Market Pre-qualification

Based on IEC 62559-2 edition 1
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1. Description of the use case

1.1. Name of use case

Use case identification		
ID	***Area(s)/Domain(s)/Zone(s)***	***Name of use case***
	Distribution Management, Users, Distribution System, Real-Time Operation, Energy Markets, Transmission System, Operational planning	Market Pre-qualification

1.2. Version management

Version management				
Version No.	***Date***	***Name of author(s)***	***Changes***	***Approval status***
1	2018-08-30	Nermin Suljanovic		Approved Version

1.3. Scope and objectives of use case

Scope and objectives of use case	
Scope	Pre-qualification - Transmission System Operator (TSO) use the Distribution System Operator (DSO) demand response mechanism for balancing purposes. DSO applies for qualification to offer balancing service at balancing energy market.
Objective(s)	Improve the system security. TSO can request the use of demand response mechanism managed by DSO to balancing services.
Related business case(s)	

1.4. Narrative of Use Case

Narrative of use case
Short description
Define the process to verify the compliance of a provider of balancing capacity with the requirements set by the transmission system operators. Balancing service provider (BSP), including the DSOs in the Slovenian scenario of the presented Use Case, must successfully pass the qualification process to become eligible to make an offer for the balancing capacity and balancing energy. BSP applies to TSO for start of the pre-qualification process. This application is evaluated, whether or not BSP DSO meets FRR (Frequency Restoration Reserve) qualification requirements. During qualification process, DSOBSP demonstrates ability to fulfil requirements including FRR minimum requirements, FRR availability requirements, the ramping rate requirements and connection requirements (Article 158 of Commission Regulation (EU) 2017/1485). The pre-qualification procedure is done by TSO in close cooperation with DSOs where necessary. The pre-qualification procedure also includes field functional tests. In this particular use case, DSO applies to TSO to become qualified to offer balancing service utilizing demand response mechanism (e.g. conservation voltage reduction - CVR) and DSO must pass standard pre-qualification procedure run by TSO.

Complete description
This SUC describes situation when the TSO facilitates the demand response mechanism, managed by the DSO, to enable balancing service. In the presented project, the acronym DSO merge two different types of entities with different roles namely, the distribution system operator (DSO) itself and the distribution network operation (DNO). The main difference between the DSOs and DNOs are the attributions and responsibilities but also the historical terms used in each country. The use of the acronym DSO is line with the European Network Codes. DSOs should be qualified by TSO to give an offer for the balancing capacity and the balancing energy. In this respect, DSO submits an application for qualification and passes a pre-qualification process run by TSO. This SUC describes the field test that will be implemented in Slovenia and that may not be suitable of other geographies and network constraints. This SUC describes the internal process of the TSO to pre-qualify the balancing offers. In the present SUC, it is considered that the TSO have the role of market operator and the pre-qualification process is an internal process of the TSO. The DSO have two roles, namely as Balancing Service Provider and as network operator (in the present SUC in an operational planning perspective). The internal processes of DSO are not described in the present SUC. Other BSPs connected in transmission or distribution system can also request a pre-qualification to participate in the balancing market. Within 8 weeks from receipt of the application, the reserve connecting TSO or the designated TSO shall confirm whether the application is complete. Where the reserve connecting TSO or the designated TSO considers that the application is incomplete they shall request additional information and the potential FRR provider shall submit the additional required information within 4 weeks from the receipt of the request. Where the potential FRR provider does not supply the requested information within that deadline, the application shall be deemed to be withdrawn. (Article 159, (EU) 2017/1485). Therefore, it is not necessarily meant that this step is mandatory. It is mandatory to allow BSP to supplement incomplete documentation. In the proposed way it would more flexible if some minor technical corrections are sufficient for requirements fulfil, not to restart the pre-qualification process.

1.5. Key performance indicators (KPI)

Key performance indicators			
ID	***Name***	***Description***	***Reference to mentioned use case objectives***
1	Amount of pre-qualified balancing capacity (MW) in a given time period (e.g. year)		Improve the system security.TSO can request the use of demand response mechanism managed by DSO to balancing services.
2	Number of successful pre-qualification procedures in a given time period (e.g. year)		TSO can request the use of demand response mechanism managed by DSO to balancing services.

1.6. Use case conditions

Use case conditions	
Assumptions	
1	DSO can participate at the balancing market using demand response mechanism.
2	The balancing market operation, including the pre-qualification, is an internal process of the TSO
Prerequisites	
1	BSP has capacity to offer balancing service.
2	Distribution grid can accommodate balancing energy resources.
3	DSO has a capacity to deliver balancing energy using demand response mechanism

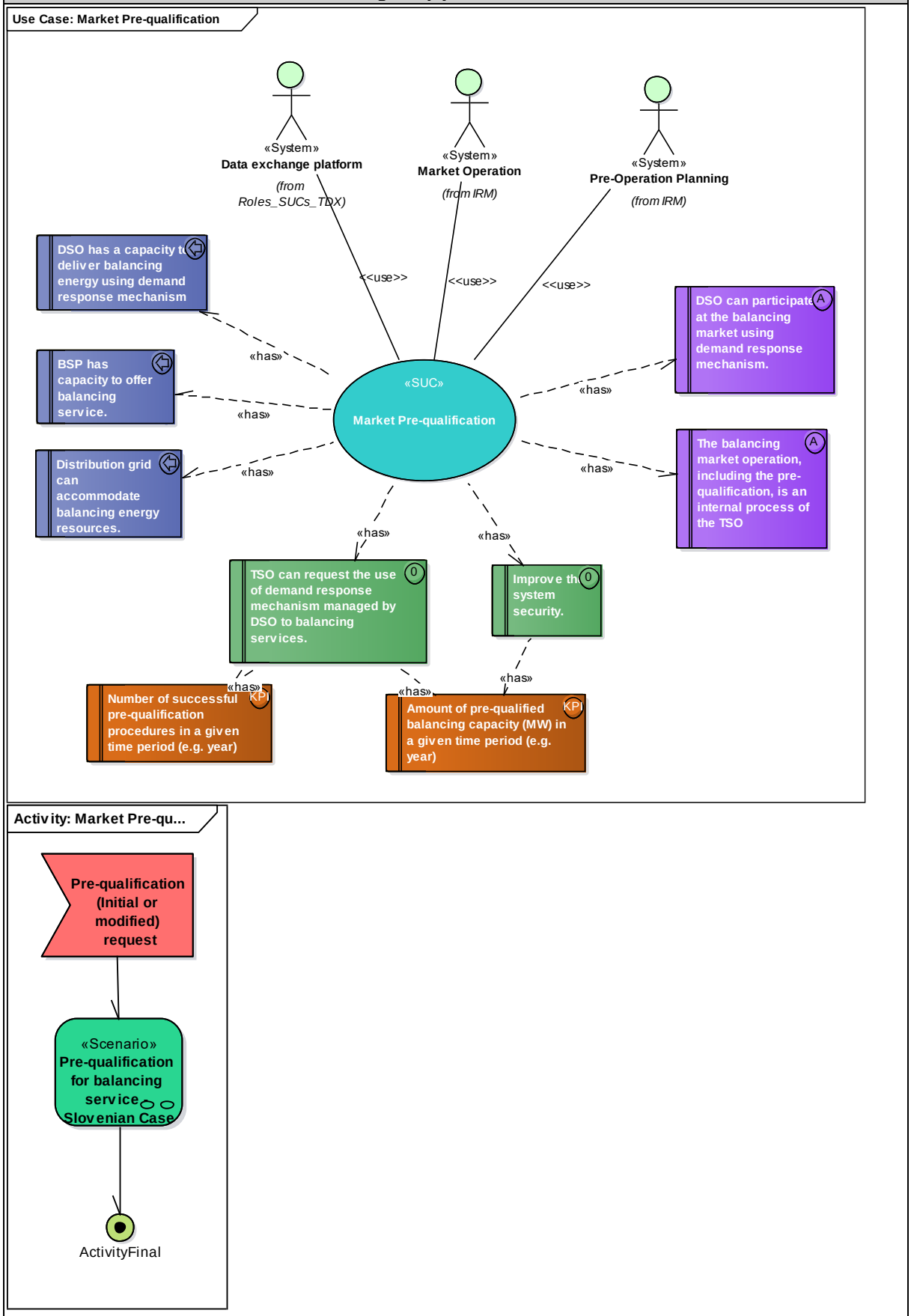
1.7. Further information to the use case for classification/mapping

Classification information
Relation to other use cases
<<BUC>> Activation of DSO-connected resources for balancing purposes in market environment <<SUC>> Information exchange using a collaborative platform <<SUC>> Market Offering
Level of depth
Prioritisation
High
Generic, regional or national relation
Specific use-case to be used in TDX-ASSIST project.
Nature of the use case
SUC
Further keywords for classification

1.8. General remarks

2. Diagrams of use case

Diagram(s) of use case



3. Technical details

3.1. 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	Platform used by several entities to exchange information for different proposes. The 3 types of data (Real-time; scheduled and structural data) can be exchanged in this platform. The operational/control data are not included in the real-time type. The exchange of information related with markets is included in the scheduled data. The data-agnostic ICT infrastructure enables a secure and reliable information exchange for different purposes and within different time scales.	
Pre-Operation Planning	System	The Predictive Operation Planning (POP) business function involved in forecasting future operation situation with an acceptable level of reliability, the inclusion of what-if scenarios and risk assessment. This include the management of adequate that requires system operators and planners to take into account scheduled and reasonably expected unscheduled availability of equipment, while maintaining a constant balance between supply and demand.	
Market Operation	System	The Market Operation (MO) business function involves the provision of a market based allocation of energy, capacity and ancillary services based on bid-based market clearing. Market Operations produce schedules and balancing dispatch instructions that are feasible considering market and grid constraints.	

3.2. References

4. Step by step analysis of use case

4.1. Overview of scenarios

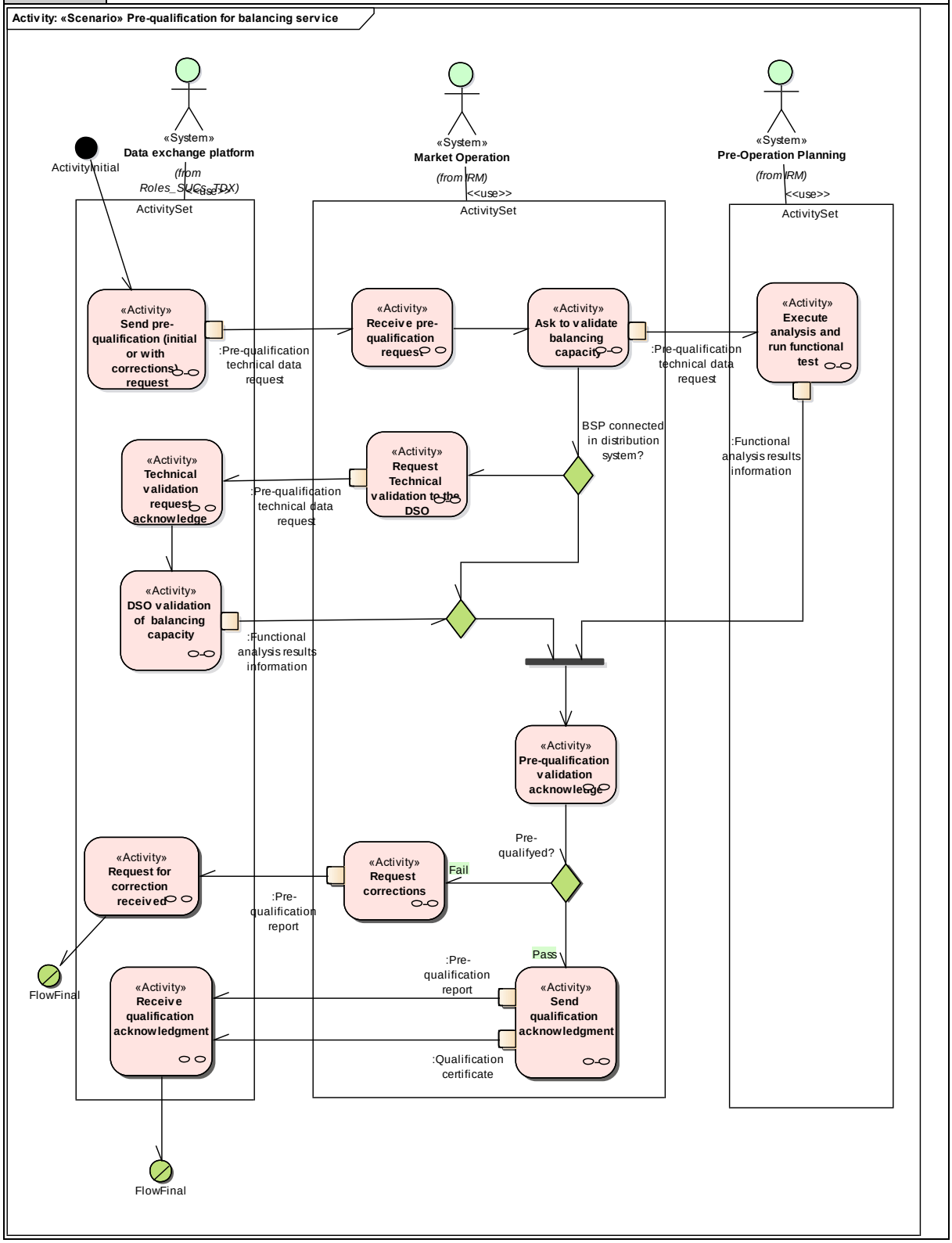
Scenario conditions						
No.	***Scenario name***	***Scenario description***	***Primary actor***	***Triggering event***	***Pre-condition***	***Post-condition***
1	Pre-qualification for balancing service - Slovenian Case	This SUC describes situation when the TSO facilitates the demand response mechanism, managed by the DSO, to enable balancing service. DSO should be qualified by TSO to give an offer for the balancing capacity and the balancing energy. In this respect, DSO submits an application for qualification and passes a pre-qualification process run by TSO. This SUC describes the field test that will be implemented in Slovenia.		Pre-qualification (Initial or modified) request		

4.2. Steps - Scenarios

4.2.1. Pre-qualification for balancing service - Slovenian Case

Scenario step by step analysis

Scenario	
Scenario name	Pre-qualification for balancing service - Slovenian Case



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		Send pre-qualification (initial or with corrections) request	BSPs, including the DSOs send the pre-qualification request to TSO (with the role of market operator) for balancing services and provides technical data for request evaluation. If the pre-qualification request is incomplete, BSP receives request to provide additional information, within 8 days after application is received. The internal processes of BSPs are not described in the presented work.		Data exchange platform	Market Operation	Info1-Pre-qualification technical data request	
1.2		Receive pre-qualification request	After BSP application, TSO analyses the application and checks if there are a need for additional information. When application is complete, TSO continues with the validation.		Market Operation			
1.3		Ask to validate balancing capacity	This step initiates technical evaluation of an applicant, which is done by TSO and DSO where necessary. TSO communicates		Market Operation	Pre-Operation Planning	Info1-Pre-qualification technical data request	

			designated DSO in refer to the balancing resources under evaluation and FRR activation impact on the distribution grid. When DSO provides a balancing service using DR mechanism, evaluation of the pre-qualification application is run by designated TSO only.					
1.4		Execute analysis and run functional test	BSP application is evaluated by TSO. Evaluation includes analyses how balancing resource meets minimal technical FRR requirements, availability requirements, ramping rate and connectivity. Analyses are followed by field functional tests, which also include verification that information provided in the application are presented on the site. Functional test will validate balancing capacity (MW), ramping rate and other technical characteristics. Test activations are part of the functional tests.		Pre-Operation Planning	Market Operation	Info2-Functional analysis results information	

1.5		Request Technical validation to the DSO			Market Operation	Data exchange platform	Info1-Pre-qualification technical data request	
1.6		Technical validation request acknowledge			Data exchange platform			
1.7		DSO validation of balancing capacity	The DSO should do the technical validation of all the qualification requests for the SGU connected in the distribution system. DSO evaluates impact of FRR activation on the distribution grid, e.g. congestion and voltage violation. The internal validation process of the DSO is not described in the presented SUC.		Data exchange platform	Market Operation	Info2-Functional analysis results information	
1.8		Pre-qualification validation acknowledge			Market Operation			
1.9		Request corrections			Market Operation	Data exchange platform	Info3-Pre-qualification report	
1.10		Request for correction received	The data exchange platform should send the pre-qualification report to the concerned BSP. The BSP can adjust the initial request or not. The internal process of the BSP is not described in the presented work.		Data exchange platform			

1.11		Send qualification acknowledgment			Market Operation	Data exchange platform	Info4-Qualification certificate, Info3-Pre-qualification report	
1.12		Receive qualification acknowledgment			Data exchange platform			

5. Information exchanged

Information exchanged			
Information exchanged, ID	***Name of information***	***Description of information exchanged***	***Requirement, R-IDs***
Info1	Pre-qualification technical data request	BSPs sends technical data necessary for pre-qualification of balancing service product based. In the specific case of DSOs the service is based in the existing demand response programs. Proves for technical and operational requirements: - Connectivity requirements (list of technical units, identification of connection point, location, WGS, balancing group, influenced system operators) - Control area (e.g. Slovenia) - Influenced system operators are informed (yes/no) -List of balancing groups (where technical units belong) - Demonstration that control units are capable to provide FRR service (description and schemes of technical units, technical data of technical unit consisting control unit, descriptions of internal test procedures) - Description of technical units integration into a control unit (strategies how demand is shared among technical units and monitoring of activation; description how technical units are assigned at different aggregation levels: control unit, control group and control portfolio). - Power measurements: description of instruments and methods for power and energy measurements. - Minimum FRR control range - Activation capabilities (response time for activation or setpoint change on TSO request) - Control dynamics (provide maximum gradient to ramp up and ramp down, capability to activate/deactivate overall control portfolio in the requested time interval – e.g. 12.5 min); -Availability: contracted balancing capacity must be 100% available during contract validity; - ICT capabilities (comm. protocols, data exchange, requirements for real-time data exchange, real-time exchange during non-activation interval-sampling intervals, data archiving); - Organizational data: Control center (location, description, contact), Testing and monitoring of FRR	

		resources (TSO requires to run functional tests according to the predefined tests or during activation period).	
Info2	Functional analysis results information	Functional tests that are examined are functional requests are fulfilled. This includes test activation, test of ICT system and analysis how activation of distributed resources impacts the distribution grid (e.g. overload of transformers and lines, voltage violation).	
Info3	Pre-qualification report	Accepted technical capability for mFRR or aFRR product. This is document about test results and recognition of the capability to offer FRR services. This document is to confirm that applicant's capability is validated. In the case of a negative result, all requirements which are not fulfilled are listed and results of functional tests are provided.	
Info4	Qualification certificate	Final proof that BSP is validated to provide mFRR or aFRR product. It is mandatory for sending an offer at the balancing market. Validity of the document is time limited (e.g. on 5 years).	

6. Requirements (optional)

7. Common terms and definitions

8. Custom information (optional)