

Business Service

Exchange reconciliation results electricity

This version of the Service Description is effective from the implementation of *TS046 IC280L Reconciliation Messages PRF to XML*.

Please note: the Dutch version is leading.

Name	SD030 – Exchange reconciliation results electricity	Version	7.0
Code	BSCMF0087 - Exchange reconciliation results and reconciliation results for aggregated volumes BSCMF0088 - Exchange reconciliation results for aggregated ISP volumes	Status	Dutch version approved
Date	23 December 2024	Author	EDSN Business Integration

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Document management

Version	Version date	Changes	Author
0.1	17 August 2022	Initial version Prepared on the basis of BRS Reconciliation electricity	EDSN
0.2	28 September 2022	Version after review by WG C1	EDSN
0.3	26 October 2022	Functional parameters and class diagrams added	EDSN
0.6	07 November 2022	Version after processing review WG C1	EDSN
0.7	12 December 2022	Version after processing review sector	EDSN
0.9	02 January 2023	Version for approval	EDSN
0.91	23 January 2023	Version after processing subsequent review sector House style changed to MFF BAS	EDSN
1.0	03 February 2023	Approved version	EDSN
1.1	20 April 2023	Modified due to RFC A2.0-TR3-2 Specification definition and review reconciliation (result) run ID	EDSN
1.9	04 May 2023	Version following review Messaging team MFFBAS	EDSN
2.0	12 May 2023	Approved version	EDSN
2.1	07 December 2023	Modified due to: • RFC-003-A2.0-TR3 Correction types in BS Reconciliation results • RFC-005-A2.0-TR3 IC280L Scope change: ○ Reconciliation results PRF for the whole of the Netherlands (N281) expired ○ Reconciliation results PRF per grid area (N282) expired ○ Grid loss mutation per grid area (N283) expired • RFC-006-A2.0-TR3 New codes for volumes • General Change: Term settlement changed to reconciliation	EDSN
2.6	21 December 2023	Version after processing review Messaging team MFFBAS	EDSN
2.9	04 January 2024	Version after review Messaging team MFFBAS	EDSN
3.0	19 January 2024	Approved version	EDSN
3.1	13 February 2024	Modified due to RFC-011-A2.0-TR3 Units reconciliation prices in reconciliation results	EDSN
3.9	15 February 2024	Version after review Messaging team MFFBAS	EDSN
4.0	08 March 2024	Approved version	EDSN
4.6	12 March 2024	Modified due to: • RFC-014-A2.0-TR3 Volumes in reconciliation results to 3 decimal points	EDSN
4.9	15 March 2024	Version after review Messaging team MFFBAS	EDSN
5.0	05 April 2024	Approved version	EDSN
5.1	15 May 2024	Modified due to:	EDSN

Version	Version date	Changes	Author
		RFC-016-A2.0-TR3 Signing convention in reconciliation results	
5.6	21 May 2024	In paragraph 1.4, the consumer for message code N243 and N251 has been changed from DSO to SO (in accordance with BRS use case UC A20.322) Version after processing review Messaging team MFFBAS	EDSN
5.9	27 May 2024	Version after review Messaging team MFFBAS	EDSN
6.0	21 June 2024	Approved version	EDSN
6.1	21 October 2024	Modified due to: - IC280L Scope change (changes due to RFC-005-A2.0-TR3 IC280L Scope change will be reversed because IC280L is back in scope); - RFC-020-A2.0 IC280L Measurement month in reconciliation notifications; - Add check 792 in section 3.5 Receiver checks for notification "Reconciliation results for aggregated ISP volumes" (from backlog); - Add explanatory note (as footnote) during check 780 (from backlog)	EDSN
6.3	24 October 2024	Version after discussion in Messaging team MFFBAS	EDSN
6.6	11 November 2024	Version following review in Messing team MFFBAS	EDSN
6.9	29 November 2024	Version after review Messaging team MFFBAS	EDSN
7.0	23 December 2024	Approved version	EDSN

Distribution history

Version	Dissemination date	Receivers
0.1	17 August 2022	Working group C1 EDSN Business Integration
0.2	28 September 2022	EDSN Business Integration
0.3	26 October 2022	Working group C1
0.6	07 November 2022	Working group C1 Issue leads and central coordinator working groups IC257, IC275, IC252 and IC279 Members sound board group IC280 Light MFF BAS
0.7	07 December 2022	Working group C1
0.7	12 December 2022	Working group C1 Issue leads and central coordinator working groups IC257, IC275, IC252 and IC279 Members sound board group IC280 Light MFF BAS

Version	Dissemination date	Receivers
0.9	02 January 2023	Working group C1 Issue leads and central coordinator working groups IC257, IC275, IC252 and IC279 SI MFF BAS Design Authority MFF BAS SSG A2.0 MFF BAS
0.91	23 January 2023	Working group C1 Design Authority MFF BAS SSG A2.0 MFF BAS
1.0	03 February 2023	Working group C1 MFF BAS
1.1	20 April 2023	Messaging team MFFBAS
1.9	04 May 2023	Messaging team MFFBAS Implementation Steering Committee MFF BAS SSG A2.0 MFF BAS
2.0	12 May 2023	Messaging team MFFBAS MFF BAS
2.1	07 December 2023	Messaging team MFFBAS
2.6	21 December 2023	Messaging team MFFBAS
2.9	04 January 2024	IISO PFSG Messaging team MFFBAS
3.0	19 January 2024	MFF BAS Messaging team MFFBAS
3.1	13 February 2024	Messaging team MFFBAS
3.9	15 February 2024	IISO PFSG Messaging team MFFBAS
4.0	08 March 2024	MFF BAS Messaging team MFFBAS
4.6	12 March 2024	Messaging team MFFBAS
4.9	15 March 2024	IISO PFSG Messaging team MFFBAS
5.0	05 April 2024	MFF BAS Messaging team MFFBAS
5.1	15 May 2024	Messaging team MFFBAS
5.6	23 May 2024	MFF BAS Messaging team MFFBAS
5.9	29 May 2024	BOSO IISO PFSG Messaging team MFFBAS
6.0	21 June 2024	MFF BAS Messaging team MFFBAS

Version	Dissemination date	Receivers
6.1	21 October 2024	Messaging team MFFBAS
6.3	24 October 2024	Messaging team MFFBAS
6.6	11 November 2024	MFF BAS Messaging team MFFBAS
6.9	29 November 2024	BOSO IISO PFSG Messaging team MFFBAS
7.0	23 December 2024	MFF BAS Messaging team MFFBAS

Referenced documents

Requirements model

No.	Description	Version	Date	Author
1.	BRS Reconciliatiegegevens (BRS Reconciliation data)	3.0	23 December 2024	Messaging team MFFBAS

Design frameworks and guidelines

No.	Description	Version	Date	Author
2.	NEDU EDSN Ontwerpkeuzes (NEDU EDSN Design choices)	3.9	15 April 2021	NEDU/EDSN
3.	TenneT Web Services guide	N/A	September 2024	TenneT
8.	Technical Guide - Measurements & Allocations Documents	1.94	21 May 2024	TenneT

Service descriptions and data model

No.	Description	Version	Date	Author
4.	EDSN Complex Data Type Specificatie (EDSN Complex Data Type Specification)	2.4	07 June 2023	EDSN
5.	EDSN Logisch Data Type Specificatie (EDSN Logical Data Type Specification)	3.0	07 June 2023	EDSN
6.	ebIX® Code list	1.4A	23 November 2023	ebIX TC
7.	ISO 8601 voor datum- en tijdsnotatie (ISO 8601 for date and time stamping)	1:2019	2019	ISO
9.	ENTSO-E code list	V84	27 October 2022	ENTSO-E

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1 Introduction

1.1 Service description

The service description describes:

1. the arrangements for exchange by the TSO of reconciliation results SMA:
 - a. the volumes and volume differences relating to one full calendar month across all grid areas per BRP (national portfolio) between the sum of the aggregated volumes active energy SMA used by the TSO in the final imbalance determination and the sum of the aggregated volumes active energy SMA provided by the DSOs in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month, to the BRP;
 - b. the volumes and volume differences relating to one full calendar month per grid area per BRP between the aggregated volumes active energy SMA used by the TSO in the final imbalance determination and the aggregated volumes active energy SMA provided by the DSOs in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month, to the BRP and DSO;
 - c. the grid loss change relating to one full calendar month per grid area, determined by the TSO based on the sum of the aggregated volumes active energy SMA of all BRPs used by the TSO's in the final imbalance determination and the sum of the aggregated volumes active energy SMA of all BRPs as supplied by the DSO's in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for the concerned calendar month, to the BRP Grid loss¹ and DSO;
2. the arrangements for exchange by the TSO of reconciliation results TMT:
 - a. the volumes and volume differences relating to one full calendar month across all grid areas per ISP per BRP (national portfolio) between the aggregated volumes active energy TMT per ISP as used by the TSO in the final imbalance determination and the aggregated volumes of active energy TMT per ISP as provided by the SO in the reconciliation process, the reconciliation price per ISP for the concerned calendar month and the amount to-be-settled per ISP for the concerned calendar month to the BRP;
 - b. the volumes and volume differences relating to one full calendar month across all grid areas per BRP (national portfolio) between the sum of the aggregated volumes active energy TMT per ISP as provided by the SOs in the reconciliation process and the aggregated volumes active energy TMT as provided by SOs in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for the concerned calendar month, to the BRP;
 - c. the volumes and volume differences relating to one full calendar month per grid area per ISP per BRP between the aggregated volumes active energy TMT per ISP as used by the TSO in the final imbalance determination and the aggregated volumes active energy TMT per ISP as provided by the DSOs in the reconciliation process, the reconciliation price per ISP for the concerned calendar month and the to-be-settled amount per ISP for that calendar month, to the BRP and SO;
 - d. the volumes and volume differences relating to one full calendar month per grid area per BRP between the sum of the aggregated volumes active energy TMT per ISP as provided by the SOs in the reconciliation process and the aggregated volumes active energy TMT as provided by the SOs in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month, to the BRP and SO;
 - e. the grid loss change relating to one full calendar month per grid area per ISP, determined by the TSO based on the aggregated volumes active energy TMT per ISP as used by the TSO in the final imbalance determination and the aggregated volumes active energy TMT per ISP as provided by the SO in the reconciliation process, the reconciliation price per ISP for the concerned calendar month and the to-be-settled amount per ISP for that calendar month, to the BRP Grid loss² and SO;

¹ The BRP designated by the DSO for grid loss.

² The BRP designated by the DSO for grid loss.

- f. the grid loss change relating to one full calendar month per grid area, determined by the TSO based on the aggregated volumes active energy TMT per ISP as used by the TSO in the final imbalance determination and the aggregated volumes active energy TMT as provided by the SOs in the reconciliation process the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month, to the BRP Grid loss² and SO;
3. arrangements about the exchange by the TSO of reconciliation results PRF:
 - a. the volumes and volume differences relating to one full calendar month across all grid areas per BRP (national portfolio) between the sum of the aggregated volumes active energy PRF used by the DSOs in the final imbalance determination and the sum of the aggregated volumes active energy PRF as provided by the DSOs in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month, to the BRP;
 - b. the volumes and volume differences relating to one full calendar month per grid area per BRP between the sum of the aggregated volumes active energy PRF as provided by the DSOs for the final imbalance determination and the sum of the aggregated volumes active energy PRF as provided by the DSOs in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month, to the BRP;
 - c. the grid loss change relating to one full calendar month per grid area, determined by TSO based on the grid loss volumes submitted by the DSO, the reconciliation price for the concerned calendar month and the to-be-settled-amount for that calendar month, to the BRP Grid loss².

To give the reader a good insight into the exchange, a detailed process description has been included as well as an indication of the notifications to be used. For a functional description of the process that supports this exchange, please refer to the Business Requirement Specification Reconciliation Data[1].

1.2 Reading guide

This document describes the following aspects, including:

- Process Exchange reconciliation results;
- These reconciliation results are exchanged via TenneT's MMC-hub
- The syntactic validations by the MMC-hub, the confirmation/rejection by the MMC-hub
- The checks on the reconciliation results by consumers (BRP and SO);
- The confirmation/rejection of the reconciliation results by the consumers (BRP and SO);
- XML message definitions.

For the functionality of the MMC-hub, please refer to the TenneT Web Services guide[3].

1.3 Starting points

The following principles were used when designing the Exchange reconciliation results service:

- Date/time notation in XML notifications according to NEDU EDSN Design Choices[2]
- The start and end date are in UTC and in accordance with the notation: YYYY-MM-DDThh:mm:ssZ;
 - Example start and end date time calendar month (November 2024, winter time):
2024-10-31T23:00:00Z / 2024-11-30T23:00:00Z;
 - Example start and end date time calendar month (June 2024, summer time):
2024-05-31T22:00:00Z / 2024-06-30T22:00:00Z;
 - Example start and end date calendar day (9 February 2024, winter time):
2024-02-08T23:00:00Z / 2024-02-09T23:00:00Z;
 - Example start and end date calendar day (31 March 2024, change winter time to summer time):
2024-03-30T23:00:00Z / 2024-03-31T22:00:00Z;
 - Example start and end date calendar day (09 June 2024, summer time):
2024-06-08T22:00:00Z / 2024-06-09T22:00:00Z;
 - Example start and end date calendar day (27 October 2024, change summer time to winter

time):

2024-10-26T22:00:00Z / 2024-10-27T23:00:00Z;

- Wherever this service description refers to “System operator” or “SO”, this can also be read as “GDS owner” if it involves electricity connections large consumers;
- A set of reconciliation results that are generated in a reconciliation results run for a given calendar month per allocation group will be assigned an identical reconciliation results run identification in order to enable consumers can use this identification to match the set of reconciliation results for a given calendar month and allocation group. This reconciliation results run identification is identical for all receivers;
- All volumes are positive numbers (or zero) except volumes for the set of volume differences and grid loss changes. Negative numbers are only allowed for these sets;
- The notifications with volumes and volume differences for SMA, TMT and PRF always refer to one full calendar month, thus also the notifications for reconciliation results PRF³;
- If a party will supply data on behalf of another party (via the MMC-hub), the Carrier ID should be used for this in the SOAP header . For use CarrierID, see TenneT Web Services guide[3];

³ This is a change from the EDINE notification E26 which may contain reconciliation results over a period of maximum 17 months.

1.4 Use of the Exchange reconciliation results service

The table below shows which reconciliation results the transmission system operator (TSO) must send to the balance responsible party (BRP) or distribution system operator (DSO). The table also contains a reference to the relevant use cases from the BRS[1].

Overview table

From	Data GA = grid area AP=allocation point ISP=imbalance settlement period	To											
		BRP			BRP Grid loss			SUP			DSO		SO
		SM A	PR F	TM T	SM A	PR F	TM T	SM A	PRF	TM T	SM A	PRF	TM T
TSO	Volume differences across all Gas (BSCMF0087)	1.	16.	7.									
TSO	Volume difference per GA (BSCMF0087)	2.	17.	10.							3.		11.
TSO	Volume differences across all GAs per ISP (BSCMF0088)			6.									
TSO	Volume difference per GA per ISP (BSCMF0088)			8.									9.
TSO	Grid loss change per GA (BSCMF0087)				4.	18.	14.				5.		15.
TSO	Grid loss change per GA per ISP (BSCMF0088)						12.						13.

The numbers shown in bold in the table above refer to the numbers shown in bold in the table below.

Detailed overview

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁴
Allocation points with allocation method smart meter allocation (SMA);						
1. National Portfolio: Sum of the aggregated active energy volumes SMA across all grid areas per BRP per energy direction, as used by the TSO in the final imbalance determination; Sum of the aggregated volumes active energy SMA across all grid areas per BRP per energy direction, as	TSO	BRP	Allocation point ELK SMA	UC A20.304 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolumeSettlementResultSeries, volume type SDO, MRP and MVV)	N231

⁴ See section 3.6 Application ProcessTypeID.

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁴
provided by the DSOs in the reconciliation process. Volume differences between the two amounts across all grid areas per BRP per energy direction, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction.						
2. By grid area: Aggregated volumes active energy SMA per grid area per BRP per energy direction, as used by the TSO in the final imbalance determination. Aggregated volumes active energy SMA per grid area per BRP per energy direction, as provided by the DSOs in the reconciliation process; Volume differences between both aggregated volumes per grid area per BRP per energy direction, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction.	TSO	BRP	Allocation point ELK SMA	UC A20.304 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume type SDO, MRP and MVV)	N232
3.	TSO	DSO	Allocation	UC A20.321	BSCMF0087 - Exchange	N232

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁴
By grid area: Sum of the aggregated volumes active energy SMA per grid area per BRP per energy direction, as used by the TSO in the final imbalance determination. Aggregated volumes active energy SMA per grid area per BRP per energy direction, as provided by the DSOs in the reconciliation process; Volume differences between both aggregated volumes per grid area per BRP per energy direction, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction.			point ELK SMA	(DSO)	reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume type SDO, MRP and MVV))	
4. By grid area: Grid loss change per grid area, determined by the TSO based on the sum of the aggregated volumes active energy used by the TSO in the final imbalance determination and the sum of the aggregated volumes active energy SMA, as provided by the DSO in the reconciliation process, the reconciliation price for the concerned	TSO	BRP Grid loss	Allocation point ELK SMA	UC A20.304 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume typing MNM)	N233

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁴
calendar month and the to-be-settled amount for that calendar month.						
5. By grid area: Grid loss change per grid area per energy direction, determined by the TSO based on the sum of the aggregated volumes active energy used by the TSO in the final imbalance determination and the sum of the aggregated volumes active energy SMA, as provided by the DSO in the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month.	TSO	DSO	Allocation point ELK SMA	UC A20.321 (DSO)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume typing MNM)	N233

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁵
Allocation points with allocation method telemetry (TMT)						
6. National Portfolio: Aggregated volumes active energy TMT across all grid areas per BRP per ISP per energy direction, as used by the TSO in the final imbalance determination. Aggregated volumes active energy TMT across all grid areas per BRP per ISP per energy direction, as provided by the SO's in the reconciliation process. Volume differences between both aggregate volumes across all grid areas per BRP per ISP per energy direction, the reconciliation price per ISP for the concerned calendar month and the to-be-settled amount per ISP for that calendar month per energy direction.	TSO	BRP	Allocation point ELK TMT	UC A20.305 (BRP)	BSCMF0088 - Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeries, volume type ODO, ORP and OVV)	N241
7. National Portfolio: Sum of aggregated volumes active energy TMT across all grid areas per BRP per ISP per energy direction, as provided by the SO's in the reconciliation process.	TSO	BRP	Allocation point ELK TMT	UC A20.305 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolumeSettlementResultSeries, volume type SRP, MRP, and MVV)	N242

⁵ See section 3.6 Application ProcessTypeID.

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁵
Aggregated volumes active energy TMT across all grid areas per BRP per energy direction, as provided by the SO's in the reconciliation process. Volume differences between both aggregated volumes across all grid areas per BRP per energy direction, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction.						
8. By grid area: Aggregated volumes active energy TMT per grid area per BRP per ISP per energy direction, as used by the TSO in the final imbalance determination. Aggregated volumes active energy TMT per grid area per BRP per ISP per energy direction, as provided by the SO's in the reconciliation process. Volume differences between both aggregate volumes per grid area per BRP per ISP per energy direction, the reconciliation price per ISP for the concerned calendar month and the	TSO	BRP	Allocation point ELK TMT	UC A20.305 (BRP)	BSCMF0088 - Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeries, volume type ODO, ORP and OVV)	N243

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁵
to-be-settled amount per ISP for that calendar month per energy direction.						
9. By grid area: Aggregated volumes active energy TMT per grid area per BRP per ISP per energy direction, as used by the TSO in the final imbalance determination Aggregated volumes active energy TMT per grid area per BRP per ISP per energy direction, as provided by the SO's in the reconciliation process Volume differences between both aggregate volumes per grid area per BRP per ISP per energy direction, the reconciliation price per ISP for the concerned calendar month and the to-be-settled amount per ISP for that calendar month per energy direction.	TSO	SO	Allocation point ELK TMT	UC A20.322 (SO)	BSCMF0088 - Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeries, volume type ODO, ORP and OVV)	N243
10. By grid area: Sum of aggregated volumes active energy TMT per grid area per BRP per ISP per energy direction, as provided by the SO's in the reconciliation process. Aggregated volumes	TSO	BRP	Allocation point ELK TMT	UC A20.305 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolumeSettlementResultSeries, volume typing SRP, MRP and MVV))	N251

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁵
active energy TMT per grid area per BRP per energy direction, as provided by the DSOs in the reconciliation process; Volume differences between both aggregated volumes per grid area per BRP per energy direction, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction.						
11. By grid area: Sum of aggregated volumes active energy TMT per grid area per BRP per ISP per energy direction, as provided by the SO's in the reconciliation process. Aggregated volumes active energy TMT per grid area per BRP per energy direction, as provided by the DSOs in the reconciliation process; Volume differences between both aggregated volumes per grid area per BRP per energy direction, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month per	TSO	SO	Allocation point ELK TMT	UC A20.322 (SO)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume type SRP, MRP, and MVV)	N251

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁵
energy direction.						
12. By grid area: Grid loss change per grid area per ISP per energy direction, determined by the TSO based on the volumes used by the TSO in the final imbalance determination and the aggregated active energy volumes TMT per ISP, as provided by the SOs in the reconciliation process, the reconciliation price per ISP for the concerned calendar month and the to-be-settled amount per ISP for that calendar month.	TSO	BRP Grid loss	Allocation point ELK TMT	UC A20.305 (BRP)	BSCMF0088 - Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeries, volume typing ONM)	N261
13. By grid area: Grid loss change per grid area per ISP per energy direction, determined by the TSO based on the volumes used by the TSO in the final imbalance determination and the aggregated active energy volumes TMT per ISP, as provided by the SOs in the reconciliation process, the reconciliation price per ISP for the concerned calendar month and the to-be-settled amount per ISP for that calendar month.	TSO	SO	Allocation point ELK TMT	UC A20.322 (SO)	BSCMF0088 - Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeries, volume typing ONM)	N261
14.	TSO	BRP Grid	Allocation	UC A20.305	BSCMF0087 - Exchange	N271

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁵
By grid area: Grid loss change per grid area per energy direction, determined by the TSO based on the aggregated active energy volumes TMT per ISP and the aggregated active energy volumes as provided by the SO for the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month.		loss	point ELK TMT	(BRP)	reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume typing MNM)	
15. By grid area: Grid loss change per grid area per energy direction, determined by the TSO based on the aggregated active energy volumes TMT per ISP and the aggregated active energy volumes as provided by the SO for the reconciliation process, the reconciliation price for the concerned calendar month and the to-be-settled amount for that calendar month.	TSO	SO	Allocation point ELK TMT	UC A20.322 (SO)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume typing MNM)	N271
Allocation points with allocation method profiled (PRF)						
16. National Portfolio: Sum of the aggregated allocated volumes active energy PRF across all grid areas per BRP per energy direction per	TSO	BRP	Allocation point ELK PRF	UC A20.306 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume type SDO, MRP and MVV)	N281

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁵
price period, as provided by the DSO during the reconciliation process. Sum of the aggregated determined volumes active energy PRF across all grid areas per BRP per energy direction per price period, as provided by the DSOs in the reconciliation process. Volume differences per price period between both amounts across all grid areas per BRP per energy direction per price period, the reconciliation price per price period for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction per price period.						

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁶
Allocation points with allocation method profiled (PRF)						
17. By grid area: Sum of the aggregated allocated volumes active energy PRF per grid area per BRP per energy direction per price period, as provided by the DSO during the reconciliation process. Sum of the aggregated determined volumes active energy PRF per grid area per BRP per energy direction per price period, as provided by the DSOs in the reconciliation process. Volume differences between both amounts per grid area per BRP per energy direction per price period, the reconciliation price per price period for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction per price period.	TSO	BRP	Allocation point ELK PRF	UC A20.306 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume type SDO, MRP and MVV)	N282
18. By grid area: Grid loss change per grid area per energy direction per price period, determined by the TSO based on the grid loss volumes provided by the DSO,	TSO	BRP Grid loss	Allocation point ELK PRF	UC A20.306 (BRP)	BSCMF0087 - Exchange reconciliation results for aggregated volumes (AggregatedVolume SettlementResultSeries, volume typing MNM)	N283

⁶ See section 3.6 Application ProcessTypeID.

Exchange	Provider of reconciliation results	Consumer of reconciliation results	Type allocation point	BRS Use case	Business Service	Code ⁶
the reconciliation price per price period for the concerned calendar month and the to-be-settled amount for that calendar month per energy direction per price period.						

1.5 List of terms and abbreviations

Term	Description
Allocation point	Virtual point at the transfer point of a connection, where the energy exchange between an installation and the system is administratively allocated to a market party as if measurement had taken place at the transfer point of the connection (Electricity 1.1 Glossary).
AMI	Consumption with production
AP	Allocation point
AZI	Consumption without production
BPMN	BPMN (Business Process Modelling and Notation)
BRP	Balance responsible party (formerly PV (Program responsible party))
BRS	Business Requirements Specification
DIM	Unmeasured connections for which profiles are drawn up in accordance with Appendix 16 of the Net code dimensioned (DIM) profiles.
ELK	Electricity
EDSN	Energy Data Services Netherlands
GDS	Closed distribution system
Aggregate volumes	Aggregation of volumes based on determined periodic meter readings in the measurement and change processes.
GV	Large consumption
KV	Small consumption
TSO	Transmission system operator
SUP	Supplier
MMC-hub	Market-Market-Communication hub
MRP	Metering responsible party
SO	System operator All references to SO can also be read as distribution system operator, transmission system operator or Closed Distribution System Operator.
NVL	Grid loss
Imbalance settlement period	The unit of time used to calculate the imbalance of BRPs. In the past, this imbalance settlement period (ISP) was also known as the Program Time Unit (PTE). The ISP is set at 15 minutes (TenneT Imbalance system).
ISP	Imbalance settlement period
PRF	Profile Indication for KV or GV allocation points that are not allocated via measured quarter values, but via profile fractions, RCF and an SJI/SJA.
Profile category	Profile category year 2021: A classification as registered in the Connection Register. Profile category from go live Allocatie 2.0 tranche 2: A classification for connections based on objectively determined characteristics such as connection value, switching times, contracted transport capacity, determined energy consumption and operating time.
DSO	Distribution system operator
SMA	Smart Meter Allocation Indication for KV allocation points that are allocated with quarter values obtained from the smart meter.
Price period	A continuous period of normal hours or low hours. The periodic volumes are determined per price period.
TMT	Telemetry

Term	Description
	Indication for GV allocation points that are allocated with quarter values that are supplied by the MRP or calculated by the SO.
Determined energy consumption	Indication per connection whether there is consumption with production (AMI) or consumption without production (AZI).
Volume	A volume relating to a period of at least one calendar day. This may also include the terms "periodic volume" and "determined volume".
Volume per imbalance settlement period	A volume relating to one imbalance settlement period.

2 Roles and responsibilities

2.1 Consumer

This service description describes how the consumers (BRP, SO) receive the reconciliation results.

2.2 Provider

This service description describes how the provider (TSO) offers the reconciliation results.

2.3 RACI

The RACI below shows the roles and responsibilities for service description Exchange reconciliation results electricity:

R (Responsible, NL: Verantwoordelijk)	EDSN Business Integration
A (Accountable, NL: Eindverantwoordelijk)	To be determined!
C (Consulted, NL: Raadplegen)	Core team system operators, BAS, A2.0 Working Group C1, EDSN, ebIX Technical Commission, TenneT
I (Informed, NL: Informeren)	BAS, MFF, EDSN

3 BPMN Exchange reconciliation results

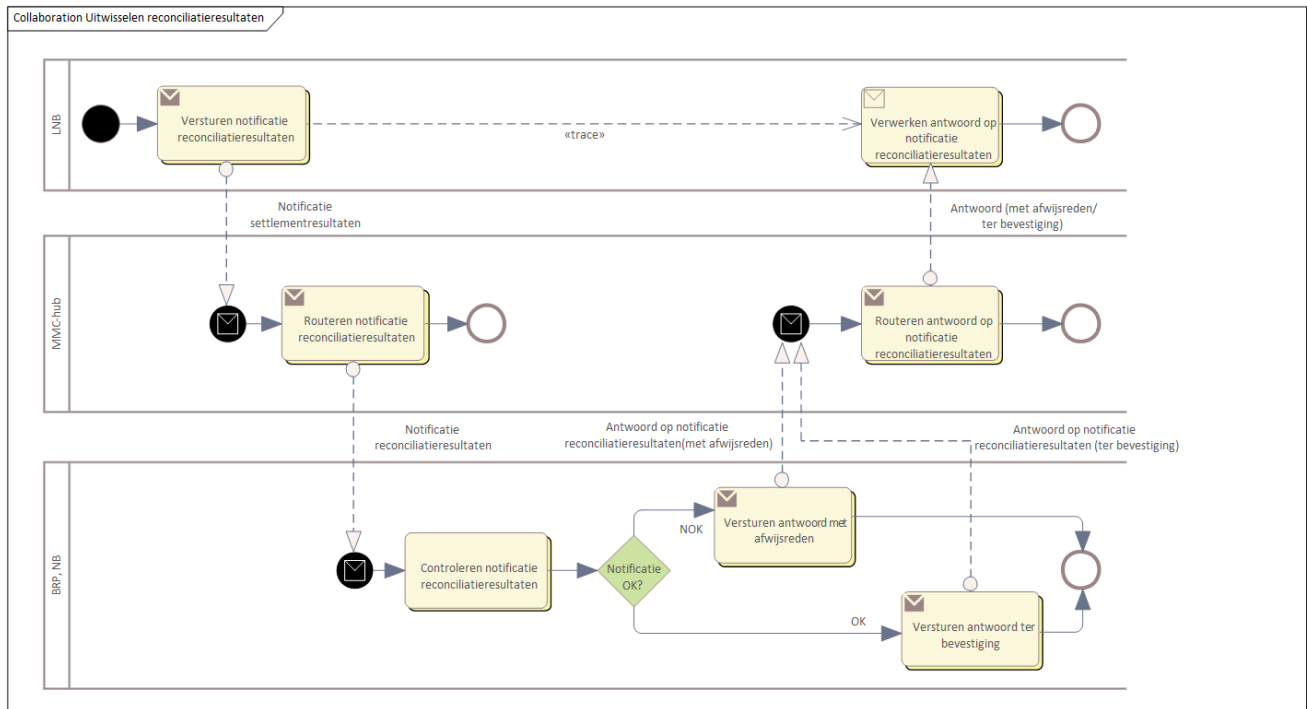


Figure 1 For detailed information about this process, see BRS Reconciliatiegegevens[1] (BRS Reconciliation Data[1])

3.1 Exchange reconciliation results

The process for exchanging reconciliation results follows the following scenario:

1. The TSO sends the notification “Notification reconciliation results”⁷ to the MMC-hub;
2. The MMC-hub processes⁸ the received “Notification reconciliation results” notification and routes the notification to the recipient⁹;
3. The receiver checks the notification “Notification reconciliation results”
4. The receiver sends the response “Confirmation/rejection notification reconciliation results” to the MMC-hub:
 - a confirmation reply, or
 - an answer with one or more rejections
5. The MMC-hub processes⁸ the response and routes the notification to the TSO.

⁷ A notification with reconciliation results for aggregated volumes or a notification with reconciliation results for aggregated ISP volumes.

⁸ A non-valid notification is rejected by the MMC-hub, see section 3.2.

⁹ Is the consumer (BRP, SO) of the reconciliation results.

3.2 Validations MMC-hub

The MMC-hub performs the following validations in response to the received notification "Notification reconciliation results" and received notification "Confirmation/rejection notification reconciliation results":

Validation	Error notification
XSD Validation: The notification shall comply to the XSD rules	TEN-500001: [Error detail]
Unreadable notification: The notification shall be a valid XML layout	TEN-500001: [Error detail]
Others: All other faults	TEN-999999: Unhandled exception

If a notification is rejected by the MMC-hub, the MMC-hub sends the error code and text to the submitter of the notification concerned. For the functionality of the MMC-hub, please refer to the TenneT Web Services guide[3].

3.3 Checks on receiver

The recipient may perform the following checks after receiving the notification "Notification reconciliation results" and the notification "Confirmation/rejection notification reconciliation results"¹⁰:

Validation	Error notification in the SOAP response
The received XML notification complies with the W3C XML 'well-formedness' specification.	TEN-500001: [Error detail]
The received XML notification complies with the XML notification definition (XSD) of the receiver.	TEN-500001: [Error detail]

Following the received notification "Notification reconciliation results" the receiver performs the following checks:

Validation	Error notification in the Acknowledgement
The integrity and/or confidentiality of the XML notification is guaranteed (signing check).	Error code: 999 Error notification: TEN-500021 – Incorrect notification signing
The technicalNotificationId in the SOAP header is unique.	Error code: 999 Error notification: TEN-500023 – Unique identifier not unique or already processed

¹⁰ These validations are always carried out by the MMC-hub. It is recommended that recipients also perform these validations themselves.

3.4 Checks receiver for notification “Reconciliation results for aggregated volumes” (BSCMF0087)

The following checks and error notifications are available to the receiver in response to the notification "Reconciliation results for aggregated volumes" and shall be carried out insofar as they are mandatory or relevant for the processing by the receiver:

Control	Error notification	Role	Code
Reconciliation results			
The EAN code-18 of the grid area is a valid EAN code.	EAN code-18 is not valid.	BRP/SO	651
The EAN code-18 of the grid area is administered by the system operator.	The grid area does not appear in the records of the system operator.	SO	687
The BRP was registered in the appropriate grid area for at least one allocation point and at least one calendar within this allocation group during the notification period.	The BRP is not active as BRP in the grid area for this allocation group.	BRP/SO	832
All products match the product type.	One or more products do not fit the product type.	BRP/SO	667
All energy units match the products.	One or more energy units do not fit the product(s).	BRP/SO	668
The volume has a correct number of decimal places.	Volume has an incorrect number of decimal places.	BRP/SO	776
All volumes in the notification are positive numbers (or zero) ¹¹ .	Volume with negative value.	BRP/SO	686
The type of volumes matches the notification.	The type of volumes does not match the notification.	BRP/SO	810
Each grid loss volume or volume difference features a to-be-settled amount.	The to-be-settled amount is missing.	BRP/SO	831
The amount has the correct number of decimal places.	Amount has the wrong number of decimal places.	BRP/SO	803
The price has the correct number of decimal places.	Price has an wrong number of decimal places.	BRP/SO	829
Price period is appropriate for the allocation group.	Price period does not fit the allocation group.	BRP/SO	828
The notification contains the EAN 13 for a market party and the expected market role exactly once.	Missing or incorrect EAN13.	SO	758
The period to which the notification relates is exactly one calendar day.	Invalid period.	BRP/SO	789
The measurement period to which the notification relates is exactly one calendar day.	Invalid measurement period.	BRP	946
The presence of the measurement period is appropriate for the allocation group.	The presence of the measurement period does not match the allocation group.	BRP/SO	947
The end date time of the measurement period is equal to or after the end date time of the notification period.	Invalid end date time measurement period.	BRP	948

¹¹ All volumes are positive numbers (or zero) except volumes in the set of volume differences. This check thus does not apply to the set of volume differences and grid loss. See section 1.3 Starting points.

Control	Error notification	Role	Code
The notification was not delivered too early.	The notification was delivered too early, not expected earlier than in month M+2.	BRP/SO	792
The reconciliation results identifier is unique.	A reconciliation result notification with the same reconciliation run identification has already been received.	SO	811
The reference in the notification is unique.	A notification with this reference has been received in the past.	BRP/SO	670
Notification header			
The NotificationID in the SOAP header is unique.	A previous notification has already been received with the same NotificationID.	BRP/SO	669
The ProcessTypeID in the notification header matches the content of the notification.	ProcessTypeID does not match the content of the notification.	BRP/SO	681
The ProcessTypeID in the notification header matches the recipient of the notification.	ProcessTypeID does not match the recipient of the notification.	BRP/SO	747
No notification with a more recent creation date/time stamp has been received ("latest and greatest").	A notification has already been received with a more recent creation date/time stamp.	BRP/SO	704
The senderID in de SOAP Header equals the SenderID in the Business Document Header.	senderID in de SOAP Header does not equal SenderID in de Business Document Header.	BRP/SO	701
The receiverID in de SOAP Header equals the ReceiverID in the Business Document Header.	receiverID in de SOAP Header does not equal the ReceiverID in the Business Document Header.	BRP/SO	745
The contentType ¹² in the SOAP Header is in keeping with the ProcessTypeID in the Business Document Header.	contentType in the SOAP is not consistent with ProcessTypeID in the Business Document Header.	BRP/SO	754
The CorrelationID in the Business Document Header, if filled in, is the same as the correlationID in the SOAP Header ¹³ .	The Correlation ID in the Business Document Header is not the same as the Correlation ID in the SOAP Header.	BRP/SO	780
Entire notification			
Notification is complete, correct and directed to the correct recipient ¹⁴ .	[free text field] ¹⁵	BRP/SO	999

¹² See Technical Guide - Measurements & Allocations Documents[8] for further information how to fill the contentType.

¹³ If the response error code 780 is returned, the recipient can ignore the content of the CorrelationID in the BusinessDocumentHeader because this content is not relevant. The CorrelationID in the SOAP header is leading.

¹⁴ Check and error notification if a received notification is not correct or not intended for that recipient and cannot be caught by one of the above checks.

¹⁵ An explanation of error code 999 should be entered in this text field.

3.5 Checks receiver for notification “Reconciliation results for aggregated ISP volumes” (BSCMF0088)

The following checks and error notifications are available to the receiver in response to the notification "Reconciliation results for aggregated ISP volumes" and shall be carried out insofar as they are mandatory or relevant for the processing by the receiver:

Control	Error notification	Role	Code
Reconciliation results			
The EAN code-18 of the grid area is a valid EAN code.	EAN code-18 is not valid.	BRP/SO	651
The EAN code-18 of the grid area is administered by the system operator.	The grid area does not appear in the records of the system operator.	SO	687
The BRP was registered in the appropriate grid area for at least one allocation point and at least one calendar within this allocation group during the notification period.	The BRP is not active as BRP in the grid area for this allocation group.	BRP/SO	832
All products match the product type.	One or more products do not fit the product type.	BRP/SO	667
All energy units match the products.	One or more energy units do not fit the product(s).	BRP/SO	668
The number of positions of all time series matches the period and the resolution.	The number of positions is incorrect.	BRP/SO	671
The first position in a time series is '1'.	First position does not start with '1'.	BRP/SO	676
The positions within a time series increase with an increment of '1'.	The increment of a time series is not '1'.	BRP/SO	782
The number of time series in the notification matches the allocation group.	The number of time series in the notification does not match the allocation group.	BRP/SO	764
The volume has a correct number of decimal places.	Volume has an incorrect number of decimal places.	BRP/SO	776
All volumes in the notification are positive numbers (or zero) ¹⁶ .	Volume with negative value.	BRP/SO	686
The type of volumes matches the notification.	The type of volumes does not match the notification.	BRP/SO	810
Each grid loss volume or volume difference features a to-be-settled amount.	The to-be-settled amount is missing.	BRP/SO	831
The amount has the correct number of decimal places.	Amount has the wrong number of decimal places.	BRP/SO	803
The price has the correct number of decimal places.	Price has an wrong number of decimal places.	BRP/SO	829
The notification contains the EAN 13 for a market party and the expected market role exactly once.	Missing or incorrect EAN13.	SO	758
The period to which the notification relates is exactly one calendar day.	Invalid period.	BRP/SO	789

¹⁶ All volumes are positive numbers (or zero) except volumes in the set of volume differences. This check thus does not apply to the set of volume differences and grid loss. See section 1.3 Starting points.

Control	Error notification	Role	Code
The notification was not delivered too early.	The notification was delivered too early, not expected earlier than in month M+2.	BRP/SO	792
The reconciliation results identifier is unique.	A reconciliation result notification with the same reconciliation run identification has already been received.	SO	811
The reference in the notification is unique.	A notification with this reference has been received in the past.	BRP/SO	670
Notification header			
The NotificationId in the SOAP header is unique.	A previous notification has already been received with the same NotificationID.	BRP/SO	669
The ProcessTypeID in the notification header matches the content of the notification.	ProcessTypeID does not match the content of the notification.	BRP/SO	681
The ProcessTypeID in the notification header matches the recipient of the notification.	ProcessTypeID does not match the recipient of the notification.	BRP/SO	747
No notification with a more recent creation date/time stamp has been received I ("latest and greatest").	A notification has already been received with a more recent creation date/time stamp.	BRP/SO	704
The senderID in de SOAP Header equals the SenderID in the Business Document Header.	senderID in de SOAP Header does not equal SenderID in de Business Document Header.	BRP/SO	701
The receiverID in de SOAP Header equals the ReceiverID in the Business Document Header.	receiverID in de SOAP Header does not equal the ReceiverID in the Business Document Header.	BRP/SO	745
The contentType ¹⁷ in the SOAP Header is in keeping with the ProcessTypeID in the Business Document Header.	contentType in the SOAP is not consistent with ProcessTypeID in the Business Document Header.	BRP/SO	754
The CorrelationID in the Business Document Header, if filled in, is the same as the correlationID in the SOAP Header ¹⁸ .	The CorrelationID in the Business Document Header is not the same as the correlationID in the SOAP Header.	BRP/SO	780
Entire notification			
Notification is complete, correct and directed to the correct recipient ¹⁹ .	[free text field] ²⁰	BRP/SO	999

¹⁷ See Technical Guide - Measurements & Allocations Documents[8] for further information how to fill the contentType.

¹⁸ If the response error code 780 is returned, the recipient can ignore the content of the CorrelationID in the BusinessDocumentHeader because this content is not relevant. The CorrelationID in the SOAP header is leading.

¹⁹ Check and error notification if a received notification is not correct or not intended for that recipient and cannot be caught by one of the above checks.

²⁰ An explanation of error code 999 should be entered in this text field.

3.6 Application ProcessTypeID for exchanging reconciliation results

As described in the BRS Reconciliation results[1], the notification specifications for reconciliation results are used for various applications. The application in question must be mentioned in the notification's EDSNBusinessDocumentHeader (functional header), under ProcessTypeID. Further explanation about the use of the EDSNBusinessDocumentHeader is included in the NEDU EDSN Design Choices[2].

See paragraph 1.4 for the overview of ProcessTypeID for reconciliation results.

4 Functional parameters

4.1 Notification for Exchange reconciliation results and reconciliation results for aggregated volumes (BSCMF0087)

Exchange reconciliation results and reconciliation results for aggregated volumes is an exchange for:

Allocation group SMA

1. volumes and volume differences for aggregated volumes of an SMA allocation group incl. reconciliation price and to-be-settled amount across all grid areas per BRP (national portfolio) for exchange with the BRP;
2. volumes and volume differences for aggregated volumes of an SMA allocation group incl. reconciliation price and to-be-settled amount per grid area per BRP for exchange with the BRP and DSO;
3. grid loss change SMA allocation group incl. reconciliation price and to-be-settled amount per grid area for exchange with the BRP Grid loss and DSO;

Allocation group TMT

4. volumes and volume differences for aggregated volumes of an TMT allocation group incl. reconciliation price and to-be-settled amount across all grid areas per BRP (national portfolio) for exchange with the BRP;
5. volumes and volume differences for aggregated volumes of an TMT allocation group incl. reconciliation price and to-be-settled amount per grid area per BRP for exchange with the BRP and SO;
6. grid loss change TMT allocation group incl. reconciliation price and to-be-settled amount per grid area for exchange with the BRP Grid loss and SO;

Allocation group PRF

7. volumes and volume differences for aggregated volumes of an PRF allocation group incl. reconciliation price and to-be-settled amount across all grid areas per BRP (national portfolio) for exchange with the BRP;
8. volumes and volume differences for aggregated volumes of an PRF allocation group incl. reconciliation price and to-be-settled amount per grid area per BRP for exchange with the BRP;
9. grid loss change PRF allocation group incl. reconciliation price and to-be-settled amount per grid area for exchange with the BRP Grid loss.

The following information is exchanged per aggregate:

Entry	Elec	1/n	Note	XML code
Notification identification	V	1	A UUID as a unique identifier of the notification.	
EAN code and market role BRP	A	1	EAN13 of the BRP. Required if it is a reconciliation result notification for the SO/DSO. Must be empty if it is a reconciliation result notification for the BRP ²¹ . Must be empty if it is a grid loss change notification for the BRP Grid loss ²¹ .	
	A	1	Market role of the BRP ²² .	DDK
EAN code and market role BRP Grid loss	A	1	EAN13 of the BRP Grid loss.	

²¹ Must be empty means that the appropriate field is missing from the notification. Empty fields in the XML notification are not allowed based on the UN/CEFACT NDR.

²² Market role as defined in ebIX Code list[6].

Entry	Elec	1/n	Note	XML code
			Required if it is a net change notification for the SO/DSO. Must be empty if it is a reconciliation result notification for the BRP/SO/DSO ²¹ . Must be empty if it is a grid loss change notification for the BRP Grid loss ²¹ .	
	A	1	Market role of the BRP Grid loss ²² .	DDX
EAN code grid area	A	1	The identifying EAN18 code of the grid area. Required if it concerns a reconciliation result notification for the BRP/NB/DSO per grid area. Required if it is a grid loss change notification for the BRP Grid loss. Must be empty if it concerns a reconciliation result notification for the BRP across all grid areas ²¹ .	
Product type	V	1	Allowed values (from ebIX Code list[6] and including a leading zero): Electricity	023
Allocation group	V	1	An identifier for the group to which the concerned reconciliation results belong. Allowed values: Reconciliation results allocation points aggregated (allocation method SMA) Reconciliation results allocation points aggregated (allocation method TMT) Reconciliation results allocation points aggregated (allocation method PRF)	SMA TMT PRF
Reconciliation price	V	1	The reconciliation price for the calendar month in question in Euro (excl VAT) per kWh as decimal number. Always to 2 decimal places.	
Price period	A	1	Indication of the price period for the reconciliation price. Required if it is allocation group PRF. Must be empty if it is allocation group SMA or TMT ²¹ . Allowable values for electricity (from ebIX Code list[6]): Low Normal	E10 E11
Reconciliation Result	V	1	Unique identifier (UUID) for the	

Entry	Elec	1/n	Note	XML code
Run Identification			reconciliation result run. Based on this identification, consumers may compare the set of reconciliation results for a given calendar month per allocation group. This reconciliation results run identification is identical for all receivers.	
Start date time period	V	1	Start date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
End date time period	V	1	End date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ Notification period from start date/time to end date/time is exactly 1 calendar month.	
Start date time measurement period	A	1	Start date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ <u>Required</u> if it is allocation group PRF. <u>Must be empty</u> if it is allocation group SMA or TMT ²¹ .	
End date time measurement period	A	1	End date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ The measurement period refers to the start date time to the end date time of a calendar month, over which the measurement data to which reconciliation relates has been determined. The measurement period is exactly 1 calendar month. <u>Required</u> if it is allocation group PRF. <u>Must be empty</u> if it is allocation group SMA or TMT ²¹ .	
Volume		n		
Volume	V	1	Volume as a decimal number, always to 3 decimal places. <u>Only for volume differences (type MVV) or grid loss mutation (type MNM):</u> A positive volume for consumption or	

Entry	Elec	1/n	Note	XML code
			a negative volume for production means that more volume is allocated to the BRP or BRP grid loss. A negative volume for consumption or a positive volume for production means that less volume is allocated to the BRP or BRP grid loss.	
Type volume	V	1	Type of volume and volume differences. A reconciliation result notification for the BRP/SO should always include three volumes. Two volumes (type MRP, SRP or SDO) for which differences are calculated and the volume difference (type MVV) between the two volumes. A grid loss mutation notification must contain exactly one volume type MNM. Allowed values: Volume submitted in reconciliation process Sum of the ISP volumes provided by SOs in reconciliation process Grid loss change Differences between both volumes Sum of the ISP volumes used in final imbalance determination	MRP SRP MNM MVV SDO
Product ID	V	1	Allowed values (from ebIX Code list[6]): Electricity: Active energy	871686700003 0
Energy unit	V	1	Permissible active energy value: kWh	KWH
Energy direction	V	1	Energy direction identifier. Allowed values (from ebIX Code list[6]): Consumption Production	E17 E18
Price period	A	1	Price period identifier. Required if it is allocation group PRF.	

Entry	Elec	1/n	Note	XML code
			Must be empty if it is allocation group SMA or TMT²¹. Allowable values for electricity (from ebIX Code list[6]): Low Normal	E10 E11
To-be-settled amount.	A	1	The to-be-settled amount for the concerned calendar month per energy direction (and for allocation group PRF also per price period) in Euro (excluding VAT) as a decimal number. Always to 2 decimal places. Mandatory if type volume MNM or MVV. Must be empty if type volume MRP, SRP or SDO²¹. A positive amount for consumption or a negative amount for production means that the BRP or BRP grid loss must pay extra. A negative amount for consumption or a positive amount for production means that the BRP or BRP grid loss will receive money.	

Mandatory fields (V) are always filled; optional fields (O) or dependent fields (A) if required for the context of the related reconciliation results notification.

4.2 Notification for Exchange reconciliation results for aggregated ISP volumes (BSCMF0088)

Exchange reconciliation results for aggregated ISP volumes is an exchange for:

Allocation group TMT

1. volumes and volume differences for aggregated volumes of an TMT allocation group incl. reconciliation price and to-be-settled amount across all grid areas per BRP per ISP (national portfolio) for exchange with the BRP;
2. volumes and volume differences for aggregated volumes of an TMT allocation group incl. reconciliation price and to-be-settled amount per grid area per BRP per ISP for exchange with the BRP and DSO;
3. grid loss change TMT allocation group incl. reconciliation price and to-be-settled amount per grid area per ISP for exchange with the BRP Grid loss and DSO.

The following information is exchanged per aggregate:

Entry	Elec	1/n	Note	XML code
Notification identification	V	1	A UUID as a unique identifier of the notification.	
EAN code and market role BRP	A	1	EAN13 of the BRP. Required if it is a reconciliation result notification for the SO/DSO. Must be empty if it is a reconciliation result notification for the BRP ²³ . Must be empty if it is a grid loss change notification for the BRP Grid loss ²³ .	
	A	1	Market role of the BRP ²⁴ .	DDK
EAN code and market role BRP Grid loss	A	1	EAN13 of the BRP Grid loss. Required if it is a net change notification for the SO/DSO. Must be empty if it is a reconciliation result notification for the BRP/SO/DSO ²³ . Must be empty if it is a grid loss change notification for the BRP Grid loss ²³ .	
	A	1	Market role of the BRP Grid loss ²⁴ .	DDX
EAN code grid area	A	1	The identifying EAN18 code of the grid area. Required if it concerns a reconciliation result notification for the BRP/NB/DSO per grid area. Required if it is a grid loss change notification for the BRP Grid loss. Must be empty if it concerns a reconciliation result notification for	

²³ Must be empty means that the appropriate field is missing from the notification. Empty fields in the XML notification are not allowed based on the UN/CEFACT NDR.

²⁴ Market role as defined in ebIX Code list[6].

Entry	Elec	1/n	Note	XML code
			the BRP across all grid areas ²³ .	
Product type	V	1	Allowed values (from eBIX Code list[6] and including a leading zero): Electricity	023
Allocation group	V	1	An identifier for the group to which the concerned reconciliation results belong. Allowed values: Reconciliation results allocation points aggregated (allocation method TMT)	TMT
Reconciliation Result Run Identification	V	1	Unique identifier (UUID) for the reconciliation result run. Based on this identification, consumers may compare the set of reconciliation results for a given calendar month per allocation group. This reconciliation results run identification is identical for all receivers.	
Start date time period	V	1	Start date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
End date time period	V	1	End date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ Notification period from start date/time to end date/time is exactly 1 calendar month.	
Volume²⁵		n		
ISP (electricity)	V	1	Resolution is in accordance with ISO 8601 notation[7] for Duration. Permissible values electricity: 15 minutes	PT15M
Type volume	V	1	Type of volume and volume differences. A reconciliation result notification for the BRP/SO should always include three volumes. Two volumes (type ORP and ODO) for which differences are calculated and the volume difference (type OVV) between the	

²⁵ Two complete time series:
1. volume active energy (consumption);
2. volume active energy (production).

Entry	Elec	1/n	Note	XML code
			two volumes. A grid loss mutation notification shall always include exactly one volume typed ONM. Allowed values: ISP volume supplied in reconciliation process Grid loss mutation per ISP Differences between both ISP volumes ISP volume used in final imbalance determination	ORP ONM OVV ODO
Product ID	V	1	Allowed values (from ebIX Code list[6]): Electricity: Active energy	8716867000030
Energy unit	V	1	Permissible active energy value: kWh	KWH
Energy direction	V	1	Energy direction identifier. Allowed values (from ebIX Code list[6]): Consumption Production	E17 E18
Volume per position		n		
Position	V	1	Position in the series in whole numbers.	
Volume	V	1	Volume as a decimal number, always to 3 decimal places. <u>Only for volume differences (type OVV) or grid loss mutation (type ONM):</u> A positive volume for consumption or a negative volume for production means that more volume is allocated to the BRP or BRP grid loss. A negative volume for consumption or a positive volume for production means that less volume is allocated to the BRP or BRP grid loss.	
Price and to-be-settled amount per position				
Reconciliation price per position	A	1	The reconciliation price per ISP for the concerned calendar month in Euro	

Entry	Elec	1/n	Note	XML code
			(excl VAT) per kWh as decimal number. Always to 2 decimal places. Mandatory if type volume ONM or OVV. Must be empty if type volume ORP or ODO ²³ .	
To-be-settled amount per position	A	1	To-be-settled amount per ISP for that calendar month in Euro (excl VAT) as a decimal number. Always to 2 decimal places. Mandatory if type volume ONM or OVV. Must be empty if type volume ORP or ODO ²³ . A positive amount for consumption or a negative amount for production means that the BRP or BRP grid loss must pay extra. A negative amount for consumption or a positive amount for production means that the BRP or BRP grid loss will receive money.	

Mandatory fields (V) are always filled; optional fields (O) or dependent fields (A) if required for the context of the related reconciliation results notification.

4.3 Response to notification for Exchange reconciliation results

In this case, the response for all notifications has the same structure. The response consists of an acknowledgement or a rejection:

Entry	Ele c	1/n	Note	XML code
Reference response notification	V	1	A UUID as a unique identifier of the notification.	
Notification reference	A ²⁶	1	A UUID as unique identifier for the acknowledged or rejected notification ²⁷ .	
Date/time response notification	V	1	Date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
Confirmation/rejection code	V	n	If confirmed (not rejected!), code "000" must be shared in the response.	000

²⁶ If the integrity and/or confidentiality of the XML notification cannot be guaranteed, the recipient must be able to send a rejection to the sender of the corresponding notification without the reference of the received notification. The XML notification is also compromised and the attribute may no longer be reliable or possible to obtain. The receiver is requested to contact the relevant sender directly afterwards so that they can examine the issue together and take any corrective action.

²⁷ Is the AggregatedVolumeReconciliationResult_Series.mRID or AggregatedReconciliationResult_Series.mRID for the concerned Notification.

Entry	Element	1/n	Note	XML code
			If rejected, at least one code for rejection must be shared in the response (see paragraph 3.3 - 3.5).	Code for rejection: see paragraph 3.3 - 3.5
Explanation of the rejection	A	n	Optional explanation of the rejection. Only mandatory for error code 999.	

Mandatory fields (V) are always filled; optional fields (O) or dependent fields (A) if required for the context of the related reconciliation results notification.

4.4 Explanation of the correlation of the response to the notification

Correlation on the following levels:

1. CorrelationID in de EDSNBusinessDocumentHeader shows the technical correlation between Notification and Acknowledgement if entered into the Notification by the provider²⁸;
2. Via the notification attribute (UUID), the mandatory process correlation between Notification and Acknowledgement is established. This attribute should also be used in a revisions request as a reference to the reconciliation results notification.

Additionally, a correlation may apply on the level of the SOAP header, see the document MMC Technical Guide – Measurements & Allocations Documents [8].

²⁸ CorrelationID can be entered by the provider of reconciliation results (provider). If filled, the receiving party (consumer) must specify this CorrelationID in the response to the provider. See Design Choices[2] for an explanation of the use of CorrelationID.

5 Sequence Diagram

5.1 Note

The sequence diagram shows the parties and services as an object with a so-called "lifeline". The interaction between these objects is shown by arrows as one or more notifications between objects. The notifications in the sequence diagram are explained in more detail in the chapter Information Model. Further details about notification standards and application methods are described in NEDU EDSN Design Choices[2].

5.2 Exchange reconciliation results for aggregated volumes (BSCMF0087)

The sequence diagram below relates to the supply of Reconciliation results for aggregated volumes by the transmission system operator to the MMC-hub. The MMC-hub takes care of routing, preparing and forwarding the relevant reconciliation results to the receiver.

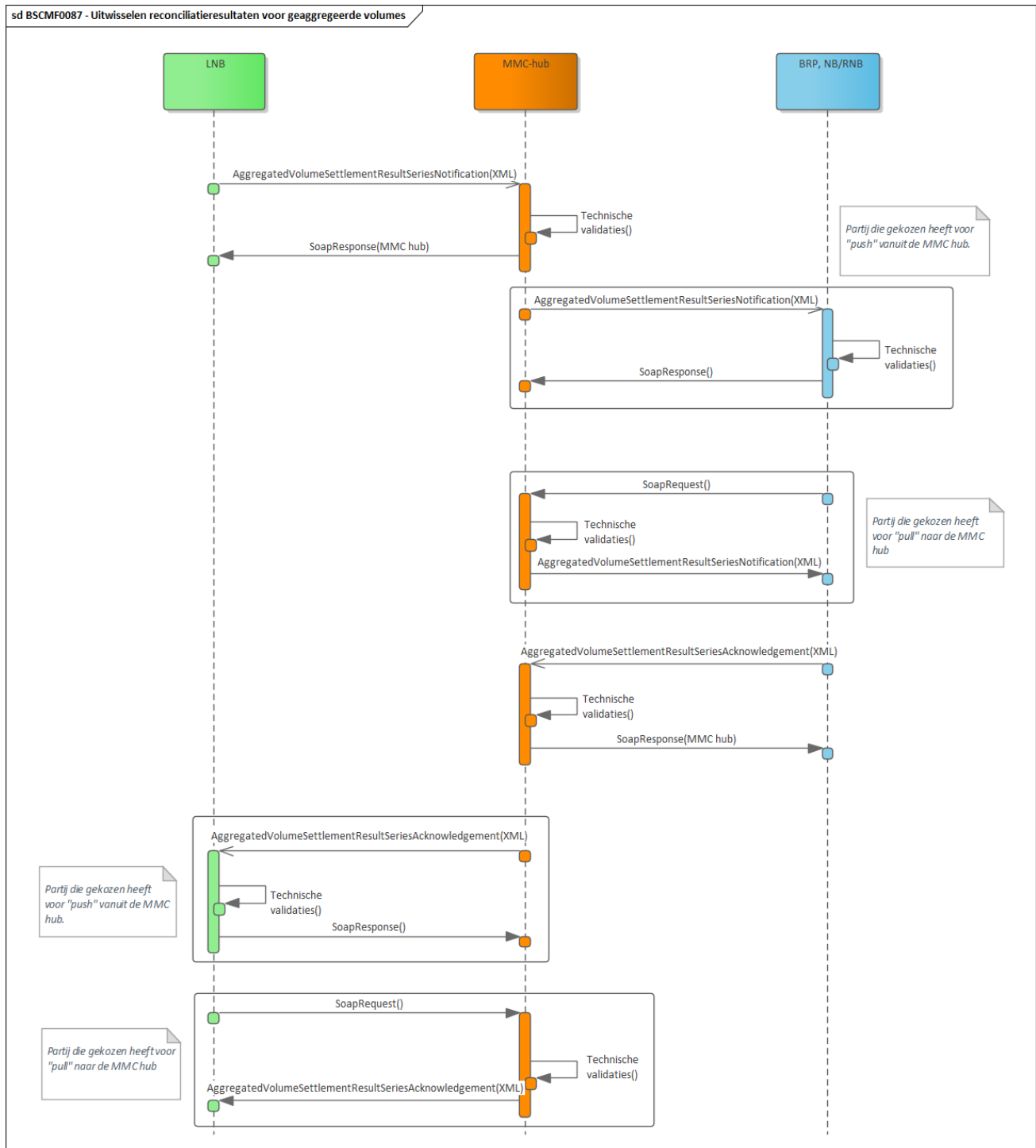
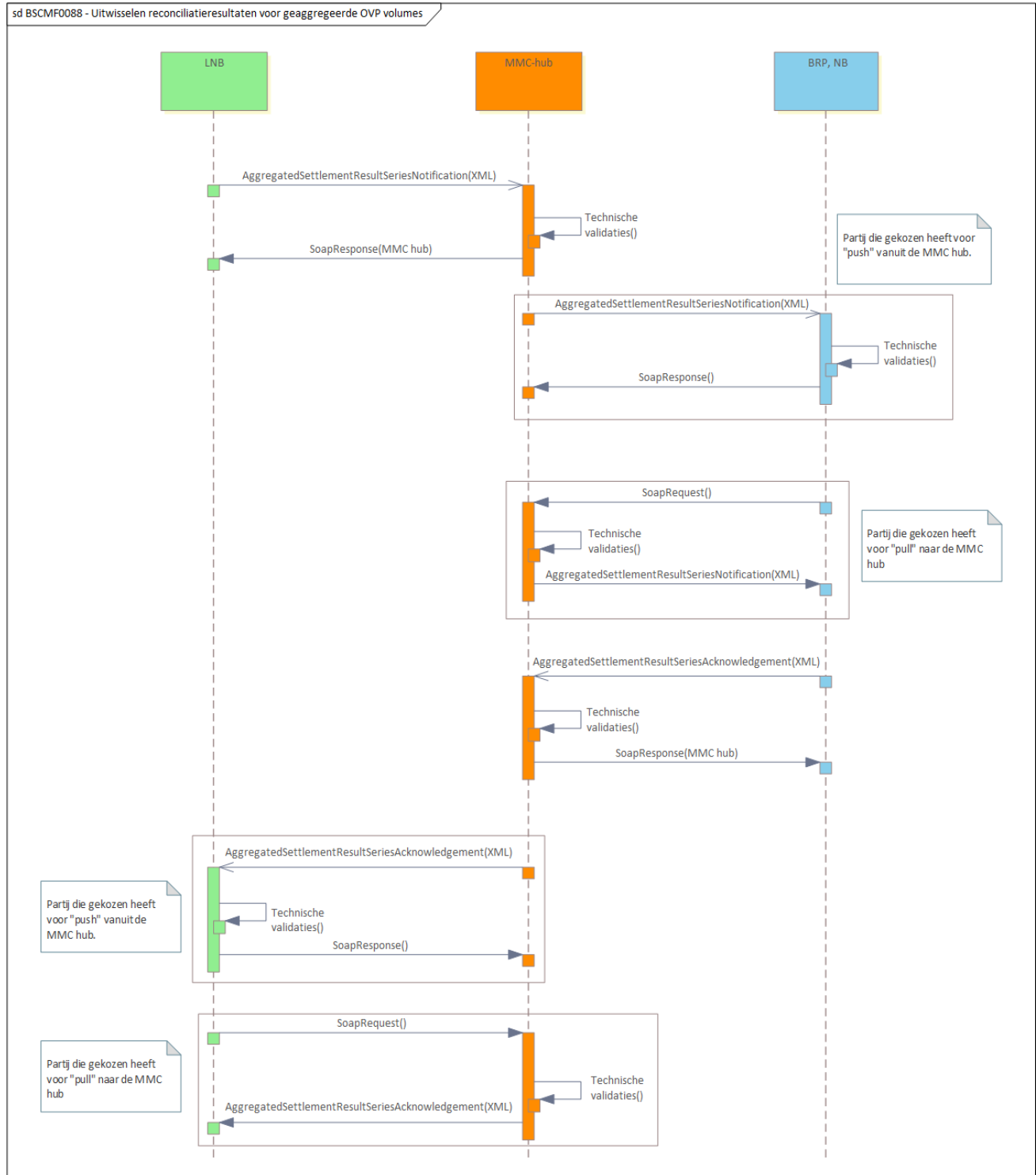


Figure 2 The sequence diagram for Exchange reconciliation results for aggregated volumes between TSO and BRP and SO/DSO via the MMC-hub

5.3 Exchange reconciliation results for aggregated ISP volumes (BSCMF0088)

The sequence diagram below relates to the supply of Reconciliation results for aggregated ISP volumes by the transmission system operator to the MMC-hub. The MMC-hub takes care of routing, preparing and forwarding the relevant reconciliation results to the receiver.



sd BSCMF0088 - Uitwisselen settlementresultaten voor geaggregeerde OVP volumes

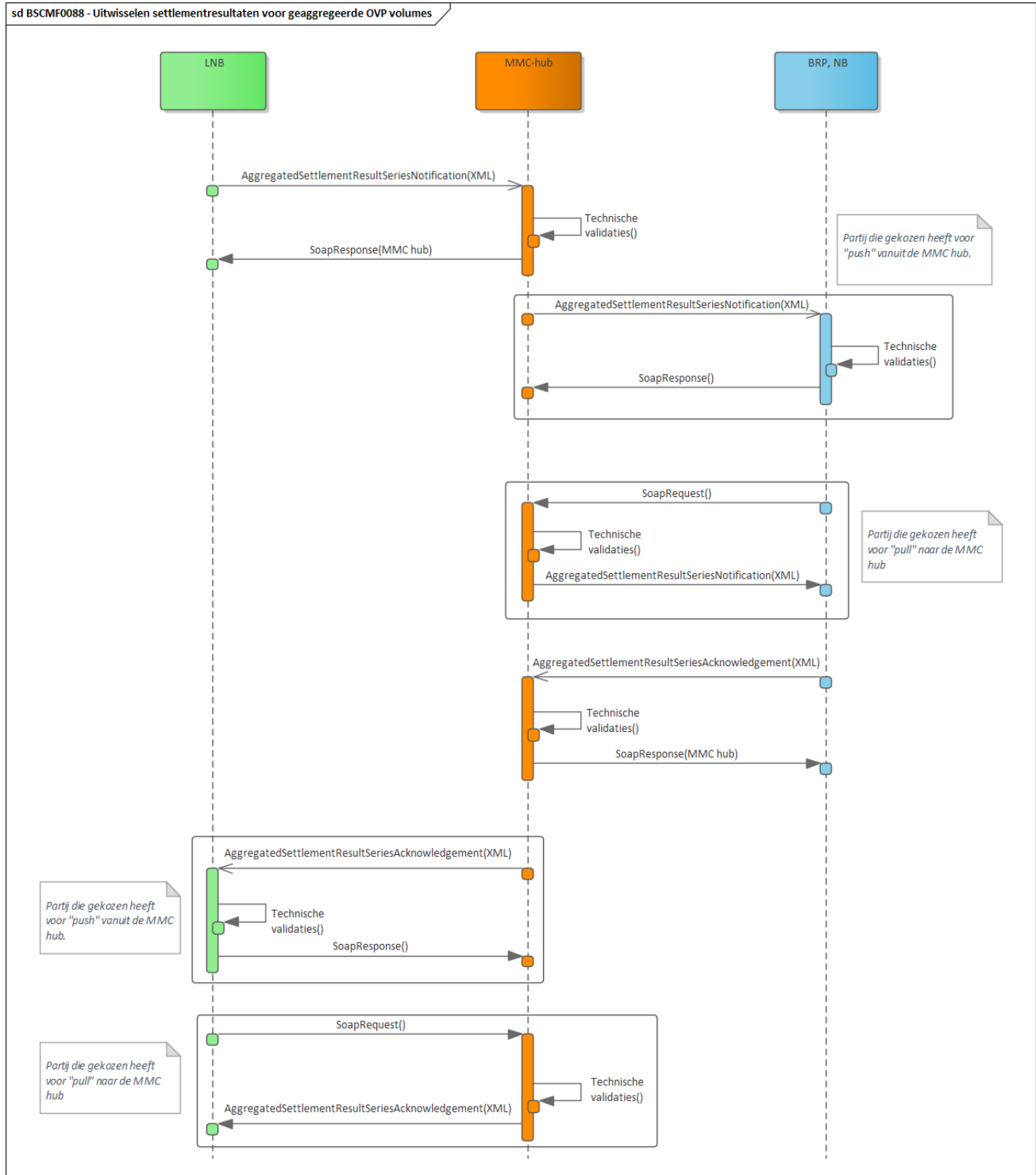


Figure 3 The sequence diagram for Exchange reconciliation results for aggregated ISP volumes between TSO and BRP and SO via the MMC-hub

6 Properties service reconciliation results

6.1 Exchange reconciliation results for aggregated volumes (BSCMF0087)

Exchange reconciliation results for aggregated volumes (AggregatedVolumeSettlementResultSeries)	
	AggregatedVolumeSettlementResultSeries – Exchange reconciliation results for aggregated volumes
Service ID	BSCMF0087
Description	The exchange of reconciliation results between TSO (provider) and the BRP, SO/DSO (consumer)
Service transaction pattern	Notification/Acknowledgement
Precondition(s)	Notification with reconciliation results is submitted by a party that is authorized and authenticated to do so.
Trigger	TSO provides Notification with reconciliation results to MMC-hub.
Post condition(s)	- Notification with reconciliation results rejected; - or - Notification with reconciliation results executed.
Service use ²⁹	
Pattern of use	N/a.
Average load	N/a.
Peak load	N/a.
Period peak load	N/a.
Period of inactivity	N/a.
Max. consumer response time	100% of the incoming Notifications must be answered by the consumer by means of an Acknowledgement within 15 minutes.
Max. response time Soap response MMC-hub	See MMC Technical Guide - Measurements & Allocations Documents[8].
Time-out	See MMC Technical Guide - Measurements & Allocations Documents[8].
Retry	The sender (provider of the reconciliation results) only performs a 'retry' if he did not receive a positive HTTP response from de MMC-hub. If the recipient (consumer of the reconciliation results) after the max. response time still did not receive a response, we advise to contact the recipient to find out the reason behind. If necessary after that the administrator of the MMC-hub can be contacted. After coordination, a resend of the Notification can be chosen as a follow-up action.
Web service	

²⁹ To be agreed with TenneT.

WSDL	See MMC Technical Guide - Measurements & Allocations Documents[8].
Version	See MMC Technical Guide - Measurements & Allocations Documents[8].
Date	See MMC Technical Guide - Measurements & Allocations Documents[8].
Soap address	See MMC Technical Guide - Measurements & Allocations Documents[8].

Operation	
User	SO
Function	Submit notification Aggregated reconciliation results for aggregated volumes
Soap action	See WSDL
Input notification	AggregatedVolumeSettlementResultSeriesNotification
XSD	AggregatedVolumeSettlementResultSeriesNotification_2p0
Output notification	AggregatedVolumeSettlementResultSeriesAcknowledgement
XSD	AggregatedVolumeSettlementResultSeriesAcknowledgement_1p0

6.2 Exchange reconciliation results for aggregated ISP volumes (BSCMF0088)

Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeries)	
Service	AggregatedReconciliationResultSeries – Exchange reconciliation results for aggregated ISP volumes
Service ID	BSCMF0088
Description	The exchange of reconciliation results between TSO (provider) and the BRP, DSO (consumer)
Service transaction pattern	Notification/Acknowledgement
Precondition(s)	Notification with reconciliation results is submitted by a party that is authorized and authenticated to do so.
Trigger	TSO provides Notification with reconciliation results to MMC-hub.
Post condition(s)	- Notification with reconciliation results rejected; - or - Notification with reconciliation results executed.
Service use ³⁰	
Pattern of use	N/a.
Average load	N/a.
Peak load	N/a.
Period peak load	N/a.
Period of inactivity	N/a.
Max. consumer response time	100% of the incoming Notifications must be answered by the consumer by means of an Acknowledgement within 15 minutes.
Max. response time Soap response MMC-hub	See MMC Technical Guide - Measurements & Allocations Documents[8].
Time-out	See MMC Technical Guide - Measurements & Allocations Documents[8].
Retry	The sender (provider of the reconciliation results) only performs a 'retry' if he did not receive a positive HTTP response from the MMC-hub. If the recipient (consumer of the reconciliation results) after the max. response time still did not receive a response, we advise to contact the recipient to find out the reason behind. If necessary after that the administrator of the MMC-hub can be contacted. After coordination, a resend of the Notification can be chosen as a follow-up action.
Web service	
WSDL	See MMC Technical Guide - Measurements & Allocations Documents[8].

³⁰ To be agreed with TenneT.

Version	See MMC Technical Guide - Measurements & Allocations Documents[8].
Date	See MMC Technical Guide - Measurements & Allocations Documents[8].
Soap address	See MMC Technical Guide - Measurements & Allocations Documents[8].

Operation	
User	SO
Function	Submit notification Aggregated reconciliation results for aggregated ISP volumes
Soap action	See WSDL
Input notification	AggregatedSettlementResultSeriesNotification
XSD	AggregatedSettlementResultSeriesNotification_1p0
Output notification	AggregatedSettlementResultSeriesAcknowledgement
XSD	AggregatedSettlementResultSeriesAcknowledgement_1p0

7 Information model

7.1 Note

The information model is shown as a class diagram. Each class diagram is followed by a table with the description of the elements, except for the class diagrams of "empty" notifications exchanged for acknowledgement.

Multiplicities are indicated with the elements. Notation 0..1 means that the element optionally occurs once, 1..1 means that the element occurs once (mandatory). Notation 0...* means that the element may optionally occur more than once. Notation 1..* means that the element may occur one or more times (mandatory).

Data types determine which type of value an element can contain. The data types are subdivided into:

- Composite data types (CDT): a composition of several (fixed) elements, which are reused more often (e.g. address)[4].
- Logical data types (LDT): a defined set of properties of the element such as minimum length, maximum length, pattern[5].

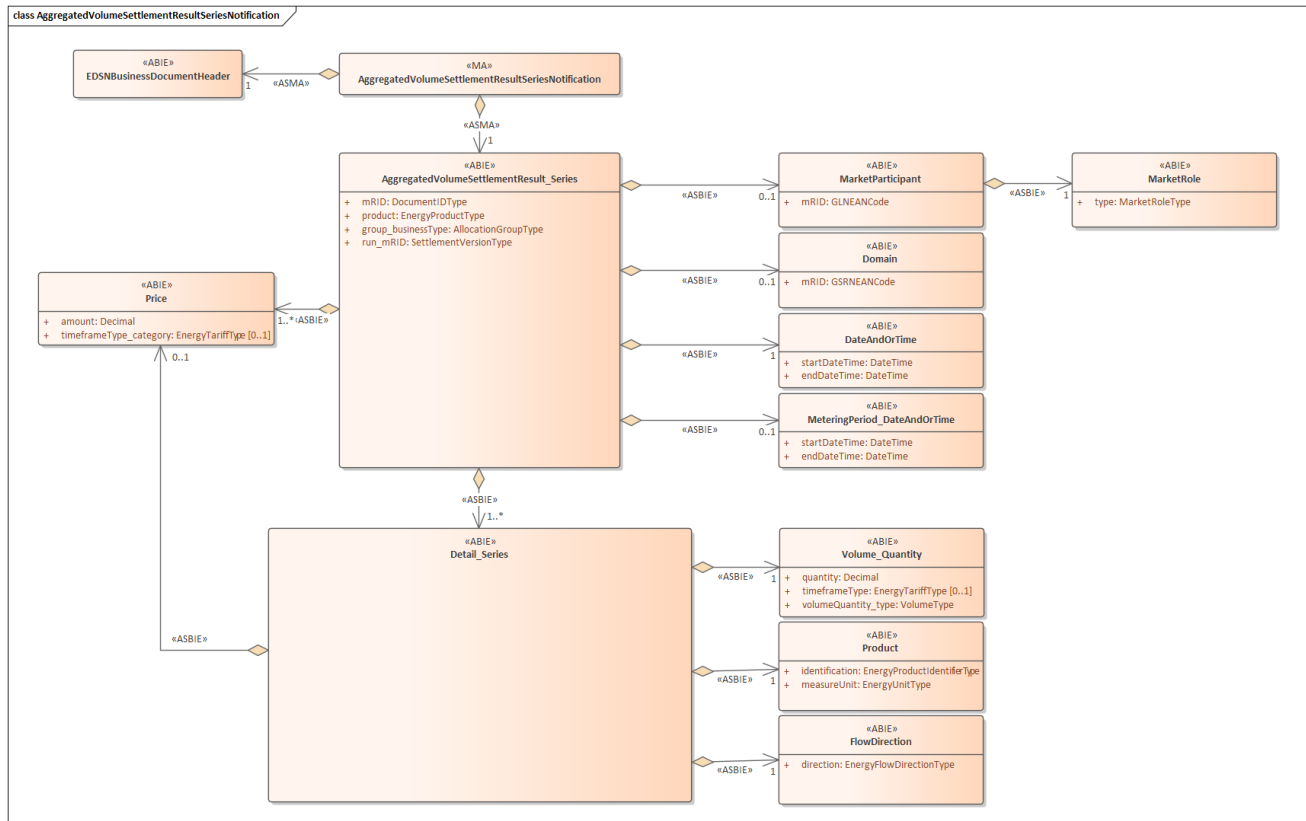
For more information on data types, please refer to NEDU EDSN Design Choices[2].

Detailed information on the values of the data types is available as a PDF document on mijnEDSN:

- EDSN Complex Data Type Specification (CDT).
- EDSN Logical Data Type Specification (LDT).

These documents also describe the values of the data types used in other information models.

7.2 Notification Exchange reconciliation results for aggregated volumes (AggregatedVolumeSettlementResultSeriesNotification)



AggregatedVolumeSettlementResult_Series

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	DocumentIDType	1..1	A unique identification of the time series.	Notification identifier (UUID)
product	EnergyProductType	1..1	The identification of the energy product (electricity, gas etc.)	Product type
group_businessType	AllocationGroupType	1..1	The identification of the nature of the time series.	Allocation group
run_mRID	SettlementVersionType	1..1	The identification of the version of the time series.	Reconciliation Result Run Identification

DateAndOrTime

XML element	Data type	Multiplicity	Description	Functional parameter
startDateTime	DateTime	1..1	Start date time of the period as per ISO 8601 YYYY-MM-DDThh:mm:ssZ.	Start date time period
endDateTime	DateTime	1..1	End date time of the period as per ISO 8601 YYYY-MM-DDThh:mm:ssZ.	End date time period

Detail_Series

XML element	Data type	Multiplicity	Description	Functional parameter
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Domain

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	GSRNEANCode	1..1	The unique identification of the domain.	EAN code grid area

FlowDirection

XML element	Data type	Multiplicity	Description	Functional parameter
direction	EnergyFlowDirectionType	1..1	The identification of the direction.	Energy direction

MarketParticipant

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	GLNEANCode	1..1	The identification of a party in the energy market.	EAN code

MarketRole

XML element	Data type	Multiplicity	Description	Functional parameter
type	MarketRoleType	1..1	The identification of the role played by a market player.	Market role

MeteringPeriod_DateAndOrTime

XML element	Data type	Multiplicity	Description	Functional parameter
startDateTime	DateTime	1..1	Start date time of the metering period as per ISO 8601 YYYY-MM-DDThh:mm:ssZ	Start date time measurement period
endDateTime	DateTime	1..1	End date time of the period as per ISO 8601 YYYY-MM-DDThh:mm:ssZ	End date time measurement period

Price

XML element	Data type	Multiplicity	Description	Functional parameter
amount	Decimal	1..1	A number of monetary units specified in a unit of currency.	Amount
timeframeType_category	EnergyTariffType	0..1	The category of a price to be used in a price calculation. The price category is mutually agreed between System Operators.	Price period

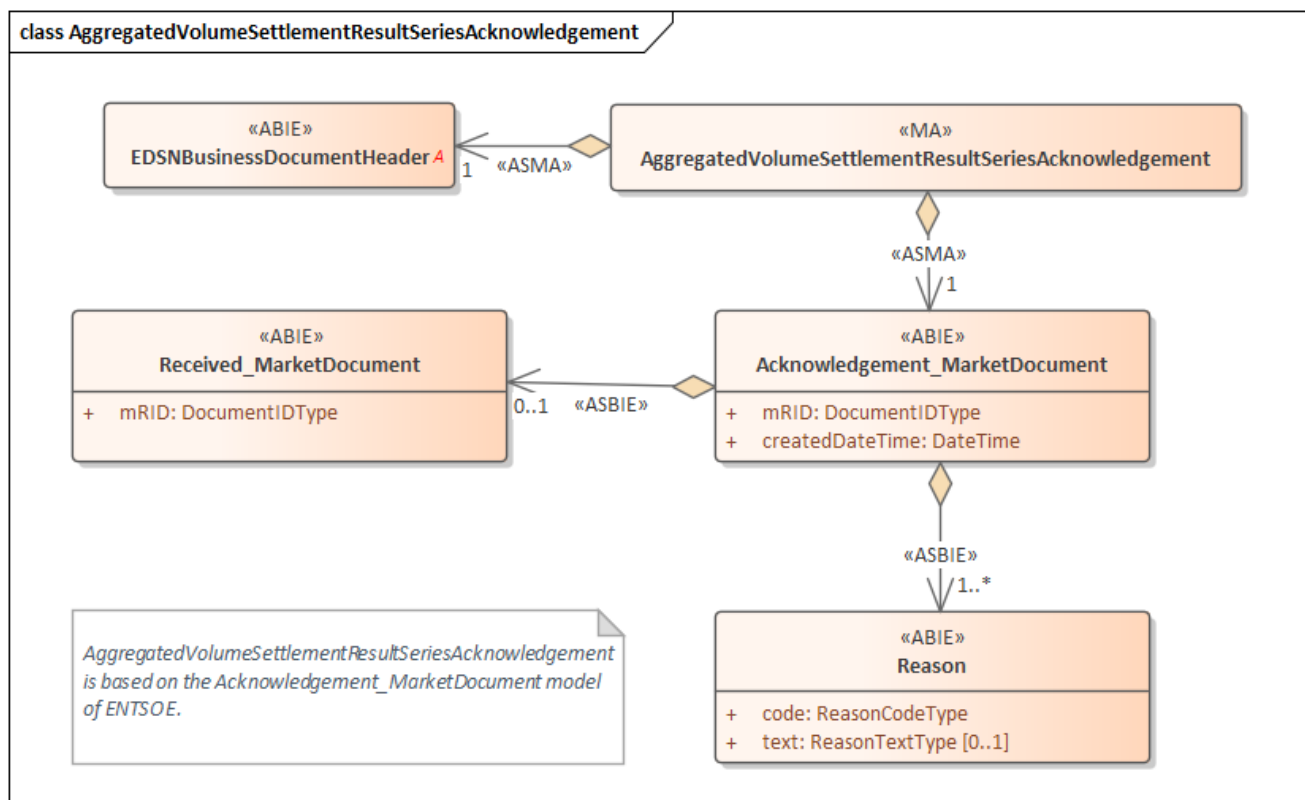
Product

XML element	Data type	Multiplicity	Description	Functional parameter
identification	EnergyProductIdentifierType	1..1	The unique identification of the product.	Product ID
measureUnit	EnergyUnitType	1..1	The identification of the measure unit.	Energy unit

Volume_Quantity

XML element	Data type	Multiplicity	Description	Functional parameter
quantity	Decimal	1..1	The quantity value. The association role provides the information about what is expressed.	Volume (electricity)
timeframeType	EnergyTariffType	0..1	The coded identification of the timeframe.	Price period
volumeQuantity_type	VolumeType	1..1	The description of the type of the quantity.	Type volume

7.3 Confirmation/rejection notification Exchange reconciliation results for aggregated volumes (AggregatedVolumeSettlementResultSeriesAcknowledgement)



Acknowledgement_MarketDocument

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	DocumentIDType	1..1	The unique identification of the document being exchanged within a business process flow.	Notification identifier (UUID)
createdDateTime	DateTime	1..1	The date and time of the creation of the document.	Date/time notification

Reason

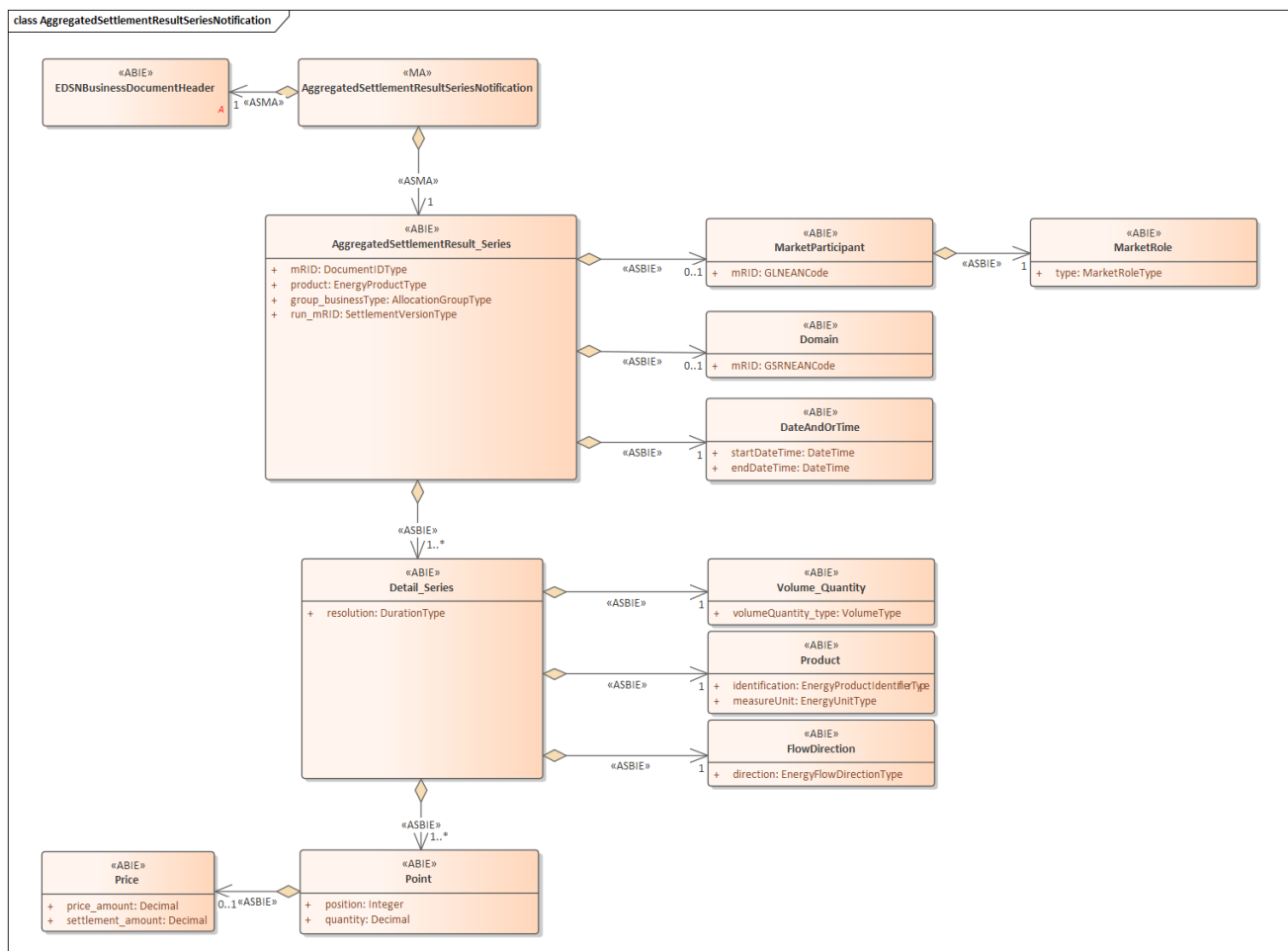
XML element	Data type	Multiplicity	Description	Functional parameter
code	ReasonCodeType	1..1	The motivation of an act in coded form.	Confirmation/rejection code

XML element	Data type	Multiplicity	Description	Functional parameter
text	ReasonTextType	0..1	The textual explanation corresponding to the reason code.	Explanation of confirmation/rejection

Received_MarketDocument

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	DocumentIDType	1..1	The unique identification of the document being exchanged within a business process flow.	Notification identifier (UUID)

7.4 Notification Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeriesNotification)



AggregatedSettlementResult_Series

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	DocumentIDType	1..1	A unique identification of the time series.	Notification identifier (UUID)
product	EnergyProductType	1..1	The identification of the energy product (electricity, gas etc.).	Product type
group_businessType	AllocationGroupType	1..1	The identification of the nature of the time series.	Allocation group

XML element	Data type	Multiplicity	Description	Functional parameter
run_mRID	SettlementVersionType	1..1	The identification of the version of the time series.	Reconciliation Result Run Identification

DateAndOrTime

XML element	Data type	Multiplicity	Description	Functional parameter
startDateTime	DateTime	1..1	Start date time of the period as per ISO 8601 YYYY-MM-DDThh:mm:ssZ.	Start date time period
endDateTime	DateTime	1..1	End date time of the period as per ISO 8601 YYYY-MM-DDThh:mm:ssZ.	End date time period

Detail_Series

XML element	Data type	Multiplicity	Description	Functional parameter
resolution	DurationType	1..1	The definition of the number of units of time that compose an individual step within a period.	ISP (electricity)

Domain

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	GSRNEANCode	1..1	The unique identification of the domain.	EAN code grid area

FlowDirection

XML element	Data type	Multiplicity	Description	Functional parameter
direction	EnergyFlowDirectionType	1..1	The identification of the direction.	Energy direction

MarketParticipant

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	GLNEANCode	1..1	The identification of a party in the energy market.	EAN code market party

MarketRole

XML element	Data type	Multiplicity	Description	Functional parameter
type	MarketRoleType	1..1	The identification of the role played by a market player.	Market role

Point

XML element	Data type	Multiplicity	Description	Functional parameter
position	Integer	1..1	A sequential value representing the relative position within a given time interval.	Position
quantity	Decimal	1..1	The principal quantity or the accepted offer quantity identified for a point.	Volume

Price

XML element	Data type	Multiplicity	Description	Functional parameter
price_amount	Decimal	1..1	A number of monetary units specified in a unit of currency.	Reconciliation price per position
reconciliation_amount	Decimal	1..1	A number of monetary units specified in a unit of currency.	To-be-settled amount per position

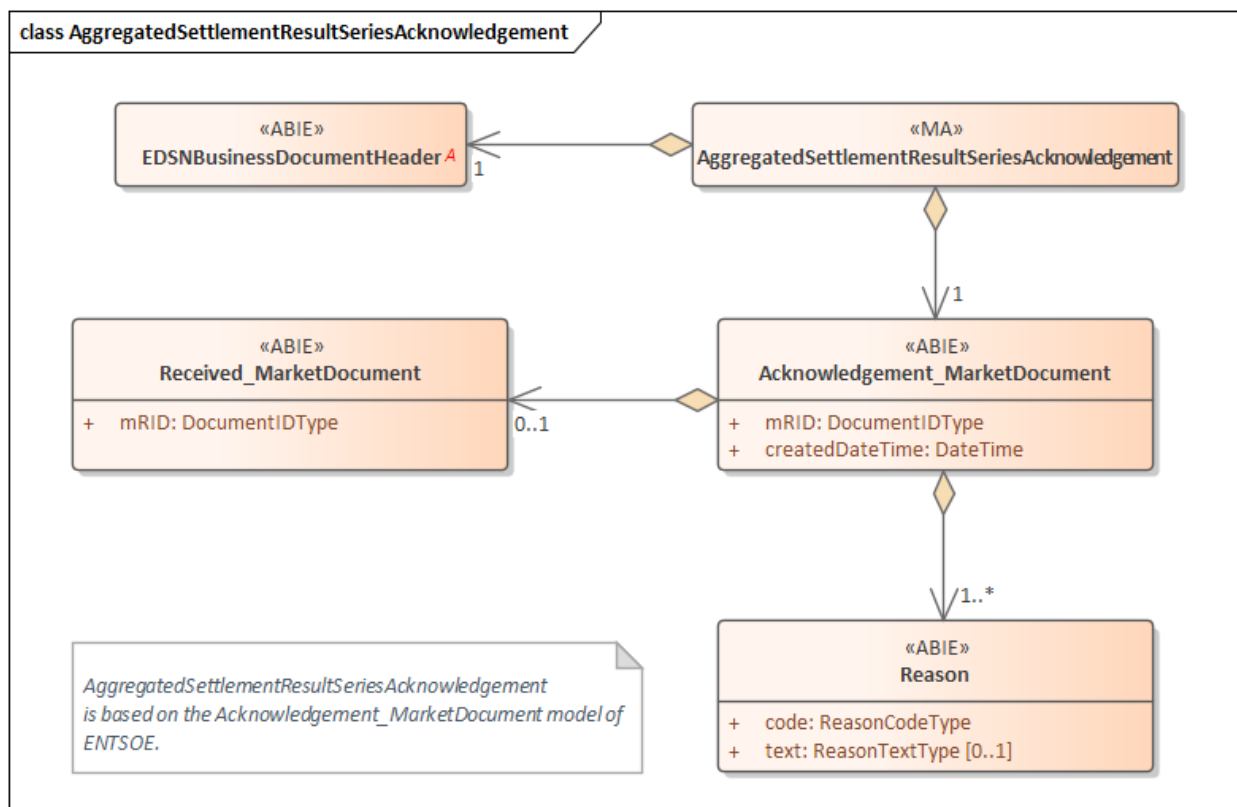
Product

XML element	Data type	Multiplicity	Description	Functional parameter
identification	EnergyProductIdentifierType	1..1	The unique identification of the product.	Product ID
measureUnit	EnergyUnitType	1..1	The identification of the measure unit.	Energy unit

Volume_Quantity

XML element	Data type	Multiplicity	Description	Functional parameter
volumeQuantity_type	VolumeType	1..1	The description of the type of the quantity.	Type volume

7.5 Confirmation/rejection notification Exchange reconciliation results for aggregated ISP volumes (AggregatedSettlementResultSeriesAcknowledgement)



Acknowledgement_MarketDocument

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	DocumentIDType	1..1	The unique identification of the document being exchanged within a business process flow.	Notification identifier (UUID)
createdDateTime	DateTime	1..1	The date and time of the creation of the document as per ISO 8601 YYYY-MM-DDThh:mm:ssZ.	Date/time notification

Reason

XML element	Data type	Multiplicity	Description	Functional parameter
code	ReasonCodeType	1..1	The motivation of an act in coded form.	Confirmation/rejection code
text	ReasonTextType	0..1	The textual explanation corresponding to the reason code.	Explanation of confirmation/rejection

Received_MarketDocument

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	DocumentIDType	1..1	The unique identification of the document being exchanged within a business process flow.	Notification identifier (UUID)