

Business Service

Exchange of measurement data time series

This version of the Service Description will take effect after approval,
when
Allocatie 2.0 tranche 3 goes live.

Please note: the Dutch version is leading.

Name	SD030 - Exchange of measurement data time series	Version	10.0
Code	BSCMF0061	Status	Approved
Date	08-12-2023	Author	EDSN Business Integration

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Document management

Version	Version date	Changes	Author
0.1	26-06-2020	Initial version Prepared based on BRS Measurement Data and Complaints GV and Notification Definition MeasurementSeries	EDSN
0.3	03-07-2020	Version for review	EDSN
0.6	17-07-2020	Review working group processed	EDSN
1.0	07-08-2020	Review from sector processed Version for information	EDSN
1.3	18-08-2020	Review on v1.0 processed	EDSN
2.0	19-08-2020	Version for information	EDSN
2.3	26-08-2020	Review on v2.0 processed Explanation about decimal places for volume per period included Explanation about correlating Notification and Acknowledgement modified Use cases BRS (A20.031 and A20.033) included	EDSN
2.6	17-09-2020	Review on v2.3 processed Explanation of the use of decimals for volume per position for electricity and gas included Validation added for resolution in combination with connection type Validation changed/added for ProcessTypeID Explanation of validation and rejection by the MMC-hub included Use cases BRS (A20.034 and A20.035) included	EDSN
2.9	21 October 2020	Review on v2.6 processed Use case BRS (A20.036) included	EDSN
3.0	28 October 2020	Version for information Volume changed from "Volume in whole numbers, with one 0 after the decimal point" to "Volume in whole numbers". Added check if a measurement data message is not correct	EDSN
3.1	13-01-2021	Control 999 added Reference to TenneT Technical Guide - Measurements & Allocations Documents added New BRS use case A20.010 (Transfer point MWNELK) added (RFC TR2021.4) Table of service features completed in chapter 6	EDSN
3.3	25-01-2021	Review on v3.1 processed	EDSN
3.6	15-02-2021	Review on v3.3 processed Control 200 expired Control 672 amended Control 681 amended Control 682 amended Control 704 amended Control 745 expired Control 754 expired Control 999 amended Table in section 1.4 completed	EDSN
4.0	18-02-2021	Version for information	EDSN
4.3	30-06-2021	RFC 249.4 processed: - Added section 4.3 about timeliness monthly notification "allocation point electricity large consumption" RFC 249.5 processed: - Use case A20.038 added RFC TR2021.5 processed: - Validations added	EDSN

Version	Version date	Changes	Author
		Received_MarketDocument.mRID optional in Acknowledgement Added the 'retry' by provider to chapter 6 Typo in 662 and 663 corrected	
4.6	08-07-2021	Processed review on 4.3	EDSN
4.9	22-07-2021	Processed review on 4.6	EDSN
5.0	26-07-2021	Version for information	EDSN
5.1	25 October 2021	Change in the number of decimal places for volume electricity in time series metering data upon go live Allocatie 2.0 tranche 2	EDSN
5.3	28 October 2021	Review working group C1 processed RFC TR2021.7 Sender and receiver entities: control 778 added	EDSN
5.9	18-11-2021	BRP changed in BRP Version for the NEDU approval process	EDSN
6.0	16-12-2021	Determined in NEDU General Meeting of Members	EDSN
7.0	20-05-2022	Service description for Allocatie 2.0 tranche 1 (TR2021) Approved in SSG A2.0 (based on MFF mandate)	EDSN
7.3	24-03-2022	Modified version for Allocatie 2.0 tranche 2 based on the following RFC: RFC249.7 Connection point distribution systems GAS and G2C connections.	EDSN
8.0	20-05-2022	Version service description for Allocatie 2.0 tranche 2 Approved in SSG A2.0 (based on MFF mandate)	EDSN
8.3	22-08-2022	Modified version using the following RFC's: RFC Allocatie 2.0-1 Use CorrelationID: control 780 added to correctly use CorrelationID for Allocatie 2.0 notifications exchanged via the MMC-hub	EDSN
8.9	02-09-2022	Version for the MFF BAS approval process	EDSN
9.0	19-09-2022	Approved in the SSG A2.0 of 16-09-2022	EDSN
9.1	03-10-2023	Modified version using the following RFC's: - RFC 249.8 Timeliness Change monthly notification Allocation Point Electricity Large Consumption (RFC in effect from go live A2.0 Tranche 2) - RFC A2.0-6 (TR2021-9) Optimization Measurement data Checks (RFC in effect from go live A2.0 Tranche 3) House style changed to MFF BAS	EDSN
9.6	26 October 2023	Version for approval	EDSN
9.9	09-11-2023	Version for approval	EDSN
10.0	08-12-2023	Approved in the MFF PF SG of 08/12/2023	EDSN

Distribution history

Version	Distribution date	Receivers
0.1	26-06-2020	EDSN Service Design
0.3	03-07-2020	GV measurement data working group, EDSN internal
0.6	17-07-2020	GV measurement data working group, NEDU
1.0	07-08-2020	GV measurement data working group, NEDU
1.3	18-08-2020	GV measurement data working group
2.0	19-08-2020	GV measurement data working group, NEDU
2.3	26-08-2020	GV measurement data working group
2.6	17-09-2020	GV measurement data working group, NEDU
2.9	21 October 2020	GV measurement data working group, NEDU
3.0	28 October 2020	GV measurement data working group, NEDU
3.1	13-01-2021	GV measurement data working group, EDSN internal
3.3	25-01-2021	GV measurement data working group, NEDU
3.6	15-02-2021	GV measurement data working group, NEDU, EDSN
4.0	18-02-2021	GV measurement data working group, NEDU, EDSN
4.3	30-06-2021	Working group Business Services A2.0, TenneT, EDSN
4.6	08-07-2021	Working group Business Services A2.0, TenneT, EDSN
4.9	22-07-2021	SR NEDU
5.0	26-07-2021	NEDU, TenneT, EDSN
5.1	25 October 2021	NEDU working group C1
5.3	28 October 2021	NEDU working group C1
5.9	18-11-2021	NEDU Design Authority Working group C1
6.0	16-12-2021	NEDU
7.0	20-05-2022	BASS, MFF, WG C1, EDSN
7.3	24-03-2022	NEDU Design Authority Working group C1
8.0	20-05-2022	BASS, MFF, WG C1, EDSN
8.3	22-08-2022	SI MFF BAS, BS A2.0 AD, WG C1
8.9	02-09-2022	SI MFF BAS, BS A2.0 AD, WG C1
9.0	19-09-2022	MFF BAS, BS A2.0 AD, WG C1
9.1	03-10-2023	Notifications team MFFBAS
9.6	26 October 2023	Notifications team MFFBAS
9.9	09-11-2023	IISO, BOSO, PFSG and Notifications team MFFBAS
10.0	11 December 2023	MFF BAS Notifications team MFFBAS

Referenced documents

Requirements model

No.	Description	Version	Date	Author
1.	BRS Metering data and objections metering data GV	9.0	14-04-2023	MFF BAS WG C1

Design frameworks and guidelines

No.	Description	Version	Date	Author
2.	NEDU EDSN Ontwerpkeuzes	3.9	15-04-2021	NEDU/EDSN
3.	TenneT Web Services guide	N/A	April 2020	TenneT
8.	Technical Guide - Measurements & Allocations Documents	1.7	13-06-2022	TenneT

Service descriptions and data model

No.	Description	Version	Date	Author
4.	EDSN Complex Data Type Specificatie	2.4	07-06-2023	EDSN
5.	EDSN Logisch Data Type Specificatie	3.0	07-06-2023	EDSN
6.	ebIX® Code list	1.2A	May 2023	ebIX TC
7.	ISO 8601 voor datum- en tijdsnotatie	1:2019	2019	ISO

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You can also contact EDSN for more information about this document in the following ways.

EDSN B.V.	Telephone 033 - 422 46 20
Van Asch van Wijckstraat 55	E-mail servicedesk@edsn.nl
3811 LP Amersfoort	Internet www.edsn.nl

1. Introduction

1.1 Service description

The service description describes the agreements concerning the exchange of time series¹ for metering data from a telemetrically measured:

- Allocation point for electricity for large consumption
- Large consumption gas connection
- Grid-to-grid transfer point electricity²;
- Transfer point MWNET electricity
- Allocation point system balance electricity
- Interconnection point of gas distribution networks

To give the reader a good idea of the exchange, a detailed process description is 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 Metering data and objections metering data[1].

1.2 Reading guide

This document describes the following aspects, including:

- Process *Exchange metering data time series*;
- The exchange of this measurement data takes place via TenneT's MMC-hub
- The syntactic validations by the MMC-hub, the confirmation/rejection by the MMC-hub
- The checks on the measurement data by the consumers (TSO, BRP, DSO)
- The confirmation/rejection of the measurement data by the consumers (TSO, BRP, DSO)
- 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 service *Exchange metering data time series*:

- 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 **calendar day** electricity (winter time):
2020-02-08T23:00:00Z / 2020-02-09T23:00:00Z;
Example start and end date **calendar day** electricity (change winter time to summer time):
2020-03-28T23:00:00Z / 2020-03-29T22:00:00Z;
Example start and end date **gas day** (winter time):
2020-02-08T05:00:00Z / 2020-02-09T05:00:00Z;
Example start and end date **calendar day** electricity (summer time):
2020-06-08T22:00:00Z / 2020-06-09T22:00:00Z;
Example start and end date **calendar day** electricity (change summer time to winter time):
2020-10-24T22:00:00Z / 2020-10-25T23:00:00Z;
Example start and end date **gas day** (summer time):
2020-06-08T04:00:00Z / 2020-06-09T04:00:00Z;
- Wherever this service description refers to "large" or "GV" connection/allocation point, this means a telemetered large consumption connection/allocation point or a telemetered Article 1 paragraphs 2 and 3 connection/allocation point (A1)
- Wherever this service description refers to "distribution system operator" or "DSO", one can also understand "GDS owner" in the case of large consumption electricity connections;

¹ These are interval values with a time interval of e.g. 15 minutes.

² Also for GDS.

- Wherever this service description refers to "Connection", this means gas connection, gas distribution network coupling point, electricity grid-on-grid transfer point, MWNET transfer point or electricity allocation point.

1.4 Use of the service Exchange measurement data time series

The table below shows the type of connection for which the metering responsible party must send a separate metering data time series notification to the system operator and/or the balance responsible party. The table also contains a reference to the relevant use cases from the BRS[1].

The frequency is daily and periodically (often monthly). Furthermore, the metering responsible party shall send an update if new data has become available or if a justified review request has been submitted. In an update notification, all measurement data for the relevant (gas) day will be made available again. This includes the measurement data that have not been changed.

Exchange	Measurement data provider	Consumer of measurement data			Type of connection	BRS Use case	Code ³
ELK							
Daily notification "allocation point large consumption of electricity"	MRP	TSO	DSO	BRP	Allocation point ELK TMT	A20.001 (DSO) A20.021 (BRP) A20.034 (TSO)	N10
Monthly notification "allocation point large consumption of electricity".	MRP	TSO	DSO	BRP	Allocation point ELK TMT	A20.002 (DSO) A20.022 (BRP) A20.035 (TSO)	N20
GAS							
Monthly report "large consumption gas connection"	MRP	TSO	DSO	-	Connection GAS TMT	A20.005 (DSO) A20.036 (TSO)	N30
Grid-to-grid transfer point ELK							
Daily notification "grid-to-grid transfer point electricity"	MRP	TSO	DSO	-	Grid-to-grid transfer point ELK	A20.007 (DSO) A20.032 (TSO)	N11
Monthly notification "grid-to-grid transfer point electricity"	MRP	TSO	DSO	-	Grid-to-grid transfer point ELK	A20.008 (DSO) A20.038 (TSO)	N21
Transfer point MWNET ELK							
Daily notification "MWNET electricity transfer point".	MRP	-	DSO	-	Transfer point MWNET ELK	A20.010 (DSO)	N11
System balance ELK							
Daily notification "allocation point system balance electricity" ⁴	MRP	TSO	-	-	Allocation point system balance ELK (5 minutes values)	A20.033 (TSO)	N12
Coupling point distribution networks GAS							
Monthly Notification "Interconnection point for gas distribution networks".	MRP	TSO	DSO	-	Interconnection point of distribution networks GAS	A20.009 (DSO) A20.031 (TSO)	N31

1.5 List of abbreviations

Abbreviation	Description
A1	A connection which falls within the definition of Article 1 of the Electricity Act. This connection is treated as a large consumption, while technically the connection is a small consumption connection
BRP	Balance responsible party (formerly PV)
EDSN	Energy Data Services Netherlands
GDS	Closed distribution system
GV	Large consumption

³ See paragraph 3.5 Application ProcessTypeID.

⁴ In deviation from 4.3.5.1, subsection a, the system operator of the national high-voltage system can impose a measuring period that is shorter than the imbalance settlement period on the metering responsible party for connected parties that supply electrical energy to the system operator of the national high-voltage system for the purpose of the system balance by means of deployed regulating power, reserve power and emergency power.

Abbreviation	Description
TSO	Transmission system operator
MMC-hub	Market-Market-Communication Hub
MRP	Metering responsible party
DSO	Distribution system operator
TMT	Telemetry (abbreviation used to distinguish between connections/allocation points with allocation method PRF and connections/allocation points with allocation method TMT)

2. Roles and responsibilities

2.1 Consumer

This service description describes how the consumers (TSO, BRP, DSO) receive the measurement data.

2.2 Provider

This service description describes how the provider (MRP) provides the measurement data.

2.3 RACI

The RACI below shows the roles and responsibilities for service description *Exchange measurement data time series*:

R (Responsible, NL: Verantwoordelijk)	EDSN Business Integration
A (Accountable, NL: Eindverantwoordelijk)	To be determined!
C (Consulted, NL: Raadplegen)	Notifications team MFFBAS, eBIX Technical Commission,
I (Informed, NL: Informeren)	GMM MFF, EDSN

3. BPMN Exchange measurement data time series

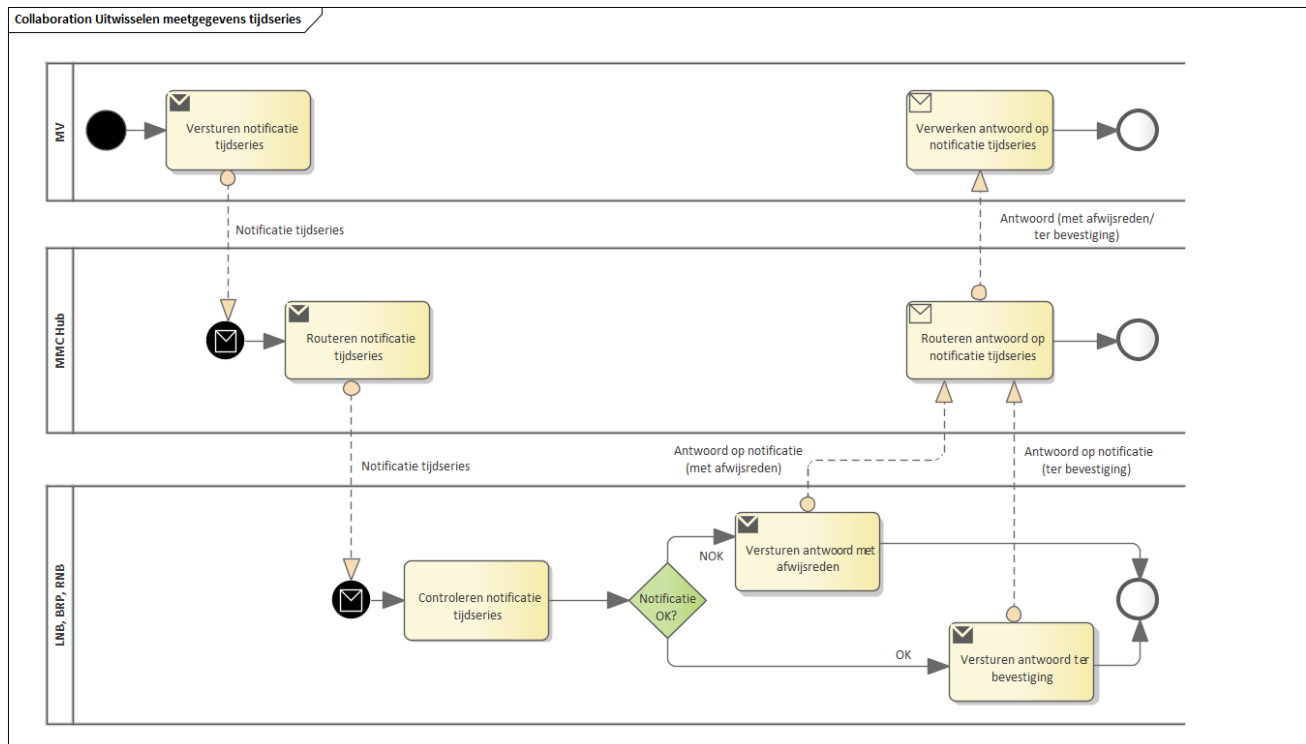


Figure 1 For detailed information on this process see BRS Metering data and objections GV[1]

3.1 Exchange of measurement data time series

The process for exchanging measurement data time series follows the following scenario:

1. The metering responsible party sends the notification "Notification of metering data time series" to the MMC-hub
2. The MMC-hub processes⁵ the received "Notification measurement data time series" notification and routes the notification to the recipient;
3. The receiver checks the notification "Notification measurement data time series"
4. The recipient sends the response "Confirmation/rejection notification metering data time series" to the MMC-hub:
 - a confirmation reply, or
 - an answer with one or more rejections
5. The MMC-hub processes⁶ the response and routes the notification to the recipient.

⁵ A non-valid notification will be rejected by the MMC-hub, see paragraph 3.2.

⁶ A non-valid notification will be rejected by the MMC-hub, see paragraph 3.2.

3.2 Validations MMC-hub

In response to the received notification "Notification measurement data time series" and received notification "Confirmation/rejection notification of measurement data time series", the MMC-hub performs the following validations:

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 TennaT Web Services guide[3].

3.3 Checks on receiver

Following the received notification "Notification metering data time series" and the received notification "Confirmation/rejection notification metering data time series", the recipient may perform the following validations⁷:

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 schema definition (XSD) of the receiver.	TEN-500001: [Error detail]

Following the received notification "Notification measurement data time series" 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

3.4 Controls on receiver for notification "Notification measurement data time series"

In response to the "time series notification" notification, the following checks and error notifications shall be available to the recipient and shall be carried out insofar as they are mandatory or relevant for the processing by the recipient:

Control	Error notification	Role	Code
Connection/grid area			
The EAN code-18 of the connection is a valid EAN code.	EAN code-18 is not valid.	BRP/SO	650
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 connection is registered with the system operator during the entire notification period.	The connection does not appear in the records of the system operator.	SO	652
The EAN code-18 of the connection is administered in the connection register during the entire notification period.	The connection does not appear in the connection register.	BRP	653
The EAN code-18 of the grid area is administered in the connection register during the entire notification period.	The grid area does not appear in the connection register.	BRP/SO	654
The combination of source and sink grid area is correct throughout the notification period.	Combination of source and sink grid area is not correct.	SO	680
According to the connection register, the MRP is registered as MRP on the connection during the entire notification period.	The MRP is not registered as an MRP on the connection.	BRP/SO	655

⁷ These validations are always carried out by the MMC-hub. It is recommended that recipients also perform these validations themselves.

According to the connection register, the BRP is registered as BRP on the connection during the entire notification period.	The BRP is not registered as a BRP on the connection.	BRP	656
The connection was not demolished during the entire period covered by the notice.	The connection has been demolished.	BRP/SO	657
The connection is a GV connection throughout the period to which the notification relates.	The connection is not a GV connection.	BRP/SO	658
The product type in the notification corresponds to the product type of the connection in the connection register.	The product type does not correspond to the product type of the connection.	BRP/SO	659
The period to which the notification relates lies at least 1 (gas) day in the past.	The measurement data are (partly) related to the future.	BRP/SO	660
The start date of the period is before the end date of the period.	Invalid time period.	BRP/SO	661
For a monthly notification, the notification period is up to 1 (gas) month.	The period to which the notification refers is not correct.	BRP/SO	662
The daily report with measurement data was delivered on time.	The daily report with measurement data was delivered too late.	BRP/SO	682
In the case of a daily electricity report, the period is exactly one calendar day.	The period to which the notification refers is not correct.	BRP/SO	663
A newer version of the notification has not yet been received when processing the notification.	Notification not processed because a newer version of the notification has been received.	BRP/SO	760
The reference in the notification is unique.	A notification with this reference has been received in the past.	BRP/SO	670
Time Series			
The resolution is appropriate for the product type.	The resolution does not fit the product type.	BRP	666
The resolution is in line with the agreements for this type of connection.	Resolution does not fit the type of connection.	BRP/SO	713
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 positions within a time series are delivered in order from low to high.	The order of the positions is incorrect.	BRP/SO	672
Each position in a time series occurs exactly once in the respective time series.	Double delivery of positions.	BRP/SO	673
A notification for electricity contains both metering data for production and consumption.	Measurement data has not been supplied for all energy directions.	BRP/SO	674
A time series for a product in combination with a direction of delivery occurs only once in the notification.	Multiple delivery of time series of a product combination in combination with delivery direction.	BRP/SO	675
The first position in a time series is "1".	First position does not start with '1'.	BRP/SO	676
The volume has a correct number of decimal places.	Volume has an incorrect number of decimal places.	BRP/SO	776
The volume in the notification is less than 200% of the volume that may be expected based on the registered physical capacity in the connection register.	The volume does not match the registered physical capacity.	BRP/SO	744
The combination of origin indication, validation status and repair method is a valid combination ⁸ .	The combination of origin indication, validation status and repair method is not a valid combination.	BRP/SO	683
All volumes in the notification are positive numbers (or zero).	Volume with negative value.	BRP/SO	686
Residual volume of gas			
When supplying residual volume, there is a gas connection.	Delivery of residual volume is not possible for an electricity connection.	BRP/SO	679

⁸ See BRS Appendix A for valid combinations of origin indication, validation status and repair method[1].

All volumes in the notification are positive numbers (or zero).	Volume with negative value.	BRP/SO	686
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 header of the notification 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.	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 EAN 13 of the market party that compiled the data is the same as the SenderID in the Business Document Header.	EAN 13 of the market party that produced the data does not match the SenderID in the Business Document Header.	BRP/SO	778
The contentType ⁹ 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 Correlation ID in the Business Document Header, if filled in, is the same as the Correlation ID in the SOAP Header.	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 ¹⁰ .	[free text field] ¹¹	BRP/SO	999

3.5 Application ProcessTypeID for exchanging measurement data time series

As described in the BRS Metering data and objections metering data GV[1], the arrangement for time series can be used for several applications. In the EDSNBusinessDocumentHeader (functional header) in the notification, the application should be specified under ProcessTypeID. Further explanation about the use of the EDSNBusinessDocumentHeader is included in the NEDU EDSN Design Choices[2].

Application	Code
Daily notification "allocation point large consumption of electricity"	N10
Daily notification "grid-to-grid transfer point electricity"	N11
Daily notification "MWNET electricity transfer point".	N11
Daily notification "allocation point system balance electricity"	N12
Monthly notification "allocation point large consumption of electricity".	N20
Monthly notification "grid-to-grid transfer point electricity"	N21
Monthly report "large consumption gas connection"	N30
Monthly Notification "Interconnection point for gas distribution networks".	N31

⁹ See Technical Guide - Measurements & Allocations Documents[8] for further information how to fill the contentType.

¹⁰ 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.

¹¹ An explanation for error code 999 should be entered in this text field.

4. Functional parameters

4.1 Notification Exchange measurement data time series

The following functional parameters are applied in Exchange metering data time series:

Given	Gas	Elec	1/n	Note	XML code
Notification Reference	V	V	1	A UUID as a unique identifier of the notification.	
EAN code connection	V	V	1	EAN 18 connection gas respectively allocation point electricity, grid-to-grid transfer point electricity, transfer point MWNET electricity, interconnection point distribution networks gas.	
EAN code metering responsible party	V	V	1	EAN 13 of the metering responsible party	
Market role	V	V	1	Role of the metering responsible party.	MDR
EAN code grid area	A	A	1	EAN 18 grid area not included in a measurement data notification for a grid-to-grid transfer point or for an interconnection point of gas distribution networks. In all other situations, the EAN 18 of the grid area is mandatory in a measuring data notification!	
EAN code grid area source	A	A	1	EAN 18 grid area only mandatory in a metering data notification for a grid-to-grid transfer point or for an interconnection point of gas distribution grids, see 4.1.1. In all other situations, the EAN 18 grid area source is not filled!	
EAN code grid area sink	A	A	1	EAN 18 grid area only mandatory in metering data notification for a grid-to-grid transfer point or for an interconnection point of gas distribution grids, see 4.1.1. In all other situations, the EAN 18 grid area sink is not filled!	
Product type	V	V	1	Allowed values (from ebIX Code list[6] and including a leading zero): Electricity Gas	023 027
Reference to review request	O	O	1	Reference to the related review request.	
Start date period	V	V	1	A periodic notification is sent for each consecutive period that a party is active on a connection. Start date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
End date period	V	V	1	End date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
Energy type¹²			n		
Imbalance settlement period (electricity)/measurement period (electricity)/PTE (gas)	V	V	1	Resolution is in accordance with ISO 8601 notation[7] for Duration: Permissible values electricity: 5 minutes 15 minutes Permissible gas values: 60 minutes	PT5M PT15M PT60M
Product ID	V	V	1	Allowed values (from ebIX Code list[6]): Electricity: Active energy Reactive energy ¹³ Gas:	8716867000030 8716867000047

¹² The number of time series delivered by the metering responsible party in a notification depends on the product type:

Electricity, up to a maximum of four time series:

1. mandatory: volume active energy (consumption);
2. mandatory: volume active energy (production);
3. optional: volume reactive energy (consumption);
4. optional: volume reactive energy (production).

Gas, one time series:

1. mandatory: volume natural gas.

¹³ Reactive energy volume will only be applied once the sector has established agreements and the required code change is in place.

Given	Gas	Elec	1/n	Note	XML code
				Natural gas	5410000100016
Energy unit	V	V	1	Permissible active energy value: kWh Permissible value of reactive energy: Kvarh Permissible value of natural gas: m ³ (n)	KWH K3 NM3
Energy direction ¹⁴	N/A	V	1	Allowed values (from ebIX Code list[6]): Consumption Production	E17 E18
Volume per position			n	Subsequent positioning	
Position	V	V	1	Position in the series in whole numbers.	
Volume	V	V	1	For electricity: Volume as a decimal number, always to 3 decimal places. For gas: Volume in whole numbers.	
Origin indicator	V	V	1	Allowed values: Measured Measured update Calculated Unmeasured 'zero' ¹⁵ See BRS Appendix A Status of metering data and meter readings [1].	MSR UMS CLC NMS
Validation status	A	A	1	Allowed values: Valid Not Valid Manually approved See BRS Appendix A Status metering data and meter readings[1].	QLD NVL MNL
Repair method	A	A	1	Allowed values: Meter check Correction factor error Correction build-in error Interpolation at meter change Zero data for loss of power Correction based on meter readings Extra information Objection BRP Objection SO Estimated See BRS Appendix A Status of metering data and meter readings [1].	VMT CFF CIN IMC NCD CMR ENF RBR RGR GMR
Residual volume of gas (only for system operator)			1		
Volume	V	N/A	1	Volume in whole numbers.	
Product ID	V	N/A	1	Allowed values: Natural gas	5410000100016
Energy unit	V	N/A	1	Allowed values: m ³ (n)	NM3
Energy direction ¹⁶	V	N/A	1	Allowed values (from ebIX Code list[6]):	

14 For the product type gas, the consumption category of the connection determines whether there is production or consumption. Therefore, energy direction is not a factor in the time series for gas.

15 Unmetered "zero" is used by the MRP as origin indication status for the zeros, that it is obliged to send for production if not measured.

16 For GGV/GXX connections, the following applies to the energy direction of residual volume gas:

- the energy direction is "Consumption" for residual volume that is added to the acquired volumes per hour
- the energy direction is "Production" for residual volume that is subtracted from the acquired volumes per hour

For GIS/GIN connections, the following applies to the energy direction of residual volume gas:

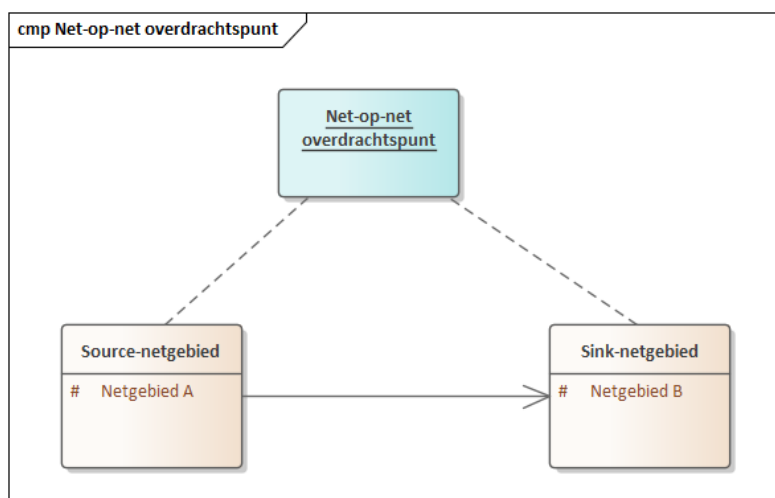
- the energy direction is "Production" for residual volumes that are added to production volumes per hour
- the energy direction is "Consumption" for residual volume that is subtracted from production volume per hour.

Given	Gas	Elec	1/n	Note	XML code
				Consumption	E17
				Production	E18

Mandatory fields (V) are always filled; optional fields (O) or dependent fields (A) if required for the context of the concerned measurement data.

4.1.1 Explanation of the use of Sink and Source at grid-to-grid transfer point electricity

For a grid-to-grid electricity transfer point, we distinguish a Source grid area and a Sink grid area. The notification for a grid-to-grid transfer point electricity is sent by the metering responsible party to both system operators of the relevant Source or Sink grid area. If the energy flows from Source to Sink, this is indicated by the energy direction "Consumption". If the energy flows from Sink to Source, this is indicated by the energy direction "Production"¹⁷.



	From	Energy direction
Source → Sink	Grid area A → Grid area B	Consumption
Source ← Sink	Grid area B → Grid area A	Production

4.1.2 Explanation of the use of Sink and Source at the interconnection point of gas distribution networks

At an interconnection point for distribution networks, we also recognise a Source grid area and a Sink grid area, but an interconnection point for distribution networks knows only one energy direction. If the energy flows from Source to Sink, the notification corresponding to the coupling point with the energy direction "consumption" is sent. When the energy flows from Sink to Source, the notification corresponding to the connection point with energy direction "Production" is sent. The notification for connection point of gas distribution systems is sent by the metering responsible party to the transmission system operator and the concerned distribution system operators based on the Sink and Source.

¹⁷ Calculated from the grid area defined as source!

4.1.3 Explanation about use of decimals for Volume per position for gas

The volume per PTE is in whole numbers!

The metering responsible party shall apply a so-called "intelligent truncate" whereby the fractional part of the volume for the imbalance settlement period/measurement period/PTE is added to the volume of the next imbalance settlement period/measurement period/PTE, within the total 24-hour period (day for electricity or gas day for gas).

Example for gas:

From	To	Position	Measured volume	Fractional part	Fractional share previous period	Volume exchanged	Fractional part next period
2020-02-08T 02:00:00Z	2020-02-08T 03:00:00Z	22	312510	0510	0020	312	0530
2020-02-08T 03:00:00Z	2020-02-08T 04:00:00Z	23	318490	0490	0530	319	0020
2020-02-08T 04:00:00Z	2020-02-08T 05:00:00Z	24	320840	0840	0020	320	0.000 ¹⁸

4.2 Response Exchange measurement data time series

The response consists of an acknowledgement or a rejection:

Given	Gas	Elec	1/n	Note	XML code
Reference response notification	V	V	1	A UUID as a unique identifier of the notification.	
Notification reference	A ¹⁹	A ²⁰	1	A UUID as unique identifier for the acknowledged or rejected notification ²¹ .	
Date/time response notification	V	V	1	Date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
Confirmation/rejection code	V	V	n	If confirmed (not rejected!), code "000" must be returned in the response. If rejected, at least one code for rejection must be returned in the response (see section 3.3 and 3.4).	000 Code for rejection: see section 3.3 and 3.4
Explanation of the rejection	O	O	n	Optional explanation of the rejection.	

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

¹⁸ In case of a gas day transition, the fractional part is not taken into account for the next imbalance settlement period/measurement period/PTE and is therefore set to 0.000.

¹⁹ 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. Due to compromised integrity or confidentiality there is no proper way to retrieve this information.

²⁰ 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. Due to compromised integrity or confidentiality there is no proper way to retrieve this information.

²¹ Is the Measurement_Series.mRID for the MeasurementSeriesNotification notification.

4.2.1 Explanation of the correlation of the response to the notification

Correlation on the following levels:

1. CorrelationID in the EDSNBusinessDocumentHeader shows the technical correlation between Notification and Acknowledgement if entered into the Notification by the provider²²;
2. Via the notification attribute (UUID), the mandatory process correlation between Notification and Acknowledgement is established. This attribute should also be used in a revision request as a reference to the measurement data notification.

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

4.3 Timeliness monthly notification “allocation point electricity large consumption”

Between 12:00 and 23:59, the metering responsible party sends the monthly notifications “allocation point electricity large consumption” (with code N20) and “grid-to-grid transfer point electricity” (with code N21). This to minimize disturbance of the sending and processing of the daily notifications “allocation point electricity large consumption” (with code N10) and “grid-to-grid transfer point electricity” (with code N11).

²² CorrelationID can be entered by the provider of the metering data time series. 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 of measurement data time series

The sequence diagram below relates to the supply of *Exchange metering data time series* by the metering responsible party to the MMC-hub. The MMC-hub takes care of routing, preparing and forwarding the relevant measurement data to the receiver.

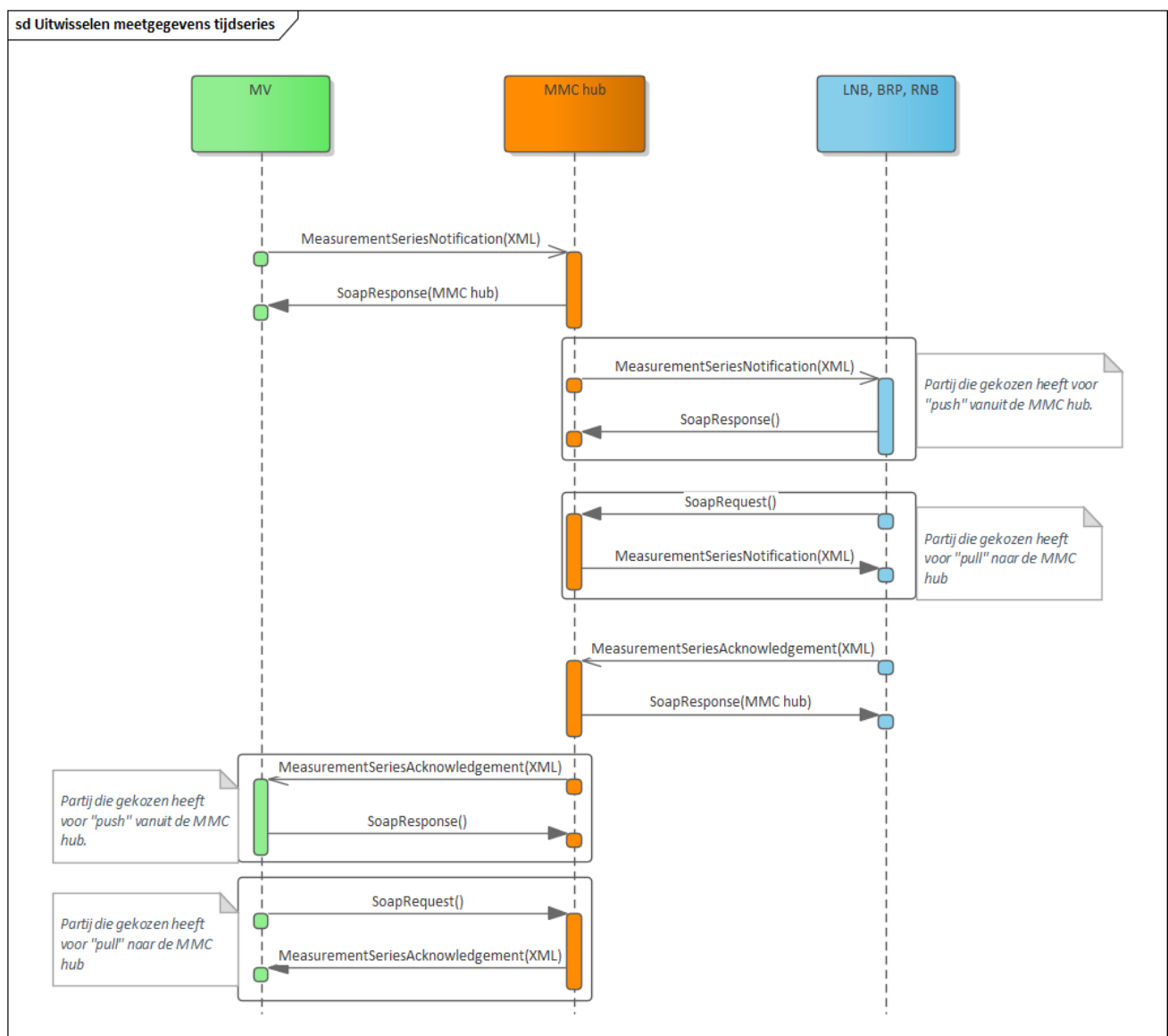


Figure 2 The sequence diagram for exchanging measurement data time series between MRP and TSO, BRP and DSO via the MMC-hub

6. Properties service Exchange measurement data time series

Exchange metering data time series (MeasurementSeries)	
Service	MeasurementSeries – Exchange metering data time series
DSO service ID	BSCMF0061
Description	Exchanging measurement data of time series between MRP (provider) and the TSO, BRP, DSO (consumer)
Service transaction pattern	Notification/Acknowledgement
Precondition(s)	<i>Notification Exchange RCF/Profile fractions</i> is submitted by a party that is authorized and authenticated to do so.
Trigger	MRP provides <i>notification of measurement data exchange time series</i> to MMC-hub.
Post condition(s)	<i>Notification Exchange metering data time series</i> rejected; - or <i>Notification Exchange metering data time series</i> carried out.
Service use ²³	
Pattern of use	N/a.
Average load	N/a.
Peak load	N/a.
Period peak load	N/a.
Period of inactivity	N/a.
Retry by provider	
Max. consumer response time	95% of the incoming Notifications must be answered by the consumer by means of an Acknowledgement within 60 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 measurement data) only performs a 'retry' if he did not receive a positive HTTP response from de MMC-hub. If the recipient (consumer of the measurement data) 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].
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].

²³ To be agreed with TenneT.

Operation		
User		MRP-er
Function		Submit <i>Notification Exchange metering data time series</i>
Soap action		See WSDL
	Input notification	MeasurementSeriesNotification
	XSD	MeasurementSeriesNotification_2p0
	Output notification	MeasurementSeriesAcknowledgement
	XSD	MeasurementSeriesAcknowledgement_3p1

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].

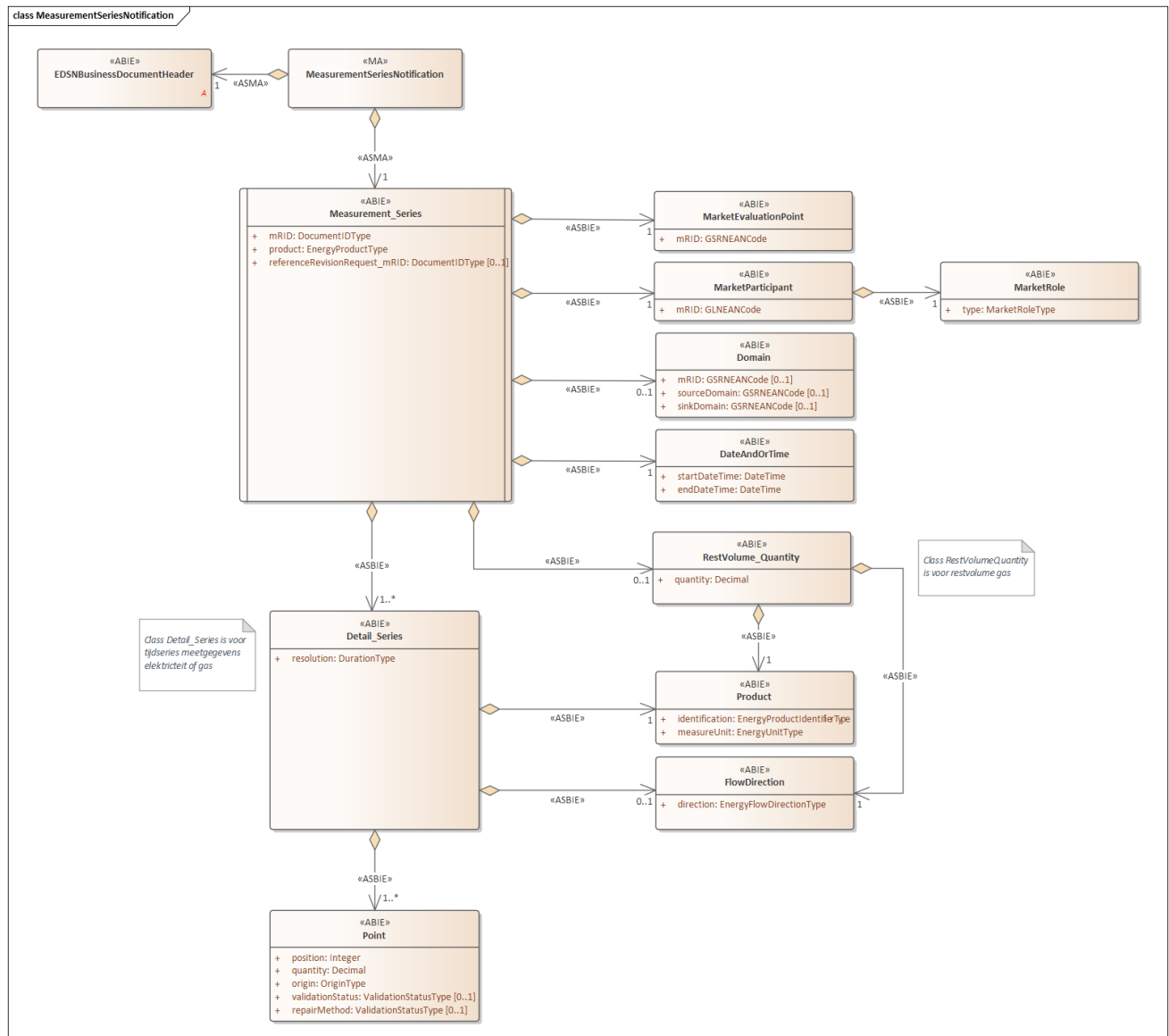
For more information on data types, please refer to NEDU EDSN Design Choices[2].

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 of Measurement Data Time Series (MeasurementSeriesNotification)



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 period
endDateTime	DateTime	1..1	End date/time of the period as per ISO 8601 YYYY-MM-DDThh:mm:ssZ.	End date 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.	Imbalance settlement period (electricity)/measurement period (electricity)/PTE (gas)

Domain

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	GSRNEANCode	0..1	The unique identification of the domain.	EAN code grid area
sourceDomain	GSRNEANCode	0..1	The unique identification of the source domain.	EAN code grid area source
sinkDomain	GSRNEANCode	0..1	The unique identification of the sink domain.	EAN code grid area sink

FlowDirection

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

MarketEvaluationPoint

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	GSRNEANCode	1..1	The identification of the evaluation point.	EAN code connection

MarketParticipant

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

Measurement_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
referenceRevisionRequest_mRID	DocumentIDType	0..1	Reference to an earlier received revision request	Reference to review request

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
origin	OriginType	1..1	The identification of the origin	Origin indicator
validationStatus	ValidationStatusType	0..1	The identification of the validation status	Validation status
repairMethod	ValidationStatusType	0..1	The identification of the repair method.	Repair method

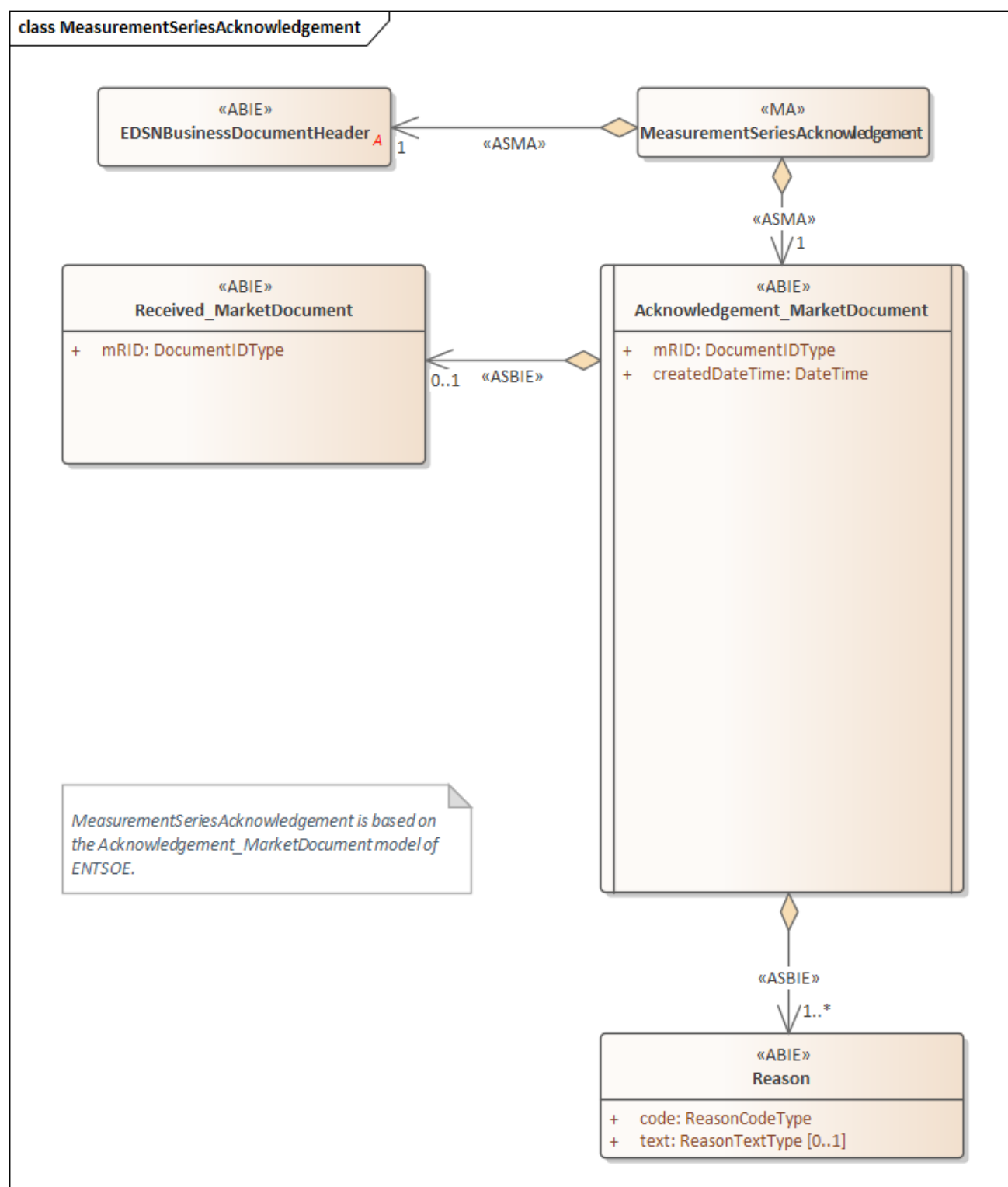
Product

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

RestVolume_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.	Residual volume of gas

7.3 Confirmation/rejection of measurement data time series (MeasurementSeriesAcknowledgement)



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)

XML element	Data type	Multiplicity	Description	Functional parameter
createdDateTime	DateTime	1..1	The date and time of the creation of the document.	

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)