Technical Guide Presentation

Introduction to Market Parties

30th June 2025

The (technical) Team

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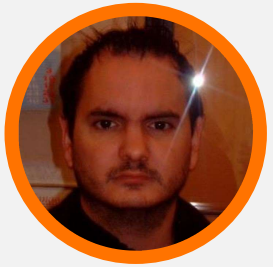

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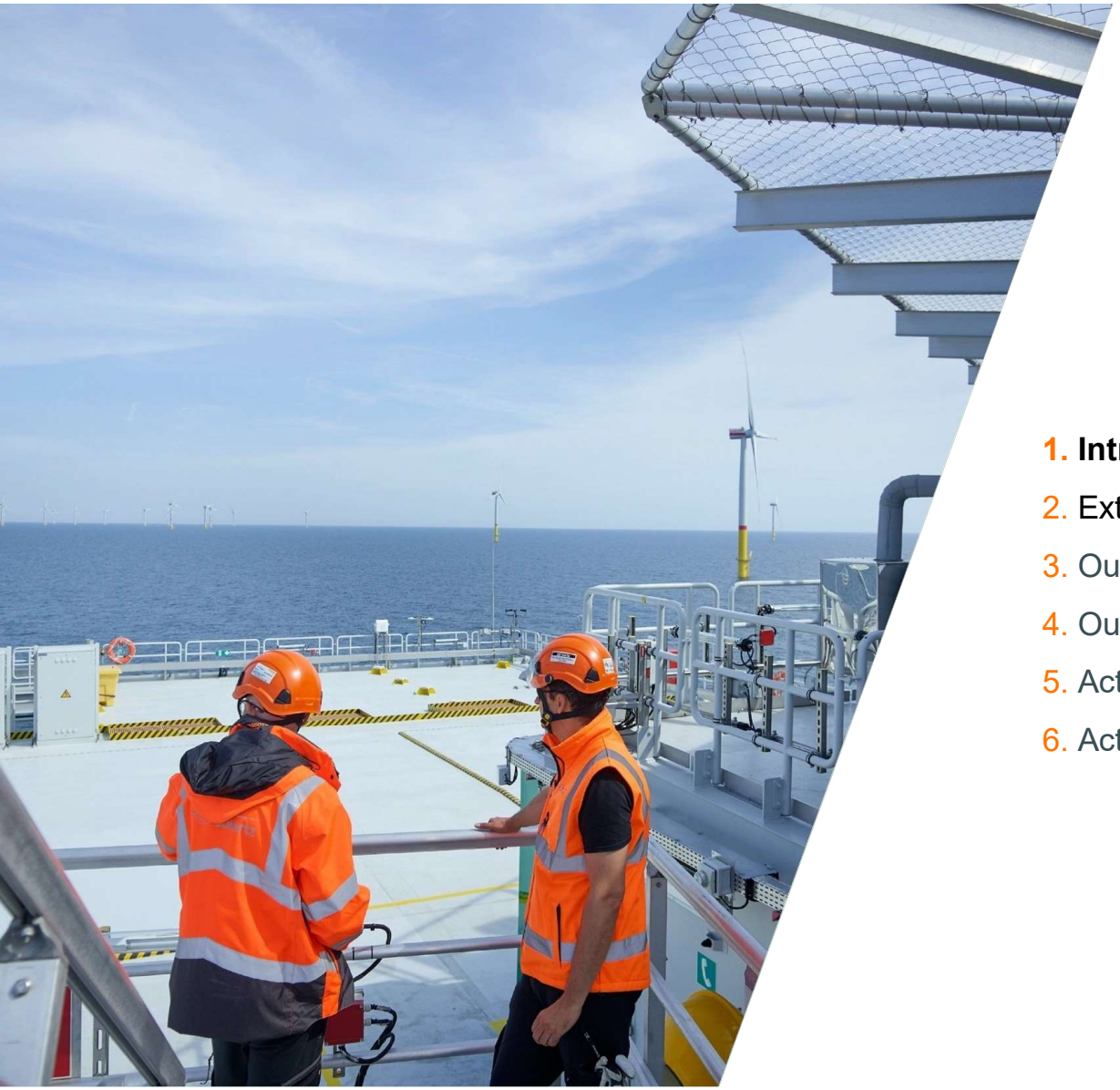
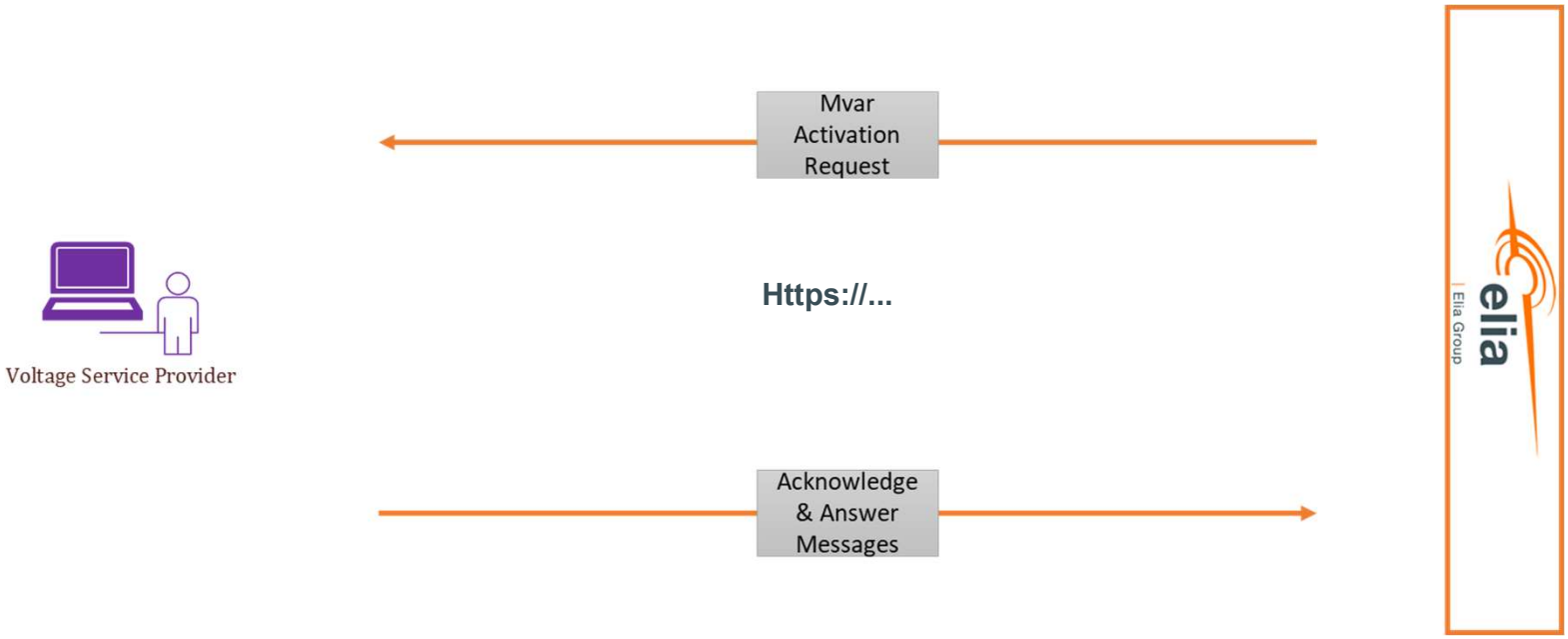


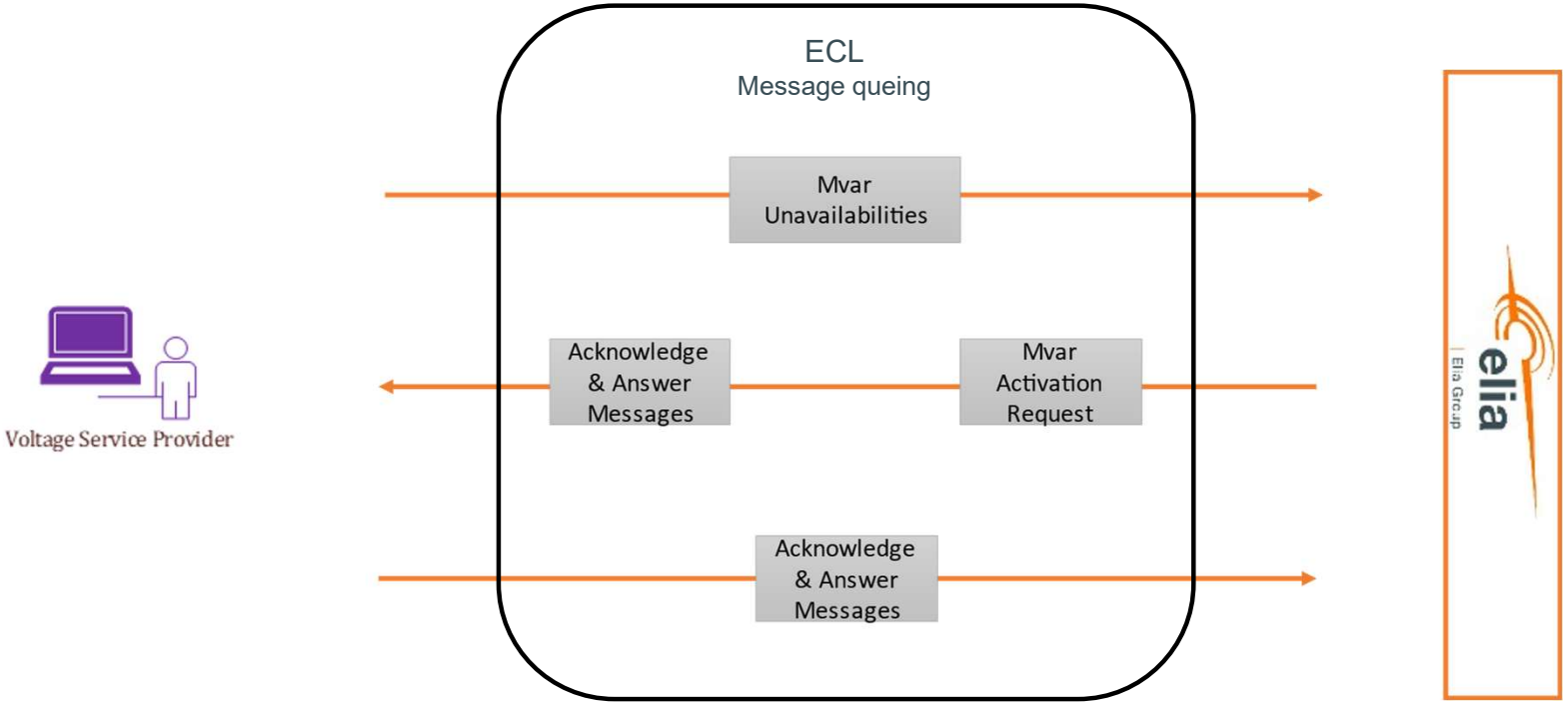
Agenda

1. **Introduction (5’)**
2. External Communication Layer (10’)
3. Outage Planning – What, Why & How? (10’)
4. Outage Planning – Technical guide details (20’)
5. Activations – Main features (5’)
6. Activations – Technical guide details (20’)

What we have now



What we will build



Why we do this

Supporting T&C ‘27-’28

- Mvar outages/unavailabilities
- Non-mandatory units
- Non active power related assets

Technology uniformization

- Icaros phase 1
- VSP T&C ‘27-’28
- Icaros phase 2

Modernization

- Changes in scope of NIS2 compliancy
- Ability to provide future proof technology

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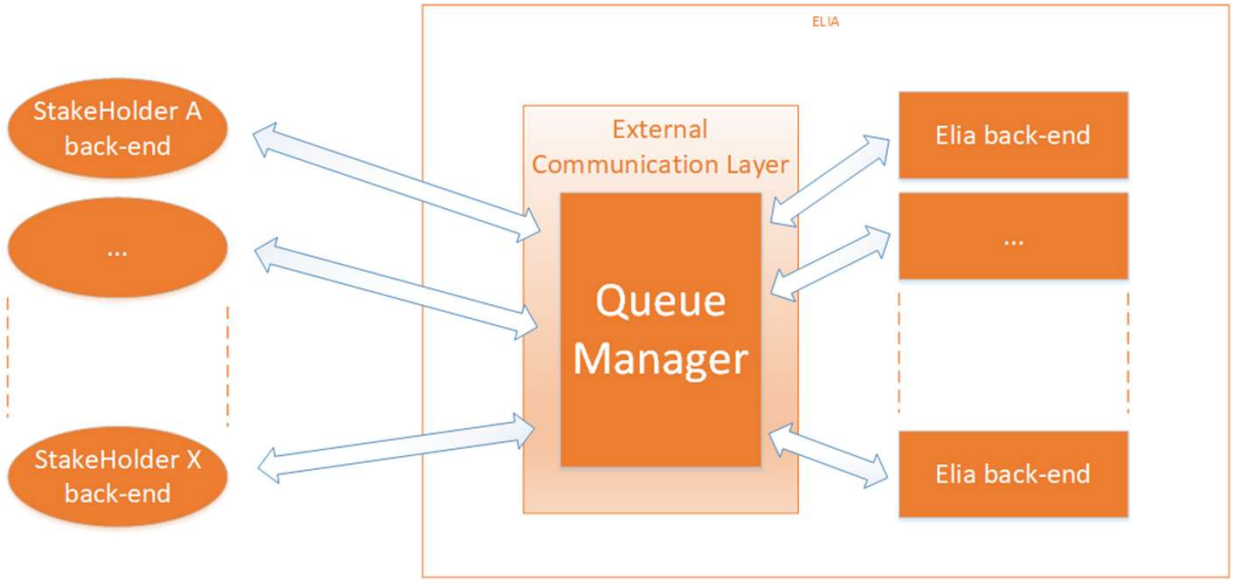
External Communication Layer for exchanges between VSP and Elia

- The External Communication Layer will be realized by a queue manager located at Elia. No hosting required by the External Stakeholders
- International standards are used for communication protocol (ENTSOe CIM) and security protocol (AMQPS)
- Detailed information can be found in technical guide



External communication layer also used for exchanges in the framework of iCAROS, Picasso and MARI project

External Communication Layer

General details:

- Dedicated queues/exchanges

  Elia > Market Party : 1 queue for each type of message per Market Party

  Market Party > Elia: 1 exchange for each type of message

- Sending messages

  Market Party has to write in the corresponding exchange

  Retry Logic: Sender need to ensure the message has been acknowledged

- Receiving messages

  Reading from the dedicated queue

  Transaction approach: message must be persisted before committing the read

- Virtual Host

  Identitcal as for iCAROS – "AncillaryServices" (see Technical guide for more information)

- JSON format

  CIM Compliant

External Communication Layer

Connection details:

- Authentication & Authorization

  Dedicated User/Password per environment

  Read rights only in queues

  Writing rights in exchanges

- URLs & ports

  Production: messaging.elia.be

  Demo: messaging-demo.elia.be

  5671 AMQPS

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Outage planning – What, Why & How? (1/4)

What is outage planning

- Communication of events that reduces the services provided by a delivery point (band available, power saving mode, …)

- 2 categories of events:
  - Unavailability events (Forced outage, Planned unavailability, Testing)
  - Service control type events (Power saving mode, Manual mode unavailable, Automatic control unavailable)

FL0

- Allows the creation of an availability plan

Slide 12

FL0 Keeping this category to be future proof

Laruelle Fabian; 2025-06-19T08:58:12.740

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Outage planning – What, Why & How? (2/4)

Why outage planning is important

- Grid stability with better forecasting
- Efficiency improved in communicating unavailability events
- Increased security
- (Better) Fulfilling of an EU obligation *(Commission Regulation (EU) 2017/1485 of 2 August 2017)*
- Makes the settlement process more efficient

Slide 13

FL0 To be further worked on, just some ideas

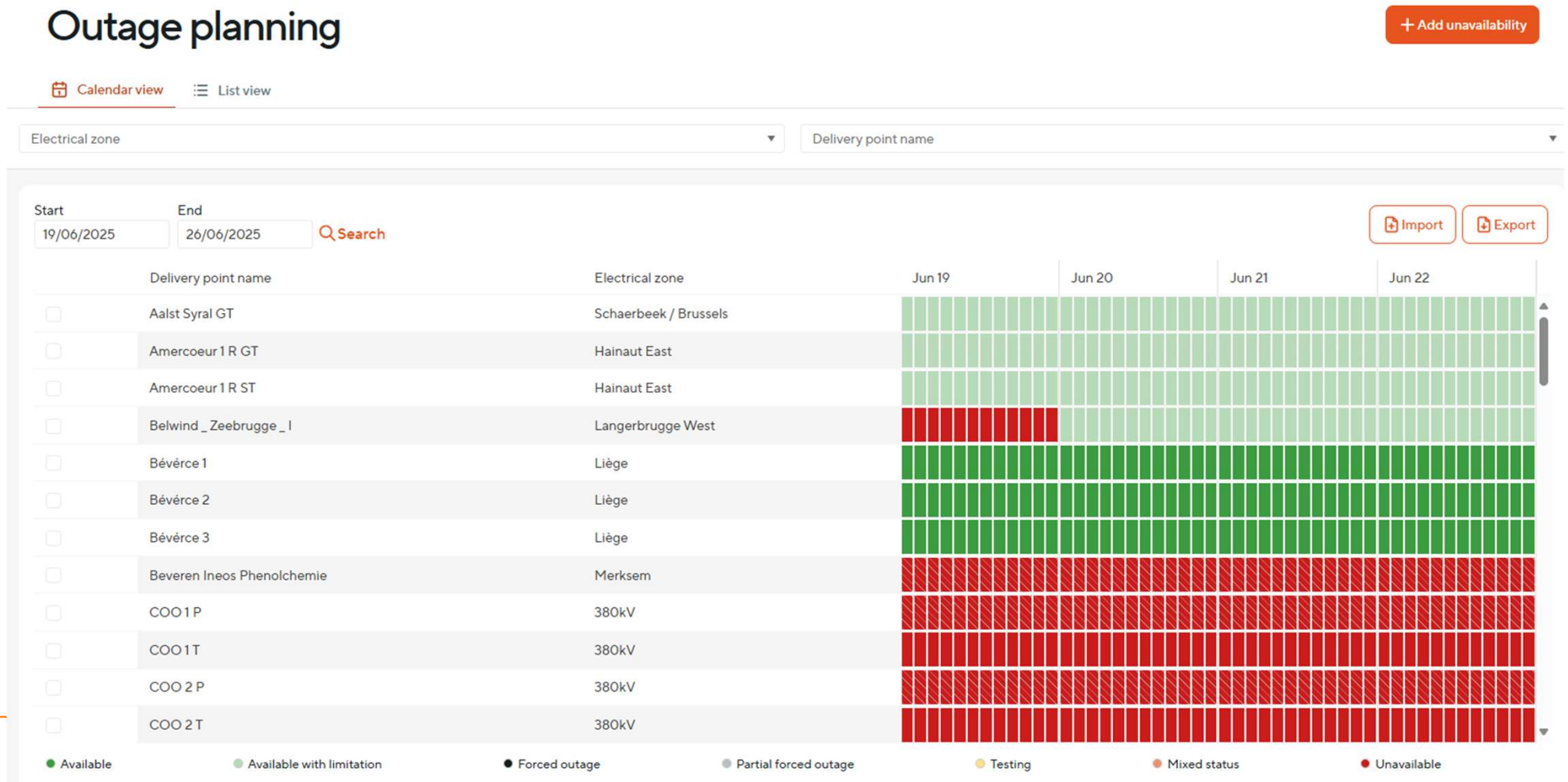
Laruelle Fabian; 2025-06-19T08:54:54.571

Outage planning – What, Why & How? (3/4)
How will it be done? (VSP side)

- Using the external communication layer programmatically to submit events
- Using the web client to submit events
- Retrieval, cancellation of submitted events will also be possible
- Visualisation of availability of delivery points will be made available.

Outage planning – What, Why & How?

Active power example



Outage planning – What, Why & How?

Active power example

Outage planning – What, Why & How? (4/4)
How will it be done? (Elia side)

- No activations will be sent when an unit is unavailable (or they will be adapted to the new available band)

- Settlement will not penalize units not fulfilling their obligations if declared unavailable* (*see terms & conditions)

- National control centre operators will use the available information to better maintain the grid stability.

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Agenda

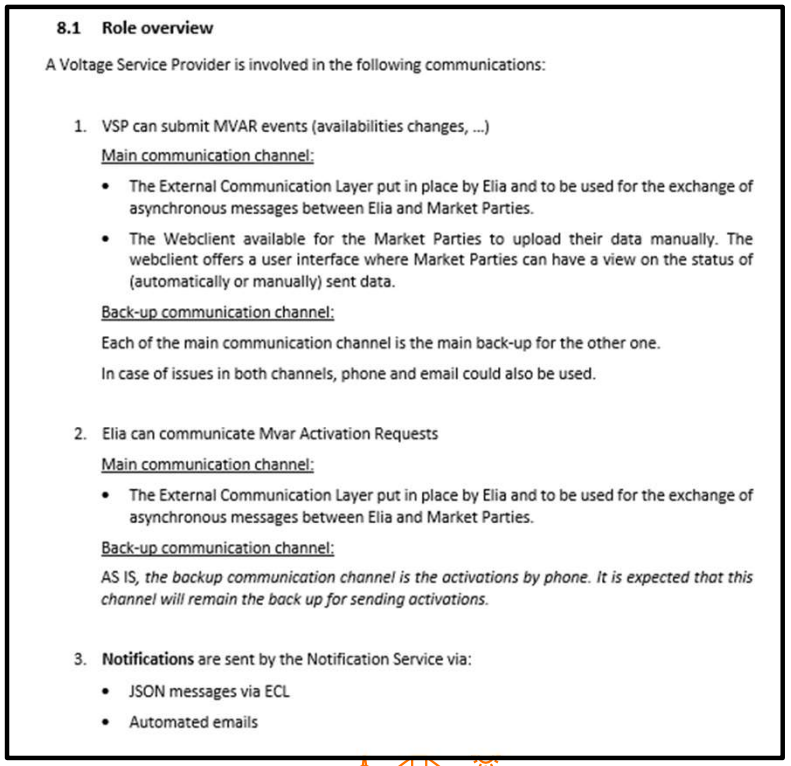
Outage Planning – Technical guide details (20')

- Event submission (15')
- Data retrievals (5')
    - Availability plan overview
    - Availability plan details
    - Event retrieval

Outage planning – Technical guide details (1/14)

Event submission

- Using the External communication layer (ECL)
- Using the Web client (that utilizes the ECL in the back-end)
- Back-ups: Each method for the other, phone or email.



8.1 Role overview

A Voltage Service Provider is involved in the following communications:

1. VSP can submit MVAR events (availabilities changes, …)

   Main communication channel:

   - The External Communication Layer put in place by Elia and to be used for the exchange of asynchronous messages between Elia and Market Parties.
   - The Webclient available for the Market Parties to upload their data manually. The webclient offers a user interface where Market Parties can have a view on the status of (automatically or manually) sent data.

   Back-up communication channel:

   Each of the main communication channel is the main back-up for the other one.

   In case of issues in both channels, phone and email could also be used.

2. Elia can communicate Mvar Activation Requests

   Main communication channel:

   - The External Communication Layer put in place by Elia and to be used for the exchange of asynchronous messages between Elia and Market Parties.

   Back-up communication channel:

   AS IS, *the backup communication channel is the activations by phone. It is expected that this channel will remain the back up for sending activations.*

3. **Notifications** are sent by the Notification Service via:

   - JSON messages via ECL
   - Automated emails

Outage planning – Technical guide details (2/14)

Event submission – Which events ?

- **Unavailability event** : If band deviation from the contractual values.
  - Submission of new available band with a new Qmin & Qmax
  - In case of no control available: Qmin=Qmax (can be equal to 0)

- **Service control event:** In case of event impacting the service control type
  - Three possibilities: Entering power saving mode, manual control unavailable, Exiting power saving mode

→1 message is expected per delivery point and event.

Ex: 2 delivery points have a planned maintenance for February. One of them is entering right now in power saving mode → 3 messages are expected. 2 for the planned maintenances and 1 for the power saving mode,

Outage planning – Technical guide details (3/14)

Event submission – ECL queues

8.2.2 Queue information

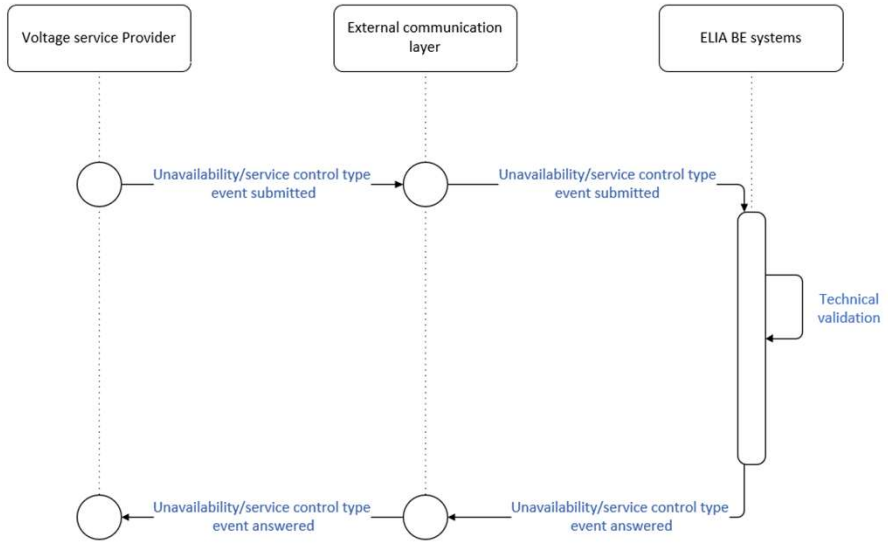
The below table contains the queues and exchange to send and receive message in a normal scenario.

Message Type	Description	Sender	Receiver	Queue/Exchange
Mvar event Submitted	Submission of new mvar event or mvar event update	VSP	Elia	MvarEventSubmitted.In.Exch
Mvar event Answered	Answer to a mvar event message	Elia	VSP	MvarEventAnswered.[TargetMarketPartyID].OutQ

Error queues

In case of errors, the following queues and exchanges are used.

Message Type	Sender	Receiver	Queue/Exchange
Mvar event Submitted	Elia	VSP	MvarEvenSubmitted.[TargetMarketPartyID].ErrorQ
Mvar event Answered	VSP	Elia	MvarEventAnswered.Error.Exch



Outage planning – Technical guide details (4/14)

Event submission – Update and withdrawals

- Same message format as for new events
- Updates: Same mrid with higher version number
- Withdrawals: Same market document without an available period and with a docstatus set to withdrawn (A13).

8.2.3.3 Update and withdrawals

Update of unavailabilities and service control type events

The rules governing the update of already submitted events can be found in the generic section of this document. But also the rules of validation for their respective events (except timeframe, see here below).

-An update must have the same market document with a revision number higher than the last version of that same market document previously submitted.

The market document needs to include a timeseries and available_period block (see the message description section here below).

Withdrawing unavailability and service control type events

To withdraw unavailabilities, a Market Document including the TimeSeries block but without the Available_Period block must be used and the docStatus should be set to "Withdrawn" (**A13**).

Outage planning – Technical guide details (5/14)

Event submission – Unavailability event

MVAR_Unavailability_MarketDocument (exactly one element per message)		
Field	Mandatory	Description
mRID	Y	Unique identifier for the MarketDocument
revisionNumber	Y	Version number for the MarketDocument
type	Y	Code for type of MarketDocument. **XXXX** = Mvar Unavailability Document
process.processType	Y	Code for type of process. **Z01** = Short term unavailability information
sender_MarketParticipant.mRID	Y	The identification of the sender (EIC code)
sender_MarketParticipant.marketRole.type	Y	The role code associated with the sender: A27=Ressource Provider
receiver_MarketParticipant.mRID	Y	The identification of the receiver (EIC code): **10X1001A1001A094** = Elia TSO
receiver_MarketParticipant.marketRole.type	Y	The role code associated with the receiver: **A04** = System Operator
createdDateTime	Y	The timestamp on which the message was sent
unavailability_Time_Period.timeInterval	Y	The start and end date and time of the period to which the unavailability refers to
docStatus	N	Status only to be used to identify an mvar unavailability document that has been cancelled. **A13** = Withdrawn
TimeSeries	Y	This list can contain only one element.

TimeSeries		
Field	Mandatory	Description
mRID	Y	Sender's identification of the timeseries
businessType	Y	Identifies the nature of the unavailability event. The following CIM codes are used **A53** = Planned Maintenance (Planned Unavailability) **A54** = Unplanned Outage (Forced Outage) **B83** = Testing
registeredResource.mRID	Y	The delivery point EAN representing the point for which the unavailability is sent
start_DateAndOrTime.date	Y	The date at which the unavailability event starts
start_DateAndOrTime.time	Y	The time at which the unavailability event starts
end_DateAndOrTime.date	Y	The date at which the unavailability event ends
end_DateAndOrTime.time	Y	The time at which the unavailability event ends
curveType	Y	A01 = Sequential fixed size block (default if no availability). Used when the available period is constructed using same resolution. A03 = Variable sized block. Used when the available period is constructed using different resolution.
quantity_Measure_Unit.name	Y	The measure of the qmin_submitted and qmax_submitted. Fixed value: **MAR**
reason	Y	Three different values are allowed "Technical", "Human" or "Other"
reason_details	Y	Free text box (Minimum 20 characters & 4 blank spaces)
Available_Period	N	This list allows 1 or more elements to compose periods with different intervals. Only optional in case of withdrawal.

Outage planning – Technical guide details (6/14)

Event submission – Unavailability event

Available_Period		
Field	Mandatory	Description
timeInterval	Y	The start and end date and time to which the available period refer to
resolution	Y	Amount of time for each interval in which a data value is defined. For example: **PT1M** = per minute **PT15M** = 15 minutes **PT1H** = 1 hour **PT1D** = 1 day **PT1MO** = 1 month
Point	Y	List of points associated to the period. It should contain as many points as needed to complete the period. If only 1 point is given, it is assumed that the same qmin and qmax are applicable for the entire period.

Point		
Field	Mandatory	Description
position	Y	The interval number defining which position in the period is indicated. It must start at 1.
Qmin_submitted	Y	The lower limit of the new available band (can be negative)
Qmax_submitted	Y	The higher limit of the new available band (can be negative)

timeInterval		
Field	Mandatory	Description
start	Y	The start date and time of the interval
end	Y	The end date and time of the interval

Outage planning – Technical guide details (7/14)

Event submission – Unavailability event


```
"Unavailability_MarketDocument": {
    "mRID": "b5a55810-9fbd-4b6b-b9c6-a9778f1bdb98",
    "revisionNumber": 1,
    "type": "PlaceholderForMvarUnavailabilityDocument",
    "process.processType": "Z01",
    "sender_MarketParticipant.mRID": "99-TESTCOMPANY--99",
    "sender_MarketParticipant.marketRole.type": "A27",
    "receiver_MarketParticipant.mRID": "10X1001A1001A094",
    "receiver_MarketParticipant.marketRole.type": "A04",
    "createdDateTime": "2025-06-25T12:54:39.696Z",
    "unavailability_Time_Period.timeInterval": {
        "start": "2025-10-26T09:00:00.000Z",
        "end": "2025-10-26T20:00:00.000Z"
    },
    "TimeSeries": [
        {
            "mRID": "6d4a30b4-971f-4505-8d42-cc0024e65bb5",
            "businessType": "A53",
            "registeredResource.mRID": "5444444444441234567",
            "start_DateAndOrTime.date": "2025-10-26",
            "start_DateAndOrTime.time": "09:00:00",
            "end_DateAndOrTime.date": "2025-10-26",
            "end_DateAndOrTime.time": "20:00:00",
            "curveType": "A01",
            "quantity_Measure_Unit.name": "MAR",
            "reason": "Technical",
            "reason_details": "This specific technical event (maintenance for ex) is foreseen on our DP",
            "Available_Period": [
                {
                    "timeInterval": {
                        "start": "2025-10-26T09:00:00.000Z",
                        "end": "2025-10-26T20:00:00.000Z"
                    },
                    "resolution": "PT15M",
                    "Point": [
                        {
                            "position": 1,
                            "Qmin_submitted": -10.0,
                            "Qmax_submitted": 15.0,
                        }
                    ]
```

Outage planning – Technical guide details (8/14)

Event submission –Service control type event

- **Power saving mode:**
  - End date is not mandatory
  - Specific message for exiting power saving mode

- **Manual/Automatic mode unavailable**
  - Very similar to outage event
  - Needs an end date

- Future proof type of message
- Every type of event that does not impact the available band
- Some MP might not have units impacted by this type of messages
- (Elia side) Flow more focused on performance

Outage planning – Technical guide details (9/14)

Event submission –Service control type event

MVAR_ServiceControlType_MarketDocument (exactly one element per message)		
Field	**Mandatory**	**Description**
mRID	Y	Unique identifier for the MarketDocument
revisionNumber	Y	Version number for the MarketDocument
type	Y	Code for type of MarketDocument. **XXXX** = Mvar service control type Document
process.processType	Y	Code for type of process. XXX=tbd
sender_MarketParticipant.mRID	Y	The identification of the sender (EIC code)
sender_MarketParticipant.marketRole.type	Y	The role code associated with the sender: A27 = Resource Provider~~XXXX = VSP~~
receiver_MarketParticipant.mRID	Y	The identification of the receiver (EIC code): **10X1001A1001A094** = Elia TSO
receiver_MarketParticipant.marketRole.type	Y	The role code associated with the receiver: **A04** = System Operator
createdDateTime	Y	The timestamp on which the message was sent
serviceControlType_Time_Period.timeInterval	Y	The start and end date and time of the period to which the service control type event refers to
docStatus	N	Status only to be used to identify a service control type document that has been cancelled. **A13** = Withdrawn
TimeSeries	Y	This list can contain only one element.

TimeSeries		
Field	**Mandatory**	**Description**
mRID	Y	Sender's identification of the timeseries
businessType	Y	Identifies the nature of the service control type event. The following codes are used **XXX** = Manual mode unavailable **XXX** = Power saving mode **XXX** = Exiting power saving mode
registeredResource.mRID	Y	The delivery point EAN representing the point for which the service control type is sent
start_DateAndOrTime.date	Y	The date at which the service control type event starts
start_DateAndOrTime.time	Y	The time at which the service control type event starts
end_DateAndOrTime.date	N	The date at which the service control type event ends
end_DateAndOrTime.time	N	The time at which the service control type event ends
curveType	Y	**A01** = Sequential fixed size block (default if no availability). Used when the available period is constructed using same resolution. **A03** = Variable sized block. Used when the available period is constructed using different resolution.
reason	Y	Three different values are allowed "Technical", "Human" or "Other"
reason_details	Y	Free text box (Minimum 20 characters & 4 blank spaces)
available_Period	N	This list allows 1 or more elements to compose periods with different intervals. Only optional in case of withdrawal.

Point		
Field	**Mandatory**	**Description**
position	Y	The interval number defining which position in the period is indicated. It must start at 1.
serviceControlType	Y	Accepts the following values: "Manual mode unavailable", "Power saving mode", "Exiting power saving mode",

timeInterval		
Field	**Mandatory**	**Description**
start	Y	The start date and time of the interval
end	N/Y	The end date and time of the interval. The field is optional only for power saving mode entry or exit.

Outage planning – Technical guide details (10/14)

What data can be retrieved?

- Availability plan overview: A global overview of the availabilities of a given delivery point.
- Availability plan details: All the market documents submitted for a specific day.
- Event : Specific event can be retrieved (via mRID)

- Very Similar to the event submission
- Almost identical to the active power outage planning

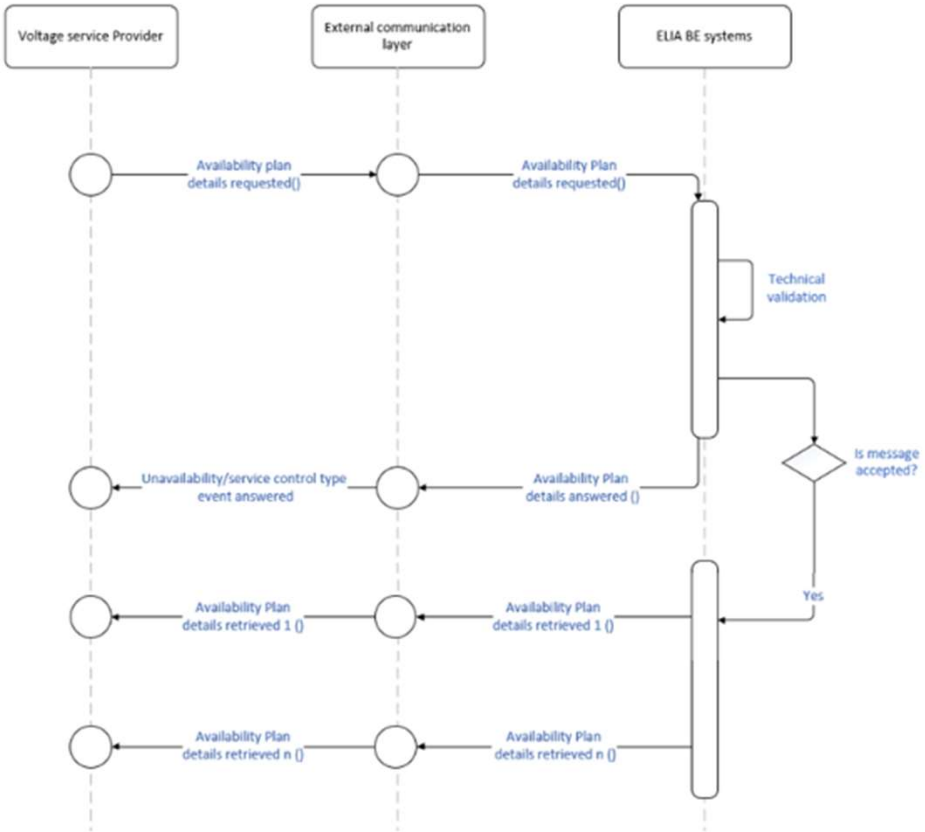
Outage planning – Technical guide details (11/14)

Availability plan overview retrieval

- 1 availability plan message per delivery point but multiple DP can be requested at once
- Max 1 year can be requested per message
- Requests, answer and plans retrieved have their own queues
- Very similar messages to event submission & retrieval
- Limitations on the number of requests

Outage planning – Technical guide details (12/14)

Availability plan overview retrieval

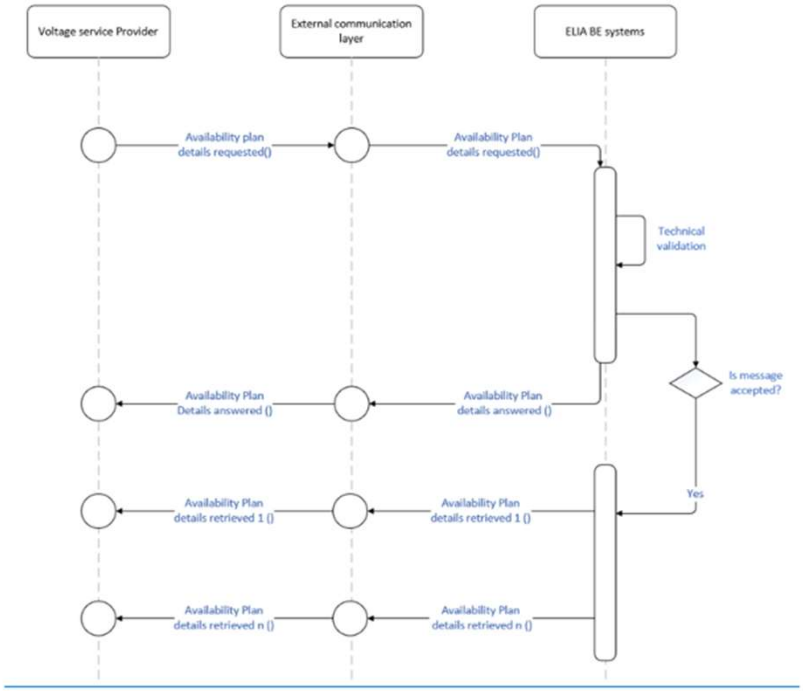


- 1 availability plan message per delivery point but multiple DP can be requested at once
- Max 1 year can be requested per message
- Requests, answer and plans retrieved have their own queues
- Very similar messages to event submission & retrieval
- Limitations on the number of requests

Outage planning – Technical guide details (13/14)

Availability plan details retrieval

- Can be requested 1 day of all events by market parties
- Will be answered with acknowledgement and all latest versions of previously submitted events
- Specific queues for availability plan details requested, answers & messages retrieved.



Outage planning – Technical guide details (14/14)
Event retrievals

- Event submitted can be requested by Market Parties
- MRIDs for the document needs to be provided
- Latest market document will be returned
- As for active power, no “broad” retrieval (availability plans details need to be used for that)

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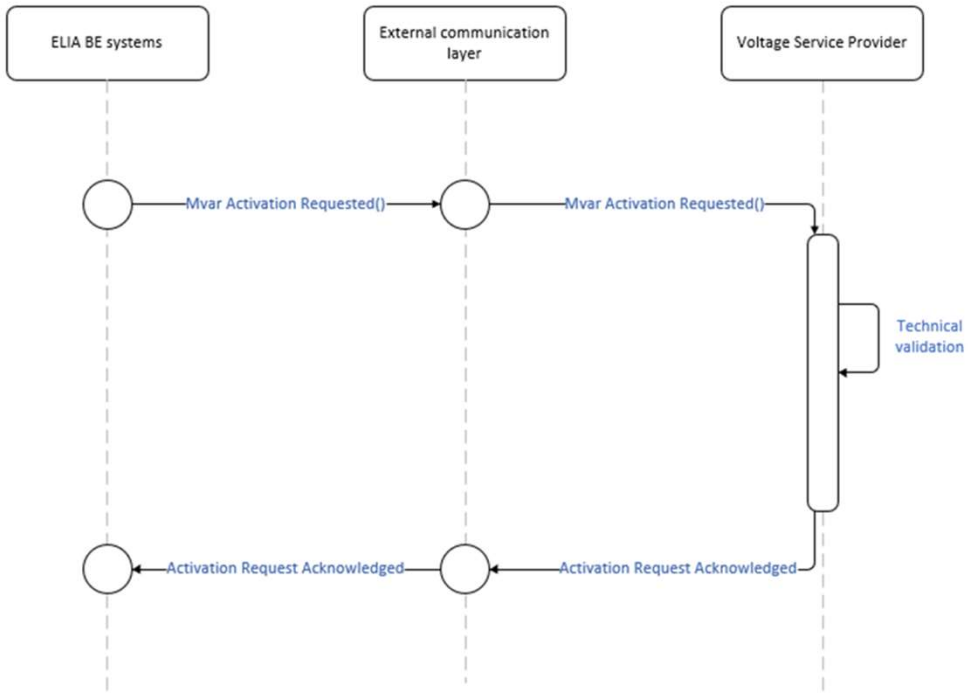
Activation – Main features

Mvar activation is used to request absorption or production of Mvar in order to solve Voltages issues

- Use of the ECL (External communication Layer)
- Use of Json format
  - Concatenation of message per DP / VSP
  - New Fields (rampingStartTime, business Type, process.processType, RegisteredResource)
- Communication test



Activation – Technical guide details (1/5)

Activation – ECL queues

Queue information

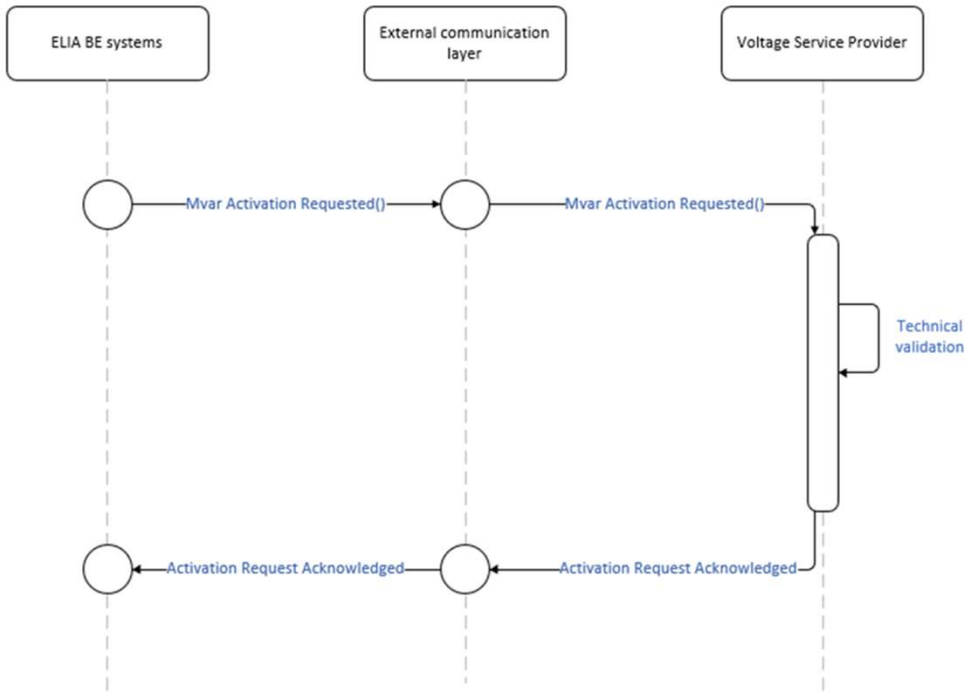
This table contains the queues and exchanges to send and receive messages in a normal scenario:

Message Type	Description	Sender	Receiver	Queue/Exchange
MvarActivation Requested	Activation request	Elia	VSP	MvarActivationRequested.[TargetMarketPartyID].OutQ
MvarActivation Request Acknowledged	Reception confirmation of an activation request message	VSP	Elia	MvarActivationAcknowledged.In.Exch

Error queues

This table contains the queues and exchanges to send and receive message only in case of error:

Message Type	Sender	Receiver	Queue/Exchange
Mvar Activation Requested	VSP	Elia	MvarActivationRequested.Error.Exch
MvarActivation Request Acknowledged	Elia	VSP	MvarActivationAcknowledged.[TargetMarketPartyID].ErrorQ



Activation – Technical guide details (2/5)
Granularity and Timeframe

- Concatenation of message per DP / VSP
- Specifique Start time for the ramping of the unit

Activation requested message

Message granularity

A mvar activation request message group all selected DPs from a respective VSP.

Message timeframe

The mvar activation request message can be sent at any time. The ramping start immediately or at least start at the timing mention in the message.

The start and end time communicated in the activation request message will be used as the reference for the setpoint target and remuneration

Activation – Technical guide details (3/5)

Activation – Activation_MarketDocument

Activation_MarketDocument (Exactly one element per message)		
Field	**Mandatory**	**Description**
mRID	Y	Unique identifier for the MarketDocument
revisionNumber	Y	Version number for the MarketDocument.
Type	Y	Code for type of MarketDocument. **A40** = Mvar Activation Document
sender_MarketParticipant.mRID	Y	The identification of the sender (EIC code) **10X1001A1001A094** = Elia
sender_MarketParticipant.marketRole.type	Y	The role code associated with receiver. Fixed value: **A04** = System Operator
receiver_MarketParticipant.mRID	Y	The identification of the receiver (EIC code)
receiver_MarketParticipant.marketRole.type	Y	The role code associated with the receiver: **A27** = Service Provider **XX** = Voltage Service Provider
createdDateTime	Y	The timestamp on which the message was sent
rampingStartTime	Y	The start of the ramping of the DP
activation_Time_Period.timeInterval	Y	This information provides the start and end date and time of the activation time interval (the end date will be empty if all the DP activated are without timing if at least 1 has a timing this field will be field in)
TimeSeries	Y	Timeseries associated to the market document. It must contain at least one element.

TimeSeries		
Field	**Mandatory**	**Description**
mRID	Y	Unique identifier for the TimeSeries
businessType	Y	Identifies the reason why an activation is requested. **XX** = Normal **XX** = Start-Up
process.processType	Y	Code for type of process. **XX** = Process with End Time **XX** = Process without End time
measurement_Unit.name	Y	**MAR** (MegaVar)
RegisteredResource	Y	DPs associated to timeseries. It must contain at least one element.

RegisteredResource		
Field	**Mandatory**	**Description**
mRID	Y	External Unique identifier of the DP to be activated
timeInterval	Y	The start and end date and time of the mvar activation.
flowDirection.direction	Y	The coded identification of the direction of energy flow. **A01** = UP **A02** = DOWN
Point	Y	List of points associated to the period.
resolution	Y	Amount of time for each interval in which a data value is defined. **PT1M** = 1 minutes

timeInterval		
Field	Mandatory	Description
start	Y	The start date and time of the interval
end	Y	The end date and time of the interval

Point		
Field	Mandatory	Description
position	Y	The interval number defining which position in the timeseries is indicated. It must start at 1.
setPoint	Y	The Mvar Setpoint that is requested. We require an accuracy of 0.1 Mvar.

Activation – Technical guide details (4/5)

Activation – Json

rampingStartTime:
The start of the ramping of the DP

businessType:
Identifies the reason why an activation is requested.
XX = Normal
XX = Start-Up

process.processType:
Identifies the reason why an activation is requested.
Code for type of process.
XX = Process with End Time
XX = Process without End time

RegisteredResource:
DPs associated to timeseries.

Activation – Technical guide details (5/5)

Activation – Communication Test

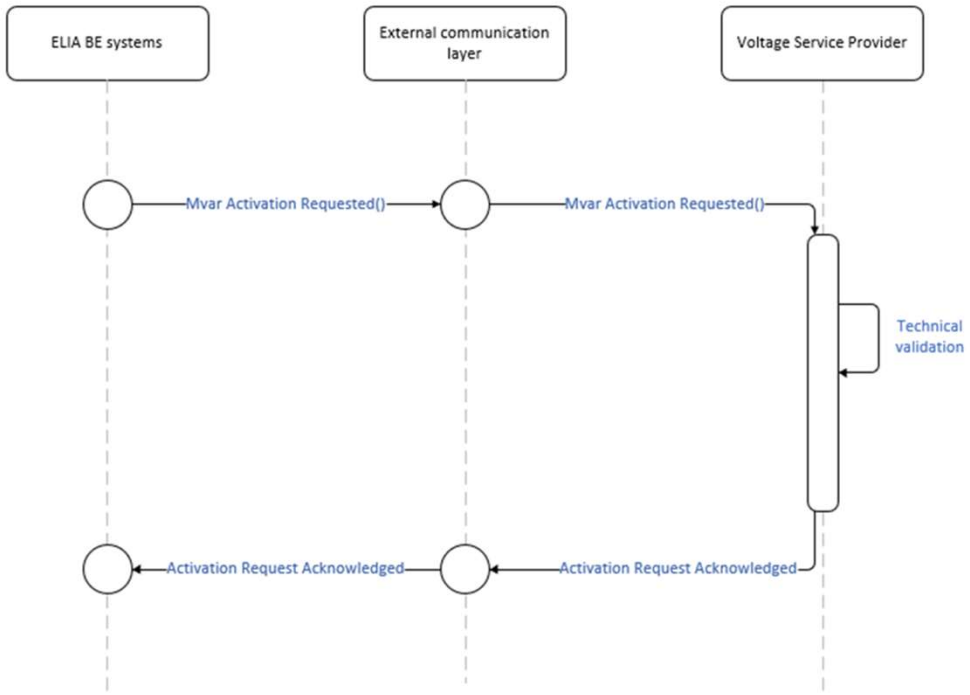
The goal of the test is to test the communication between Elia and voltage service provider.

Therefore, the communication test will go through the same communication layers as an activation.

A communication test has an activation message with a specific DP ean: “999999999999999999”.

After reception of the activation message in the communication test, the voltage service provider generates one acknowledgement :

- Acknowledgement indicates the good reception of the communication test request message



Thank you.