

Calculate flexibility baseline

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

<i>Use case identification</i>		
<i>ID</i>	<i>Area(s)/Domain(s)/Zone(s)</i>	<i>Name of use case</i>
	Market for flexibilities	Calculate flexibility baseline

2. Version management

<i>Version management</i>				
<i>Version No.</i>	<i>Date</i>	<i>Name of author(s)</i>	<i>Changes</i>	<i>Approval status</i>
1	2018-04-10	Marco Pietrucci (Terna), Karin Lehtmetts (Elering)		
2	2018-05-28	Karin Lehtmetts (Elering), Kalle Kukk (Elering)		
3	2018-06-28	Florentin Dam (AKKA)	UML Modeling	
4	2018-07-09	Florentin Dam (AKKA)	Modification on diagrams	
5	2018-07-20	Florentin Dam (AKKA)	Added some systems, Major changes in option 2	
6	2018-08-02	Eric Suignard (EDF)		
7	2018-09-21	Florentin Dam (AKKA)	T5.2 partners' remarks.	
8	2018-10-04	Eric Suignard (EDF)	Version post WP5&9 physical meeting in Tallinn	
9	2018-10-17	Eric Suignard (EDF)	Version reviewed by WP5&9 partners	
10	2019-05-07	Eric Suignard (EDF)	WP6-7-8 demos alignment and miscellaneous changes	
11	2019-06-05	Ricardo Jover (EDF), Eric Suignard (EDF)	Changes following WP5&9 workshop in Chatou	
12	2019-06-13	Eric Suignard (EDF)	Elering review	
13	2019-07-26	Eric Suignard (EDF)	Elering review	
14	2020-06-16	Eric Suignard (EDF)	innogy's and Elering's review	

3. Scope and objectives of use case

<i>Scope and objectives of use case</i>	
Scope	Define the power schedule/baseline of a given Flexibility Service Provider (FSP), which participates in the flexibility market
Objective(s)	Encourage the participation in the flexibility market of new resources, including Demand Side Resources (DSR) and variable (intermittent) Renewable Energy Sources (RES).
Related business case(s)	

4. Narrative of Use Case

Narrative of use case
<p>Short description</p> <p>If a market participant bids flexibility in the flexibility market, the baseline consumption/generation of such market participant needs to be identified for the verification and settlement processes (see SUC ‘Verify and settle activated flexibilities’). There are two options for this:</p> <ol style="list-style-type: none"> 1. Market participant has to declare its power schedule (baseline) <i>ex ante</i> in such a way to permit the System Operator (SO) to implement the settlement processes. Such player (FSP) usually declares directly the baseline, but the SO could provide specific tools to help market participants in the baseline definition, promoting market participation. 2. Market operator (TSO or DSO or Flexibility Platform Operator) itself calculates the baseline <i>ex post</i> based on meter data. The methodology to calculate baseline is transparent and public. <p>The baseline cannot be measured directly, so it must be calculated based on other available measured data, using an agreed, robust methodology. When choosing the suitable baseline methodology it is crucial to understand the most important baseline characteristics: these are accuracy, simplicity, integrity and alignment, meaning that additionally to the accuracy of the methodology it is important at the same time that it would be simple enough for all stakeholders to calculate and understand. Additionally to that, suitable methodology should minimize the availability of data manipulation as well as minimize unintended consequences.</p> <p>Several types of baseline can exist and may be needed, depending on the type of service/product provided, depending on the reserve origin (consumption, production, storage) and depending on the consumer’s group who offered the flexibility (residential, offices, industrial consumers, etc).</p> <p>Data from sub-meters could be used besides data from ‘certified’ meters when calculating the baseline.</p>
<p>Complete description</p> <p style="text-align: center;"><u>Summary of use case</u></p> <ul style="list-style-type: none"> • FSP calculates the baseline <u>Description:</u> Generates a schedule in front and presented with the bid to the market operator. <ul style="list-style-type: none"> ▪ Choose the services/products for which it intends to make a bid <u>Description:</u> ▪ Define the baseline <u>Description:</u> definition of the baseline, through specific ‘baseline tool’ (owned by the FSP or provided by the TSO or DSO or flexibility platform operator) depending on the services/products chosen and the topology of the resources aggregated ▪ Submit the baseline (schedule) and declare it for settlement purpose <u>Description:</u> Declaration of the baseline (for a single consumer/producer or aggregator bid/portfolio, or BRP’s portfolio) for settlement purposes. An upload is then done to 'baseline tool'. ▪ Forward the baseline <u>Description:</u> ▪ Record the baseline <u>Description:</u> • Market Operator calculates the baseline <u>Description:</u> Calculated after the activation in settlement phase by market operator.

<ul style="list-style-type: none"> ▪ Select bid for calculation <u>Description:</u> the type of service/product of activated bids is reviewed to calculate the baseline after the activation. ▪ Send external data <u>Description:</u> ▪ Send meter data <u>Description:</u> ▪ Facilitate secure data exchange <u>Description:</u> ▪ Calculate the baseline <u>Description:</u> ▪ Calculate the baseline (in the settlement process) <u>Description:</u> Declaration of the baseline (for a single consumer/producer or aggregator bid/portfolio, or BRP's portfolio) for settlement purposes. Real-time data are used for the calculation. ▪ Record the baseline <u>Description:</u>

5. Key performance indicators (KPI)

6. Use case conditions

Use case conditions	
Assumptions	
1	1. FSPs who are presenting their baseline as schedule before the activation must be able to declare (independently or with the help of any tools made available by the TSO) the baseline together with its bid.
2	2. For all other FSPs the baseline should be calculated after the activation in settlement phase based on metered data. : The close to real time meter data (1 hour to 15 minutes data from 'certified' meters, 1 second to 1 minute data from sub-meters) should be available for TSO and all other relevant parties by the time the baseline needs to be calculated for the settlement.
Prerequisites	
1	Data used for baseline calculation: The historical and statistical data used for calculation come from metered data.
2	Clear definition of baseline is in place: This assumes access by energy service provider of one country to sub-meter devices in another country.
3	The FSP and TSO (maybe also BRP, depends how transparent solution we want) must have access (either directly or through third-party archives) to historical and statistical data of each aggregated sources to calculate the baseline

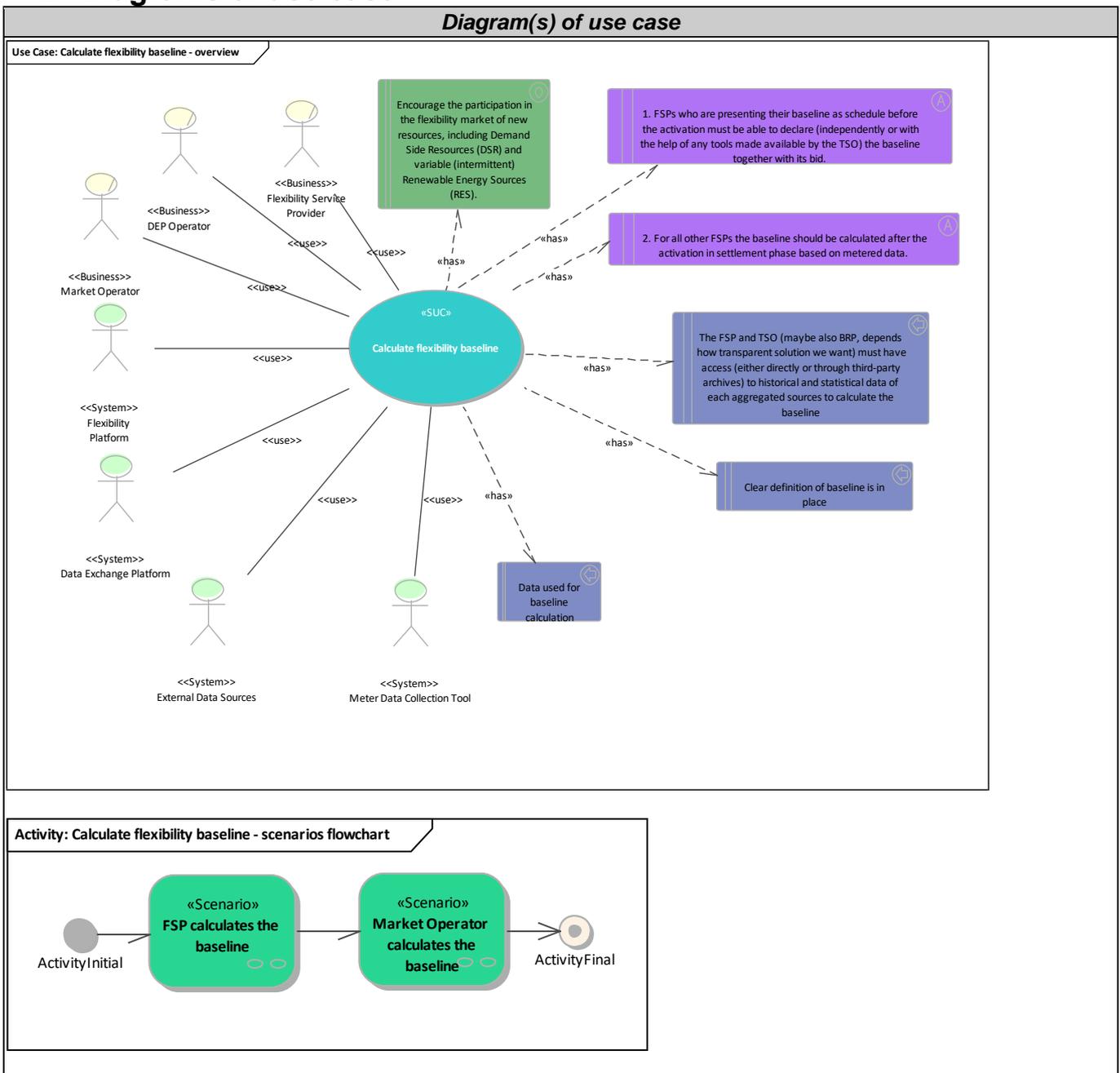
7. Further information to the use case for classification/mapping

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



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
External Data Sources	System	Contains external data such as weather information.	
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.	
Meter Data Collection Tool	System	Meter Data Collection Tool is an information system which main functionality is to collect meter readings from electricity meters.	
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.	
DEP Operator	Business	Data exchange platform operator owns and operates a communication system which basic functionality is data transfer.	
Market Operator	Business	A market operator is a party that provides a service whereby the offers to sell electricity are matched with bids to buy electricity (cf. ENTSOE-EFET-ebIX harmonized role model 2019). In EU-SysFlex project, a market operator not only trades electricity but also flexibility services. Organize auctions (continuous auctions, discrete auctions, calls for tender) between buyers and sellers of electricity-related products in the markets, and more generally publish the corresponding prices, for assets connected to power grid. Manage/operate the platform for trading (where bids and offers are collected). Clear the market and communicate results. (cf. definition in T3.3 deliverable)	In the scenario where MO calculates the baseline, it can be either the TSO, the DSO or the Flexibility Platform Operator
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.	Data exchange platform to share meter data

2. References

4. Step by step analysis of use case

1. Overview of scenarios

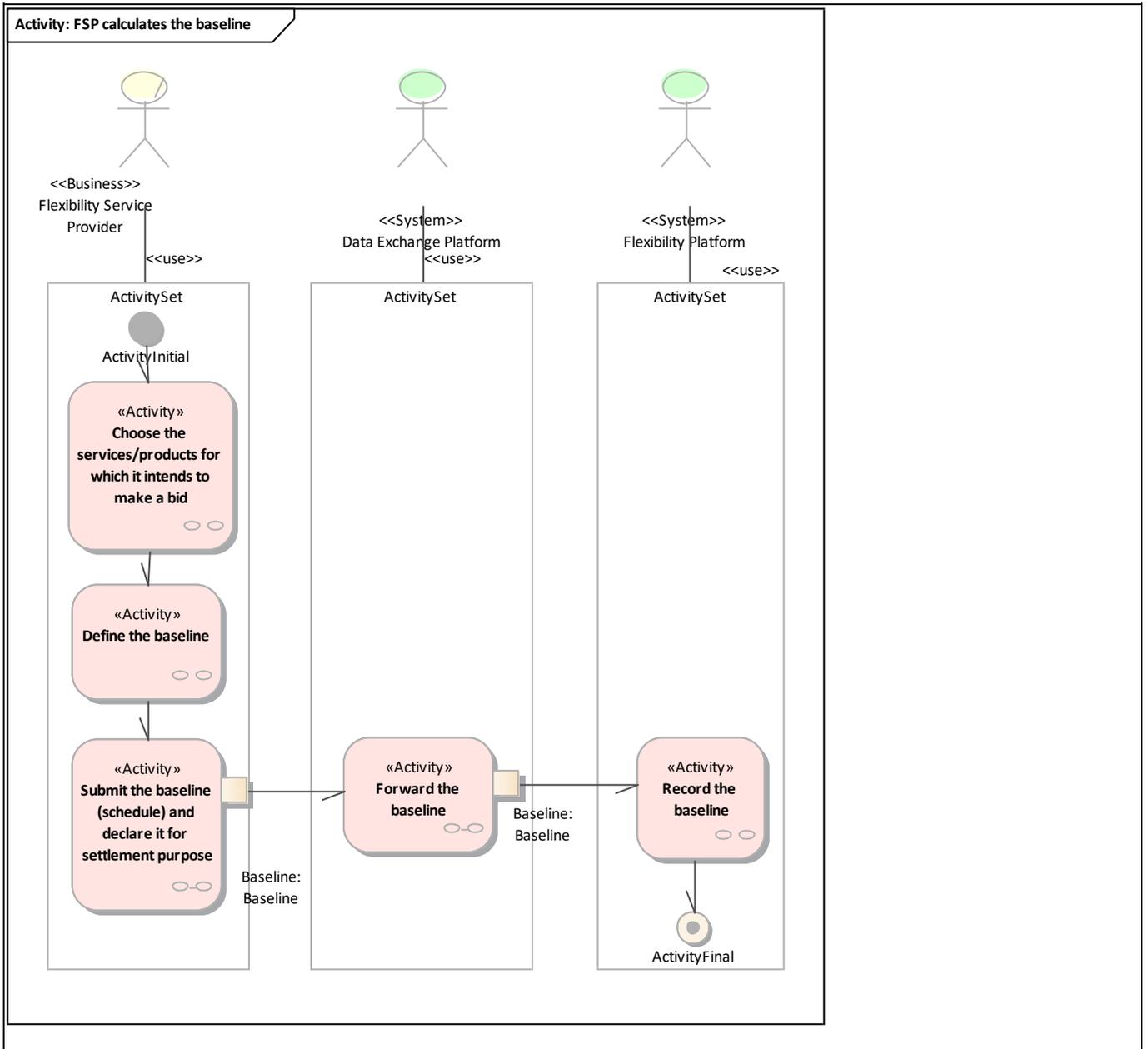
<i>Scenario conditions</i>						
<i>No.</i>	<i>Scenario name</i>	<i>Scenario description</i>	<i>Primary actor</i>	<i>Triggering event</i>	<i>Pre-condition</i>	<i>Post-condition</i>
1	FSP calculates the baseline	Generates a schedule in front and presented with the bid to the market operator.				
2	Market Operator calculates the baseline	Calculated after the activation in settlement phase by market operator.				

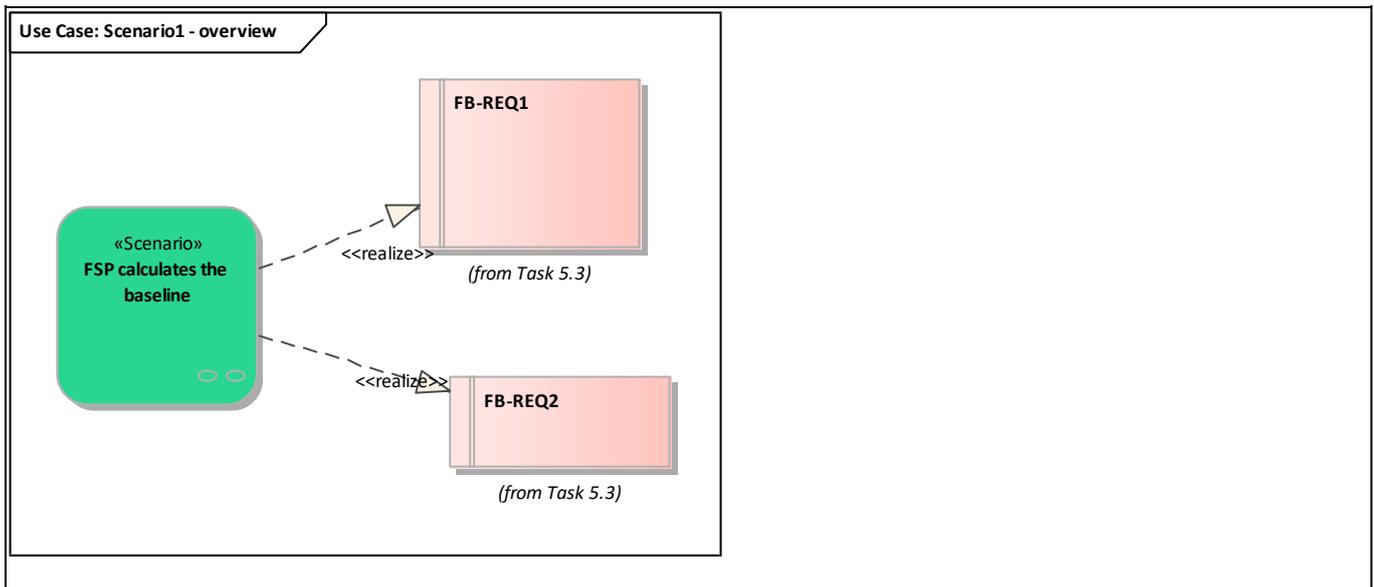
2. Steps - Scenarios

- FSP calculates the baseline

Generates a schedule in front and presented with the bid to the market operator.

<i>Requirement list (refer to "Requirement" section for more information)</i>	
<i>Requirement R-ID</i>	<i>Requirement name</i>
<u>Cat1 Req1</u>	FB-REQ1
<u>Cat1 Req2</u>	FB-REQ2





Scenario step by step analysis

Scenario								
Scenario name		FSP calculates the baseline						
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		Choose the services/products for which it intends to make a bid			<u>Flexibility Service Provider</u>			
1.2		Define the baseline	definition of the baseline, through specific 'baseline tool' (owned by the FSP or provided by the TSO or DSO or flexibility platform operator) depending on the services/products chosen and the topology of the resources aggregated		<u>Flexibility Service Provider</u>			
1.3		Submit the baseline (schedule) and declare it for settlement purpose	Declaration of the baseline (for a single consumer/producer or aggregator bid/portfolio, or BRP's portfolio) for settlement purposes. An upload is then		<u>Flexibility Service Provider</u>	<u>Data Exchange Platform</u>	Info1-Baseline	

			done to 'baseline tool'.					
1.4		Forward the baseline			Data Exchange Platform	Flexibility Platform	Info1-Baseline	
1.5		Record the baseline			Flexibility Platform			

- 1.3. Submit the baseline (schedule) and declare it for settlement purpose

Business section: FSP calculates the baseline/Submit the baseline (schedule) and declare it for settlement purpose

Declaration of the baseline (for a single consumer/producer or aggregator bid/portfolio, or BRP's portfolio) for settlement purposes.

An upload is then done to 'baseline tool'.

Information sent:

<i>Business object</i>	<i>Instance name</i>	<i>Instance description</i>
Baseline	Baseline	

- 1.4. Forward the baseline

Business section: FSP calculates the baseline/Forward the baseline

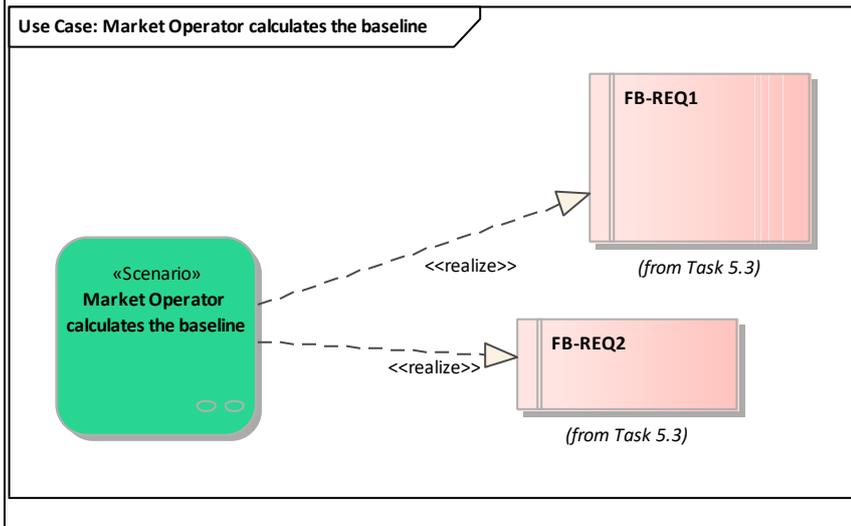
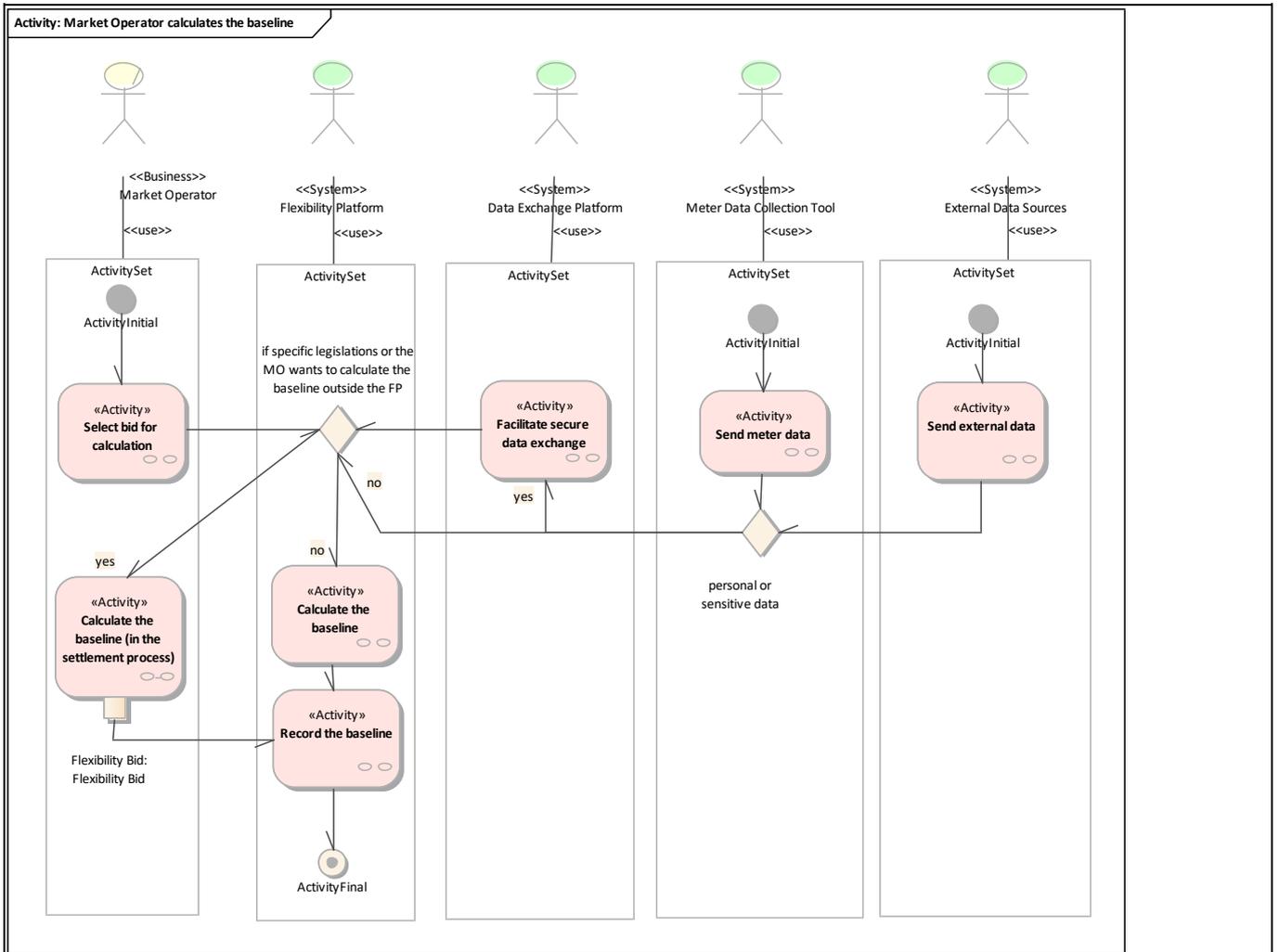
Information sent:

<i>Business object</i>	<i>Instance name</i>	<i>Instance description</i>
Baseline	Baseline	

- **Market Operator calculates the baseline**

Calculated after the activation in settlement phase by market operator.

<i>Requirement list (refer to "Requirement" section for more information)</i>	
<i>Requirement R-ID</i>	<i>Requirement name</i>
Cat1.Reg1	FB-REQ1
Cat1.Reg2	FB-REQ2



Scenario step by step analysis

Scenario	
Scenario name	Market Operator calculates the baseline



Step No	Event	Name of process/activity	Description of process/activity	Service	Information producer (actor)	Information receiver (actor)	Information exchanged (IDs)	Requirement, R-IDs
2.1		Select bid for calculation	the type of service/product of activated bids is reviewed to calculate the baseline after the activation.		Market Operator			
2.2		Send external data			External Data Sources			
2.3		Send meter data			Meter Data Collection Tool			
2.4		Facilitate secure data exchange			Data Exchange Platform			
2.5		Calculate the baseline			Flexibility Platform			
2.6		Calculate the baseline (in the settlement process)	Declaration of the baseline (for a single consumer/producer or aggregator bid/portfolio, or BRP's portfolio) for settlement purposes. Real-time data are used for the calculation.		Market Operator	Flexibility Platform	Info2-Flexibility Bid	
2.7		Record the baseline			Flexibility Platform			

- 2.6. Calculate the baseline (in the settlement process)

Business section: Market Operator calculates the baseline/Calculate the baseline (in the settlement process)

Declaration of the baseline (for a single consumer/producer or aggregator bid/portfolio, or BRP's portfolio) for settlement purposes.

Real-time data are used for the calculation.

Information sent:

Business object	Instance name	Instance description
Flexibility Bid	Flexibility Bid	

5. Information exchanged

Information exchanged

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

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	FB-REQ1	Ability of flexibility platform to collect input for baseline calculation, incl. through DEP
Req2	FB-REQ2	Ability of flexibility platform to compute baseline

7. Common terms and definitions

8. Custom information (optional)