Manage flexibility activations - Alternative 2

Based on IEC 62559-2 edition 1
Generated from UML Use Case Repository with Modsarus® (EDF R&D Tool)

1. Description of the use case

1. Name of use case

Use case identification		
ID	***Area(s)/Domain(s)/Zone(s)***	***Name of use case***
	Services related to end customers,Operational planning and forecasting,Market for flexibilities	Manage flexibility activations - Alternative 2

2. Version management

Version management				
Version No.	***Date***	***Name of author(s)***	***Changes***	***Approval status***
1	2019-08-30	Wiebke Albers (innogy SE)	alternative SUC for "Manage Flexibility Activation"	
2	2020-06-16	Eric Suignard (EDF)	innogy's and Elering's review	

3. Scope and objectives of use case

Scope and objectives of use case	
Scope	Developing generic case describing the data exchange for the process of flexibility activation where the capacity has already been reserved during earlier time frames and a new grid assessment is necessary to select the best flexibility.
Objective(s)	Make data exchange for activation of flexibilities effective and reliable.
Related business case(s)	

4. Narrative of Use Case

Narrative of use case
Short description
Description of the needed data exchange for the selection (taking into account any grid limitations) and initiation of activation of flexibilities bids that previously have been sent to the Flexibility Platform and where previously the bids were not activated but their capacity was reserved in the bidding process. Delivery of notification of activation requests to the Flexibility Service Providers (FSPs), in a reliable and timely manner according to the relevant terms and conditions applicable to FSPs. According to EU-SysFlex WP3 suggestion, the function of grid impact assessment and hosting of Grid Validation System could be taken over by Optimisation Operator role from the Primary and Secondary System Operator roles.
Complete description
Summary of use case • **Manage flexibility activation** Description: ▪ Request flexibility activation Description: Primary System Operator initiates flexibility activation on Flexibility Platform by selecting bids on the Flexibility Platform considering the amounts of energy/capacity needed as

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well as the maximum price based on the grid impact analysis results from SO - limitation and sensitivities where applicable (e.g. congestion management call for tender)

- Request flexibility activation
  Description: Primary System Operator initiates flexibility activation on Flexibility Platform by selecting bids on the Flexibility Platform considering the amounts of energy/capacity needed as well as the maximum price based on the grid impact analysis results from SO - limitation and sensitivities where applicable (e.g. congestion management call for tender)

- Assess secondary grid impact
  Description: Secondary System Operator assesses the impact of flexibility activations in its grid in order to avoid congestions due to these activations.
  Secondary System Operator provides the results of grid impact assessment to the PSO setting restrictions – if necessary - on the activation of flexibilities which would cause congestion in its grids and provide sensitivities in case of a congestion management tender.

- Decluster flexibility bids
  Description: Secondary System Operator declusters flexibility bid cluster and selects best flexibilities, so carries out the final individual bid selection based on its new grid information. SSO informs FP, PSO and FSP

- Collect the resulting requests of the SO and send request for activation
  Description:

- Collect the resulting requests of the SO and send request for activation
  Description:

- Forward resulting flexibility request
  Description:

- Activate bids (Operational)
  Description:

- Activate bids (Operational)
  Description:

- Forward activation confirmation
  Description:

- Register flexibility activation confirmation
  Description:

- Register flexibility activation confirmation
  Description:

- Register activation confirmation
  Description: Flexibility Platform receives and registers confirmations from Flexibility Service Providers in order to make sure that they actually received the requests for activation. This step does not include the verifications aspects of activations (see "Verify and settle activated flexibilities" SUC for activation verification).

5. Key performance indicators (KPI)

6. Use case conditions

Use case conditions

	Assumptions
1	Data exchange occurs as a result of business processes. The method of implementing business processes depends on the architecture of the flexibility services markets
2	Common TSO-DSO flexibility market design: The use case assumes a single market place operated by a Flexibility Platform. 'Single' stands for concept where different flexibility buyers and sellers can trade, see also definition in section 3.1. In case of time-critical very fast products, the flexibility units must react as direct response to the deviations in the system – for this specific case and step, the Flexibility Platform and the Data Exchange Platform cannot be used.
	Prerequisites
1	Communication standards must be established.
2	In a previous stage, the PSO has procured capacity bids. : This SUC is necessary, because there is a significant time duration between the capacity procurement and activation of the bids which makes a new grid assessment necessary.
3	Flexibility Service Providers and System Operators need their own applications to connect to the Flexibility Platform.
4	FSPs are being selected by the PSO based on bids in merit order list taking into account the sensitivities and limitations he receives from the SSO.
5	Flexibility Platform holds the information about which Primary System Operator is linked to which Secondary System Operator.: However, this information does not include the current switching state of individual grid assets.
6	Flexibility activation should not create congestion in any grid.
7	TSOs and DSOs play equivalent roles in this use case: TSOs and DSOs request and initiate activation of flexibilities for their own needs regardless in whose network the flexibility is located. The validation of the flexibility initiation is always done by the SO where the flexibility is connected and whose grid is impacted. Flexibilities can be activated in real time (e.g. FCR) or not (e.g. FRR).
8	FSPs have been prequalified and have submitted bids.
9	If this process shall work with the clustering of bids, the PSO cannot reserve any individual flexibility capacity bids, : but only clusters and the SSO declusters at a later stage, so carries out the final individual bid selection based on its new grid information (see also SUC "Manage flexibility bids").

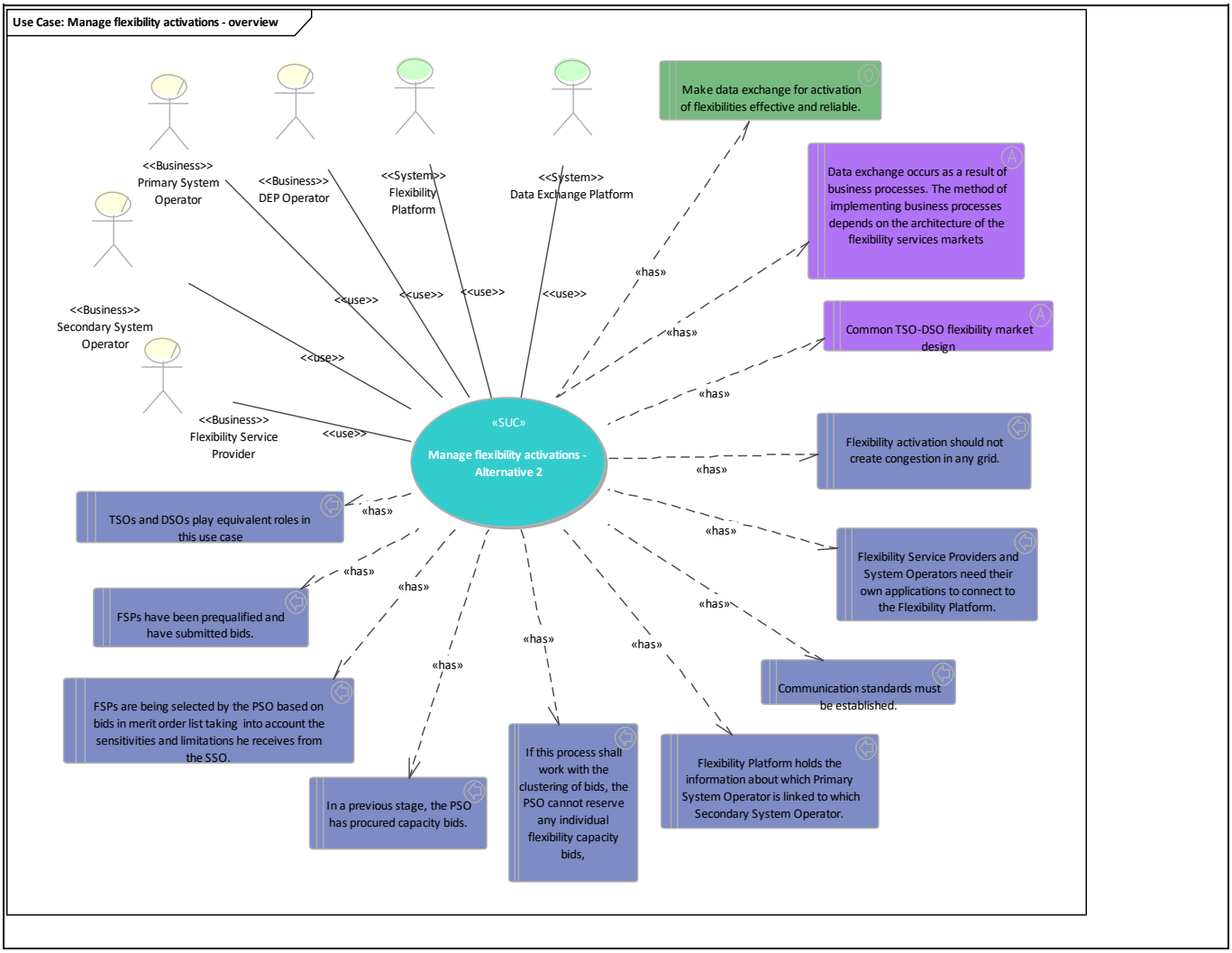
7. Further information to the use case for classification/mapping

Classification information
Relation to other use cases
Level of depth
Prioritisation
Generic, regional or national relation
Nature of the use case
SUC
Further keywords for classification

8. General remarks

2. Diagrams of use case

Diagram(s) of use case



3. Technical details

1. Actors

Actors			
Grouping (e.g. domains, zones)		***Group description***	
Actor name	***Actor type***	***Actor description***	***Further information specific to this use case***
Data Exchange Platform	System	Data exchange platform (DEP) is a communication platform the basic functionality of which is to secure data transfer (routing) from data providers (e.g. data hubs, flexibility service providers, TSOs, DSOs) to the data users (e.g. TSOs, DSOs, consumers, suppliers, energy service providers). DEP stores data related to its services (e.g. cryptographic hash of the data requested). The DEP does not store core energy data (e.g. meter data, grid data, market data) while these data can be stored by data hubs. Several DEPs may exist in different countries and inside one country.	

Secondary System Operator	Business	Operates the power grid on which a flexibility service unit is connected or this unit may otherwise impact its grid. Assesses the impact on its network of the flexibility to be procured because the activation of such flexibility may potentially cause congestion in its grid.	
Flexibility Platform	System	Flexibility Platform (FP) for System Operators and Flexibility Service Providers that enables the trading of different flexibility products and services. A FP is operated by a Market Operator. Available to System Operators and Flexibility Services Providers. It is used to support the prequalification, the bidding, the activation and the verification processes, ensuring coordination between activities undertaken by several operators using the same flexible resources. Several national and regional FPs may exist.	
Primary System Operator	Business	Initiates the call for tenders and initiates the activation of a flexibility. It also can operate the power grid on which a flexibility service unit is connected or this unit may otherwise impact its grid. In this case, it assesses the impact on its network of the flexibility to be procured because the activation of such flexibility may potentially cause congestion in its grid.	
Grid Validation System	System	System hosted by Optimisation Operators and used for the power grid congestion assessment, including grid validation if activation will cause congestion.	
Flexibility Service Provider	Business	Can be a Distribution Network Flexibility Provider or a Transmission Network Flexibility Provider (cf. definitions in T3.3 deliverable). Similar to Flexibility Aggregator. Can be both aggregator and individual consumer/generator. Type of Energy Service Provider.	
Optimisation Operator	Business	Optimise and select the bids, where relevant in combination with switching measures; clear the market for auctions or select individual bids in the order book organised by the MO taking into account the grid data (constraints and sensitivities/topology if needed) provided by DS_O and TS_O ; communicate results (rewarded offers and prices) to the MO. The OO role can be carried out by a system operator, market operator or a third party. (cf. definition in T3.2 deliverable)	
DEP Operator	Business	Data exchange platform operator owns and operates a communication system which basic functionality is data transfer.	

2. References

4. Step by step analysis of use case

1. Overview of scenarios

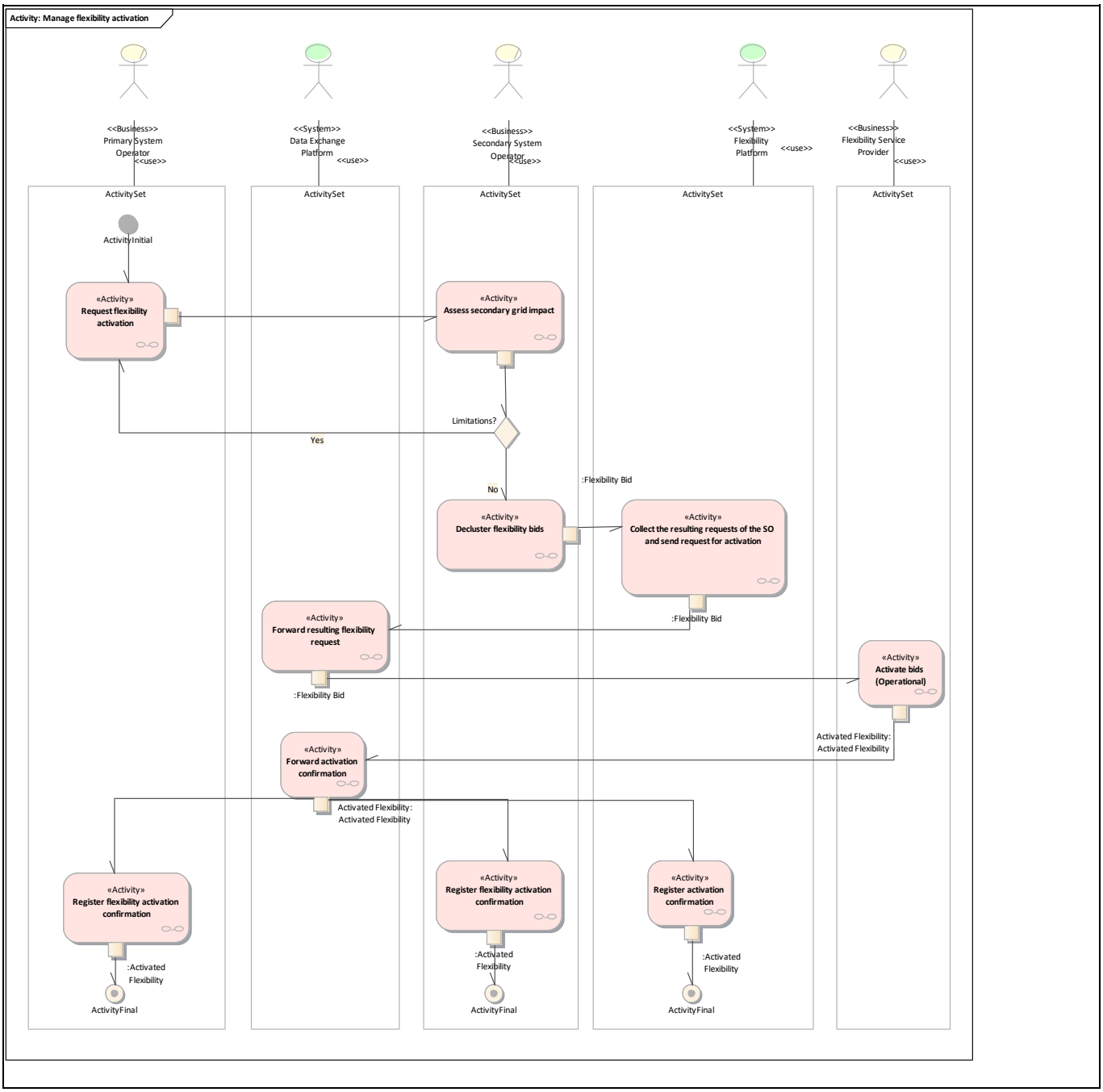
Scenario conditions						
No.	***Scenario name***	***Scenario description***	***Primary actor***	***Triggering event***	***Pre-condition***	***Post-condition***
1	Manage flexibility activation					

2. Steps - Scenarios

- **Manage flexibility activation**

Requirement list (refer to "Requirement" section for more information)	
Requirement R-ID	***Requirement name***
Cat1.Req1	FA-REQ2

Cat1.Req2	FA-REQ1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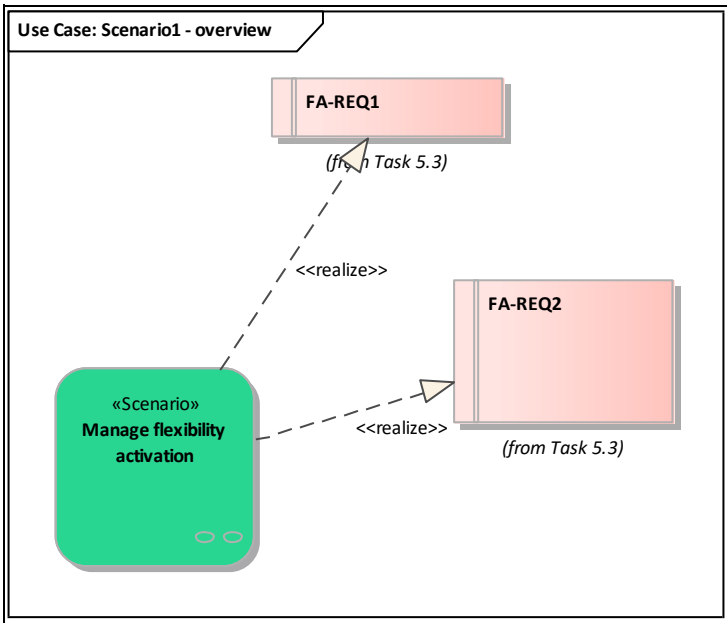
<<Business>>
Primary System Operator
<<use>>
<<System>>
Data Exchange Platform
<<use>>
<<Business>>
Secondary System Operator
<<use>>
<<System>>
Flexibility Platform
<<use>>
<<Business>>
Flexibility Service Provider
<<use>>
ActivitySet
ActivitySet
ActivitySet
ActivitySet
ActivitySet
ActivityInitial
«Activity»
Request flexibility activation
«Activity»
Assess secondary grid impact
Limitations?
Yes
No
:Flexibility Bid
«Activity»
Decluster flexibility bids
«Activity»
Collect the resulting requests of the SO and send request for activation
:Flexibility Bid
«Activity»
Forward resulting flexibility request
:Flexibility Bid
«Activity»
Activate bids (Operational)
Activated Flexibility: Activated Flexibility
«Activity»
Forward activation confirmation
Activated Flexibility: Activated Flexibility
«Activity»
Register flexibility activation confirmation
:Activated Flexibility
ActivityFinal
«Activity»
Register flexibility activation confirmation
:Activated Flexibility
ActivityFinal
«Activity»
Register activation confirmation
:Activated Flexibility
ActivityFinal



Scenario step by step analysis

Scenario								
Scenario name	Manage flexibility activation							
Step No	**Event**	**Name of process/activity**	**Description of process/activity**	**Service**	**Information producer (actor)**	**Information receiver (actor)**	**Information exchanged (IDs)**	**Requirement, R-IDs**
1.1		Request flexibility activation	Primary System Operator initiates flexibility activation on Flexibility Platform by selecting bids on the Flexibility Platform considering the amounts of energy/capacity needed as well as the maximum price based on the grid impact analysis results from SO - limitation and sensitivities where applicable (e.g. congestion management call for tender)		Primary System Operator	Secondary System Operator		
1.2		Request flexibility activation	Primary System Operator initiates flexibility activation on Flexibility Platform by selecting bids on the Flexibility Platform considering		Primary System Operator		Info1-Flexibility Bid, Info2-Flexibility Potential	

			the amounts of energy/capacity needed as well as the maximum price based on the grid impact analysis results from SO - limitation and sensitivities where applicable (e.g. congestion management call for tender)					
1.3		Assess secondary grid impact	Secondary System Operator assesses the impact of flexibility activations in its grid in order to avoid congestions due to these activations. Secondary System Operator provides the results of grid impact assessment to the PSO setting restrictions – if necessary - on the activation of flexibilities which would cause congestion in its grids and provide sensitivities in case of a congestion management tender.		Secondary System Operator	Secondary System Operator, Primary System Operator		
1.4		Decluster flexibility bids	Secondary System Operator declusters flexibility bid cluster and selects best flexibilities, so carries out the final individual bid selection based on its new grid information. SSO informs FP, PSO and FSP		Secondary System Operator	Flexibility Platform	Info1-Flexibility Bid	
1.5		Collect the resulting requests of the SO and send request for activation			Flexibility Platform	Data Exchange Platform	Info1-Flexibility Bid	
1.6		Collect the resulting requests of the SO and send request for activation			Flexibility Platform		Info1-Flexibility Bid	

1.7		Forward resulting flexibility request			Data Exchange Platform	Flexibility Service Provider	Info1-Flexibility Bid	
1.8		Activate bids (Operational)			Flexibility Service Provider	Data Exchange Platform	Info3-Activated Flexibility	
1.9		Activate bids (Operational)			Flexibility Service Provider	Flexibility Platform	Info1-Flexibility Bid	
1.10		Forward activation confirmation			Data Exchange Platform	Primary System Operator, Secondary System Operator, Flexibility Platform	Info3-Activated Flexibility	
1.11		Register flexibility activation confirmation			Primary System Operator	Primary System Operator	Info3-Activated Flexibility	
1.12		Register flexibility activation confirmation			Secondary System Operator	Secondary System Operator	Info3-Activated Flexibility	
1.13		Register activation confirmation	Flexibility Platform receives and registers confirmations from Flexibility Service Providers in order to make sure that they actually received the requests for activation. This step does not include the verifications aspects of activations (see "Verify and settle activated flexibilities" SUC for activation verification).		Flexibility Platform	Flexibility Platform	Info3-Activated Flexibility	

- 1.2. Request flexibility activation

Business section: Manage flexibility activation/Request flexibility activation
Primary System Operator initiates flexibility activation on Flexibility Platform by selecting bids on the Flexibility Platform considering the amounts of energy/capacity needed as well as the maximum price based on the grid impact analysis results from SO - limitation and sensitivities where applicable (e.g. congestion management call for tender)
Information sent:

Business object	***Instance name***	***Instance description***
Flexibility Bid	Flexibility Bid	
Flexibility Potential	Flexibility potential	

- 1.4. Decluster flexibility bids

Business section: Manage flexibility activation/Decluster flexibility bids
Secondary System Operator declusters flexibility bid cluster and selects best flexibilities, so carries out the final individual bid selection based on its new grid information. SSO informs FP, PSO and FSP
Information sent:

Business object	*Instance name*	*Instance description*
Flexibility Bid		

- 1.5. Collect the resulting requests of the SO and send request for activation

Business section: Manage flexibility activation/Collect the resulting requests of the SO and send request for activation

Information sent:

Business object	*Instance name*	*Instance description*
Flexibility Bid		

- 1.6. Collect the resulting requests of the SO and send request for activation

Business section: Manage flexibility activation/Collect the resulting requests of the SO and send request for activation

Information sent:

Business object	*Instance name*	*Instance description*
Flexibility Bid	Flexibility Bid	

- 1.7. Forward resulting flexibility request

Business section: Manage flexibility activation/Forward resulting flexibility request

Information sent:

Business object	*Instance name*	*Instance description*
Flexibility Bid		

- 1.8. Activate bids (Operational)

Business section: Manage flexibility activation/Activate bids (Operational)

Information sent:

Business object	*Instance name*	*Instance description*
Activated Flexibility	Activated Flexibility	

- 1.9. Activate bids (Operational)

Business section: Manage flexibility activation/Activate bids (Operational)

Information sent:

Business object	Instance name	Instance description
Flexibility Bid	Flexibility Bid	

- 1.10. Forward activation confirmation

  Business section: Manage flexibility activation/Forward activation confirmation

  Information sent:

Business object	Instance name	Instance description
Activated Flexibility	Activated Flexibility	

- 1.11. Register flexibility activation confirmation

  Business section: Manage flexibility activation/Register flexibility activation confirmation

  Information sent:

Business object	Instance name	Instance description
Activated Flexibility		

- 1.12. Register flexibility activation confirmation

  Business section: Manage flexibility activation/Register flexibility activation confirmation

  Information sent:

Business object	Instance name	Instance description
Activated Flexibility		

- 1.13. Register activation confirmation

  Business section: Manage flexibility activation/Register activation confirmation
  Flexibility Platform receives and registers confirmations from Flexibility Service Providers in order to make sure that they actually received the requests for activation. This step does not include the verifications aspects of activations (see "Verify and settle activated flexibilities" SUC for activation verification).
  Information sent:

Business object	Instance name	Instance description
Activated Flexibility		

5. Information exchanged

Information exchanged			
Information exchanged, ID	Name of information	Description of information exchanged	Requirement, R-IDs
Info1	Flexibility Bid		
Info2	Flexibility Potential		
Info3	Activated Flexibility		

6. Requirements (optional)

Requirements (optional)		
Categories ID	***Category name for requirements***	***Category description***
Cat1	Task 5.3	Requirements integrated from Task 5.3.
Requirement R-ID	***Requirement name***	***Requirement description***
Req1	FA-REQ2	Exchange of activation requests through DEP and flexibility platform
Req2	FA-REQ1	Automated activation of devices is possible

7. Common terms and definitions

8. Custom information (optional)