Business Requirements for

Settle

For

Reconciliation

Status: approved

Version: 1.0

Revision: -

Date: July, 2015

C O N T E N T

A. About this document

This document contains ebIX® Business Requirements for the processes regarding the data exchange for reconciliation other than measured data, for electricity only.

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 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 requirements 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 Modeling Methodology (UMM), Base Module, 2.0. (http://www.unece.org/cefact/umm/umm_index.html)

[2] UML Profile for UN/CEFACT's Modeling 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® Business Requirements for Measure for Reconciliation (www.ebix.org)

[7] ebIX® code lists (www.ebix.org)

A.2.3. ENTSO-E Documents

[8] ENTSO-E Scheduling System (ESS) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/schedulev4r1/documentation/urn-entsoe-eu-wgedi-ess-implementationguide-4-1.pdf)

[9] ENTSO-E Settlement Process (ESP) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/settlementv1r2/documentation/settlement-guide-v1r2.pdf)

A.2.4. Eurelectric

[10] Metering, Load Profiles and Settlement in Deregulated Markets, System Tariff Issues Working Group, March 2000, Ref : 2000-220-0004

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 1.0.-					
1.	All document			The lay-out has been brought in line with the ebIX® standard document lay-out	2013-07-16
2.	Paragraph on references			The list of references has been added, but is limited to references directly relevant for a document containing business requirements	2013-07-16
3.	All class diagrams		A table with semantic definitions of classes and properties		2013-07-16

			has been added		
4.	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	2013-07-16
End of updates for Version 1.0.-					
5.	Paragraph 1.1.4 Overview profiling			This paragraph has been added	2014-3-3
6.	Paragraph 1.1.6 Establish Profiled Volume (Business Process UseCase)			This paragraph has been completely recasted	2014-3-3
7.	Class diagrams			A class "Header and context information" has been added	2014-3-3
8.	PPC for reconciliation			Has been added	2014-3-3
9.	Residual Volume			Has been added	2014-3-3
End of updates for Version 1.0.- work document 03					
10.	Class diagram for Price-Volume Combination for Reconciliation			Market Balance Area has been added. Prices are specified either per Market Balance Area or per Metering Grid Area.	2014-5-23
11.	Class diagram for Prices for Reconciliation			Market Balance Area has been added. Prices are specified either per Market Balance Area or	2014-5-23

				per Metering Grid Area.	
12.	Class diagram for PPC for Reconciliation			Reconciliation Accountable (required) replaces the combination of Balance Responsible Party and Balance Supplier (both optional, because of XOR) This change has also led to an update of the text for item (4) in paragraph 1.1.5.1.	2014-5-23
End of updates for Version 1.0.- work document 04					
13.	All class diagrams			Temporary ebIX® role codes have been replaced by newly issued UN/CEFACT role codes	2015-07-14
End of updates for Version 1.0.- for approval					

1. Business Requirements View: Settle for Reconciliation

These Business requirements are based on the assumption, that reconciliation only deals with consumption.[1] Reconciliation is part of the overall settlement process.

1.1. Settle (Business Process UseCase)

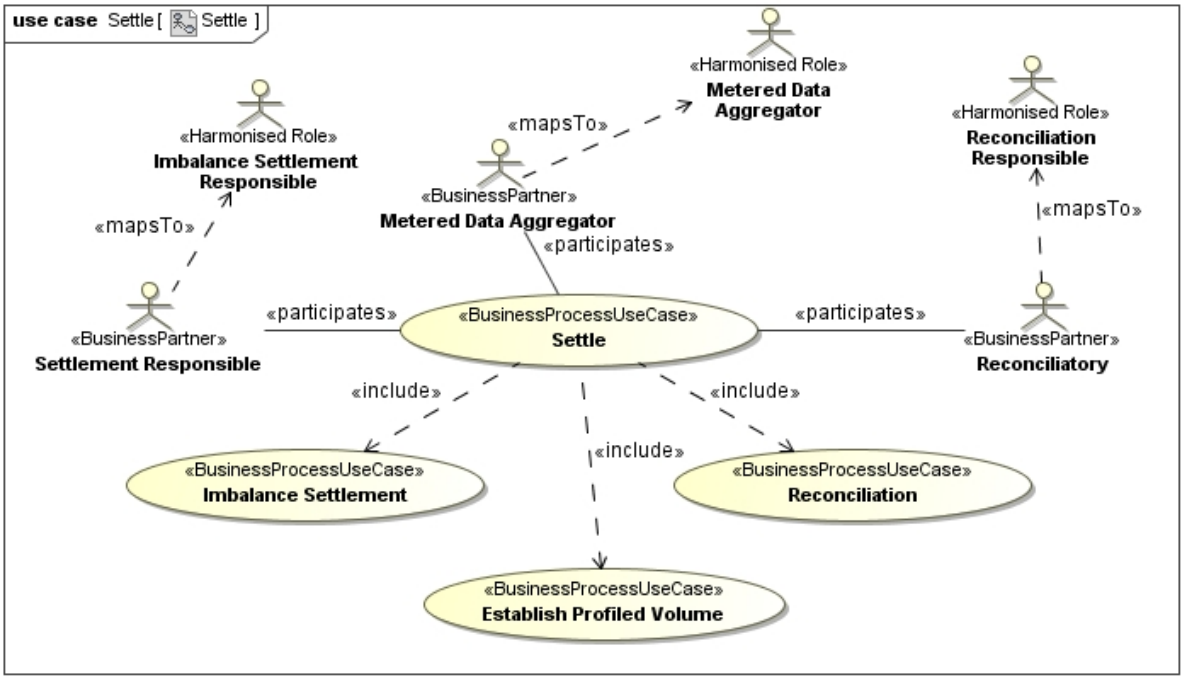


Figure 1 Settle

1.1.1. Description

UseCase description: Settle	
definition	Confronts planned volumes with subsequent measured operational volumes and settles the differences financially.
beginsWhen	The timing of the various processes is guided by a time schedule (nationally defined). As a general rule can be stated, that the Imbalance Settlement processes is executed on a daily basis where the Reconciliation process is executed on a monthly basis.
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	All processes included in the time schedule have been executed according to

[1] We see the need for reconciliation for production becoming a real business requirement soon. But at the moment no procedures have been developed for this.

	the national rules and deadlines.
postCondition	The imbalances are charged to the right accountable parties.
Exceptions	None
Actions	*See 1.1.2*

1.1.2. Business Process

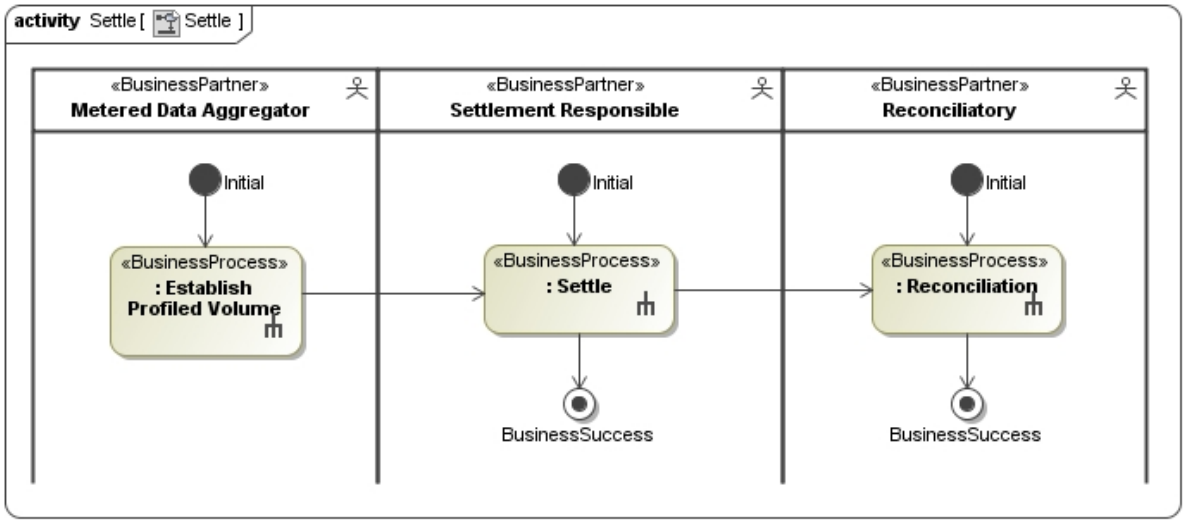


Figure 2 BP Settle

1.1.3. Imbalance Settlement (Business Process)

This process is described in the ENTSO-E Settlement Process (ESP) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/settlementv1r2/documentation/settlement-guide-v1r2.pdf), see [9]. It is therefore not further specified here.

1.1.3.1. Establish residual volume per MGA (Business ProcessAction)

This process is assumed to be part of the ENTSO-E Settlement Process (ESP) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/settlementv1r2/documentation/settlement-guide-v1r2.pdf), see [9]. It is therefore not further specified here.

1.1.4. Overview profiling

1.1.4.1. Profiles for Reconciliation[2]

With the opening of the European electricity markets, the first step in most countries has been to look at the wholesale market, and the relatively large consumers. For those consumers the metering of the consumption per hour is relatively straightforward, and it is easy to establish at which price the electricity consumption should be billed, since large consumers have interval meters installed already, for hourly or half-hourly metering.
But as thresholds become lower and countries have a full opening of their markets, this is no longer the case. For the retail market, the question is therefore how to establish a practical but economical alternative to hourly metering for each individual end consumer. Load profile-based metering and settlement is a feasible and cost effective way to give the opportunity for small consumers to participate in open markets. The users are mainly residential consumers, but also low energy users, that are now able to change their electricity supplier in several of the deregulated markets in Europe. The aim is to allow real access to the retail market without introducing costly and complex metering systems as a necessary requirement. This can be seen either as a permanent or a transitional solution.
Load profiling involves:
· determining an estimate of the average load profile of a class of customers over a given period, and
· allocating or 'deeming' that load profile to all customers in that customer category.

1.1.5. Area based (analytic) versus category based (synthetic)

There are two general methods for the construction of load curves: the area method and the category method. A periodic reconciliation (calculation for deviations between the suppliers) is connected with both those methods.
In the area model (or regional method), especially large or medium size consumers are equipped with the facilities for time interval metering. Power used by as well as losses related to those consumers is subtracted from the total energy consumption by the considered time interval for metering. The result, that is the difference calculated for each time interval, is considered to illustrate the consumption of all those consumers who are entitled to use the load curve model in the area (network) in question. Therefore this average profile can be deemed to be the load profile for all end users that were not metered on time interval basis within the geographic region covered by the network. That class of customers can be either all those consumers that are not metered on time interval basis within the geographic region covered by a network. With this method, the non-metered customers constitute the residual profile, which is an adjusted load-profile for the node or for the area under consideration. This is called analytic load profiling.

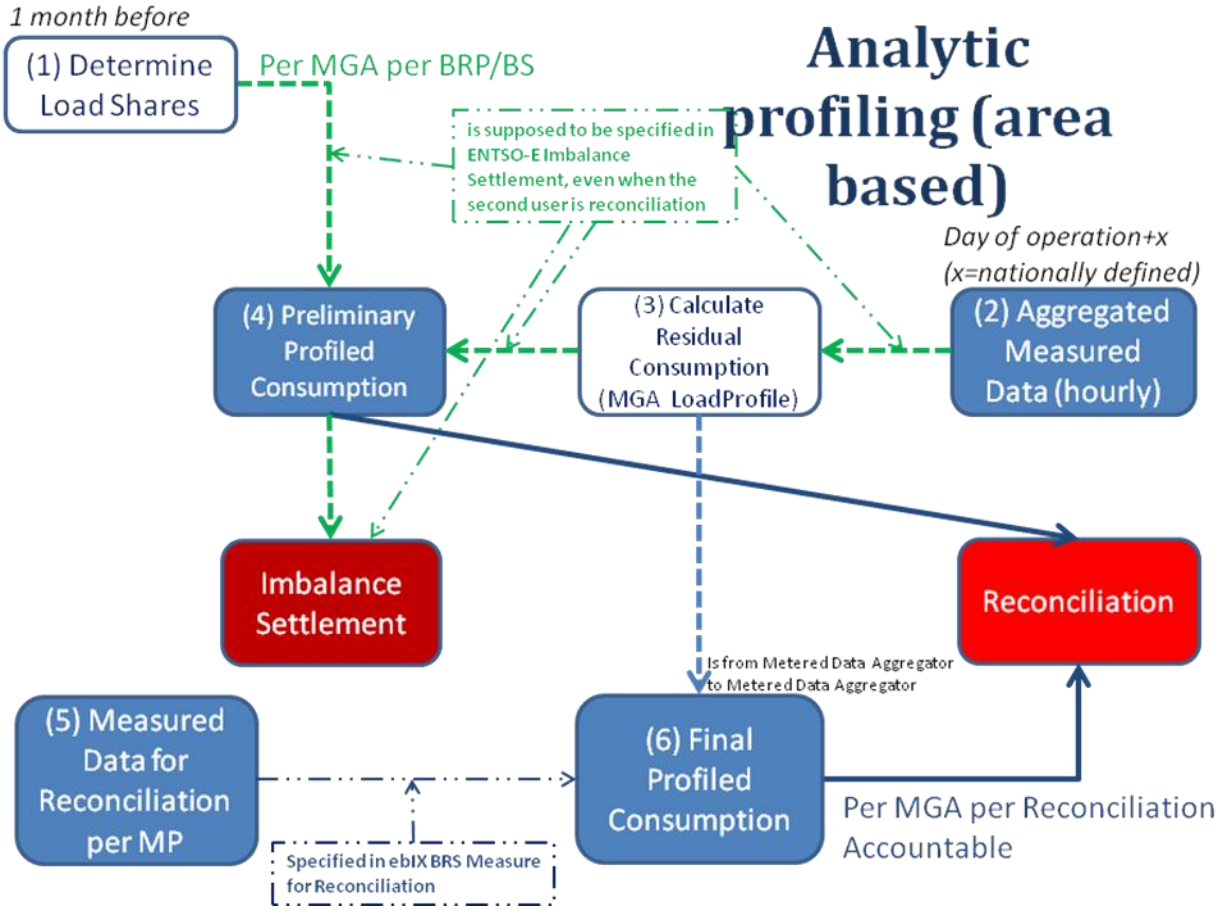
The category model (or consumer-group-related method) defines the load of a consumer taking into account the average load of a group. There are different criteria used to form these profiles but the precondition is always that sufficient load measurements have been made earlier. This option groups customers with a similar load pattern into categories, where each individual customer is then

[2] With acknowledgement to the study undertaken by Eurelectric into this matter. See [10].

associated with a predetermined representative load-profile. There are different criteria used to create these profiles, but the precondition is always that load measurements (metering measurements) have been made at an earlier stage. This is called synthetic load profiling.

The information exchange in this document supports both methods, since this document focuses on the information exchange in the phase of the actual reconciliation of the residual volume left for final allocation after the imbalance settlement. The use of either kind of profiles for planning consumption is out of scope of this document. The exchange of preliminary profiled consumption for imbalance settlement is assumed to be part of (the preparations for) the scheduling process (see [8]). The specification of the profile category is part of the master data for a Metering Point (see **Error! eference source not found.**).

1.1.5.1. Analytic profiling



Remarks:

(1) Determine Load Shares

This will be done in the month before operation. It is based on the expected annual consumption for the profiled consumption Metering Point and on the relation between supplier and Metering Point as specified in the master data (after most recent switches) for the Metering Point.

(2) Collect, validate and aggregate the data from continuously read (e..g hourly measured) meters as input for both Imbalance Settlement and for Reconciliation
This will be done one - or more, depending on national regulation - day(s) after the day of operation.
Period values (e.g. hourly) for Exchange, Production and (hourly) settled Consumption MP's.

(3) Calculate Residual Consumption (per Metering Grid Area)
Using the validated measured data (as described in (2)) in order to calculate the residual volume for profiled consumption (= ∑Exchange + ∑Production - ∑(hourly) non-profiled Consumption). The volume (total of profiled consumption per MGA) is forwarded to the Imbalance Settlement Responsible for imbalance settlement and to a Metered Data Aggregator (central) for reconciliation. The exchange for imbalance settlement is assumed to be specified by ENTSO-E. The exchange for reconciliation is regarded as nationally specific and internal (within an actor) at the moment and is therefore not further specied in this document.

(4) Preliminary Profiled Consumption
Distribution of Residual Consumption (as calculated in (3)) between Metered Data Aggregator and Balance Responsible Parties (and suppliers) using Load Shares (as described in (1)). Preliminary Profiled Consumption is both input for the imbalance settlement and parallel also input for the reconciliation (same volume!). Preliminary Profiled Consumption is the resulting profiled part of the aggregated metered consumption per Metering Grid Area.

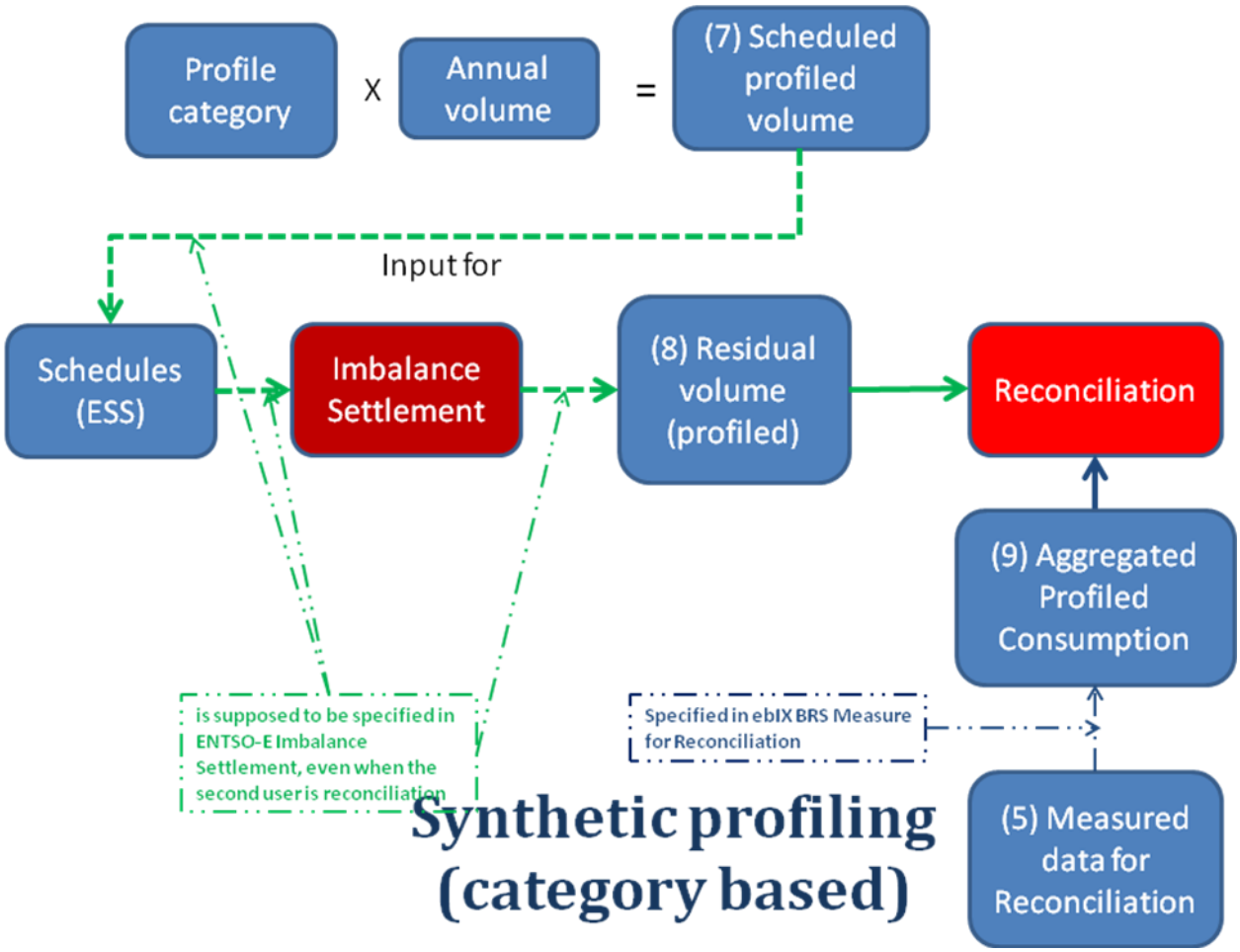
For Imbalance settlement Preliminary Profiled Consumption is specified per Balance Responsible Party per Metering Grid Area (BRP/BS within a MGA).

For Reconciliation Preliminary Profiled Consumption is specified per Reconciliation Accountable per Metering Grid Area (RA within a MGA). In the Nordic countries these data are exchanged under the name of "Redistributed measured data per MGA for reconciliation".

(5) Meters for profiled metering points are read in the period after the imbalance settlement. Usually national regulation requires the meter to be read at least once per year.

(6) Periodise Consumption over (hourly) detail periods
The overall volume resulting from the meter reads (as described in (5)) are distributed over (hourly) periods using the Residual Consumption (as described in (3)) as a template. And the results are aggregated per (hourly) period, per Reconciliation Responsible, per Metering Grid Area.

1.1.5.2. Synthetic profiling



(7) Scheduled profiled consumption
The profile category assigned to that Metering Point (as part of the master data for a Metering Point) is used to distribute the annual volume (also available as part of the master data for a Metering Point) over (hourly) periods.

(8) Residual volume (profiled)
The residual volume results from the imbalance settlement as the profiled part of the settled volume.

(9) Aggregated profiled consumption
The overall volume resulting from the meter reads (as described in (5)) are distributed over (hourly) periods using the profile category as a template. And the results are aggregated per (hourly) period, per Reconciliation Accountable, per Metering Grid Area.

1.1.6. Establish Profiled Volume (Business Process UseCase)

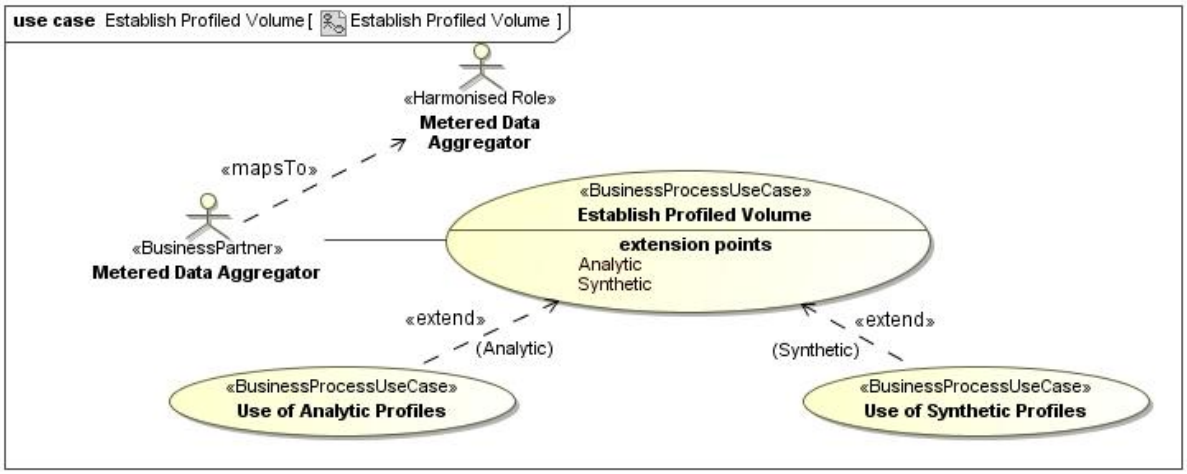


Figure 3 Establish Profiled Volume

1.1.6.1. Description

UseCase description: Establish Profiled Volume	
definition	The use of master and/or measured data for the planning, settlement and reconciliation of consumption at profiled MeteringPoints.
beginsWhen	The timing of the various processes is guided by a time schedule (nationally defined). As a general rule can be stated, that the Imbalance Settlement processes is executed on a daily basis where the Reconciliation process is executed on a monthly basis.
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	All processes included in the time schedule have been executed according to the national rules and deadlines.
postCondition	The profile information is available for the calculation of volumes for either the scheduling and imbalance settlement processes or for the reconciliation process.
Exceptions	None
Actions	*See 1.1.6.2*

1.1.6.2. Business Process

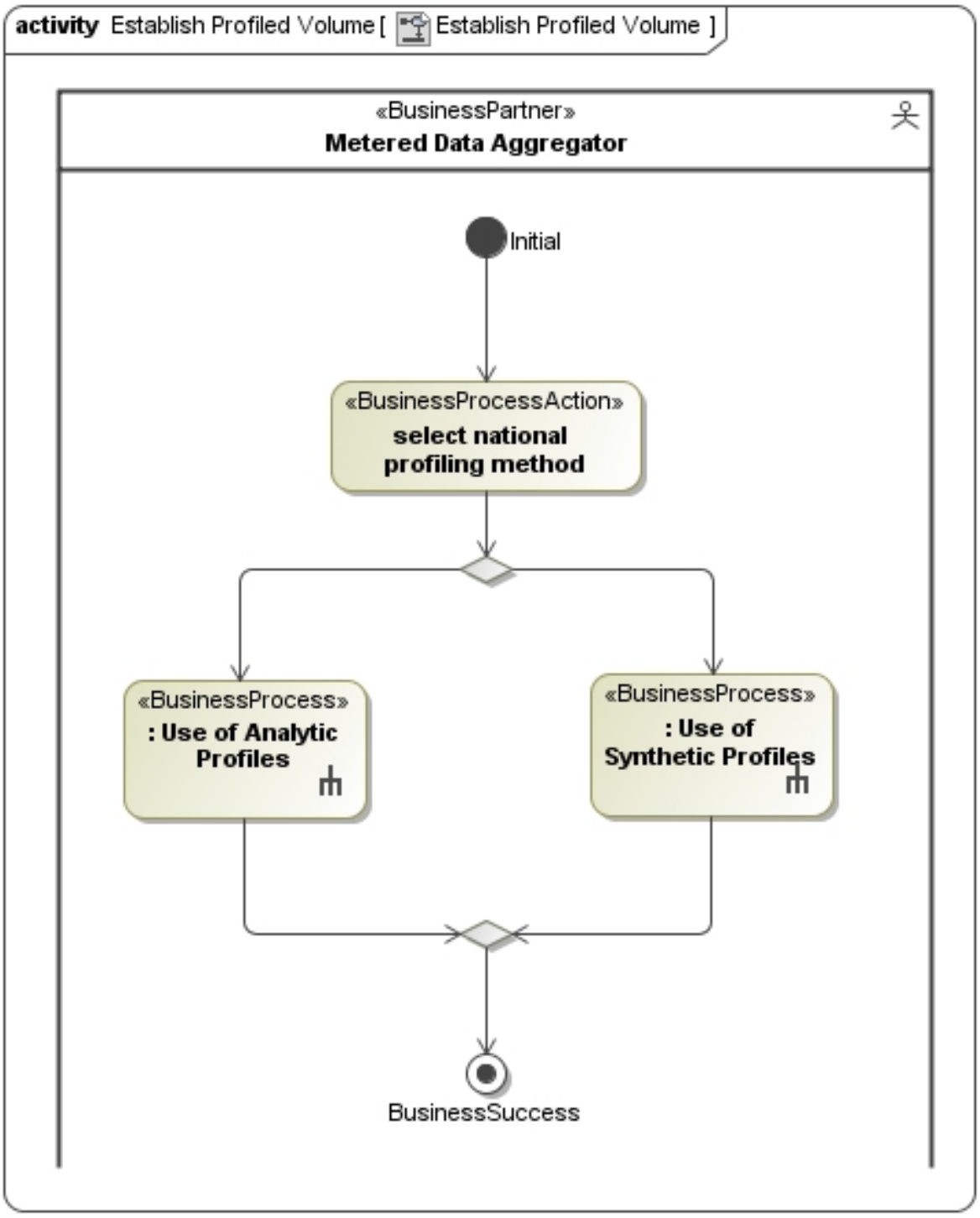


Figure 4 BP Establish Profiled Volume

1.1.6.3. Use of Analytic Profiles (Business Process UseCase)

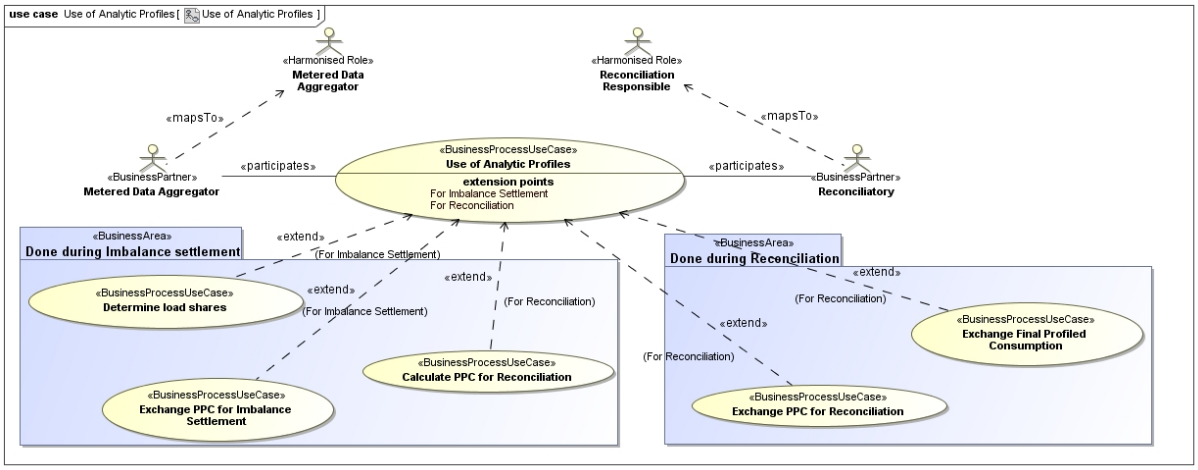


Figure 5 Use of Analytic Profiles

1.1.6.3.1. Description

UseCase description: Use of Analytic Profiles	
definition	The use of historic measured data for the scheduling, settlement and reconciliation of profiled Metering Points.
beginsWhen	The timing of the various processes is guided by a time schedule (nationally defined). As a general rule can be stated, that the Imbalance Settlement processes is executed on a daily basis where the Reconciliation process is executed on a monthly basis.
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	All processes included in the time schedule have been executed according to the national rules and deadlines.
postCondition	The profile information is available for the calculation of volumes for either the scheduling and imbalance settlement processes or for the reconciliation process.
Exceptions	None
Actions	*See 1.1.6.3.2*

1.1.6.3.2. Business Process

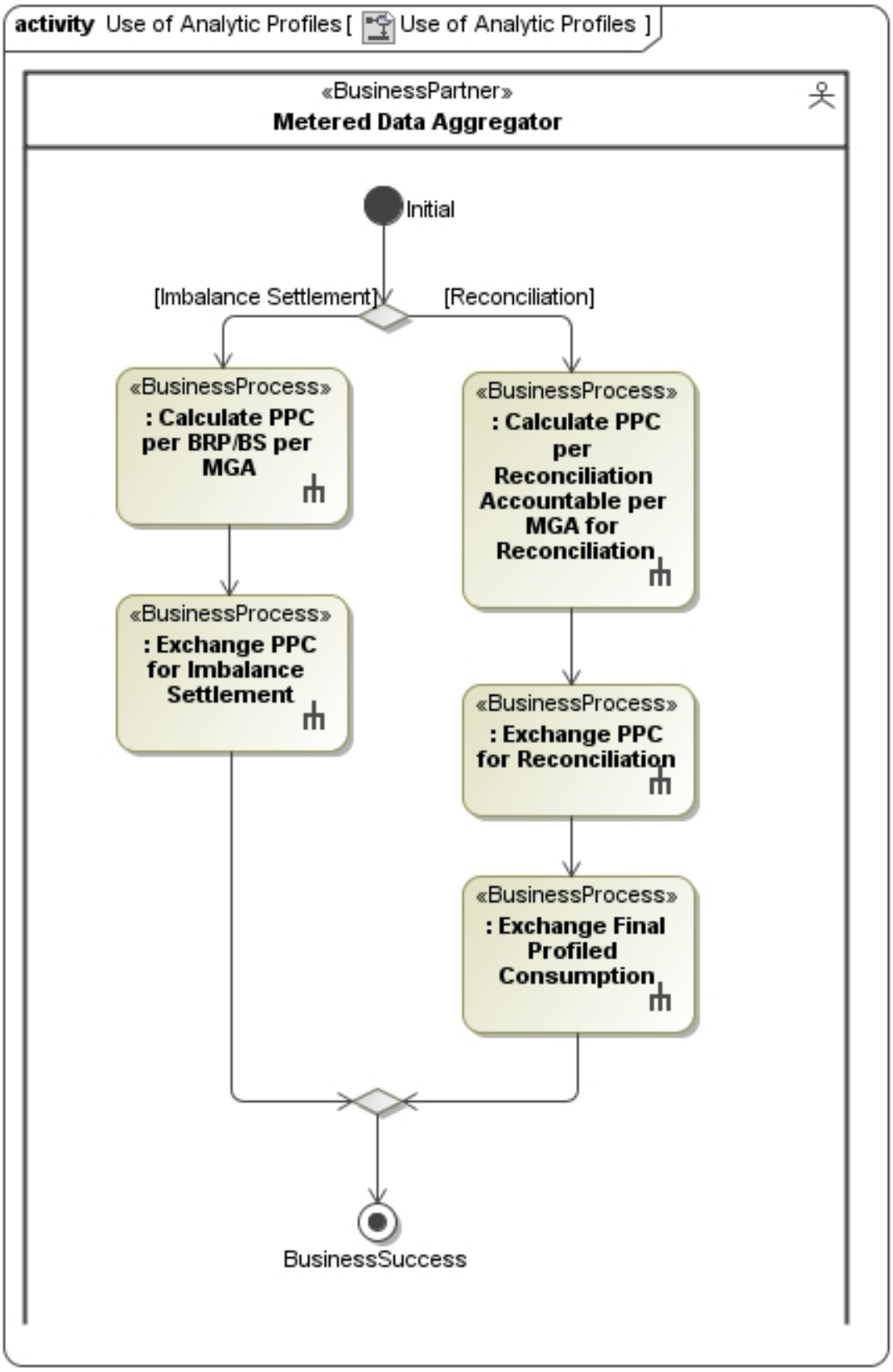


Figure 6 BP Use of Analytic Profiles

1.1.6.3.3. Calculate PPC per BRP/BS per MGA (Business Process UseCase)

This process is assumed to be part of the ENTSO-E Settlement Process (ESP) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/settlementv1r2/documentation/settlement-guide-v1r2.pdf), see [9]. It is therefore not further specified here.

1.1.6.3.4. Exchange PPC for Imbalance Settlement (Business Process UseCase)

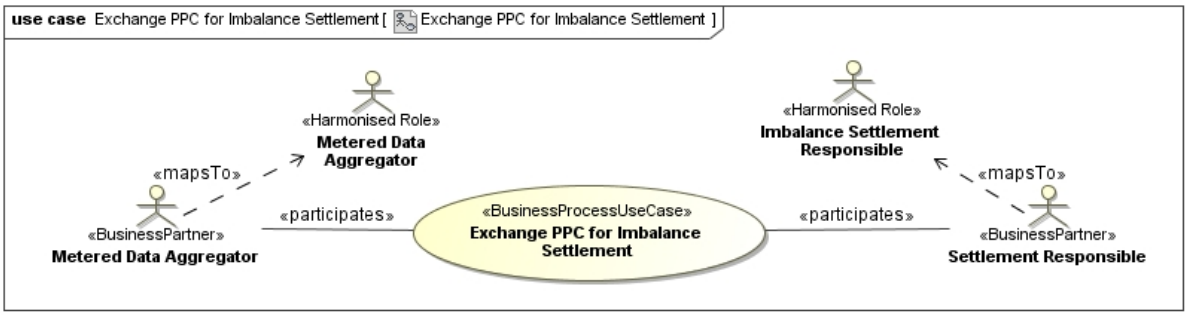


Figure 7 Exchange PPC for Imbalance Settlement

1.1.6.3.4.1. Description

UseCase description: Exchange PPC for Imbalance Settlement	
definition	The volumes aggregated per Metering Grid Area per set of (nationally defined) aggregation criteria are made available for the Settlement Responsible by the Metered Data Aggregator.
beginsWhen	The timing is guided by a time schedule (nationally defined).
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	The reception of the aggregated volumes has been acknowledged by the Settlement Responsible
postCondition	The aggregated volumes are available as input for the imbalance settlement process at the Settlement Responsible.
Exceptions	None
Actions	*See 1.1.6.3.4.2*

1.1.6.3.4.2. Business Process

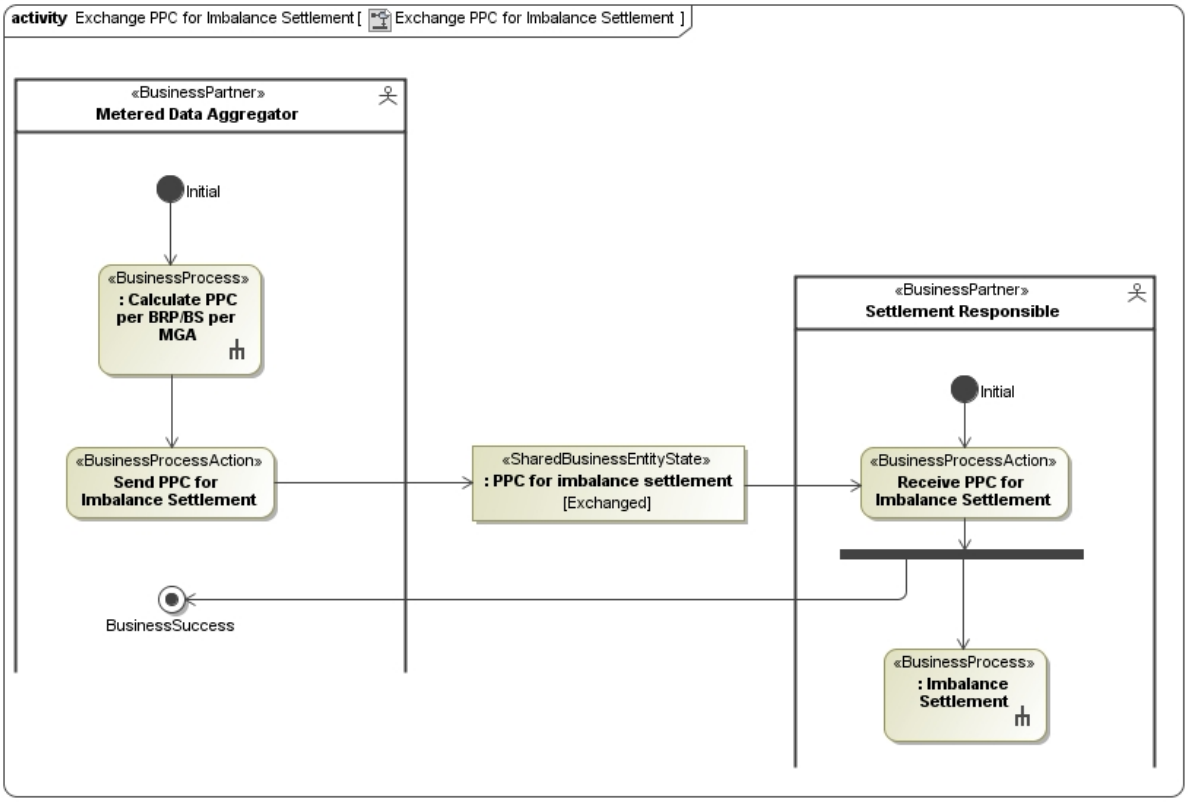


Figure 8 BP Exchange PPC for Imbalance Settlement

1.1.6.3.5. Calculate Final Profiled Consumption (Business Process UseCase)

This process is assumed to be part of the specifications provided by the ENTSO-E Settlement Process (ESP) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/settlementv1r2/documentation/settlement-guide-v1r2.pdf), see [9]. It is therefore not further specified here.

1.1.6.3.6. Exchange PPC for Reconciliation (Business Process UseCase)

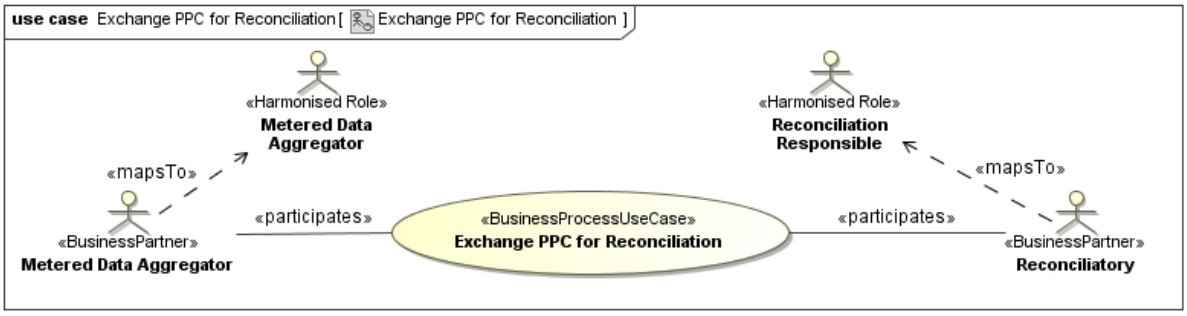


Figure 9 Exchange PPC for Reconciliation

1.1.6.3.6.1. Description

UseCase description: Exchange PPC for Reconciliation	
definition	The volumes aggregated per Metering Grid Area per set of (nationally defined) aggregation criteria are made available for the Reconciliatory by the Metered Data Aggregator.
beginsWhen	The timing is guided by a time schedule (nationally defined).
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	The reception of the aggregated volumes has been acknowledged by the Reconciliatory
postCondition	The aggregated volumes are available as input for the reconciliation process at the Reconciliatory.
Exceptions	None
Actions	*See 1.1.6.3.6.2*

1.1.6.3.6.2. Business Process

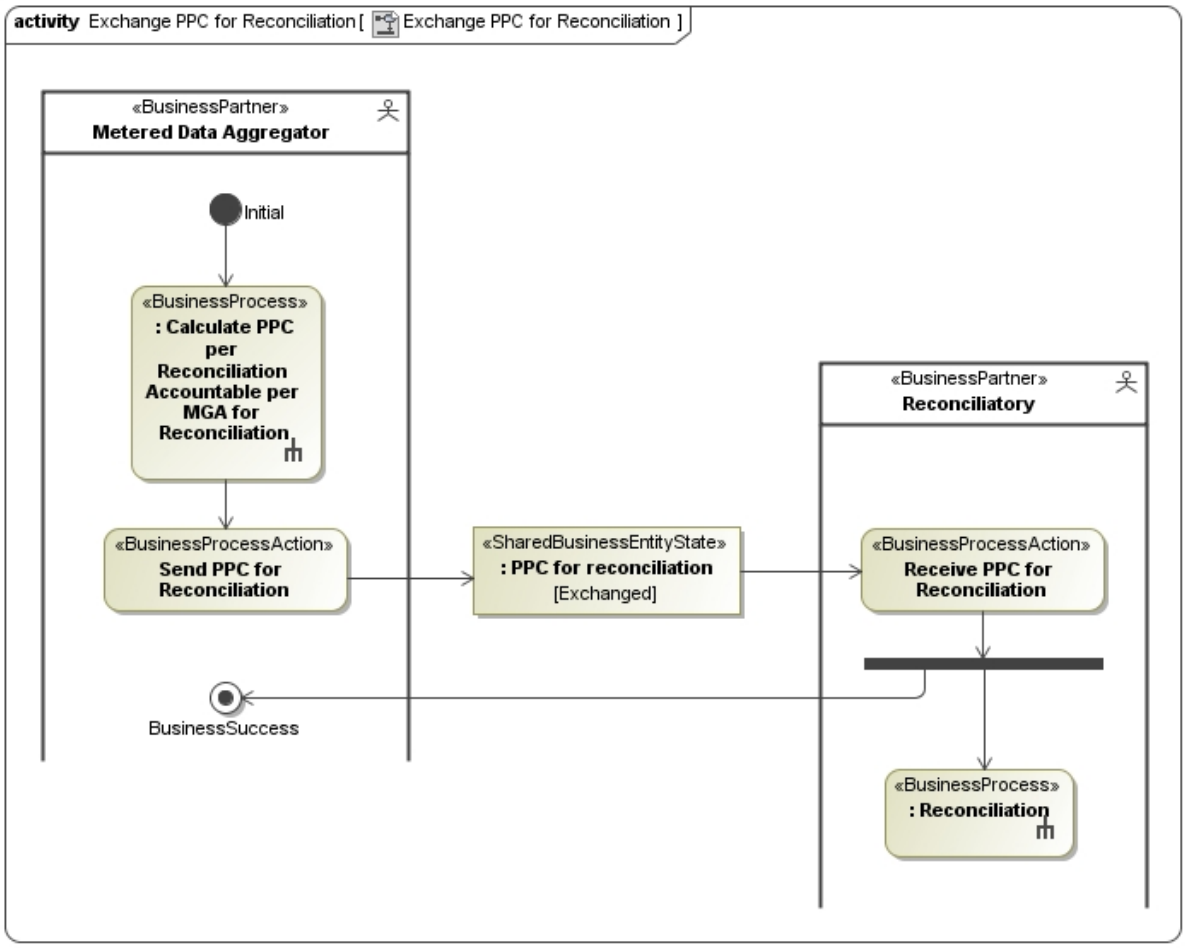


Figure 10 BP Exchange PPC for Reconciliation

1.1.6.3.7. Exchange Final Profiled Consumption (Business Process UseCase)

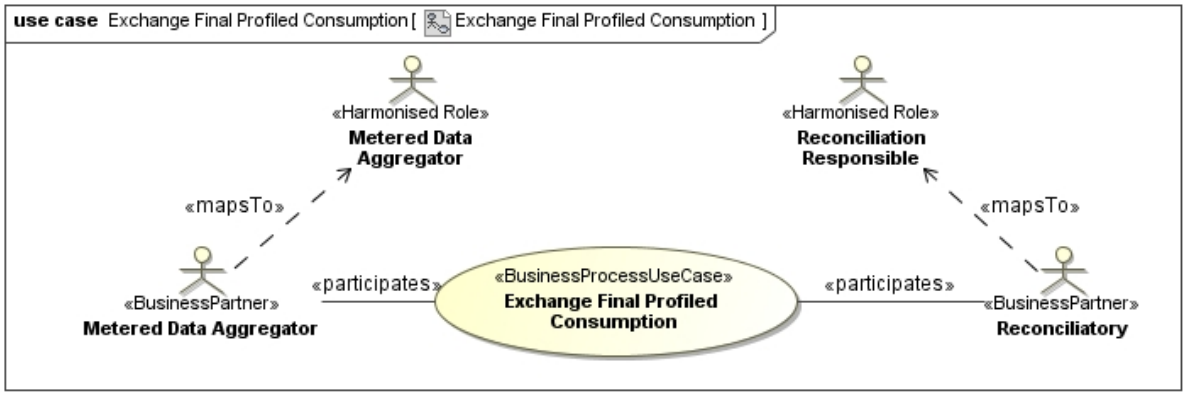


Figure 11 Exchange Final Profiled Consumption

1.1.6.3.7.1. Description

UseCase description: Exchange Final Profiled Consumption

definition	The volumes aggregated per Metering Grid Area per Reconciliation Accountable are made available for the Reconciliatory by the Metered Data Aggregator. The set is periodically updated by using recently received validated measured for a set Metering Points.
beginsWhen	The timing is guided by a time schedule (nationally defined).
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	The reception of the aggregated volumes has been acknowledged by the Reconciliatory
postCondition	The aggregated volumes are available as input for the reconciliation process at the Reconciliatory.
Exceptions	None
Actions	*See 1.1.6.3.7.2*

1.1.6.3.7.2. Business Process

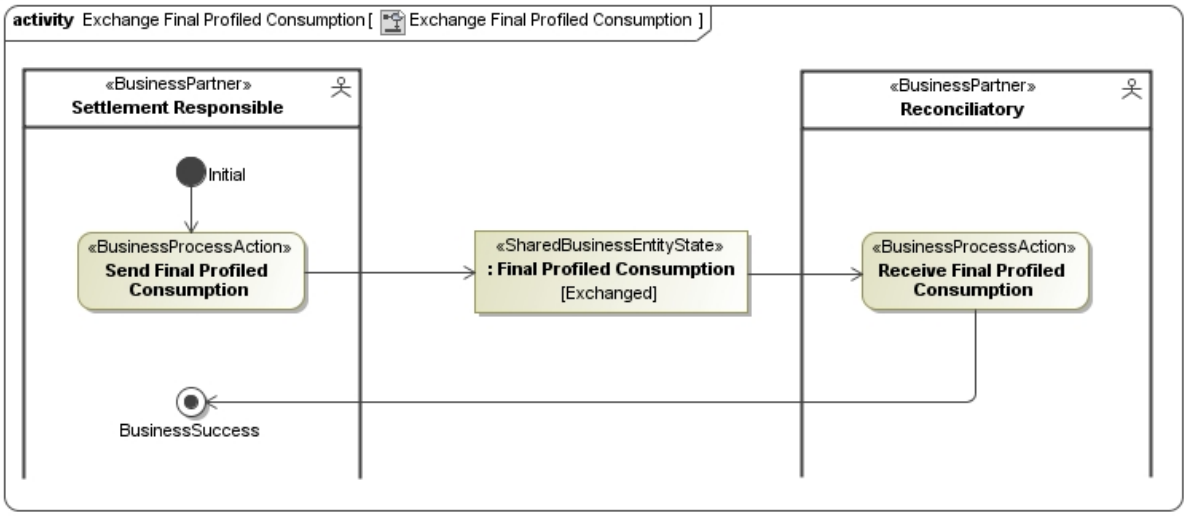


Figure 12 BP Exchange Final Profiled Consumption

1.1.6.4. Use of Synthetic Profiles (Business Process UseCase)

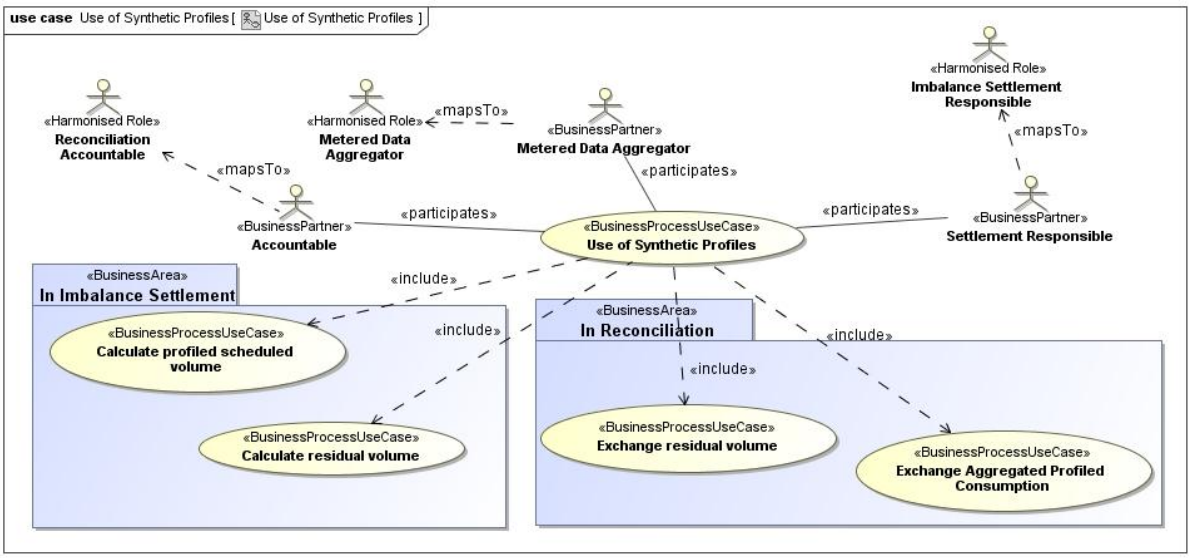


Figure 13 Use of Synthetic Profiles

1.1.6.4.1. Description

UseCase description: Use of Synthetic Profiles	
definition	The use (as master data for a MeteringPoint) of fractions per detail period defined in a profile category in combination with a standard annual volume for the calculation of volumes per detail period for the scheduling, settlement and reconciliation of profiled MeteringPoints.
beginsWhen	The timing of the various processes is guided by a time schedule (nationally defined). As a general rule can be stated, that the Imbalance Settlement processes is executed on a daily basis where the Reconciliation process is executed on a monthly basis.
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	All processes included in the time schedule have been executed according to the national rules and deadlines.
postCondition	The volumes per detail period are available for the calculation of volumes for either the scheduling and imbalance settlement processes or for the reconciliation process.
Exceptions	None
Actions	*See 1.1.6.4.2*

1.1.6.4.2. Business Process

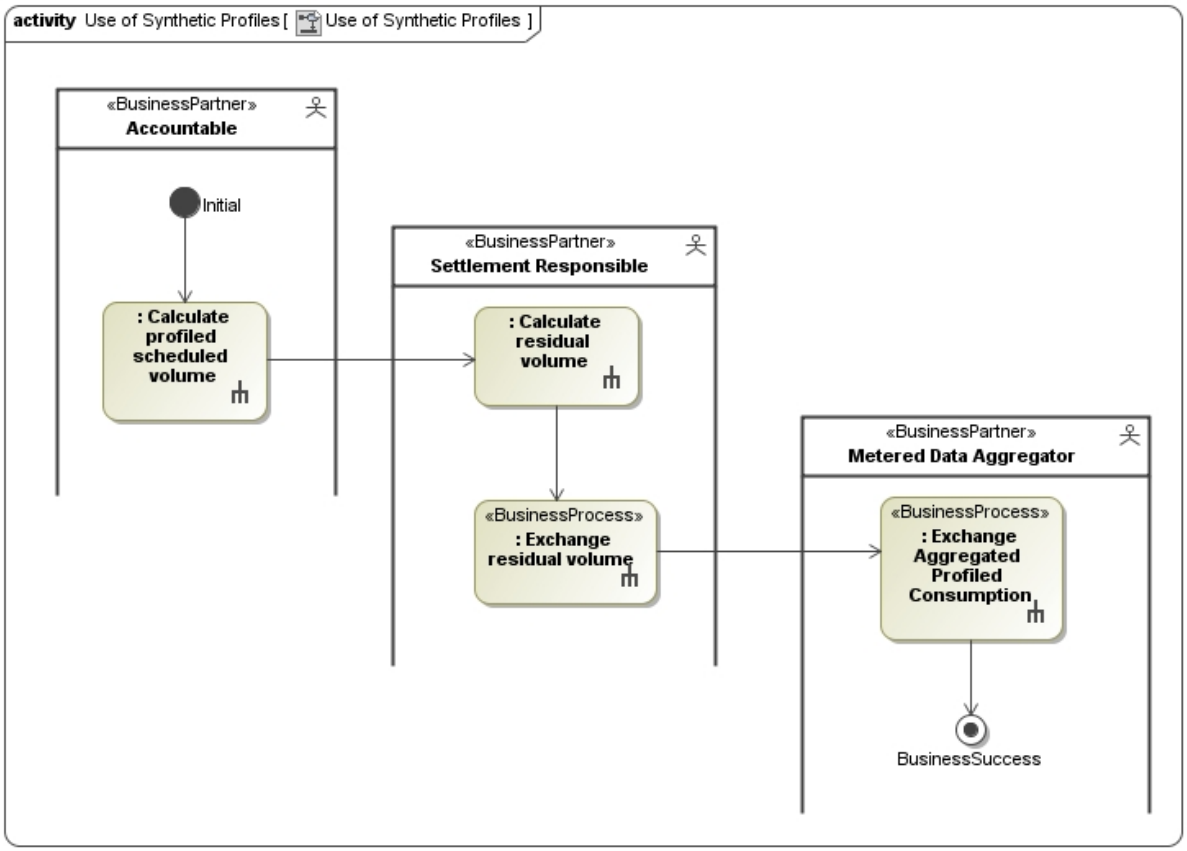


Figure 14 BP Use of Synthetic Profiles

1.1.6.4.3. Calculate profiled scheduled volume (Business Process UseCase)

This process is assumed to be part of the ENTSO-E Settlement Process (ESP) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/settlementv1r2/documentation/settlement-guide-v1r2.pdf), see [9]. It is therefore not further specified here.

1.1.6.4.4. Calculate residual volume (Business Process UseCase)

This process is assumed to be part of the ENTSO-E Settlement Process (ESP) Implementation Guide (https://www.entsoe.eu/fileadmin/user_upload/edi/library/settlementv1r2/documentation/settlement-guide-v1r2.pdf), see [9]. It is therefore not further specified here.

1.1.6.4.5. Exchange residual volume (Business Process UseCase)

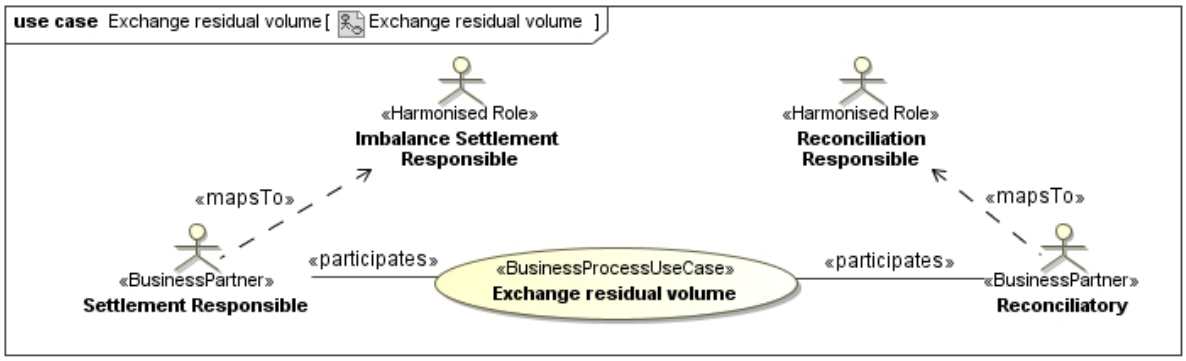


Figure 15 Exchange residual volume

1.1.6.4.5.1. Description

UseCase description: Exchange residual volume	
definition	The profiled volumes remaining from the imbalance settlement and aggregated per Metering Grid Area per set of (nationally defined) aggregation criteria are made available for the Reconciliatory by the Settlement Responsible.
beginsWhen	The timing of the process is guided by a time schedule (nationally defined). As a general rule can be stated, that the Imbalance Settlement processes (of which the residual volume is one of the results) is executed on a daily basis.
preCondition	The imbalance settlement has been finalized and partners responsible for the execution of the exchange should have access to relevant master data for the exchange.
endsWhen	The reception of the residual volumes has been acknowledged by the Reconciliatory.
postCondition	Residual volumes are available for the Reconciliatory.
Exceptions	None
Actions	*See 1.1.6.4.5.2*

1.1.6.4.5.2. Business Process

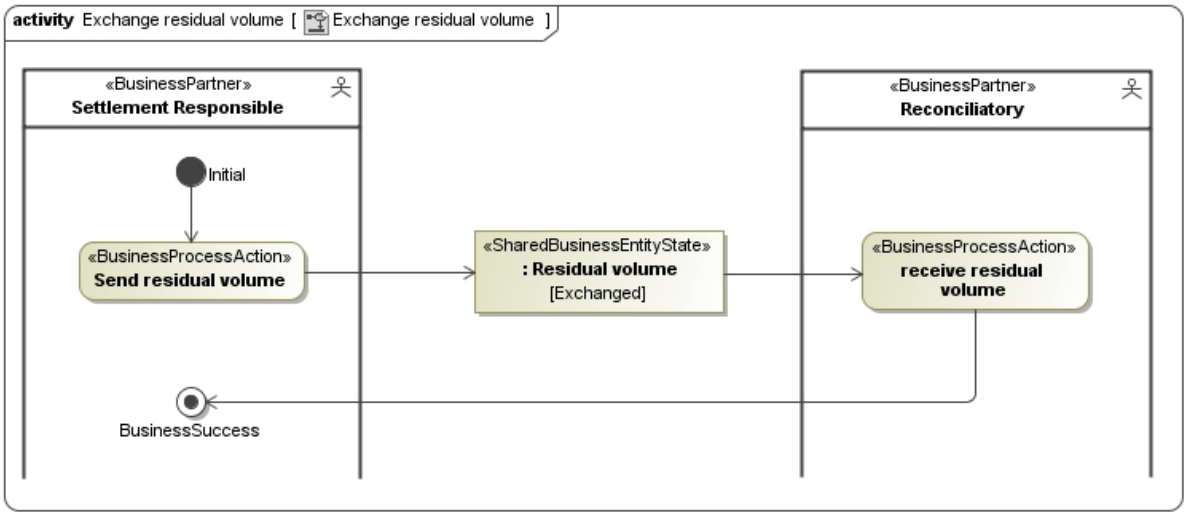


Figure 16 BP Exchange residual volume

1.1.6.4.6. Exchange Aggregated Profiled Consumption (Business Process UseCase)

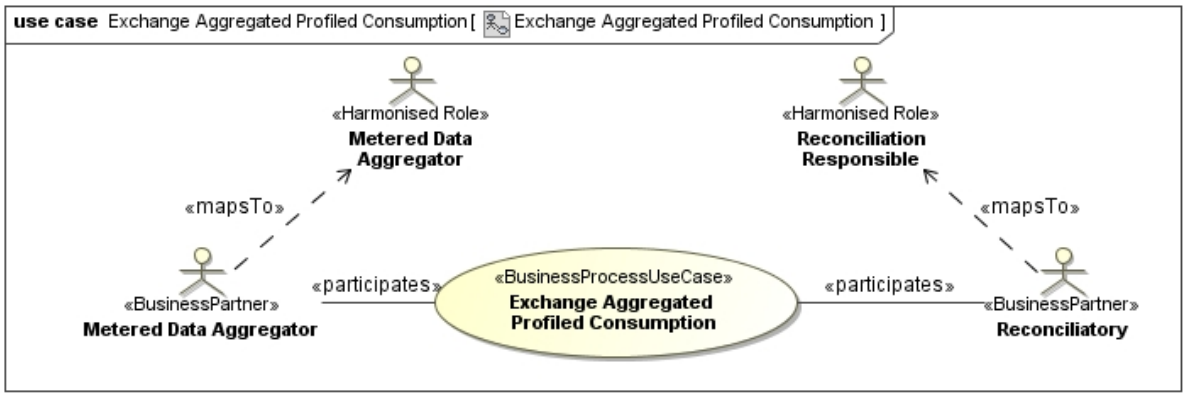


Figure 17 Exchange Aggregated Profiled Consumption

1.1.6.4.6.1. Description

UseCase description: Exchange Aggregated Profiled Consumption	
definition	The volumes aggregated per Metering Grid Area per Reconciliation Accountable are made available for the Reconciliatory by the Metered Data Aggregator. The set is periodically updated by using recently received validated measured for a set Metering Points.
beginsWhen	The timing is guided by a time schedule (nationally defined).
preCondition	Partners responsible for the execution of the processes should have access to relevant master data and input data for the process should be available.
endsWhen	The reception of the aggregated volumes has been acknowledged by the

	Reconciliatory
postCondition	The aggregated volumes are available as input for the reconciliation process at the Reconciliatory.
Exceptions	None
Actions	*See 1.1.6.4.6.2*

1.1.6.4.6.2. Business Process

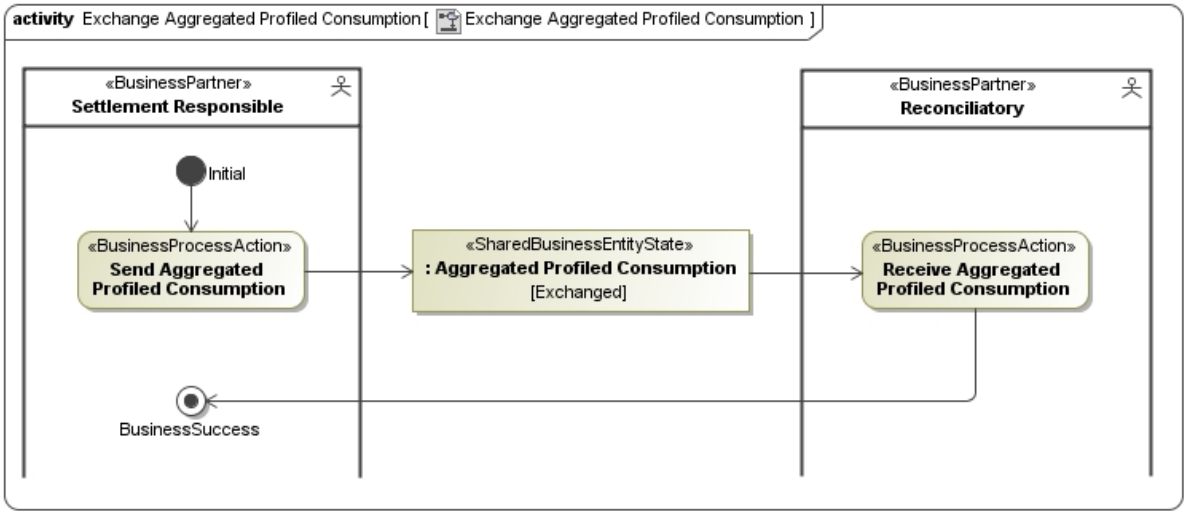


Figure 18 BP Exchange Aggregated Profiled Consumption

1.1.7. Reconciliation (Business Process UseCase)

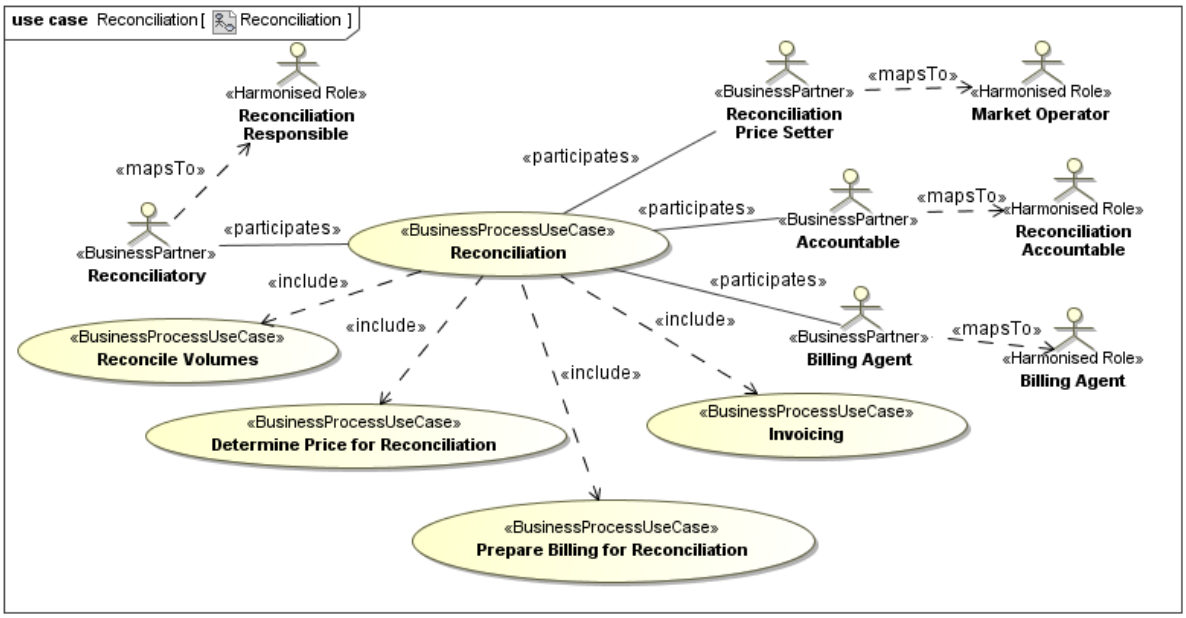


Figure 19 Reconciliation

1.1.7.1. Description

UseCase description: Reconciliation	
definition	The party accountable for the final settlement of imbalance for a profiled Metering Point is financially charged for this imbalance.
beginsWhen	The Reconciliatory • decides to, or • when the (national) time schedule prescribes him to.
preCondition	The Reconciliatory has available: • (National) Rules for reconciliation • The preliminary profiled consumption for profiled Metering Points within the Metering Grid Area resulting from Imbalance Settlement • Validated measured data for the profiled Metering Point(s) that will be part of the reconciliation • Profiled consumption per Reconciliation Accountable resulting from (according to national Reconciliation rules): o Profile category (as part of master data) for the Metering Point that will be part of the reconciliation o Preliminary profiled consumption derived from previous period

	• Master data for the exchange of data • Validated measured data used as input in the process “Reconcile Volumes” are supposed to be correct and up-to-date. Correction processes for incorrect data are supposed to be manual and specified according to national rules.
endsWhen	The financial accountability of all parties accountable for imbalance for one or more profiled Metering Point(s) is established.
postCondition	The party accountable for the final settlement of imbalance for a profiled Metering Point is financially charged.
exceptions	none
actions	*See 1.1.7.2*

1.1.7.2. Business Process

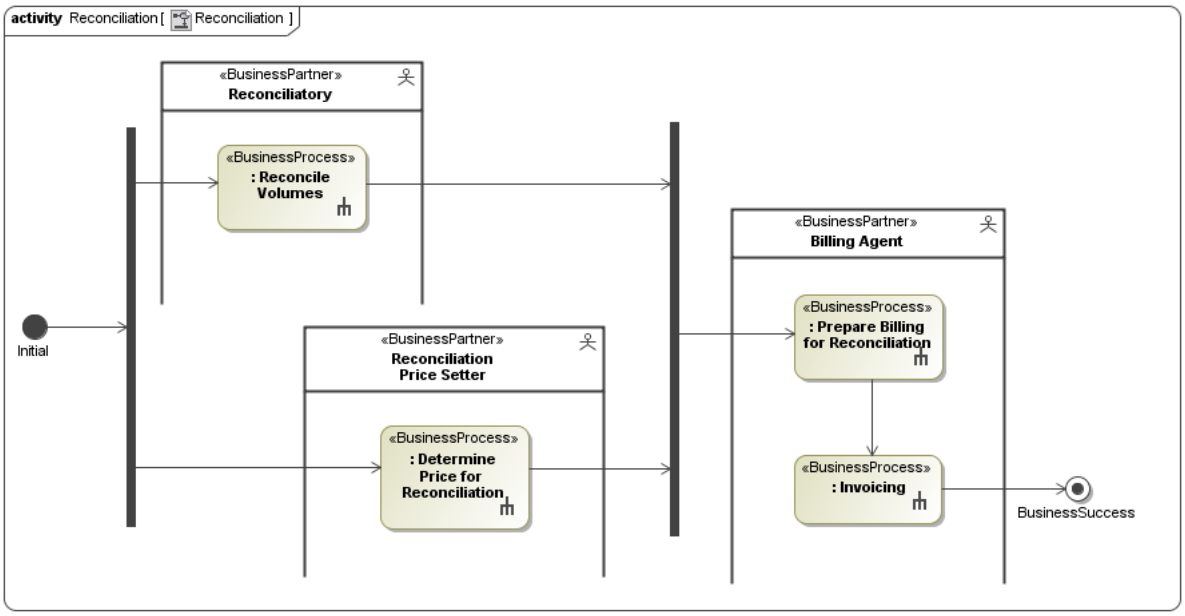


Figure 20 BP Reconciliation

1.1.7.3. Reconcile Volumes (Business Process UseCase)

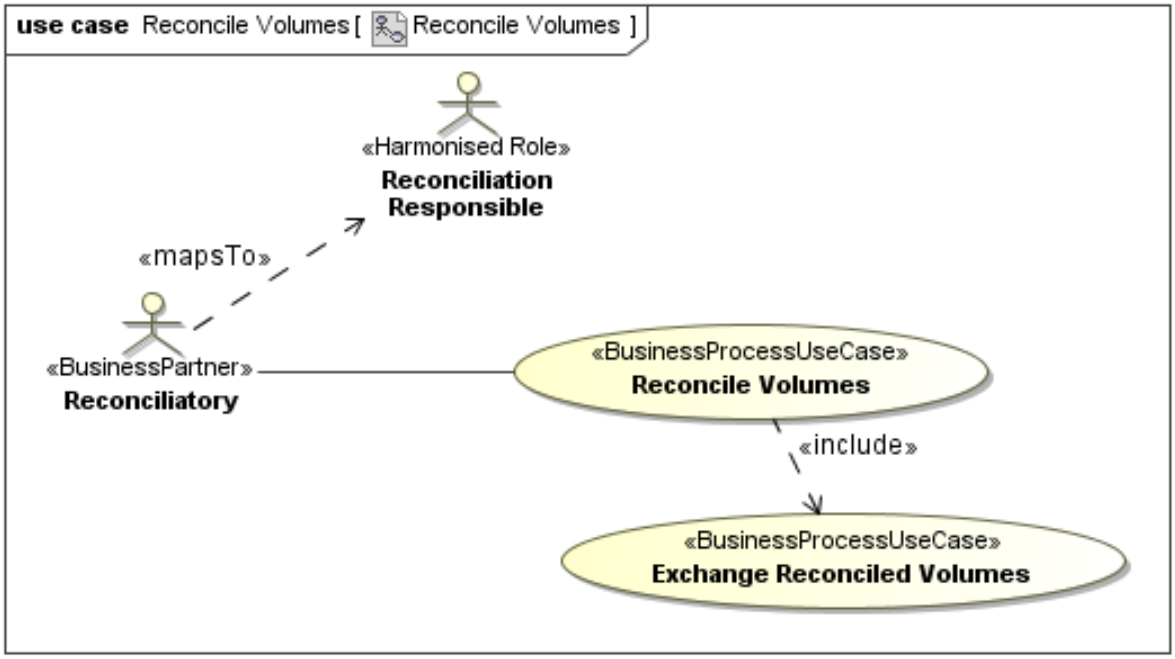


Figure 21 Reconcile Volumes

1.1.7.3.1. Description

UseCase description: Reconcile Volumes	
definition	Reconciled volumes are established per accountable party for profiled Metering Points and the results are made available to the Billing Agent In many countries the DSO acts as Reconciliatory
beginsWhen	The Reconciliatory • decides to or • when the (national) time schedule prescribes him to.
preCondition	See 1.1.7.1
endsWhen	The reconciled volumes have been exchanged.
postCondition	The reconciled volumes are available to the Billing Agent.
exceptions	none
actions	*See 1.1.7.3.2*

1.1.7.3.2. Business Process

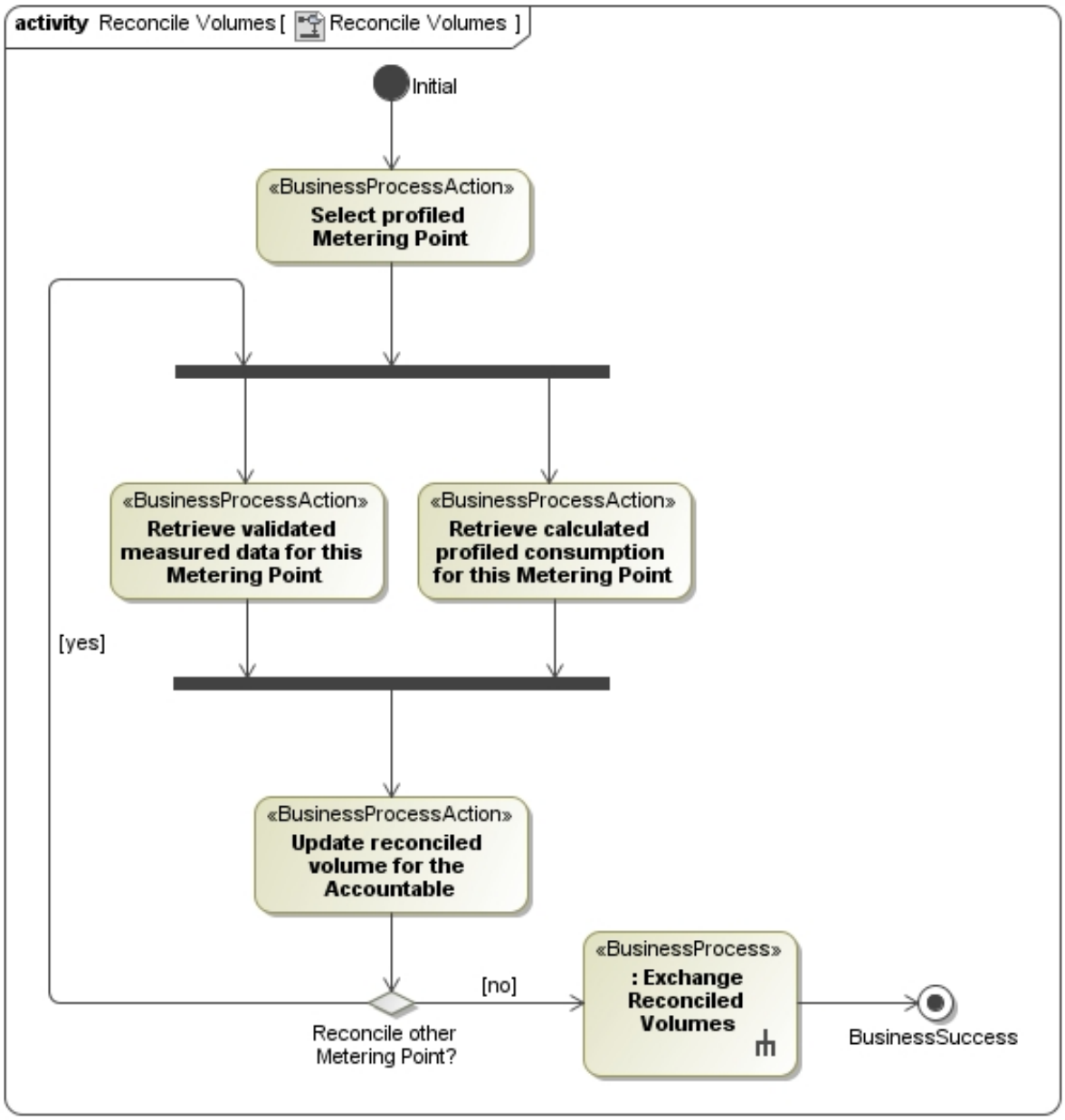


Figure 22 BP Reconcile Volumes

1.1.7.3.3. Exchange Reconciled Volumes (Business Process UseCase)

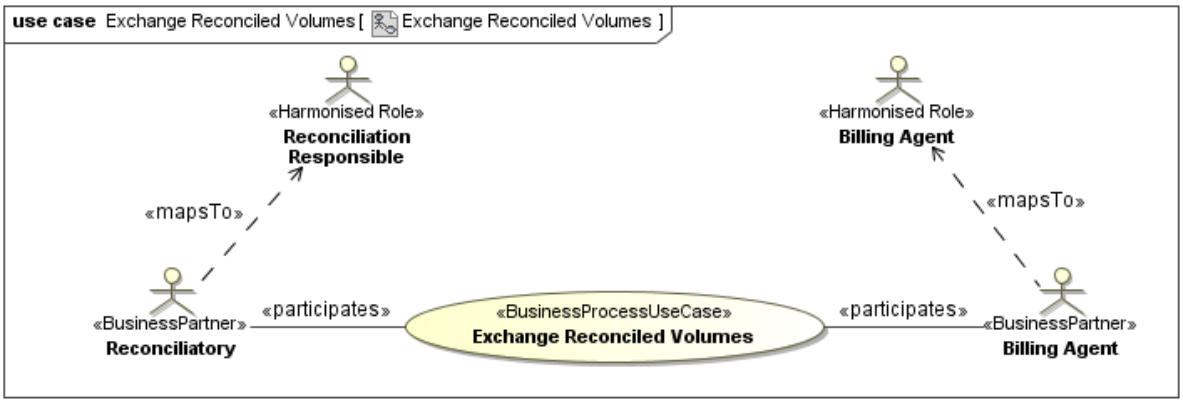


Figure 23 Exchange Reconciled Volumes

1.1.7.3.3.1. Description

UseCase description: Exchange Reconciled Volumes	
definition	Reconciliatory sends reconciled volumes to Billing Agent.
beginsWhen	The Reconciliatory • decides to, or • when the (national) time schedule prescribes him to.
preCondition	The Reconciliatory has available: • reconciled volumes per Reconciliation Accountable • master data for the exchange of data
endsWhen	The reception of the reconciled volumes has been acknowledged by the Billing Agent.
postCondition	Reconciled volumes are available for the Billing Agent.
exceptions	none
actions	*See 1.1.7.3.3.2*

1.1.7.3.3.2. Business Process

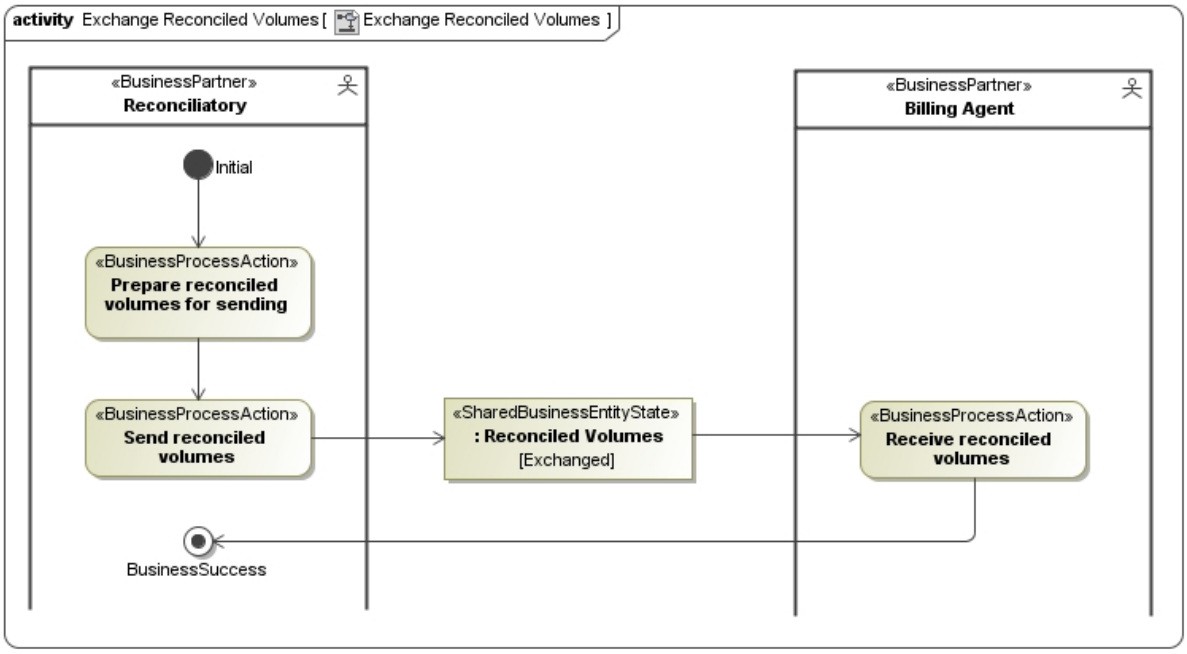


Figure 24 BP Exchange Reconciled Volumes

1.1.7.4. Determine Price for Reconciliation (Business Process UseCase)

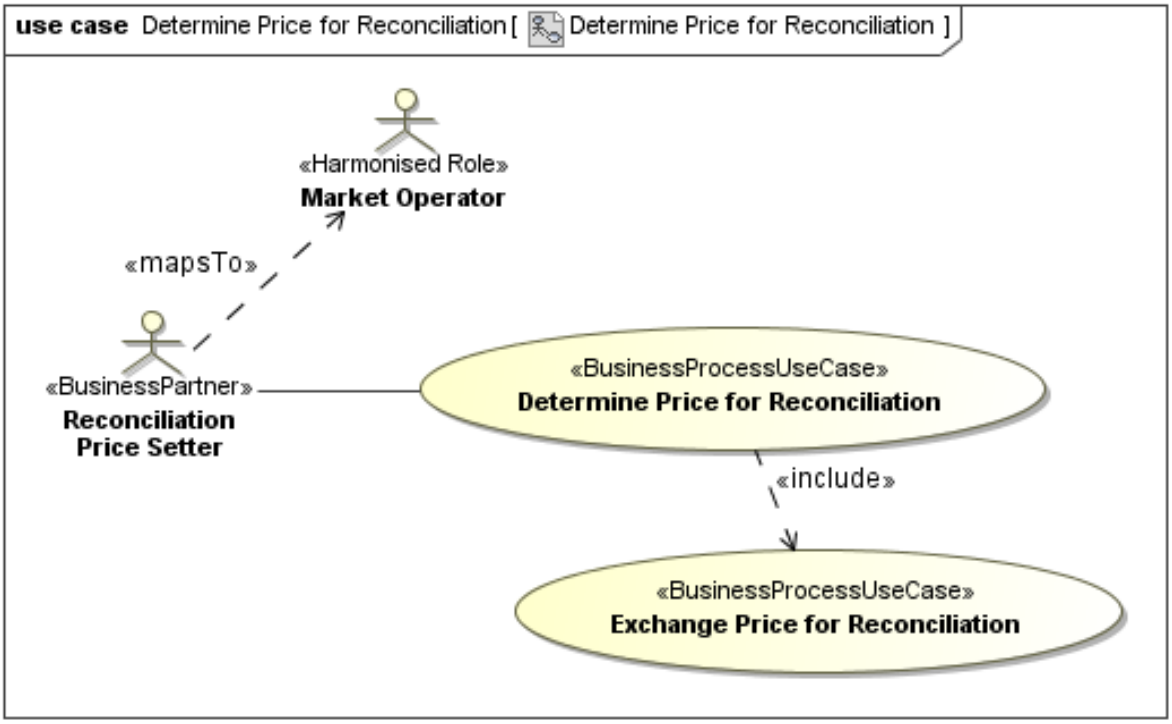


Figure 25 Determine Price for Reconciliation

1.1.7.4.1. Description

UseCase description: Determine Price for Reconciliation	
definition	The Reconciliation Price Setter determines the period price(s) for reconciled volumes in accordance with national rules and sends the resulting price(s) to the Billing Agent. In many countries the TSO acts as Reconciliation Price Setter.
beginsWhen	The Reconciliation Price Setter • decides to, or • when the (national) time schedule prescribes him to.
preCondition	The Reconciliation Price Setter has available: • (National) Rules to determine the price and • Input data on which the price is to be based • Master data for the exchange
endsWhen	The period price(s) for reconciled volumes has/have been determined and exchanged.
postCondition	The period price(s) for reconciled volumes are available to the Billing Agent.
exceptions	none
actions	*See 1.1.7.4.2*

1.1.7.4.2. Business Process

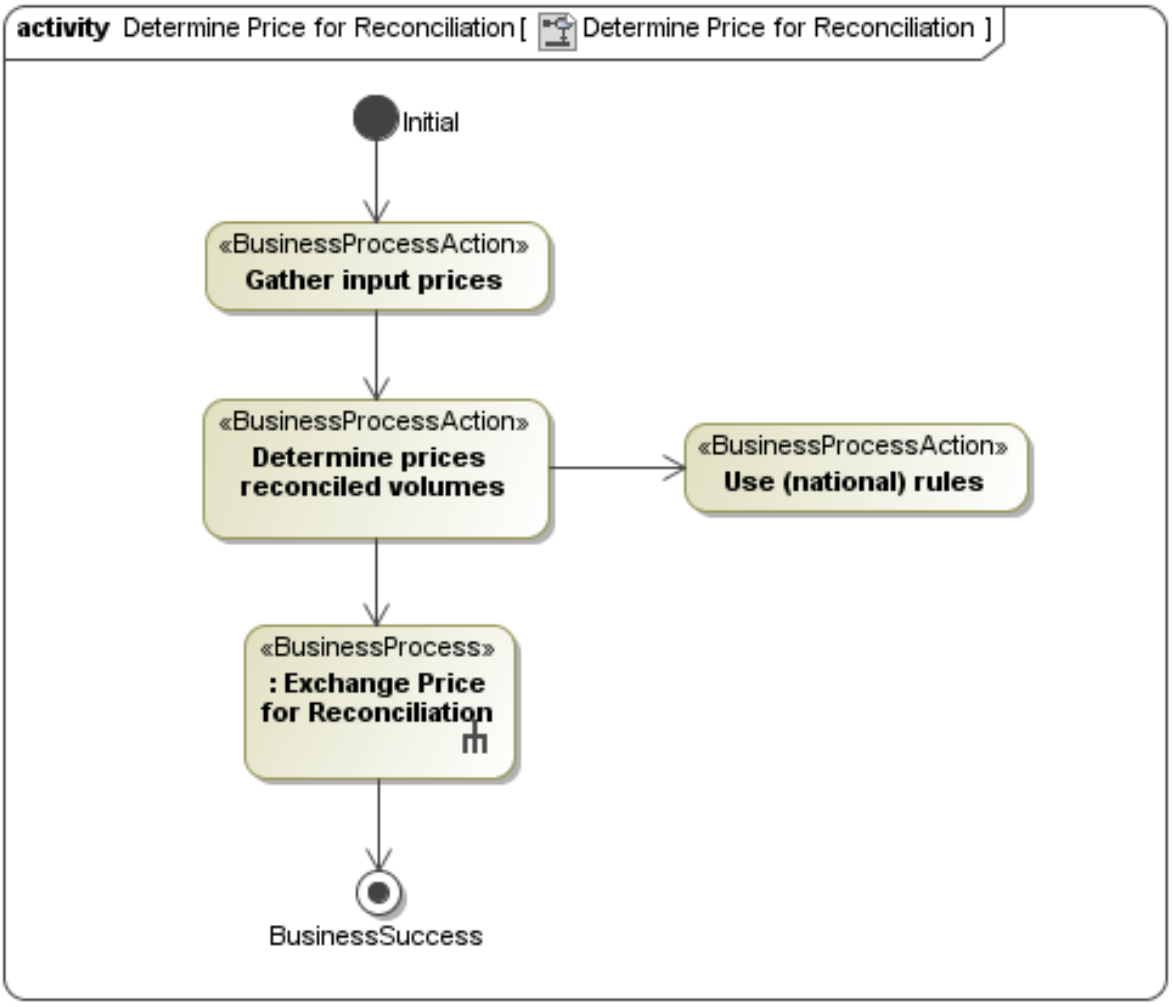


Figure 26 BP Determine Price for Reconciliation

1.1.7.4.3. Exchange Price for Reconciliation (Business Process UseCase)

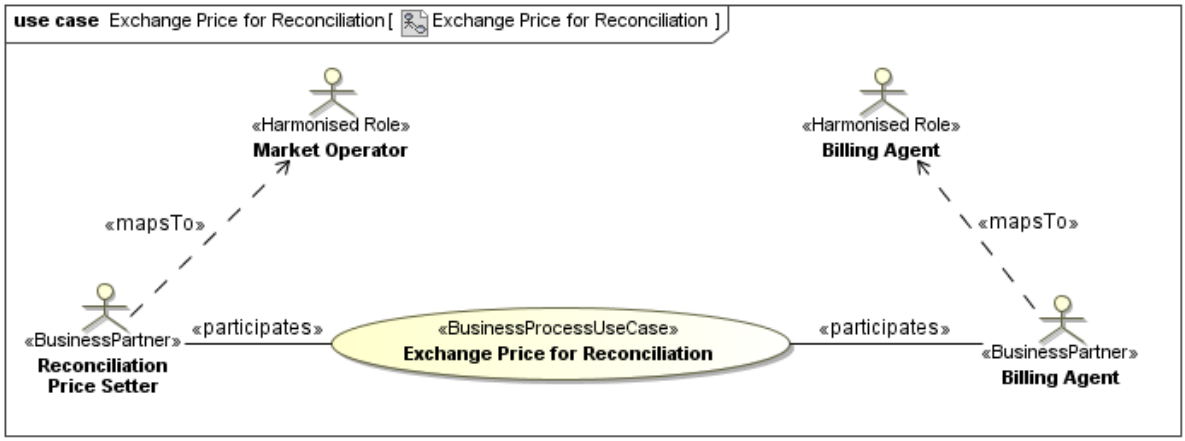


Figure 27 Exchange Price for Reconciliation

1.1.7.4.3.1. Description

UseCase description: Exchange Price for Reconciliation	
definition	The Reconciliation Price Setter sends prices for reconciled volumes to Billing Agent.
beginsWhen	The Reconciliation Price Setter • decides to, or • when the (national) time schedule prescribes him to.
preCondition	The Reconciliation Price Setter has available: • prices for reconciled volumes • master data for the exchange of data
endsWhen	The reception of the reconciliation prices has been acknowledged by the Billing Agent.
postCondition	Reconciliation prices are available for the Billing Agent.
exceptions	none
actions	*See 1.1.7.4.3.2*

1.1.7.4.3.2. Business Process

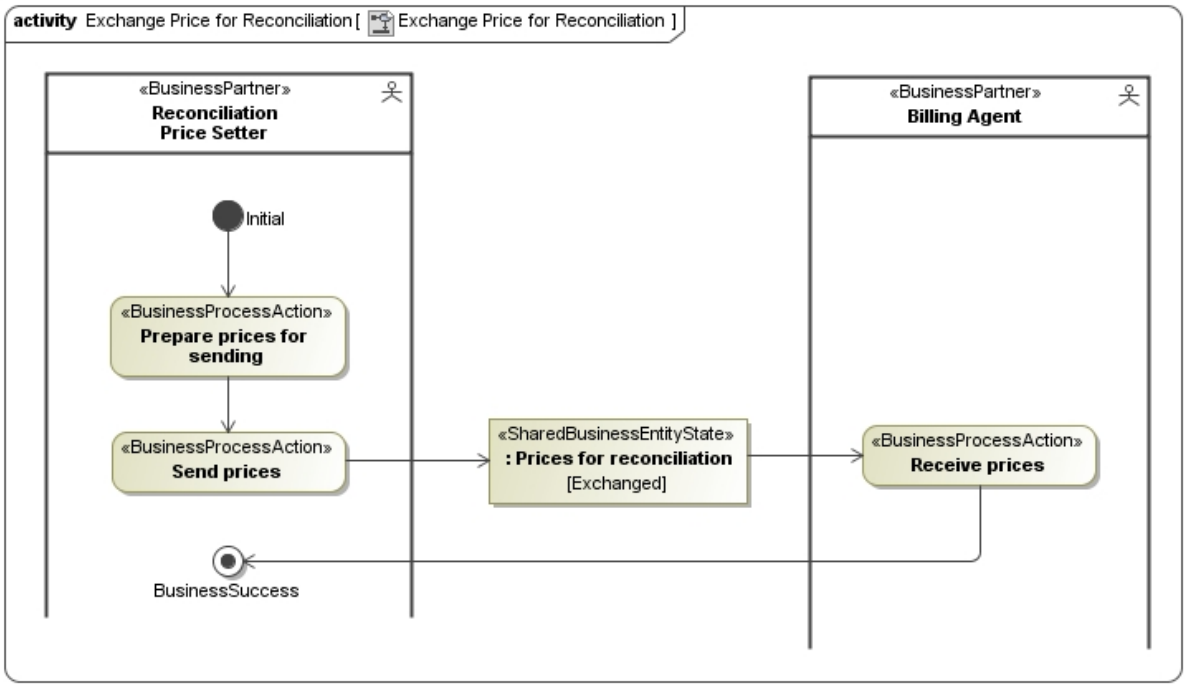


Figure 28 BP Exchange Price for Reconciliation

1.1.7.5. Prepare Billing for Reconciliation (Business Process UseCase)

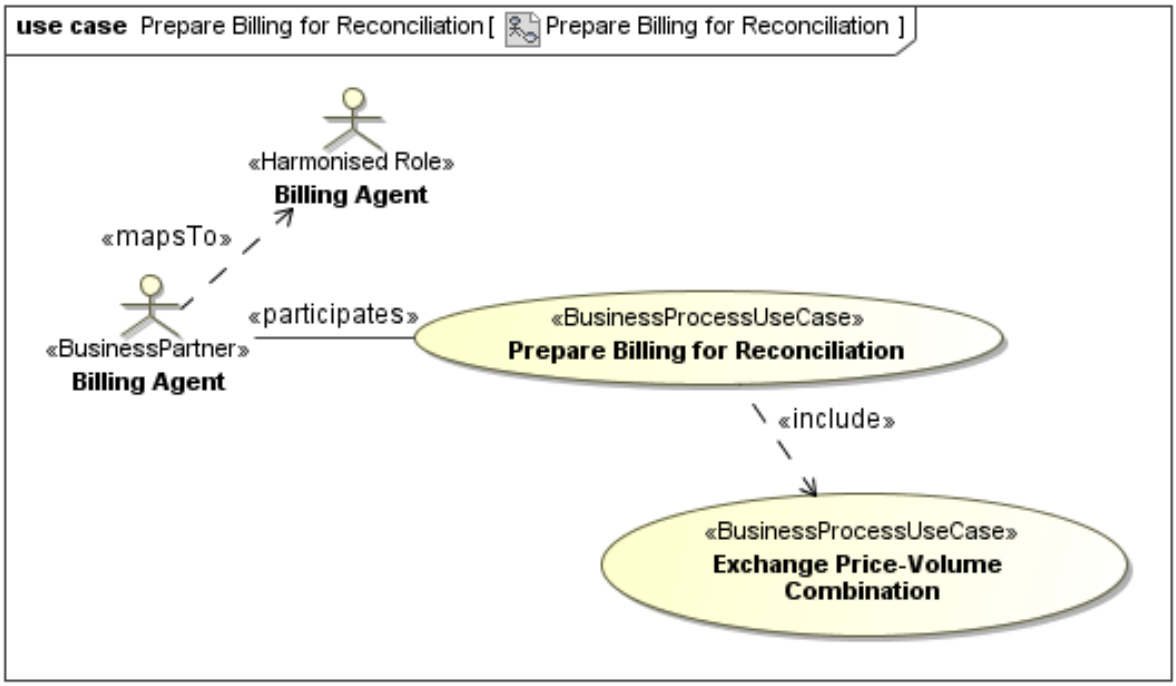


Figure 29 Prepare Billing for Reconciliation

1.1.7.5.1. Description

UseCase description: Prepare Billing for Reconciliation	
definition	Based on national rules the Billing Agent prepares and exchanges the reconciliation prices and reconciled volumes for the Reconciliation Accountable. In many countries the TSO acts as Billing Agent.
beginsWhen	The Billing Agent • decides to, or • when the (national) time schedule prescribes him to.
preCondition	The Billing Agent has available: • reconciled volumes and reconciliation prices • master data for the exchange of data
endsWhen	The information regarding the Price-Volume Combination has been exchanged and can be used for invoicing.
postCondition	The information regarding the Price-Volume Combination is available for the Reconciliation Accountable and the invoicing can be started.

exceptions	none
actions	see 1.1.7.5.2

1.1.7.5.2. Business Process

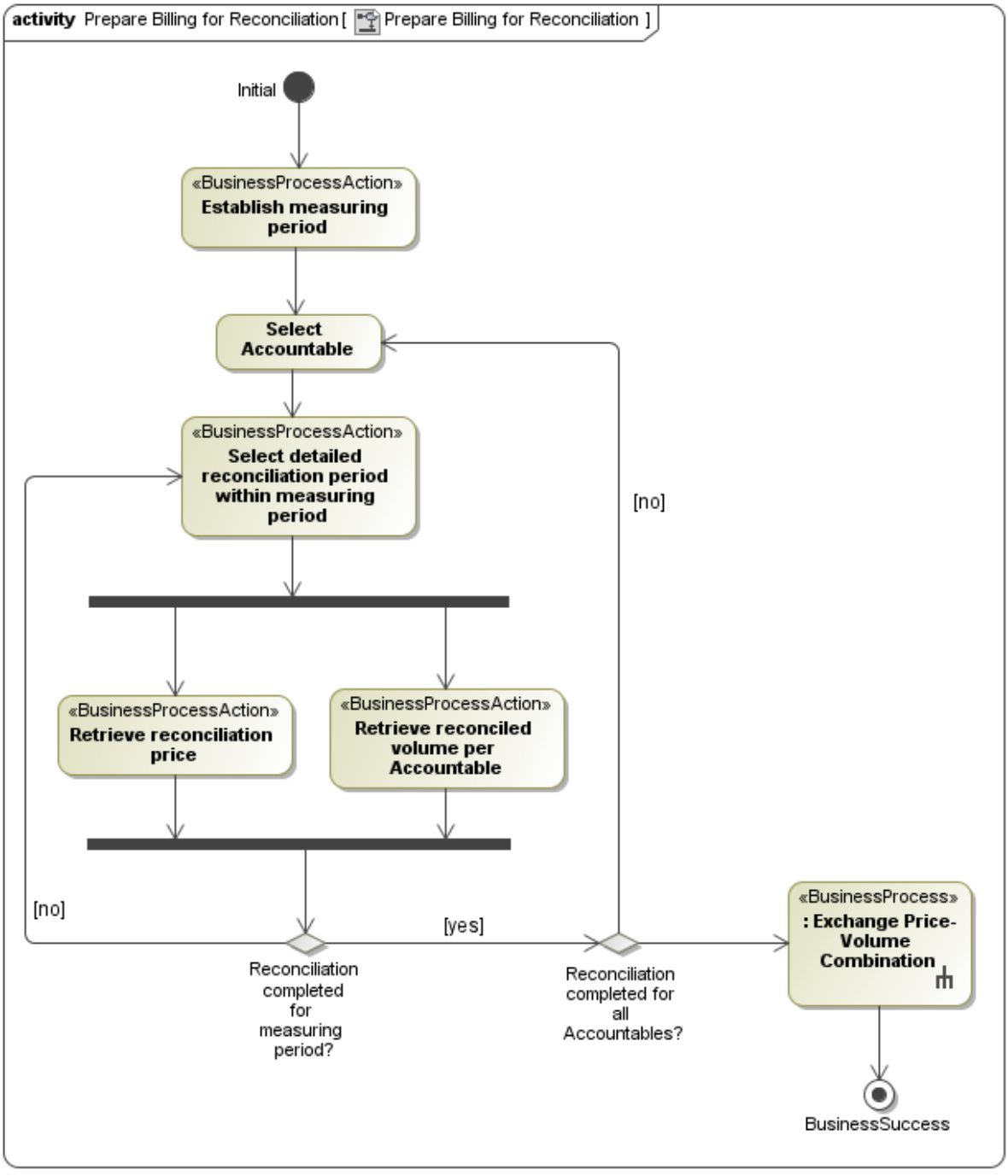


Figure 30 BP Prepare Billing for Reconciliation

1.1.7.5.3. Exchange Price-Volume Combination (Business Process UseCase)

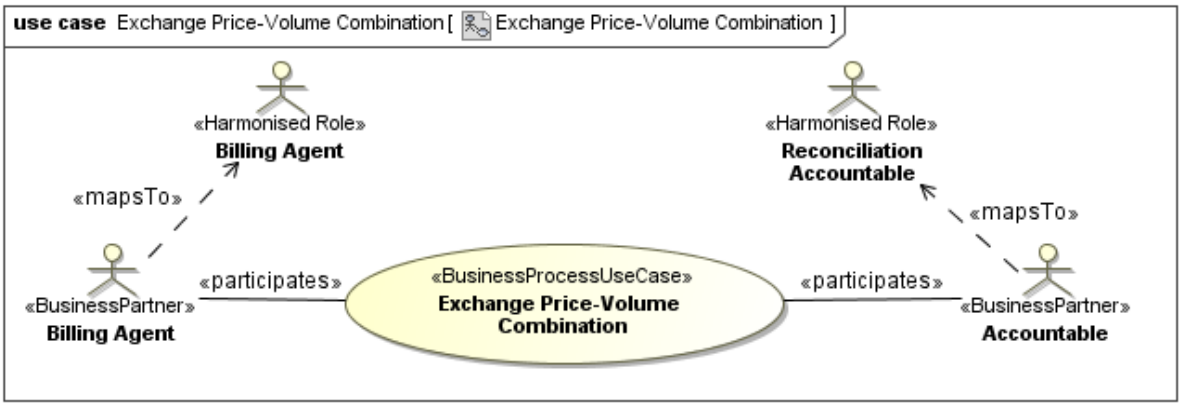


Figure 31 Exchange Price-Volume Combination

1.1.7.5.3.1. Description

UseCase description: Exchange Price-Volume Combination	
definition	The Billing Agent sends price-volume combinations to the Accountable
beginsWhen	The Billing Agent • decides to, or • when the (national) time schedule prescribes him to.
preCondition	The Billing Agent has available: • reconciliation price per detailed period • reconciled volume per detailed period • master data for the exchange of data
endsWhen	The reception of the price-volume combinations has been acknowledged by the Accountable.
postCondition	Price-volume combinations are available for the Billing Agent and the Accountable.
exceptions	none
actions	See 1.1.7.5.3.2

1.1.7.5.3.2. Business Process

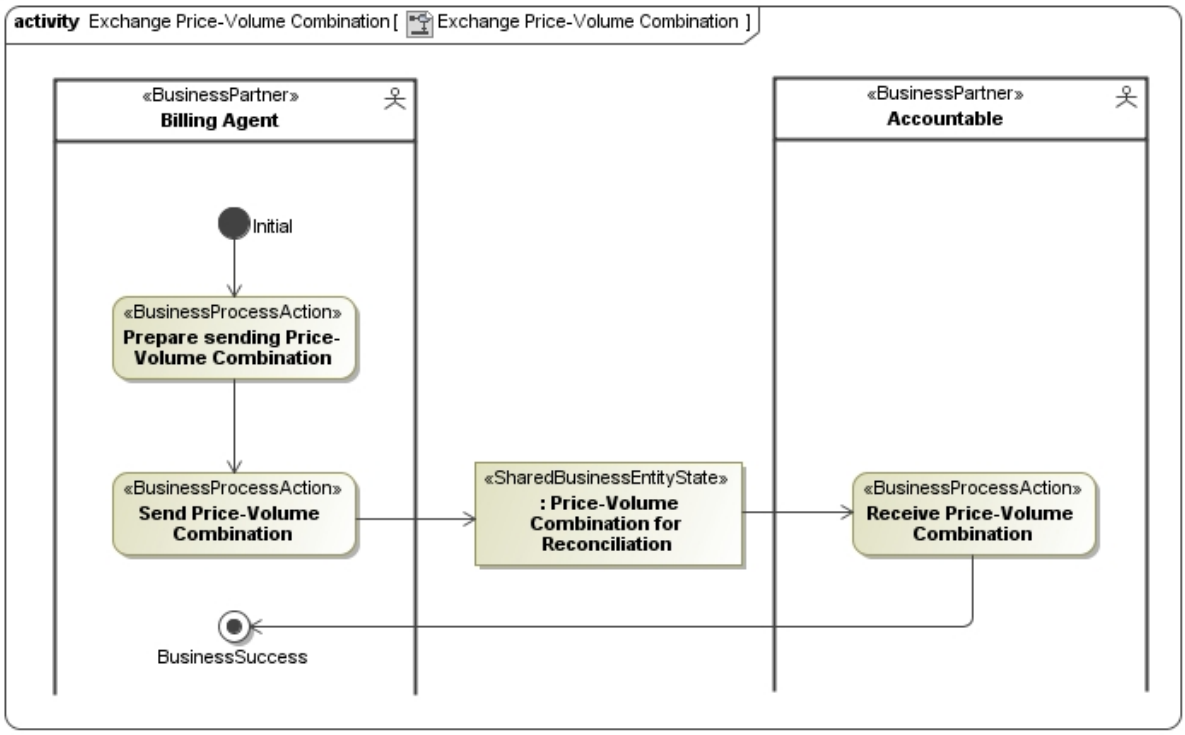


Figure 32 BP Exchange Price-Volume Combination

1.1.7.6. Invoicing (Business Process UseCase)

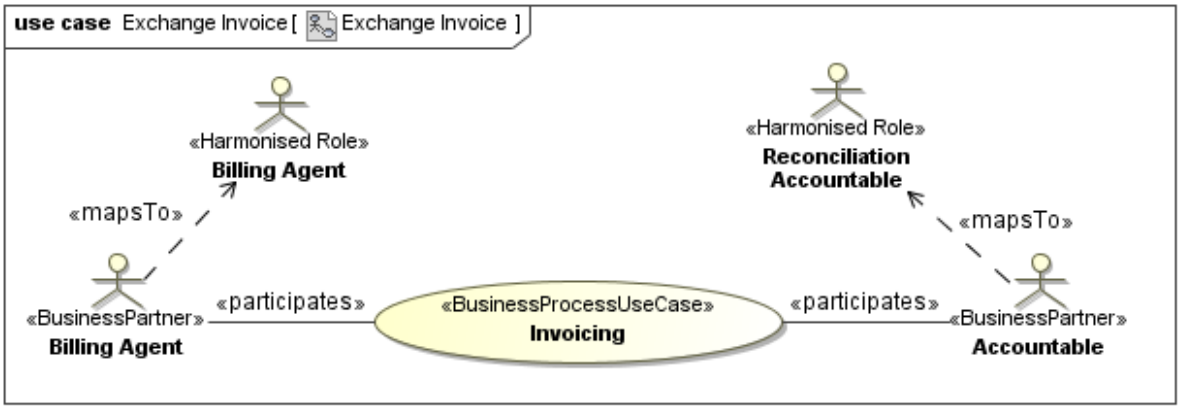


Figure 33 Invoicing

The invoicing process is not specified in further detail here. This is left to national specification.

1.2. Business Partner View

1.2.1. Business Partners Settle for Reconciliation

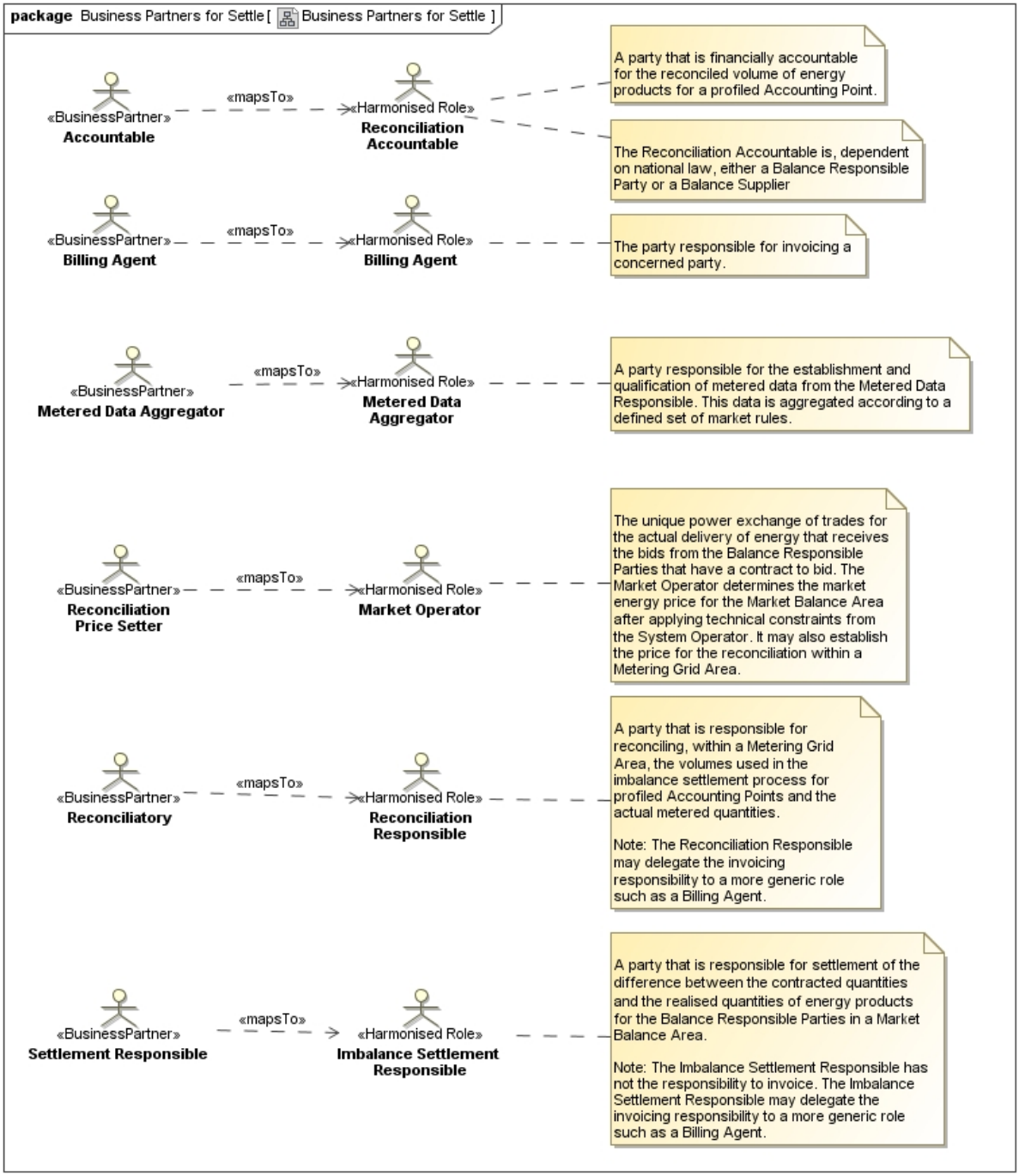


Figure 34 Business Partners Settle for Reconciliation

1.3. Business Entity View

1.3.1. Short introduction

In these business requirements the ebIX® work group EMD has for the first time used the principle of specifying the core data set as business requirements. This core data set is defined as the set of information that is required when using synchronous web services as the exchange mechanism.

The information required for a-synchronous web services is added as an option.

Finally optional information is specified.

For exchange as a stand-alone document header and context information will have to be added. But this is not regarded as a business requirement when defining the core data set, but as a requirement for technical implementation or mapping to syntax.

It is important to note that it is assumed for defining the core data set, that Metering Points are uniquely dedicated to either electricity or to gas. As a consequence the specification of the business sector is not part of core data set anymore.

1.3.2. PPC for imbalance settlement (Class Diagram)

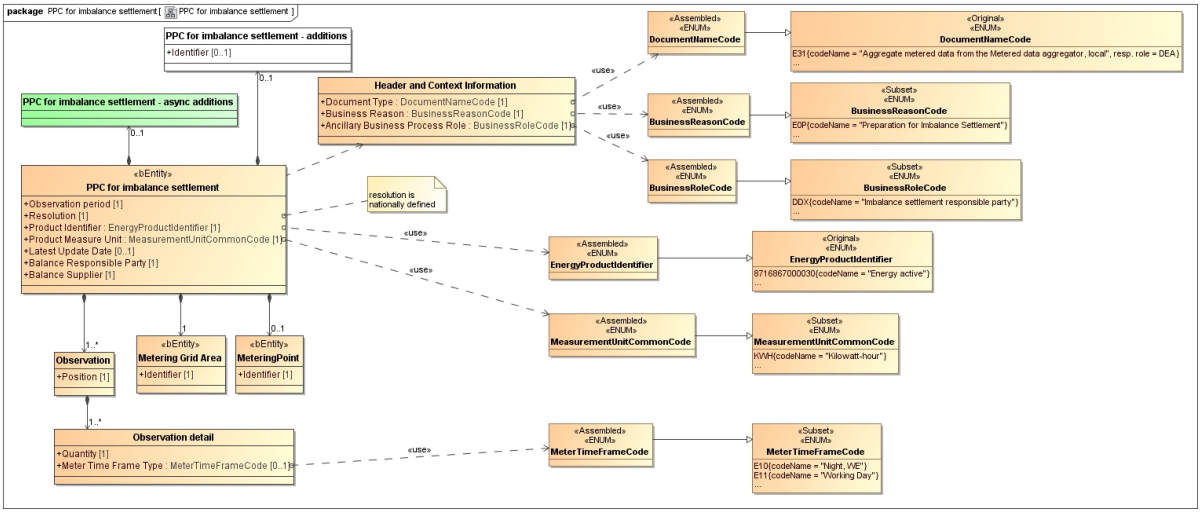


Figure 35 PPC for imbalance settlement

Element definitions, PPC for imbalance settlement	
«Business entity» PPC for reconciliation	The information set of PPC for imbalance settlement sent by a Metered Data Aggregator for the imbalance settlement of profiled Metering Points within a Metering Grid Area to the Settlement Responsible in order to enable the imbalance settlement.
Observation Period	A specific period of time describing the duration of this set of PPC for imbalance settlement.
Resolution	The resolution of this set of volumes expressed as a duration between the start and end of subsequent observations within this set of PPC for imbalance settlement.
Product Identifier	A code specifying the energy product for the quantity in this time series/set of PPC for imbalance settlement.
Product Measure Unit	The unit of measure used for the quantity in this time series/set of PPC for imbalance settlement.
Latest Update Date	The latest date on which one or more of the volumes of aggregated measured data to be used for the imbalance settlement have been updated.
Reconciliation Accountable	A party that is financially accountable for the reconciled volume of energy products for a profiled Accounting Point.
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the PPC for imbalance settlement is applicable.
Identifier	The unique identification of this Metering Grid Area.
Observation	A set of one or more Preliminary Profiled Consumption(s) for a detail period. The detail set volume(s) may be a part of a wider (e.g 24 hour) set of such volumes.

Position	The ordinal position of this observation in the wider set of Preliminary Profiled Consumptions.
Observation detail	A set of values for Preliminary Profiled Consumption for a detail period. The volume(s) and their characteristics may be a part of a set of such volumes.
Quantity	The Preliminary Profiled Consumption - quantity of energy for this observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the quantity in question.
PPC for reconciliation Additions	Additional information, related to PPC 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.
Identifier	The unique identification of this set of information as given by the Metered Data Aggregator.
PPC for reconciliation Async Additions	Additional information, related to PPC 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.
Header and Context Information	The set of information specifying the information to be added to this payload “PPC for imbalance settlement” 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. PPC for imbalance settlement (State Diagram)

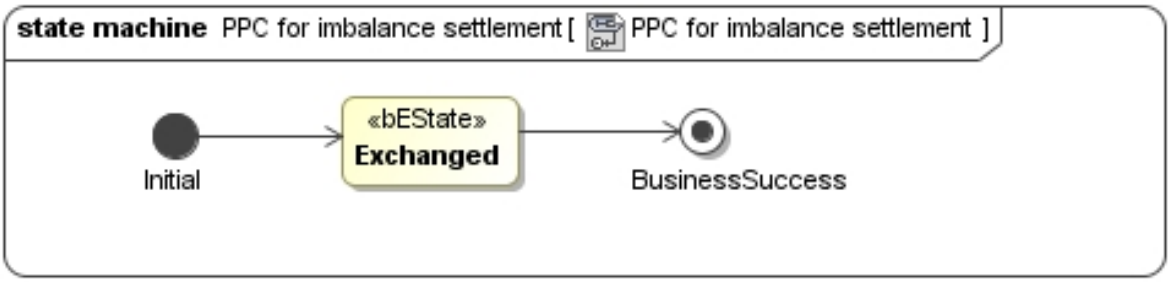


Figure 36 SD PPC for imbalance settlement

1.3.3. PPC for reconciliation (Class Diagram)

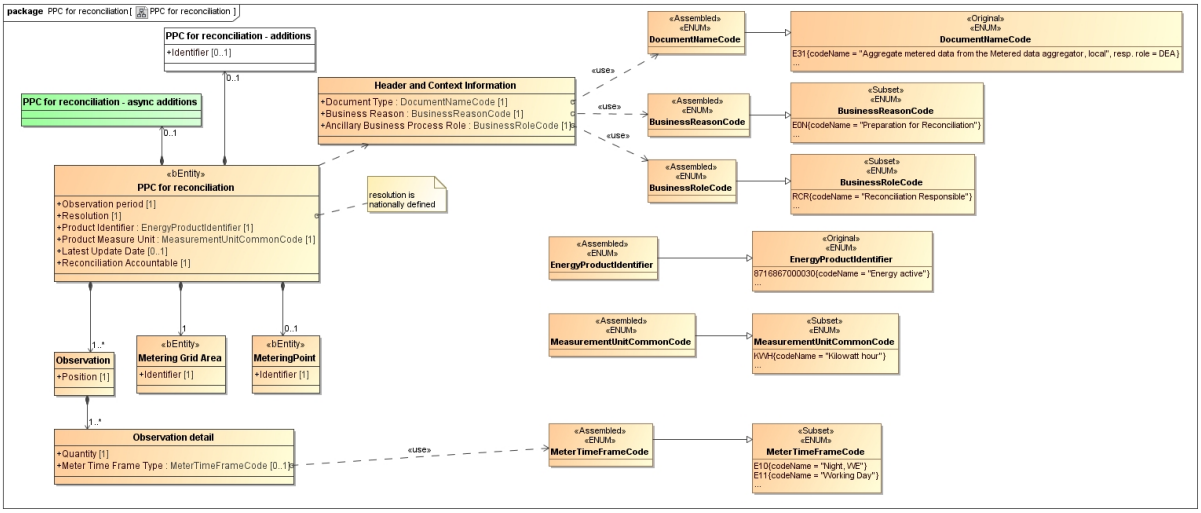


Figure 37 PPC for reconciliation

Element definitions, PPC for reconciliation	
«Business entity» PPC for reconciliation	The information set of PPC for reconciliation sent by a Metered Data Aggregator for the reconciliation of profiled Metering Points within a Metering Grid Area to the Reconciliatory in order to enable the reconciliation.
Observation Period	A specific period of time describing the duration of this set of PPC for reconciliation.
Resolution	The resolution of this set of reconciled volumes expressed as a duration between the start and end of subsequent observations within this set of PPC for reconciliation.
Product Identifier	A code specifying the energy product for the quantity in this time series/set of PPC for reconciliation.
Product Measure Unit	The unit of measure used for the quantity in this time series/set of PPC for reconciliation.
Latest Update Date	The latest date on which one or more of the volumes of aggregated measured data to be used for the reconciliation have been updated.
Reconciliation Accountable	A party that is financially accountable for the reconciled volume of energy products for a profiled Accounting Point.
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the PPC for reconciliation is applicable.
Identifier	The unique identification of this Metering Grid Area.
Observation	A set of one or more Preliminary Profiled Consumption(s) for a detail period. The detail set volume(s) may be a part of a wider (e.g 24 hour) set of such volumes.
Position	The ordinal position of this observation in the wider set of Preliminary Profiled Consumptions.

Observation detail	A set of values for Preliminary Profiled Consumption for a detail period. The volume(s) and their characteristics may be a part of a set of such volumes.
Quantity	The Preliminary Profiled Consumption - quantity of energy for this observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the quantity in question.
PPC for reconciliation Additions	Additional information, related to PPC for reconciliation, 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 Metered Data Aggregator.
PPC for reconciliation Async Additions	Additional information, related to PPC for reconciliation, 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.
Header and Context Information	The set of information specifying the information to be added to this payload "PPC for reconciliation" 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. PPC for reconciliation (State Diagram)

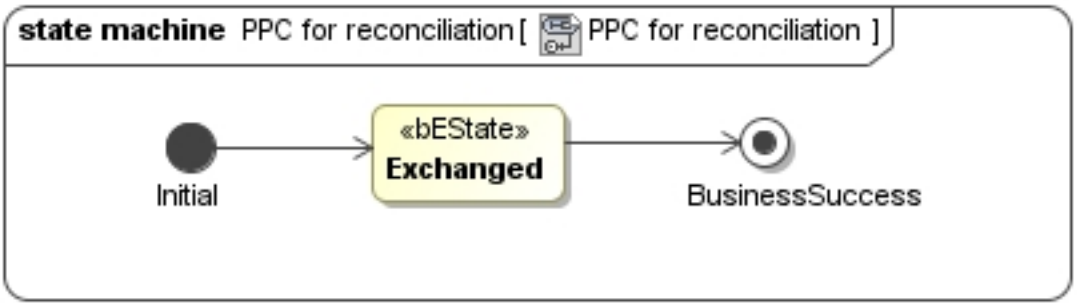


Figure 38 SD PPC for reconciliation

1.3.4. Final Profiled Consumption (Class Diagram)

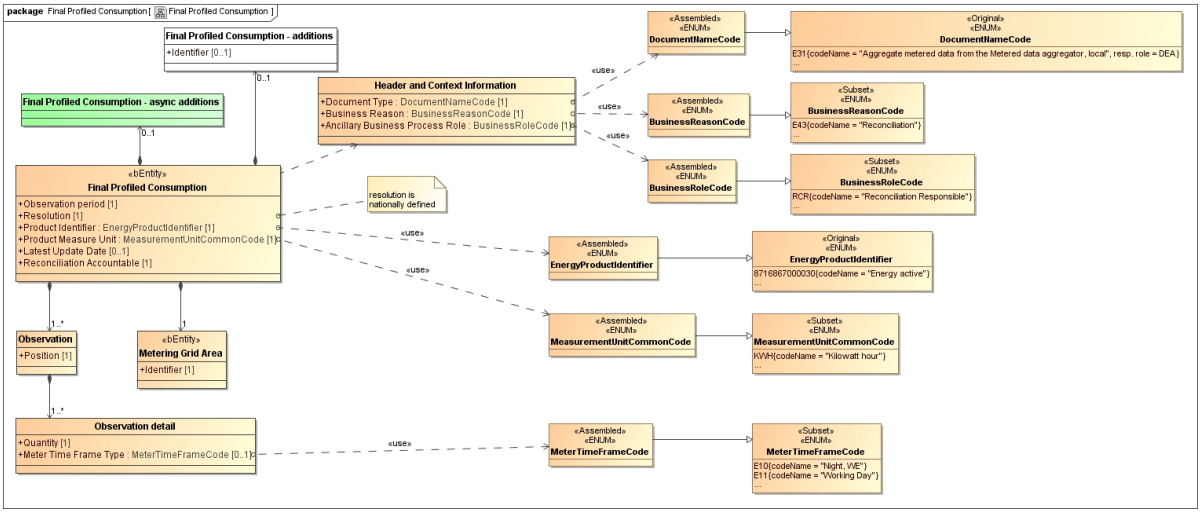


Figure 39 Final Profiled Consumption

Element definitions, Final Profiled Consumption	
«Business entity» Final Profiled Consumption	The information set of Final Profiled Consumption sent by a Metered Data Aggregator for the reconciliation of profiled Metering Points within a Metering Grid Area to the Reconciliatory in order to enable the reconciliation.
Observation Period	A specific period of time describing the duration of this set of Final Profiled Consumption.
Resolution	The resolution of this set of reconciled volumes expressed as a duration between the start and end of subsequent observations within this set of Final Profiled Consumption.
Product Identifier	A code specifying the energy product for the quantity in this time series/set of Final Profiled Consumption.
Product Measure Unit	The unit of measure used for the quantity in this time series/set of Final Profiled Consumption.
Latest Update Date	The latest date on which one or more of the volumes of validated measured data used for the reconciliation have been updated.
Reconciliation Accountable	The unique identification of the (Reconciliation) Accountable, that is financially accountable for the Final Profiled Consumption specified.
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the Final Profiled Consumption is applicable.
Identifier	The unique identification of this Metering Grid Area.
Observation	A set of one or more Final Profiled Consumption(s) for a detail period. The detail set volume(s) may be a part of a wider (e.g 24 hour) set of such volumes.

Position	The ordinal position of this observation in the wider set of Final Profiled Consumptions.
Observation detail	A set of values for Final Profiled Consumption for a detail period. The volume(s) and their characteristics may be a part of a set of such volumes.
Quantity	The Final Profiled Consumption - quantity of energy for this observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the quantity in question.
Final Profiled Consumption Additions	Additional information, related to Final Profiled Consumption, 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 Settlement Responsible.
Final Profiled Consumption Async Additions	Additional information, related to Final Profiled Consumption, 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.
Header and Context Information	The set of information specifying the information to be added to this payload “Final Profiled Consumption” 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.

1.3.4.1. Final Profiled Consumption (State Diagram)

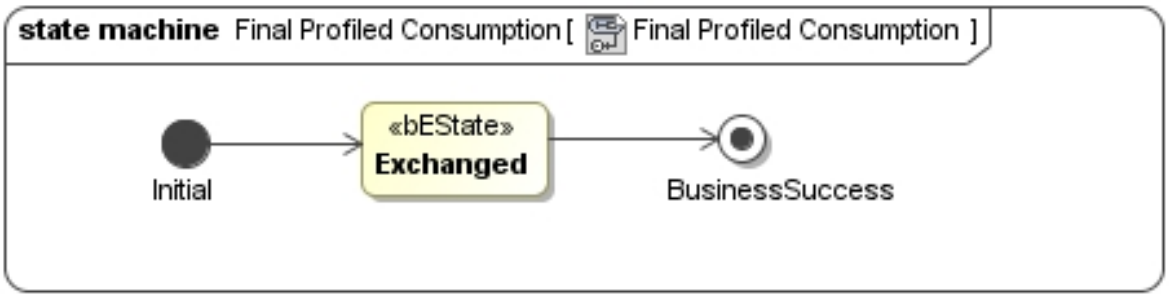


Figure 40 SD Final Profiled Consumption

1.3.5. Residual Volume (Class Diagram)

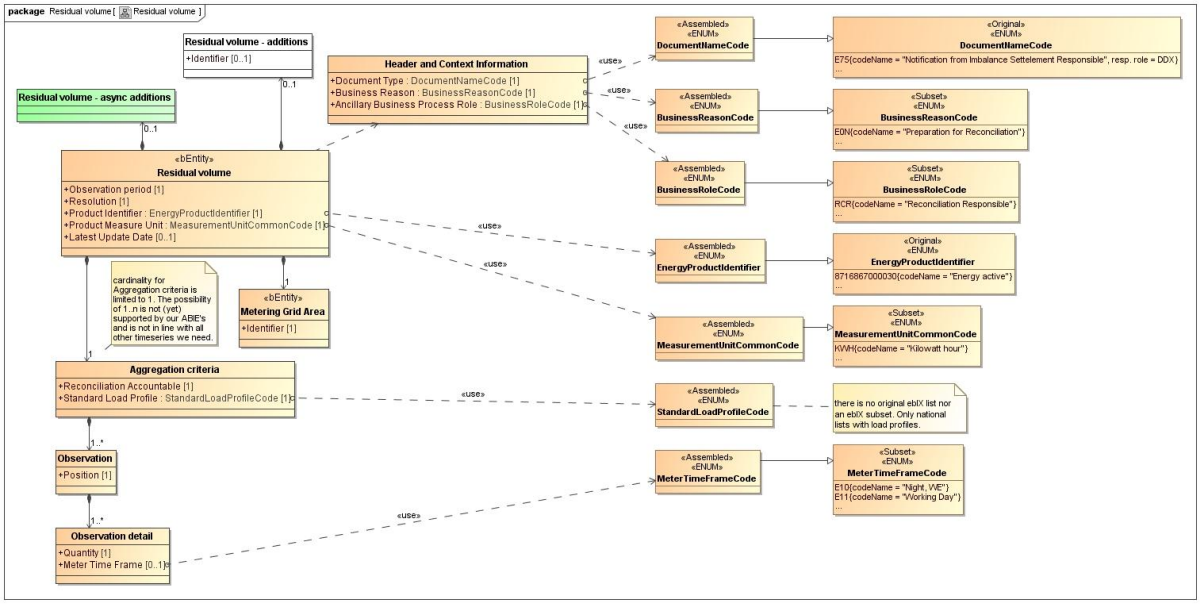


Figure 41 Residual Volume

Element definitions, Residual Volume	
«Business entity» Residual Volume	The information set of Residual Volumes sent by a Settlement Responsible for the reconciliation of profiled Metering Points within a Metering Grid Area to the Reconciliatory.
Observation Period	A specific period of time describing the duration of this set of Residual volumes.
Resolution	The resolution of this set of Residual volumes expressed as a duration between the start and end of subsequent observations within this set of Residual volumes.
Product Identifier	A code specifying the energy product for the quantity in this time series/set of Residual volumes.
Product Measure Unit	The unit of measure used for the quantity in this time series/set of Residual volumes.
Latest Update Date	The latest date on which one or more of the volumes of validated measured data used for the reconciliation have been updated.
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the Residual volumes are established.
Identifier	The unique identification of this Metering Grid Area.
Aggregation Criteria	The criteria used for the aggregation of the residual volumes within this Metering Grid Area.
Reconciliation Accountable	The unique identification of the (Reconciliation) Accountable, that is financially accountable for the Residual volumes specified.

Standard Load Profile	The standard load profile for this aggregation.
Observation	A set of one or more Residual volume(s) for a detail period. The detail set volume(s) may be a part of a wider (e.g 24 hour) set of such volumes.
Position	The ordinal position of this observation in the wider set of Residual volumes.
Observation detail	A set of values for Residual volume for a detail period. The volume(s) and their characteristics may be a part of a set of such volumes.
Quantity	The after imbalance settlement resulting quantity of energy for this observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the quantity in question.
Residual Volume Additions	Additional information, related to Residual Volume, the use of which may be agreed on a national level. This is however not used when specifying the payload in the ebIX® model.
Reconciled Volume Async Additions	Additional information, related to Residual Volume, 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.
Header and Context Information	The set of information specifying the information to be added to this payload “Residual volume” 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.

1.3.5.1. Residual Volume (State Diagram)

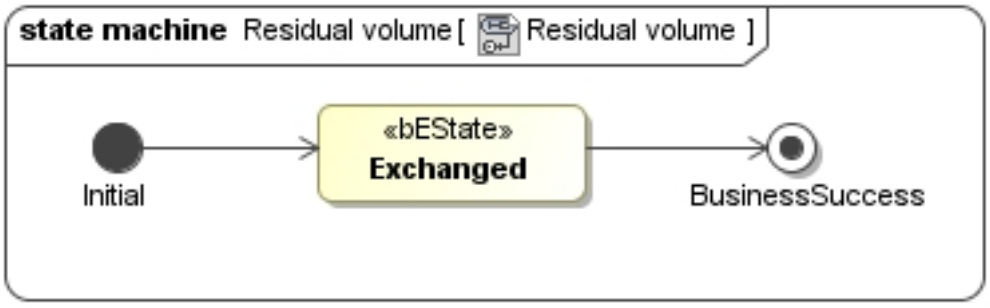


Figure 42 SD Residual Volume

1.3.6. Aggregated Profiled Consumption (Class Diagram)

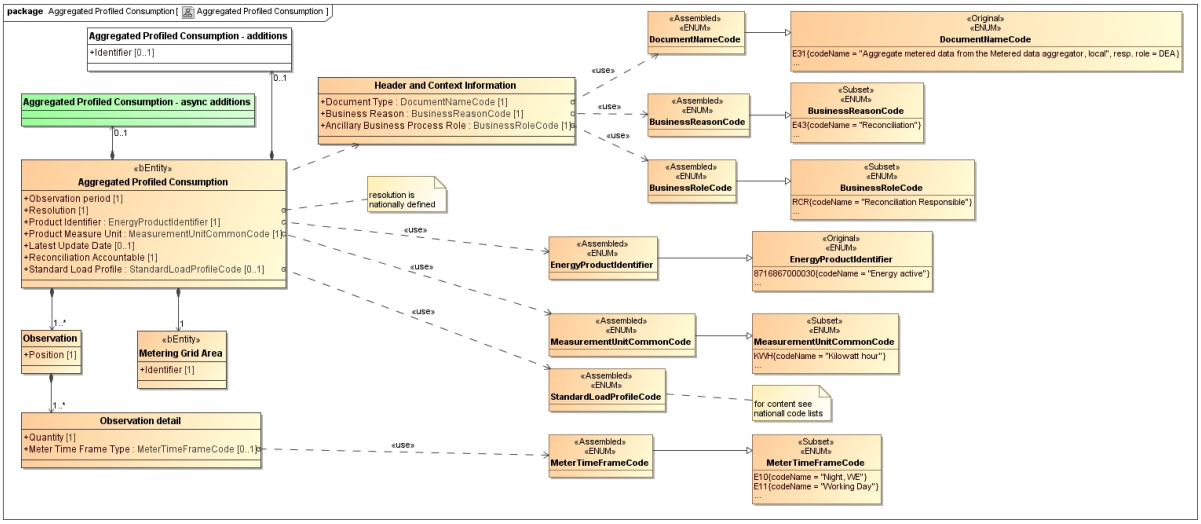


Figure 43 Aggregated Profiled Consumption

Element definitions, Aggregated Profiled Consumption	
«Business entity» Aggregated Profiled Consumption	The information set of Aggregated Profiled Consumption sent by a Metered Data Aggregator for the reconciliation of profiled Metering Points within a Metering Grid Area to the Reconciliatory in order to enable the reconciliation.
Observation Period	A specific period of time describing the duration of this set of Aggregated Profiled Consumption.
Resolution	The resolution of this set of reconciled volumes expressed as a duration between the start and end of subsequent observations within this set of Aggregated Profiled Consumption.
Product Identifier	A code specifying the energy product for the quantity in this time series/set of Aggregated Profiled Consumption.
Product Measure Unit	The unit of measure used for the quantity in this time series/set of Aggregated Profiled Consumption.
Latest Update Date	The latest date on which one or more of the volumes of validated measured data used for the reconciliation have been updated.
Reconciliation Accountable	The unique identification of the (Reconciliation) Accountable, that is financially accountable for the Aggregated Profiled Consumption specified.
Standard Load Profile	The standard load profile for this aggregation.
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the Aggregated Profiled Consumption is applicable.
Identifier	The unique identification of this Metering Grid Area.

Observation	A set of one or more Aggregated Profiled Consumption(s) for a detail period. The detail set volume(s) may be a part of a wider (e.g 24 hour) set of such volumes.
Position	The ordinal position of this observation in the wider set of Aggregated Profiled Consumptions.
Observation detail	A set of values for Aggregated Profiled Consumption for a detail period. The volume(s) and their characteristics may be a part of a set of such volumes.
Quantity	The Aggregated Profiled Consumption - quantity of energy for this observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the quantity in question.
Final Profiled Consumption Additions	Additional information, related to Aggregated Profiled Consumption, 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 Reconciliatory.
Final Profiled Consumption Async Additions	Additional information, related to Aggregated Profiled Consumption, 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.
Header and Context Information	The set of information specifying the information to be added to this payload “Aggregated Profiled Consumption” 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.

1.3.6.1. Aggregated Profiled Consumption (State Diagram)

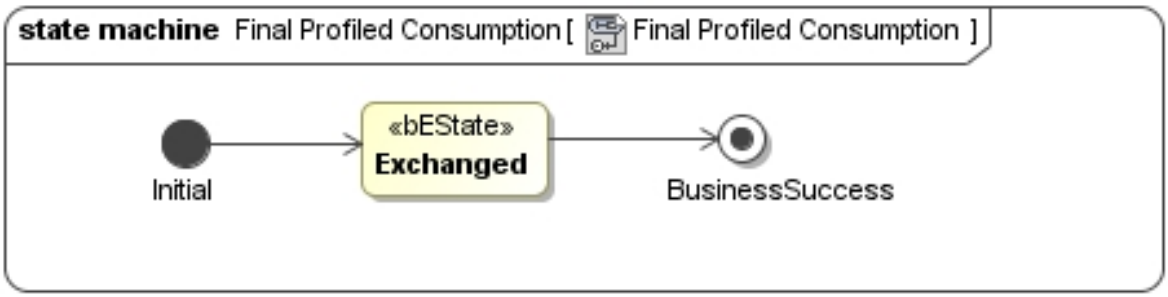


Figure 44 SD Aggregated Profiled Consumption

1.3.7. Reconciled Volumes (Class Diagram)

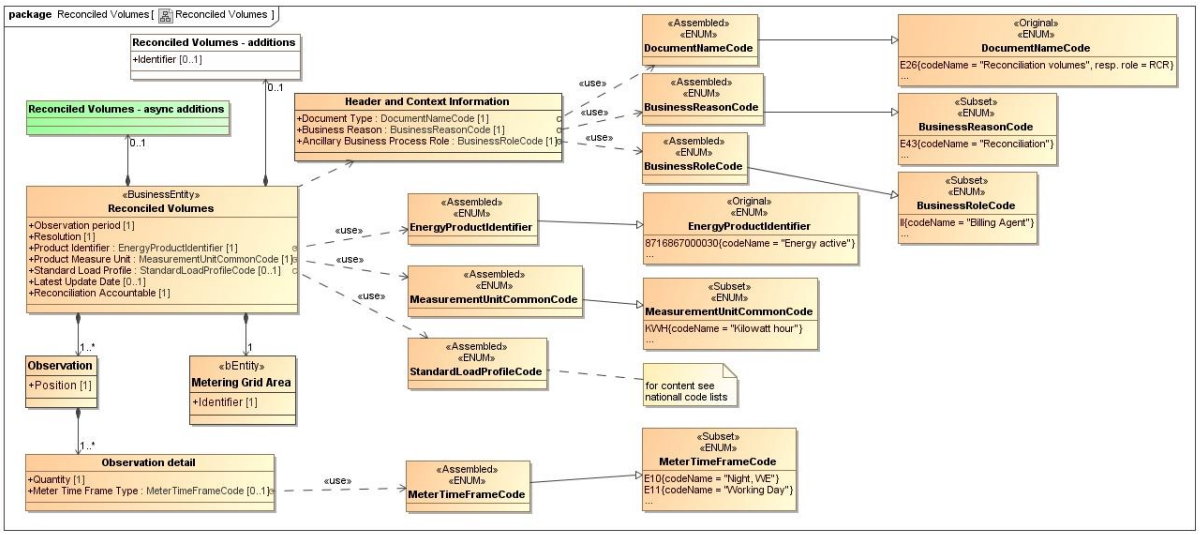


Figure 45 Reconciled Volumes

Element definitions, Reconciled Volumes	
«Business entity» Reconciled Volumes	The information set of reconciled volumes sent by a Reconciliatory responsible for the reconciliation of profiled Metering Points within a Metering Grid Area to the Billing Agent in order to enable the financial settlement of reconciliation results.
Observation Period	A specific period of time describing the duration of this set of reconciled volumes.
Resolution	The resolution of this set of reconciled volumes expressed as a duration between the start and end of subsequent observations within this set of reconciled volumes.
Product Identifier	A code specifying the energy product for the quantity in this time series/set of reconciled volumes.
Product Measure Unit	The unit of measure used for the quantity in this time series/set of reconciled volumes.

Standard Load Profile	The standard load profile for this Metering Point.
Latest Update Date	The latest date on which one or more of the volumes of validated measured data used for the reconciliation have been updated.
Reconciliation Accountable	The unique identification of the (Reconciliation) Accountable, that is financially accountable for the reconciliation volumes specified.
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the reconciliation prices are applicable.
Identifier	The unique identification of this Metering Grid Area.
Observation	A set of one or more reconciled volume(s) for a detail period. The detail set volume(s) may be a part of a wider (e.g 24 hour) set of such volumes.
Position	The ordinal position of this observation in the wider set of reconciled volumes.
Observation detail	A set of values for reconciled volume for a detail period. The volume(s) and their characteristics may be a part of a set of such volumes.
Quantity	The reconciled quantity of energy for this observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the quantity in question.
Reconciled Volumes Additions	Additional information, related to Reconciled Volumes, 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 Reconciliatory.
Reconciled Volumes Async Additions	Additional information, related to Reconciled Volumes, 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.
Header and Context Information	The set of information specifying the information to be added to this payload “Reconciled Volumes” 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.

1.3.7.1. Reconciled Volumes (State Diagram)

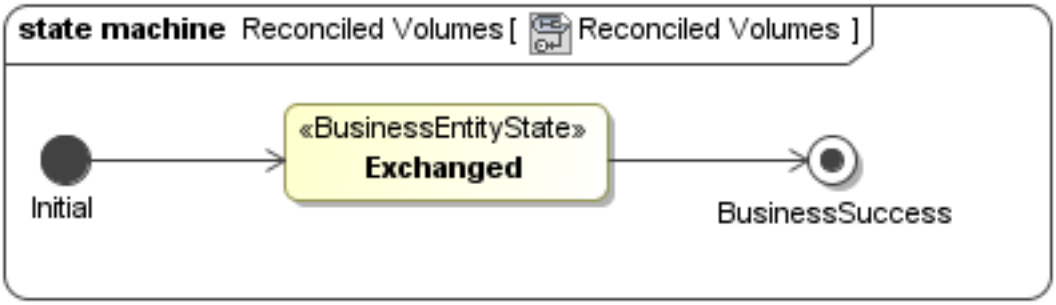


Figure 46 SD Reconciled Volumes

1.3.8. Prices for Reconciliation (Class Diagram)

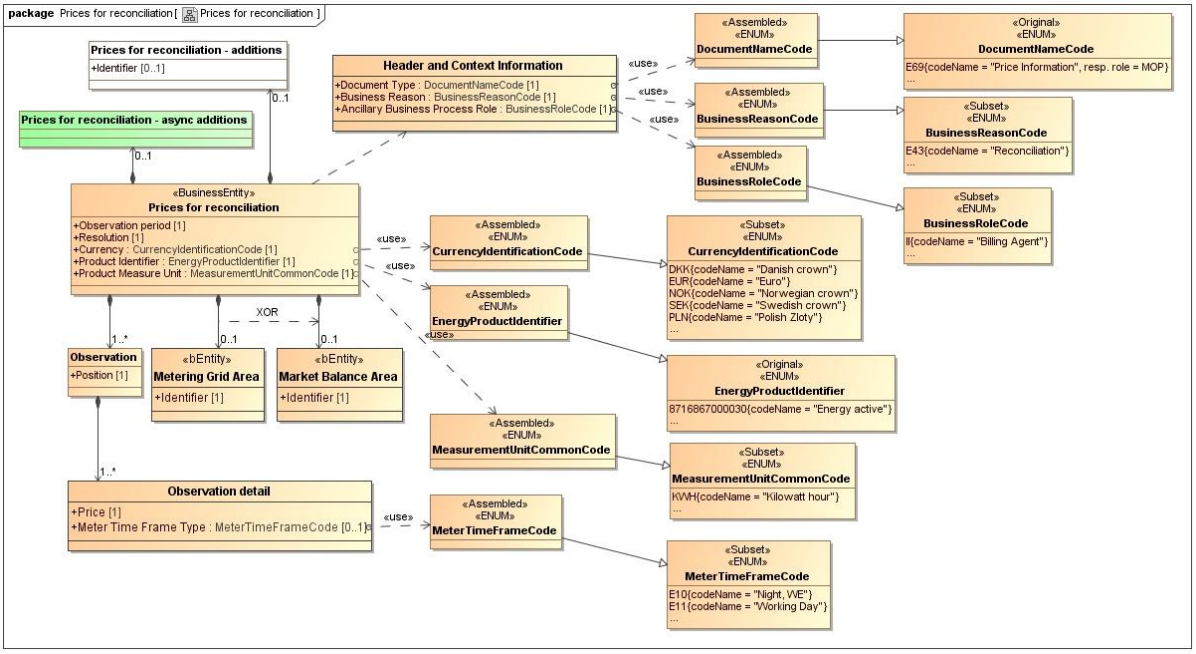


Figure 47 Prices for Reconciliation

Element definitions, Prices for Reconciliation	
«Business entity» Prices for Reconciliation	The information set to be sent by the Reconciliation Price Setter to the Billing Agent in order to enable the financial settlement of reconciliation results.
Observation Period	A specific period of time describing the duration of the requested set of prices.
Resolution	The resolution of this set of prices expressed as a duration between the start and end of subsequent observations within this set of prices.
Currency	A code specifying the currency used for this set of prices
Product Identifier	A code specifying the energy product for which the prices in this time series are applicable.

Product Measure Unit	The unit of measure used for the volumes in this time series/set and used for the specification of the unit of the product for which the prices in this time series are applicable (e.g. EUR/kWh).
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the prices are applicable.
Identifier	The unique identification of this Metering Grid Area.
«Business entity» Market Balance Area	A geographic area consisting of one or more Metering Grid Areas with common market rules for which the settlement responsible party carries out a balance settlement and which has the same price for imbalance.
Identifier	The unique identification of this Market Balance Area.
Observation	A set of one or more price(s) for a detail period. The detail set price(s) may be a part of a wider (e.g 24 hour) set of such prices.
Position	The ordinal position of this observation in the wider set of prices.
Observation detail	A set of values for reconciliation prices for a detail period. The price(s) and their characteristics may be a part of a set of such prices.
Price	The reconciliation price for this observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the price in question.
Prices for Reconciliation Additions	Additional information, related to Prices for Reconciliation 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 Reconciliation Price Setter.
Prices for Reconciliation Async Additions	Additional information, related to Prices for Reconciliation, 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.
Header and Context Information	The set of information specifying the information to be added to this payload “Prices for Reconciliation” 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.

1.3.8.1. Prices for Reconciliation (State Diagram)

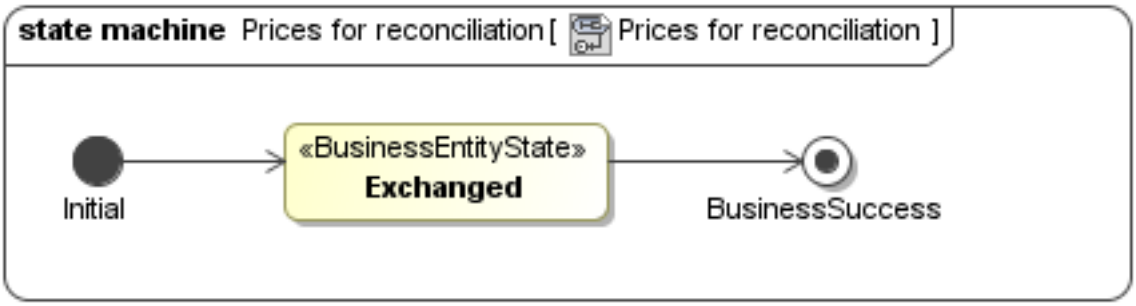


Figure 48 SD Prices for Reconciliation

1.3.9. Price-Volume Combination for Reconciliation (Class Diagram)

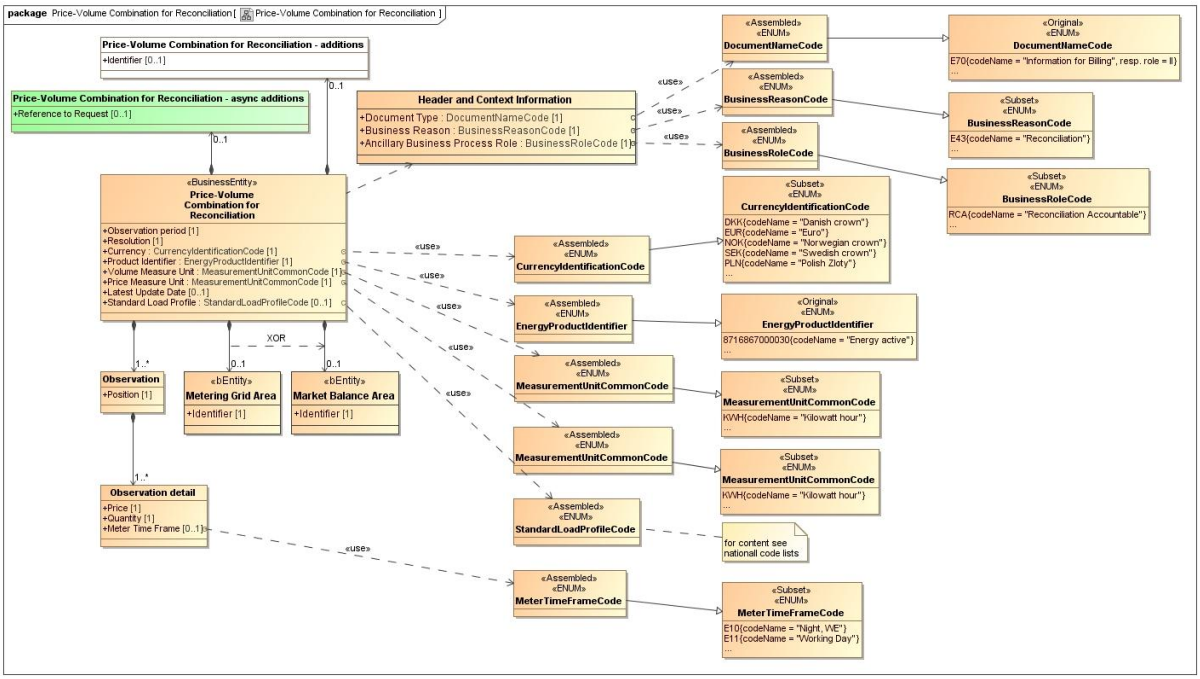


Figure 49 Price-Volume Combination for Reconciliation

Element definitions, Price-Volume Combination for Reconciliation	
«Business entity» Price-Volume Combination for Reconciliation	The information set to be sent by the Billing Agent to the Accountable in order to provide basic background for the financial settlement of reconciliation results.
Observation Period	A specific period of time describing the duration of this set of price-volume combinations.

Resolution	The resolution of this set of price-volume combinations expressed as a duration between the start and end of subsequent observations within this set of price-volume combinations.
Currency	A code specifying the currency used for the prices in this set
Product Identifier	A code specifying the energy product for which the prices and volumes in this time series are applicable.
Product Measure Unit	The unit of measure used for the specification of the volume and the price for the product in this time series.
Latest Update DateTime	The latest date and time on which one or more of the volumes of validated data included in the aggregation have been updated.
«Business entity» Market Balance Area	A geographic area consisting of one or more Metering Grid Areas with common market rules for which the settlement responsible party carries out a balance settlement and which has the same price for imbalance.
Identifier	The unique identification of this Market Balance Area.
«Business entity» Metering Grid Area	A physical area where consumption, production and exchange can be metered, here used as the area within which the reconciliation volumes are established and the prices are applicable..
Identifier	The unique identification of this Metering Grid Area.
Observation	A set of one or more price-volume combination(s) for a detail period. The detail set combination(s) may be a part of a wider (e.g 24 hour) set of such combinations.
Position	The ordinal position of this observation in the wider set of price-volume combinations.
Observation detail	A set of values for price-volume combination for a detail period. The price-volume combination(s) and their characteristics may be a part of a set of such combinations.
Price	The reconciliation price for this detail observation.
Quantity	The reconciled quantity of energy for this detail observation.
Meter Time Frame Type	A code specifying the Meter Time Frame for the price-volume combination in question.
Price-Volume Combination for Reconciliation Additions	Additional information, related to Price-Volume Combination for Reconciliation 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 Billing Agent.

Price-Volume Combination for Reconciliation Async Additions	Additional information, related Price-Volume Combination for Reconciliation, 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.
Header and Context Information	The set of information specifying the information to be added to this payload "Price-Volume Combination for Reconciliation" 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.

1.3.9.1. Price-Volume Combination for Reconciliation (State Diagram)

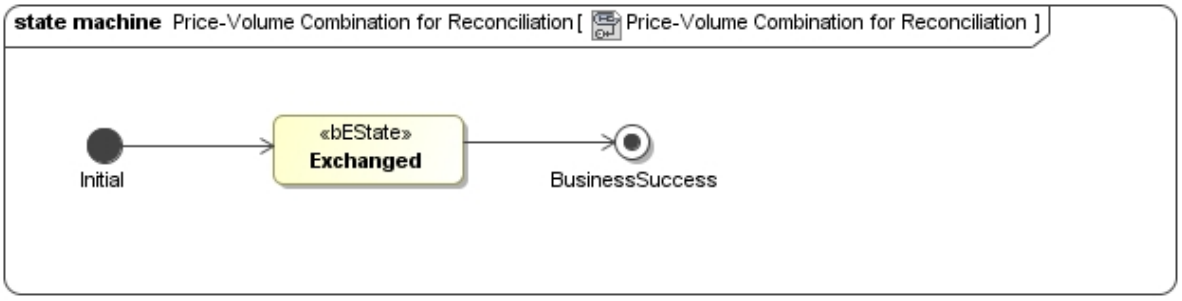


Figure 50 SD Price-Volume Combination for Reconciliation