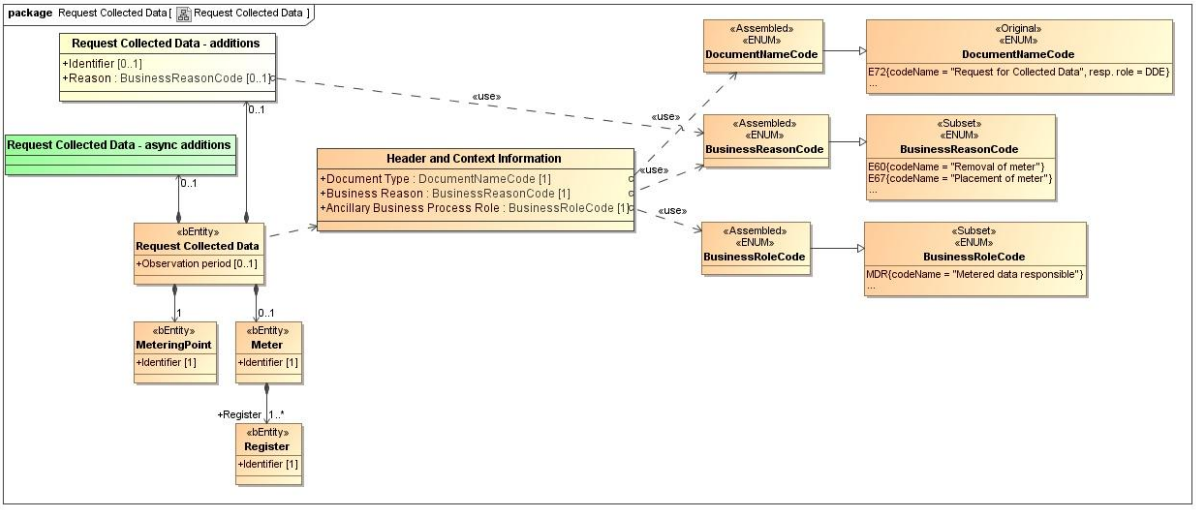

Figure 19. Request Collected Data

Element definitions, Request Collected Data	
«Business entity» Request Collected Data	The information set sent by a Validator in charge of the Metering Point when requesting a set of collected data from the Collector.
Observation Period	A specific period of time describing the duration of the requested set of collected data.
«Business entity» Metering Point	An entity where energy products are metered or computed.
Identifier	The unique identification of the Metering Point to which the collected data are attributed.
«Business entity» Meter	A physical device containing one or more registers.
Identifier	The unique identification of the Meter that contains the register that has been read.
«Business entity» Register	A physical or logical counter measuring energy products.
Identifier	The unique identification of the Register that has been read.
Request Collected Data Additions	Additional information, related to Request Collected Data the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Identifier	The unique identification of this request as given by the Validator.

Reason	A code specifying the business process as part of the specification of the context for this request. **Remark**: in contrast to the deletion of “Reason” in almost all other places, the property is regarded to provide valuable information in case of meter changes (e.g. higher priority for the response to the request)
Collected Data Async Additions	Additional information, related to Request Collected Data, 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.
	none
Header and Context Information	The set of information specifying the information to be added to this payload “Request Collected Data” in order 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 role taking part in this exchange together with the role responsible for the process/this exchange.

1.3.2.1. Request (State Diagram)

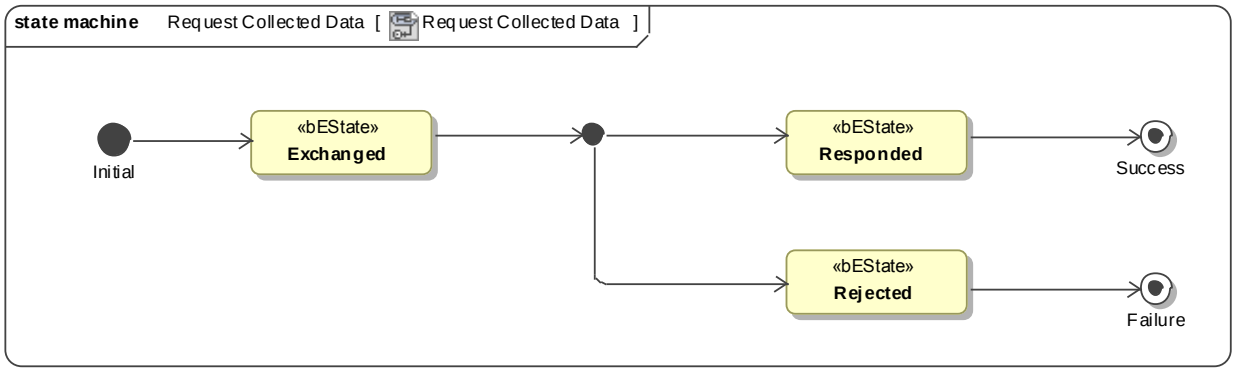

Figure 20. SD Request Collected Data

1.3.3. Negative Response to Request (Class Diagram)

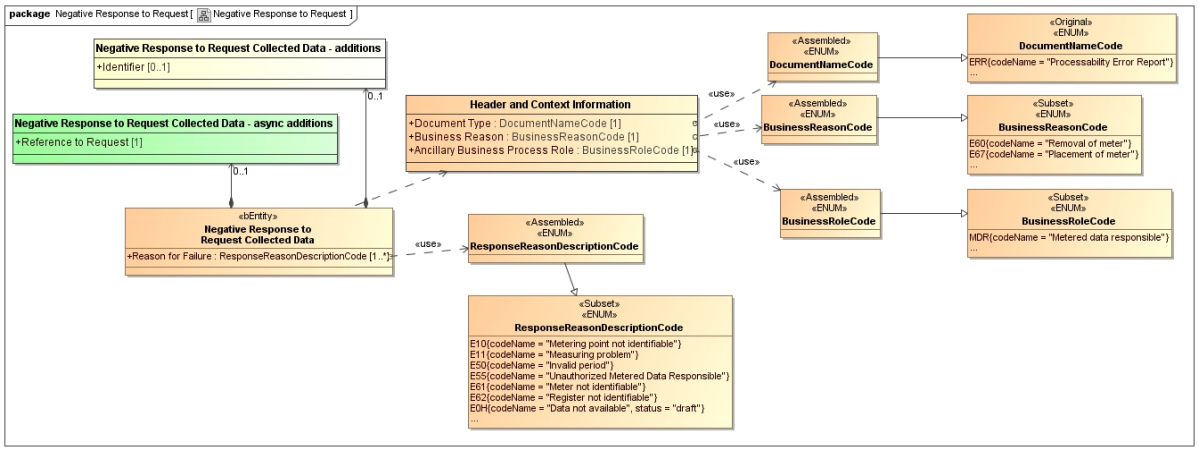

Figure 21. Negative Response to Request

Element definitions, Negative Response to Request Collected Data	
«Business entity» Negative Response to Request Collected Data	The response sent by a Collector to the Validator requesting collected data when not in the position to respond with the requested collected data.
Reason for Failure	A code specifying the reason for this negative response.
Negative Response to Request Collected Data Additions	Additional information, related to Negative Response to Request Collected Data the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Identifier	The unique identification of this response as given by the Collector.
Negative Response to Request Collected Data Async Additions	Additional information, related to Negative Response to Request Collected Data, 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 leading to this response, which uniquely identifies it.
Header and Context Information	The set of information specifying the information to be added to this payload “Negative Response to Request” in order 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 role taking part in this exchange together with the role responsible for the process/this exchange.

1.3.3.1. Negative Response to Request (State Diagram)

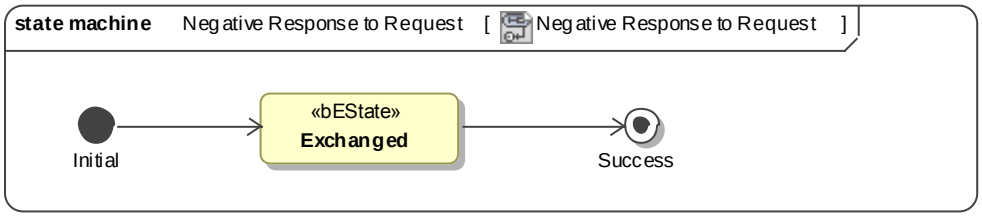

Figure 22. SD Negative Response to Request