

Business Service

Exchange of measurement data volumes installation

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Document management

Version	Version date	Amendments	Author
0.1	24-07-2020	Initial version Prepared based on BRS Measurement Data and GV Reclamations and message definition VolumeInstallationSeries	EDSN
0.3	29-07-2020	Version for review	EDSN
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0.9	14-09-2020	Review sector processed	EDSN
0.91	18-09-2020	Review sector processed	EDSN
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1.1	13-01-2021	Control 200 and 999 added Reference to TenneT Technical Guide - Measurements & Allocations Documents added Table of service features completed in chapter 6 Error message at check 686 adjusted Check 707 added Check 742 added Codes for Energy Direction changed	EDSN
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2.6	08-07-2021	Processed review of 2.3	EDSN
2.9	22-07-2021	Processed review of 2.6	EDSN
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Distribution history

Version	Dissemination date	Receivers
0.1	24-07-2020	EDSN Service Design
0.3	29-07-2020	GV measurement data working group, EDSN internal
0.6	19-08-2020	GV measurement data working group, NEDU
0.9	14-09-2020	GV measurement data working group, NEDU
0.91	18-09-2020	GV measurement data working group
0.92	24-09-2020	GV measurement data working group
1.0	25-09-2020	GV measurement data working group, NEDU
1.1	13-01-2021	GV measurement data working group, EDSN internal
1.3	25-01-2021	GV measurement data working group, NEDU
1.6	15-02-2021	GV measurement data working group, NEDU, EDSN
2.0	18-02-2021	GV measurement data working group, NEDU, EDSN
2.3	30-06-2021	Working group Business Services A2.0, TenneT, EDSN
2.6	08-07-2021	Working group Business Services A2.0, TenneT, EDSN
2.9	22-07-2021	SR NEDU
3.0	26-07-2021	NEDU, TenneT, EDSN

Referenced documents

Requirements model

No.	Description	Version	Date	Author
1.	BRS Meetgegevens en reclamaties meetgegevens GV	4.0	26-07-2021	NEDU

Design frameworks and guidelines

No.	Description	Version	Date	Author
2.	NEDU EDSN Ontwerpkeuzes	3.9	26-07-2021	EDSN
3.	TenneT Web Services guide	N/A	April 2020	TenneT
8.	Technical Guide - Measurements & Allocations Documents	1.0	31-03-2021	TenneT

Service descriptions and data model

No.	Description	Version	Date	Author
4.	EDSN Complex Data Type Specificatie	2.2	27-05-2020	EDSN
5.	EDSN Logical Data Type Specificatie	2.7	27-05-2020	EDSN
6.	ebIX® Code list	1.0A	June 2019	ebIX TC
7.	ISO 8601 for date and time stamping	1:2019	2019	ISO
9.	UN/CEFACT 6063 Quantity type code qualifier	C	2000	UN/CEFACT

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1 Introduction

1.1 Service description

The service description describes the agreements on the exchange of volumes of an installation of:

- Allocation point electricity profile large-scale consumption
- Allocation point electricity telemetry large-scale consumption.

To give the reader a good idea of the exchange, a detailed process description is included as well as an indication of the messages to be used. For a functional description of the process that supports this exchange, please refer to the *Business Requirement Specification Measuring Data and Complaints Measuring Data GV*[1].

1.2 Reading guide

This document describes the following aspects, including:

- Process *Exchange of measurement data volumes installation*
- These volumes are exchanged via TenneT's MMC hub
- The syntactic validations by the MMC hub, the confirmation/rejection by the MMC hub
- The controls on the volumes by the consumers (TSO, DSO)
- The confirmation/rejection of the volumes by the consumers (TSO, DSO)
- XML message definitions.

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

1.3 Starting points

The following principles were used in designing the service *Exchange of measurement data volumes installation*:

- Date/time notation in XML messages 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 of start and end date calendar day electricity (winter)
2020-02-08T23:00:00Z / 2020-02-09T23:00:00Z;
Example of electricity calendar day start- and end date (summer):
2020-06-08T22:00:00Z / 2020-06-09T22:00:00Z
- Wherever this service description refers to "large-scale consumption", this means a large-scale connection/allocation point or a Section 1 para. 2 and 3 connection/allocation point (A1)
- Where this service description refers to "regional grid operator" or "DSO", this can also be read as "GDS owner" insofar as it concerns electricity wholesale connections
- Wherever this service description refers to "Connection", this refers to allocation point electricity.

1.4 Use service Exchange of measurement data volumes installation

The table below indicates the type of connection for which the party responsible for metering must send a separate message to the grid operator. In addition, the table contains a reference to the relevant use cases from the BRS[1].

The frequency is monthly, except for the yearly connections (based on master data). Furthermore, the measurement manager will send an update if new data has become available. In an update message, all metering data for the relevant period will be made available again. This includes the measurement data that has not changed.

Exchange	Measurement data provider	Consumer of measurement data			Type of connection	BRS Use case	Code ¹
ELK							
Installation volumes "allocation point electricity profile large-scale consumption or telemetry large-scale consumption". The message per allocation point contains the volumes of all installations "behind" this allocation point.	MRP	TSO	DSO	-	Allocation point ELK TMT	A20.002 A20.035	N80
Installation volumes "allocation point electricity profile large-scale consumption or telemetry large-scale consumption". The message per allocation point contains the volumes of all installations "behind" this allocation point.	MRP	-	DSO	-	Allocation point ELK PRF	A20.003	N80

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-scale consumption, while technically the connection is a small-scale consumption connection
EDSN	Energie Data Services Nederland B.V.
GDS	Closed distribution system
GV	Wholesale
TSO	Transmission System Operator
MMC hub	Market-Market-Communication hub
MRP	Measurement Responsible Party
PRF	Profile (abbreviation used to distinguish between profiled connections/allocation points and connections/allocation points measured by telemetry).
BRP	Balance Responsible Party
DSO	Distribution System Operator
SO	System Operator (DSO or TSO)
TMT	Telemetry (abbreviation used to distinguish between connections/allocation points with allocation method PRF and connections/allocation points with allocation method TMT)

¹ See section 3.5 Application ProcessTypeID.

1.6 Disclaimer

The terms of this disclaimer apply to this English service description.

In the event of any conflict between this English service description and the Dutch version of this service description, the Dutch service description will prevail.

2 Roles and responsibilities

2.1 Consumer

This service description describes how the consumers (TSO, DSO) receive the volumes.

2.2 Provider

This service description describes how the provider (MRP) offers the volumes.

2.3 RACI

The RACI below shows the roles and responsibilities for this service:

R (Responsible)	EDSN Business Integratie
A (Accountable)	To be determined!
C (Consulted)	NEDU-ICWE, ebIX Technical Committee, TenneT
I (Informed, NL: Inform)	ALV NEDU, EDSN

3 BPMN Exchange of measurement data volumes installation

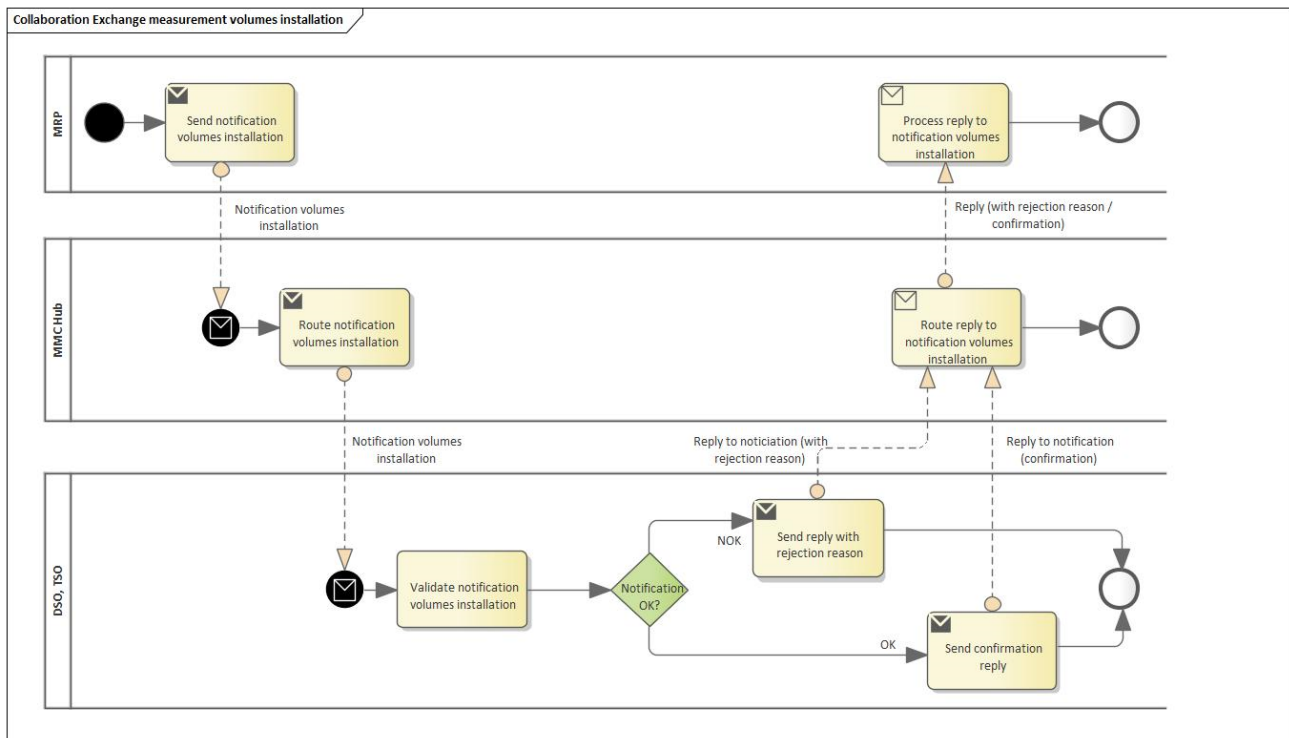


Figure 1 For detailed information on this process see BRS Measurement data and complaints GV[1].

3.1 Exchange of measurement data volumes installation

The process for exchange of measurement data volumes follows this scenario:

1. The measurement responsible party sends the message "Notification of measurement data volumes installation" to the MMC-hub
2. The MMC-hub processes² the received "Notification measurement data volumes installation" message and routes the message to the receiver
3. The receiver checks the message "Notification of measurement data volumes installation"
4. The receiver sends the response "Confirmation/rejection of notification of measurement data volumes installation" to the MMC-hub:
 - a confirmation reply, or
 - an answer with one or more rejections
5. The MMC-hub processes³ the reply and routes the message to the recipient.

² A non-valid message is rejected by the MMC hub, see section 3.2.

³ A non-valid message is rejected by the MMC hub, see section 3.2.

3.2 Validations MMC-hub

Following the received message "Notification of measurement data volumes installation" and received message "Confirmation/rejection of notification of measurement data volumes installation" the MMC hub performs the following validations:

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

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

3.3 Checks on receiver

Following the received message "Notification measurement data volumes installation" and the received message "Conformation/rejection notification measurement data volumes installation" the recipient may perform the following checks⁴:

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

Following the received message "Notification measurement data volumes installation" the receiver performs the following checks:

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

3.4 Checks on receiver for message "Notification measurement data volumes installation"

The following checks and error messages are available to the receiver in response to the message "Notification of measurement data volumes installation" and shall be carried out insofar as they are mandatory or relevant for the processing by the receiver:

Control	Error message	Role	Code
Connection/network area			
The EAN code-18 of the connection is a valid EAN code.	EAN code-18 is not valid.	SO	650
The EAN code-18 of the network area is a valid EAN code.	EAN code-18 is not valid .	SO	651
The EAN code-18 of the connection is registered with the network operator during the entire message period.	The connection does not appear in the records of the grid operator.	SO	652
The EAN code-18 of the grid area is administered by the grid operator.	The grid area does not appear in the records of the grid operator.	SO	687
According to the connection register, the MRP is registered as MRP on the connection during the entire message period.	The MRP is not registered as an MRP on the connection.	SO	655
The connection was not demolished during the entire period covered by the notice.	The connection has been demolished.	SO	657
The connection is a GV connection throughout the period to which the message relates.	The connection is not a GV connection.	SO	658
The connection is an electricity allocation point.	The connection is not an electricity allocation point.	SO	740

⁴ The MMC-hub performs these checks. The recipient can choose to perform these checks as well.

The product type in the message 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.	SO	659
The period to which the message relates lies at least 1 (gas) day in the past.	The measurement data are (partly) related to the future.	SO	660
The start date of the period is before the end date of the period.	Invalid time period.	SO	661
The period covered by the message does not overlap with the date of a Supplier-switch, a move-in, a move-out and/or an end of delivery.	Period overlaps a SVEL event.	SO	702
The EAN code-18 of the installation is an installation administered by the EAN code-18 of the connection.	The installation in combination with the connection does not appear in the records of the grid operator.	SO	688
For all connections (excl. annual connections), the message period is a maximum of 1 calendar month.	The period is too long.	SO	716
The period covered by the message is whole days.	The period is not a whole day.	SO	707
The connection is measured according to the connection register.	The connection is unmetered according to the connection register.	SO	742
Volume			
All products match the product type.	One or more products do not fit the product type.	SO	667
All energy units match the products.	One or more energy units do not fit the product(s).	SO	668
The volume does not exceed the maximum number of agreed decimal places.	Incorrect number of decimal places.	SO	677
All volumes in the message are positive numbers (or zero).	Volume with negative value.	SO	686
The period covered by the volumes in the message is within the message period.	Invalid time period.	SO	729
The start date of the period is before the end date of the period.	Invalid time period.	SO	741
The volume per installation in combination with energy direction appears at most once in the message.	Multiple delivery of volume per installation.	SO	710
Message header			
The MessageID in the SOAP header is unique.	A previous message has already been received with the same MessageID.	BRP/SO	669
The ProcessTypeID in the message header is filled with the correct code.	Incorrect or missing ProcessTypeID.	SO	681
No message with a more recent creation date/time stamp has been received.	A message has already been received with a more recent creation date/time stamp.	SO	704
The senderID in de SOAP Header equals the SenderID in the Business Document Header.	senderID in de SOAP Header is niet gelijk aan 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 ⁵ in de SOAP Header is consistent 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
Entire message			
Message is complete, correct and addressed to the correct recipient ⁶ .	free text field ⁷	SO	999

3.5 Application ProcessTypeID for exchange of measurement data volumes installation

As described in the *BRS Measurement Data and Reclamations Measurement Data GV[1]*, the scheme for the volume installation can be used for several applications. In the EDSNBUSINESSDOCUMENTHEADER (functional

⁵ See Technical Guide - Measurements & Allocations Documents[8] for further information how to fill the contentType.

⁶ Check and error message if a received message is not correct or not intended for that particular recipient and cannot be caught by one of the above checks.

⁷ An explanation of error code 999 should be entered in this text field.

header) in the message, at ProcessTypeID should be specified which application it concerns. Further explanation of the use of the EDSNBusinessDocumentHeader is included in the *NEDU EDSN Design Choices*[2].

Application	Code
Installation volumes "allocation point electricity profile large-scale consumption or telemetry large-scale consumption".	N80

4 Functional parameters

4.1 Notification Exchange of measurement data volumes installation

The following functional parameters are applied to *Exchange of measurement data volumes installation*:

Given	Gas	Elek	1/n	Note	XML code
Message Reference	N/A	V	1	A UUID as a unique identifier of the message.	
EAN code connection	N/A	V	1	EAN 18 electricity allocation point.	
EAN code measurer	N/A	V	1	EAN 13 of the measuring agent.	
Market role	N/A	V	1	Role of the person responsible for measurement.	MDR
EAN code net area	N/A	V	1	EAN 18 of the network area.	
Product type	N/A	V	1	Allowed values (from ebIX Code list[6] and including a leading zero): Electricity	023
Start date period	N/A	V	1	A periodic message 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	N/A	V	1	End date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
Volume installation			n		
Installation identification	N/A	V	1	EAN 18 of the installation (or an identification determined by the MRP).	
Volume	N/A	V	1	Volume in whole numbers.	
Product ID	N/A	V	1	Allowable values for electricity (from ebIX Code list[6]): Active energy	8716867000030
Energy direction	N/A	V	1	Allowable values for installation (from UN/CEFACT Code list[9]): - Own consumption by installation - Gross generation by installation	208 141
Energy unit	N/A	V	1	Permissible values of active energy: kWh	KWH
Start date period (for volume installation)	N/A	V	1	Start date and time of the period to which the volume relates. Start date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
End date period (for volume installation)	N/A	V	1	End date and time of the period to which the volume relates. End date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	

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

4.2 Response Exchange of measurement data volumes installation

The response consists of an acknowledgement or a rejection:

Given	Gas	Elek	1/n	Note	XML code
Reference response message	N/A	V	1	A UUID as a unique identifier of the message.	
Message Notification Reference	N/A	A ⁸	1	A UUID as unique identifier of the acknowledged or rejected notification message ⁹ .	
Date/time response message	N/A	V	1	Date time is in UTC and in accordance with ISO 8601 notation[7]: YYYY-MM-DDThh:mm:ssZ	
Confirmation/rejection code	N/A	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).	Code for rejection: see section 3.3
Explanation of the rejection	N/A	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 message.

4.2.1 Explanation of the correlation of the response to the notification

Correlation on the following levels:

1. Through the EDSNBusinessDocumentHeader, the technical correlation between Notification and Acknowledgement is established if this information is provided by the requester¹⁰;
2. Via the message attribute (both UUID), the obligatory process correlation between Notification and Acknowledgement is established

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

⁸ If the integrity and/or confidentiality of the XML message cannot be guaranteed, the recipient must be able to send a rejection to the sender of the corresponding message without the reference of the received message. Due to compromised integrity or confidentiality there is no proper way to retrieve this information.

⁹ Is the VolumeInstallation_Series.mRID of the VolumeInstallationSeriesNotification message.

¹⁰ CorrelationID can be filled by the provider of volumes and meter readings. 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 messages between objects. The messages in the sequence diagram are explained in more detail in the chapter Information Model. Further details on message standards and application methods are described in *NEDU EDSN Design Choices*[2].

5.2 Exchange of measurement data volumes installation

The sequence diagram below concerns the offering of *Exchange of measurement data volumes* by the measurement responsible party to the MMC hub. The MMC hub takes care of routing, preparing and forwarding the relevant measurement data to the receiver.

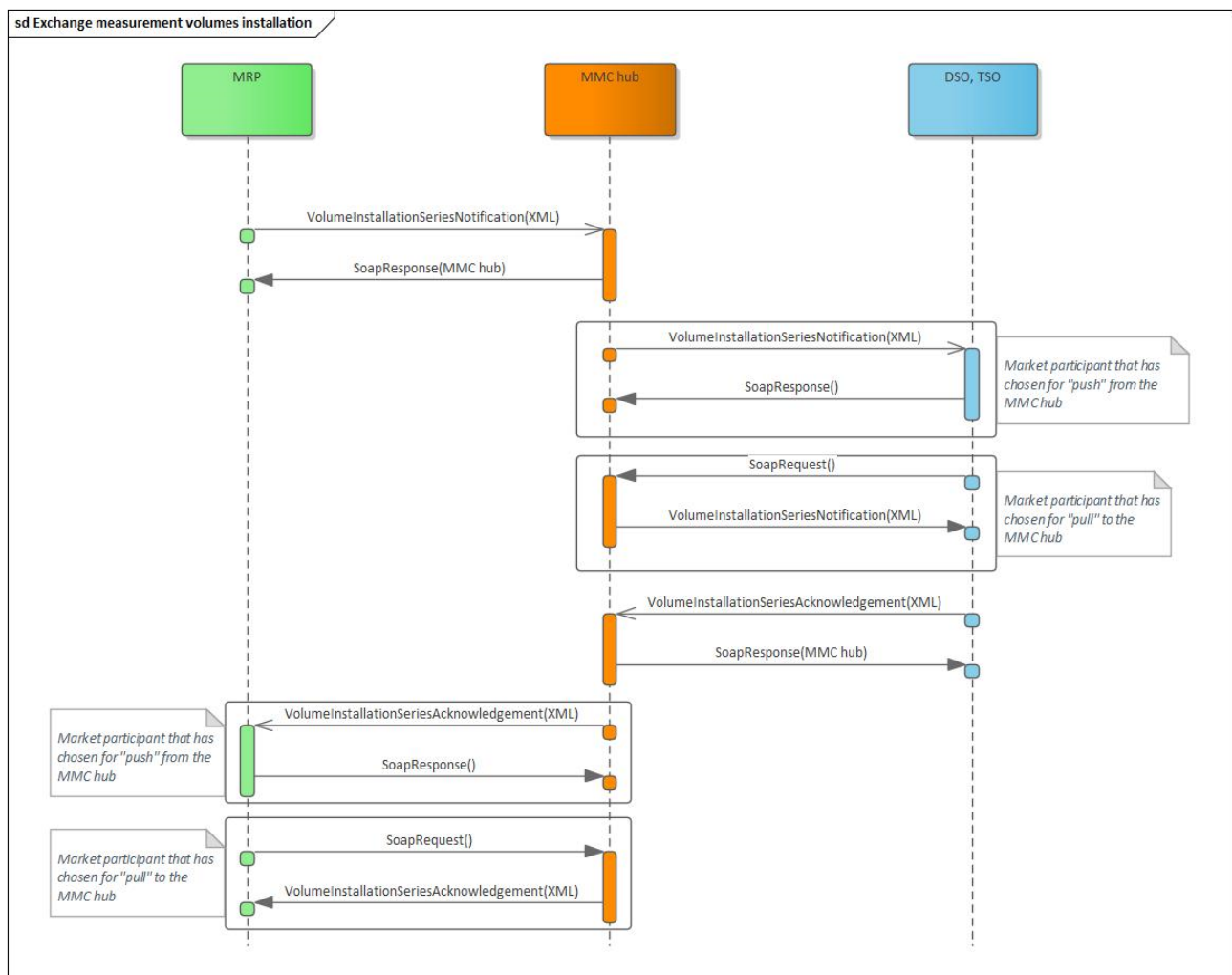


Figure 2 The sequence diagram for exchange of measurement data volumes installation MRP and TSO and DSO via the MMC hub

6 Service features *Exchange of measurement data volumes installation*

Exchange of measurement data volumes installation (VolumeInstallationSeries)	
Service	VolumeInstallationSeries - Exchange of measurement data volumes installation
DSO service ID	BSCMF0062
Description	Exchange of measurement data volumes installation between MRP (provider) and TSO, DSO (consumer)
Service transaction pattern	Notification/Acknowledgement
Precondition(s)	<i>Notify Exchange of Metering Data Volumes installation</i> is submitted by a party authorised and authenticated for this purpose.
Trigger	Party provides <i>Notify Exchange of measurement data volumes installation</i> to MMC hub.
Post condition(s)	<i>Notify Exchange of measurement data volumes installation</i> rejected - or <i>Notify Exchange of measurement data volumes installation</i> carried out.
Service use ¹¹	
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	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.
Webservice	
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].

¹¹ To be agreed with TenneT.

Operation		
User	MRP-er	
Function	Submission <i>Notification Exchange of measurement data volumes installation</i>	
Soap action	See WSDL	
Input message	VolumeInstallationSeriesNotification	
XSD	VolumeInstallationSeriesNotification_1p0	
Output message	VolumeInstallationSeriesAcknowledgement	
XSD	VolumeInstallationSeriesAcknowledgement_1p1	

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" messages 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].

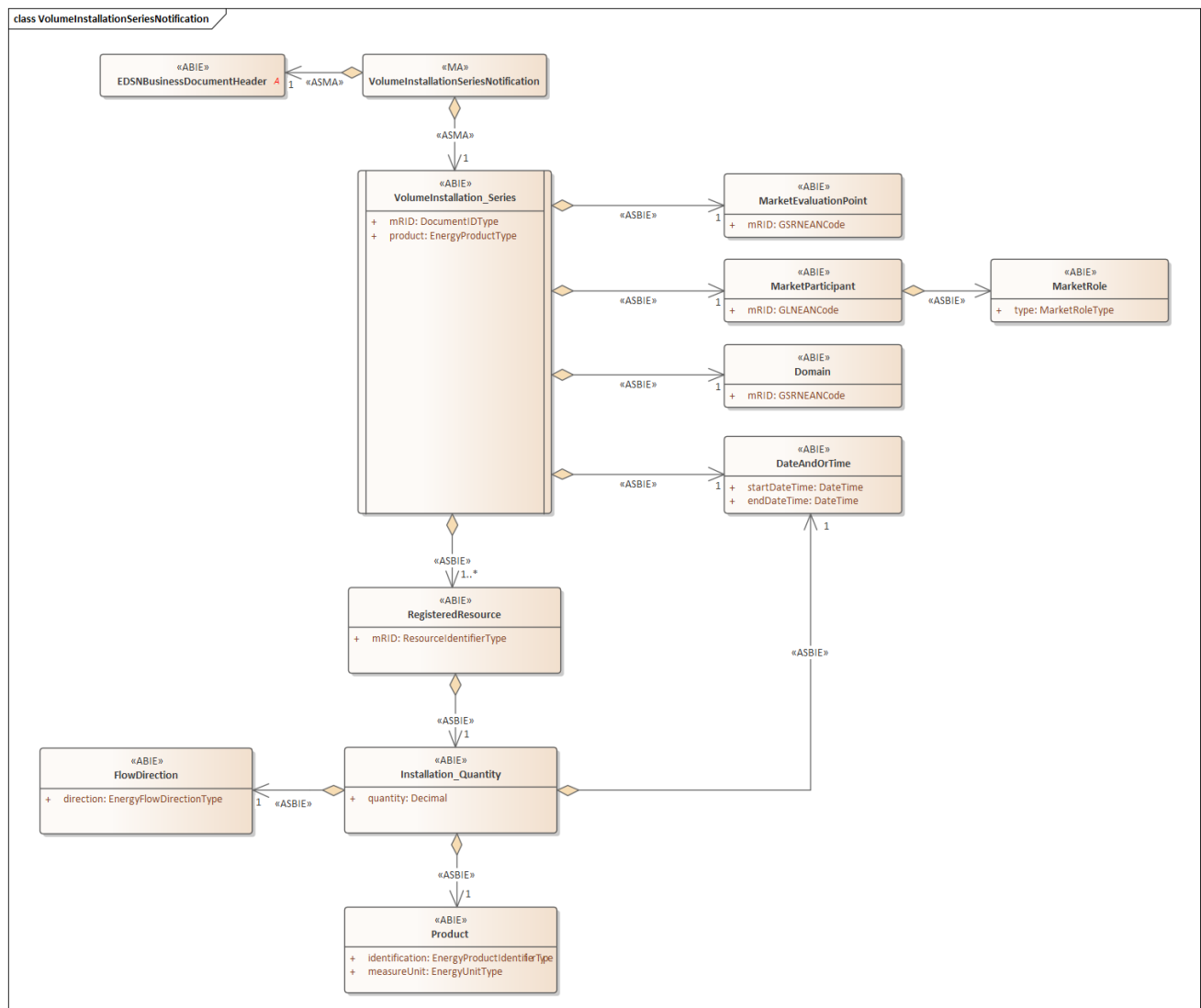
For more information on data types, please refer to *NEDU EDSN Design Choices*[2].

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

- 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 Volumes Installation (VolumeInstallationSeriesNotification)



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

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

Installation_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 installation

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 measurer

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

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

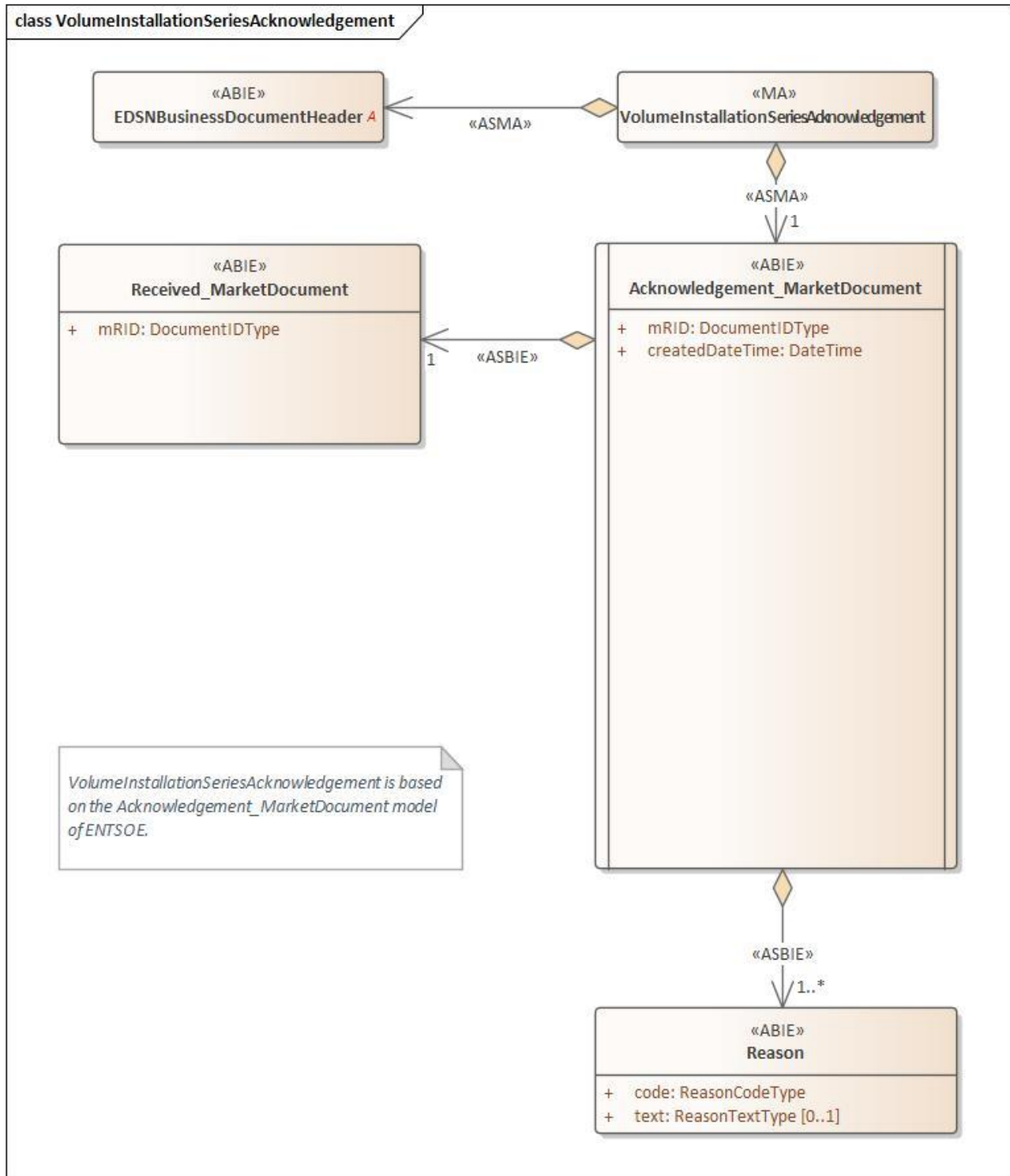
RegisteredResource

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	ResourceIdentifierType	1..1	The unique identification of a resource.	Installation identification

VolumeInstallation_Series

XML element	Data type	Multiplicity	Description	Functional parameter
mRID	DocumentIDType	1..1	A unique identification of the time series.	Message Identifier (UUID)
product	EnergyProductType	1..1	The identification of the energy product (electricity, gas etc.)	Product type

7.3 VolumeInstallationSeriesAcknowledgement



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.	Message Identifier (UUID)
createdDateTime	DateTime	1..1	The date and time of the creation of the document.	Date/time message

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 the 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 message identifier (UUID)