Business Requirements for Prepare and aggregate Resources for flexibility services

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CONTENT

A. Preface

This Business Requirement Specification (BRS) describes the processes needed to prepare and aggregate Resources for use in flexibility services. The BRS is made in an ebIX® project with members from ebIX® and representants of TSOs and DSOs. The reason for ebIX® to start modelling flexibility services processes was induced by the quickly growing interest in flexibility energy services and the increasing number of flexibility implementations, all be it most of them still experimentally. We tried to use as much experience as possible in the project to set up this BRS. In setting up this BRS we based the work on the good work already done by other groups ([7], [8], [9] and [10]), the experience from the project members and the result from the ebIX® Distributed Flexibility project phase I; "ebIX® Overview of energy flexibility services" ([6]).

In the ebIX® Overview of energy flexibility services, the following usecases were identified:

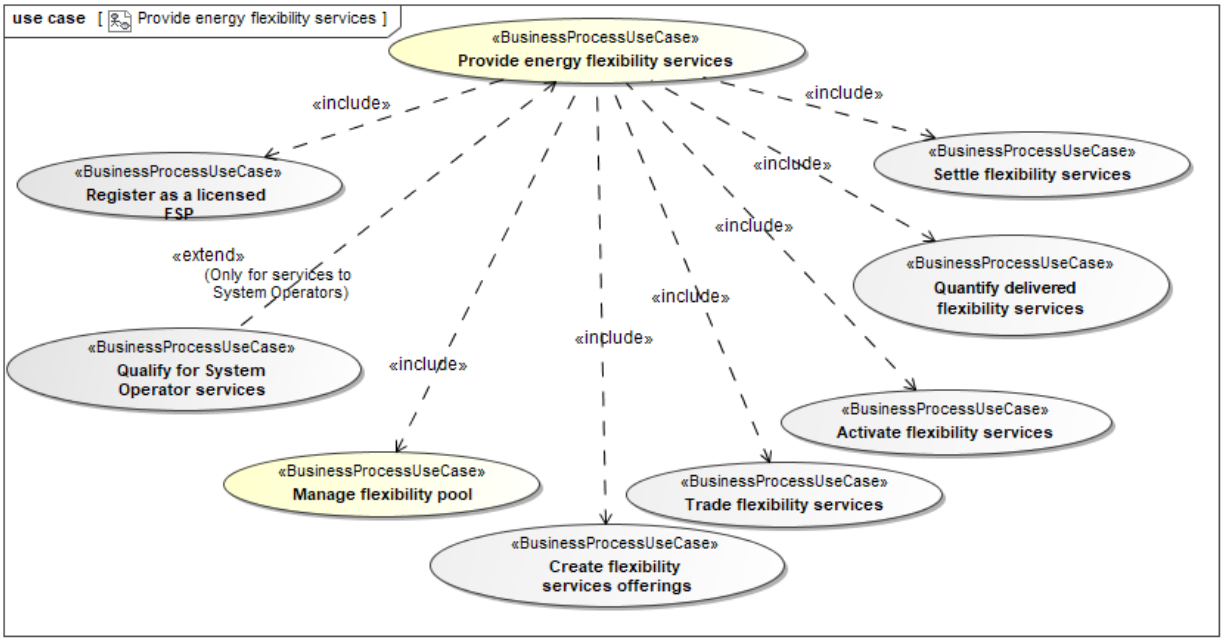

Figure 1 UseCase diagram: Overview of energy flexibility services

The yellow UseCase (Manage flexibility pool) from Figure 1 (phase I) has now been elaborated under the name BRS for Prepare and aggregate Resources for flexibility services. Further, we detailed a separate UseCase for for administration of flexibity register information in a separate BRSs; "BRS for Flexibility register administration".

One of the challenges of the project was, while discussing all details of different kinds of flexibility services, keeping the document at such an abstract level that in principle it covers all kind of different flexibility services and applications, ranging from balancing services, congestion services to services for portfolio optimisation.

The Flexibility Service Provider plays a dominant role in this BRS. Most processes modelled in this BRS are focused around the individual Resource at an Accounting Point or a pool of Resources, from where the flexibility service is to be delivered. The two core processes are:

Prepare Resource(s): The Flexibility Service Provider onboards and adjusts a Resource for a flexibility product or a pool of Resources, including verification and preparation of

the Resource, such as added remote control equipment, and other contractual and/or technical metering configuration requirements.

Aggregate Resources for pool(s)": The Flexibility Service Provider aggregates Resources for a pool of Resources and prepares the pool(s) for a flexibility service offering or product. The process may, if needed by national rules, include "product pre-qualification" and/or "grid pre-qualification".

We are convinced this BRS will increase the general understanding of flexibility and especially the processes of preparation and aggregation of Resources for flexibility services. We hope to get feedback when organisations start to use the BRS or when setting up a flexibility market. For an overview and navigation through the sub-processes we included an a coherent overview of all uses cases defined in this BRS.

I want to express my thanks to the project members.

May 2022,

Gerrit Fokkema (Convenor).

B. About this document

This document is a business requirements specification for exchange of information related to preparations and aggregations of Resources as part of the "energy flexibility services process" within the European energy market. These processes will ease the access for the Flexibility Service Providers (Resource Aggregators) and help System Operators and other market roles to allow flexibility actors in existing and new products.

During the development of this BRS, a flexibility register with a Flexibility Register Administrator was introduced. The Flexibility Register Administrator keeps track of parties (roles), and flexibility services related data for Accounting Points and Resources involved in flexibility processes. This is described in a separate document [4].

As a general introduction ebIX® has published a separate document "Introduction to ebIX® Business Requirements and Business Information Models" [1]. The introduction also includes the generic model elements that are not specific for a particular business process.

In line with UN/CEFACT Modelling Methodology version 2 (UMM-2) ebIX® defines the business requirements as the first step in modelling energy market processes. This document specifies an UMM Business Requirements View, which consist of the three sub views: Business Domain View, Business Partner View and Business Entity View.

The Business Information Model is in turn the basis for the creation of XML schema's and is the basis for the specification of web services. The Business Information Model and the syntax specific structures are specified by the "ebIX® Technical Committee" (ETC).

Since the ebIX® model is open for national customisation, some attributes are added as optional for usage for regional/national customisation. If used, these attributes must be specified nationally.

A complete overview of all elaborated UseCases, including relations between them, is shown in Appendix B.

B.1. Comments to the ebIX® model

If you have comments or suggestions to the requirements, please contact the ebIX® secretary (secretary@ebix.org).

B.2. References

B.2.1. Standards

[1] UML Profile for UN/CEFACT's Modelling Methodology (UMM), Base Module, 2.0. (UN/CEFACT Modelling Methodology (UMM))

[2] The Harmonized Role Model (for the Electricity Market) by ebIX®, ENTSO-E, and EFET (https://www.ebix.org/artikel/role_model)

B.2.2. ebIX® Documents

[1] Introduction to ebIX® Business Requirements and Business Information Models (https://www.ebix.org/artikel/documents)

[2] Recommended Identification Schemes for the European Energy Market (https://www.ebix.org/artikel/documents)

[3] ebIX® code lists (https://www.ebix.org/artikel/documents)

[4] ebIX® BRS for Flexibility register administration (https://www.ebix.org/artikel/documents)

[5] ebIX® Business Requirements Specifications (BRSs) are referenced several places in this document, such as ebIX® BRS for Alignment of AP characteristics, ebIX® BRS for Alignment of metering configuration characteristics for a MP, ebIX® BRS for Flexibility register administration and ebIX® BRS for administration of consent. These BRSs are published at (https://www.ebix.org/artikel/documents)

[6] ebIX® Overview of energy flexibility services (https://www.ebix.org/artikel/distributed-flexibility-project)

B.2.3. Energy flexibility services work by other groups

[7] USEF (https://www.usef.energy/)

[8] Horizon 2020 projects (EU-SysFlex, INTERRFACE and OneNet) (https://ec.europa.eu/programmes/horizon2020/en/home)

[9] Equigy project (https://equigy.com/)

[10] "A toolbox for TSOs and DSOs to make use of new system and grid services" by CEDEC, E.DSO for Smart Grids, Eurelectric, GEODE and ENTSO-E.

B.3. Participants in the project

These Business Requirements, as part of the ebIX® Model for the European Energy Market (see [1]), are prepared by the ebIX Flexibility project, consisting of representatives from ebIX (and their countries), ENTSO-E, DSO's and TSO's.

B.4. Main changes since last version

Old	New	Clarification	Date
		Version 1.2	
v1r1C	v1r2A	Editorial updates: • Hidden attributes from the root class in Appendix A. • Corrected document names to be in line in the data view and in Appendix A. • Removed the stereotype «Business entity» from all class diagram descriptions. • Renamed the class "Resource" to "Resource information" in all documents. • Renamed the class "Accounting Point" to "Accounting Point information". • Addition of links from the activity diagrams in the Business Domain View to the business documents (Business Entities) in the Business Entity View. • Added a Grid connection ID to all documents.	20230203
		Version 1.1	
v1r0A	v1r1A	Second version for ebIX® Forum approval.	20220510
v1r1A	v1r1B	Addition of clarifying text and correction of spelling errors.	20220614
v1r1B	v1r1C	Addition of clarifying text and correction of spelling errors.	20221103
		Version 1.0	
v1r0A		Draft for ebIX® forum approval.	20210825

1 Introduction

1.1 Definitions

Flexibility is defined as the capability to modify generation injection and/or consumption patterns in the energy system (like electricity or gas)- on an individual Resource, Accounting Point or aggregated level - on external request.

Flexibility Services are defined as balancing services, non-frequency ancillary services, congestion management services etc. where Flexibility is used to meet the needs of energy market participants or System Operators on different existing or new energy or power marketplaces.

Flexibility Service Provider is a party that offers flexibility services to the energy market based on acquired (aggregated) capabilities[1].

A **flexibility product** is a certain capacity or volume of energy that a Flexibility Service Provider makes available for a flexibility service.

Grid constraints are technical requirements, such as thermal limit of a network element and/or voltage limits for a grid section, part of operational security limits of an operational grid that need to be observed to meet security requirements defined in Article 18 of the EU System Operation Guideline[2]."

A Resource delivers the capability to modify generation injection and/or consumption patterns in the energy system (like electricity or gas). It is a market representation of an asset, or a group of assets related to the energy industry. A Resource represents for example grid assets, consumption assets or production assets, such as generating units, consumption units, energy storage units or virtual power plants.

A pool is a collection of one or more Resources that is used by a Flexibility Service Provider to offer one or more flexibility products to the market.

1.2 Basic principles

The following principles have been used when drafting this document:

- In this BRS it is assumed that roles involved in a process are implicitly consented to receive relevant data. Other parties, who have an interest in receiving these data, may get them under the condition that they are explicitly consented by the Customer. These parties are called Consented Parties.

[1] In this document, the role Flexibility Service Provider corresponds to the *Independent aggregator*, a market participant engaged in aggregation who is not affiliated to the customer's according to the Directive (EU) 2019/944.

[2] Article 18 COMMISSION REGULATION (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation.

- A Flexibility Service Provider must comply to European and national rules regarding formal registration, etc., see the UseCase “Register as a licenced FSP” in Figure 1.
- A flexibility register is introduced in the ebIX® BRS for flexibility register administration, see [5]. The responsible party for the flexibility register administration is a Flexibility Register Administrator, who keeps track of parties (roles) relevant for flexibility services in the market, such as the Flexibility Service Provider and his Balance Responsible Party, and flexibility services related data for Accounting Points and Resources involved in flexibility processes. The flexibility register is closely related to the Metering Point administration and may, based on national rules, be incorporated in the Metering Point administration.
- Resource registration in the flexibility register could be separated from the registration of the (responsible) Flexibility Service Provider for that Resource, but in this BRS it is chosen to combine the Resource and Flexibility Service Provider registration.
- A Resource is registered in the flexibility register before it is grid- and/or product pre-qualified.
- We assume that Resources and Pools of Resources have unique identifications, such as GS1 or EIC.
- There must be a product register defining flexibility product characteristics for a product that is offered in the market. However, the content of this register is out of scope for this BRS.
- In this BRS we introduce two “qualifier roles”:
    - The Flexibility Grid Qualifier is a party responsible for pre-qualifying a Resource or a pool of Resources for specific requirements in an energy grid. The grid pre-qualification includes a verification if the grid can (technically) accept the delivery of flexibility services from the Resource or pool of Resources. The Flexibility Grid Qualifier may be a role within, or closely linked to, a System Operator (DSO or TSO).
    - The Flexibility Product Qualifier is a party responsible for pre-qualifying a Resource or a pool of Resources for a specific product for delivery of flexibility services to the energy market. The product pre-qualification includes an assessment whether the Resource or the pool of Resources meets the requirements of the product.
- The role System Operator used in this BRS covers the system operator part of both the DSOs and of the TSOs.
- We use Accounting Point as the object where energy (transfer) is measured for market purposes and where market players assume certain responsibilities in well-defined roles. An Accounting Point is a type of Metering Point. The administration of the characteristics for the Accounting Points, including the different responsible roles, is the Metering Point administration, performed by the Metering Point Administrator.
- Each Accounting Point is associated with a physical connection to the grid (sometimes referred to as connection point or similar). This Grid connection is identified with the “Grid connection ID” (*Definition:* “The unique identification of the grid connection the Accounting Point is connected to”). Each Accounting Point is connected to one Grid connection (ID), although there are rare cases where an Accounting Point can have more than one physical Grid connection to the grid. A Grid connection ID has one or more Accounting Points linked to it, as is the case for sub–Accounting Points (see below).

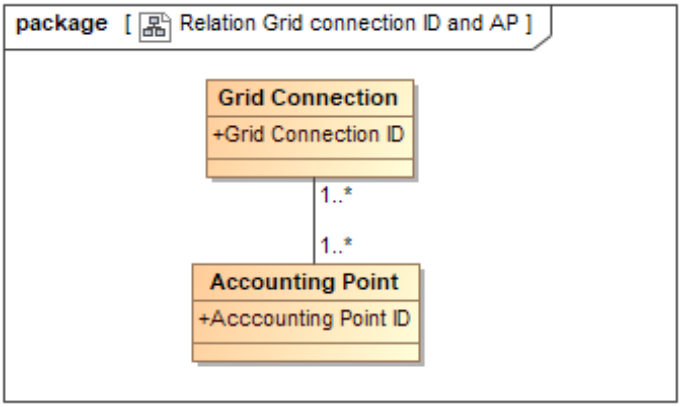

Figure 1 Relation between Grid connection ID and Accounting Point

- An Accounting Point consists of one or more Installation(s), which contains one or more Assets that consume or produce energy. At the connection of an Installation to the grid, the energy transfer usually is measured with one or more Meter(s).

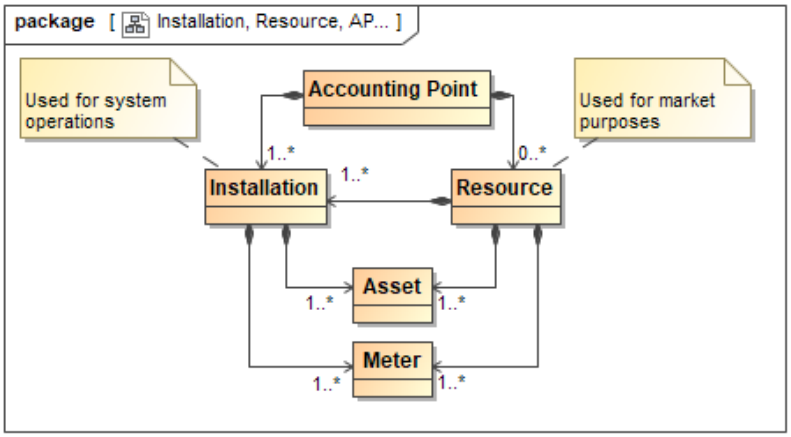

Figure 2 What is an Accounting Point?

Further, an Accounting Point can have zero or more Resources. A Resource is built up of one or more Assets of one or more Installations at the Accounting Point, but not all Assets from an Installation nor all Installations at an Accounting Point need to be part of a Resource. The Resource may be used for offering a certain energy and/or capacity (service) to the market. A Resource can be measured separately or using the meter(s) of the installation(s) of the Accounting Point. The Resource is through the Accounting Point also linked to the same Grid connection and has the same Grid connection ID as the Accounting Point it is part of.

Since this BRS concerns (flexibility) market processes, we use the Resource. The Installation is not used in the rest of the BRS.

- From each Accounting Point it may be split off one or more sub–Accounting Point(s) (linked to the same Grid connection ID), which is measured. A sub–Accounting Point can have zero or more Resources. Sometimes a Resource can for market reasons be split off into a sub-Accounting Point.
- The sub–Accounting Points (SAPs) must be treated as normal Accounting Points (APs) in the market processes. For the flexibility processes, measurements can come from Accounting Point-, sub–Accounting Point- or Resource level. Where we write in this document Accounting Point it applies as well for a sub–Accounting Point; we do not (need to) distinguish between main and sub–Accounting Points.

- The flexibility service provided by a Resource is either metered or calculated. Based on national rules these measured data are made available to the Flexibility Service Provider and to other relevant roles. In some countries the settlement of flexibility services may be based on real-time data, instead of going via a Metered Data Responsible and/or Metered Data Administrator.
- There can only be one Flexibility Service Provider (FSP) for a Resource for a delivery period, but a Flexibility Service Provider may have many Resources contracted at the same time.
- There is always one Resource Provider responsible for a Resource, who has a link to the Customer of the Accounting Point
- It is assumed that the System Operators publish constraints for their grid as limitations for the provision of flexibility services by Flexibility Services Providers.
- When defining the UseCases in this Business Requirement Specifications (BRS), the electricity sector has been the focus area. However, it should be possible to also use the UseCases as a basis for other energy sources, such as gas or heat/cold.
- "The happy flow principle" is used in the UseCase descriptions, i.e., the focus is the expected outcome of a process and exceptions on this outcome (rejections, etc.) are described in the "exception row".
- In this BRS there is no differentiation between flexibility (trades) used by a System Operator (DSO or TSO) and other market parties. The model should be applicable for all kinds of applications of flexibility services, including balancing services, non-frequency ancillary services and congestion management services.
- Since the ebIX® model is open for national customisation, some attributes are added as optional for usage for regional/national customisation. If used, these attributes must be specified nationally.

2 Business Domain View: Prepare and aggregate Resources for flexibility services (Business Process UseCase)

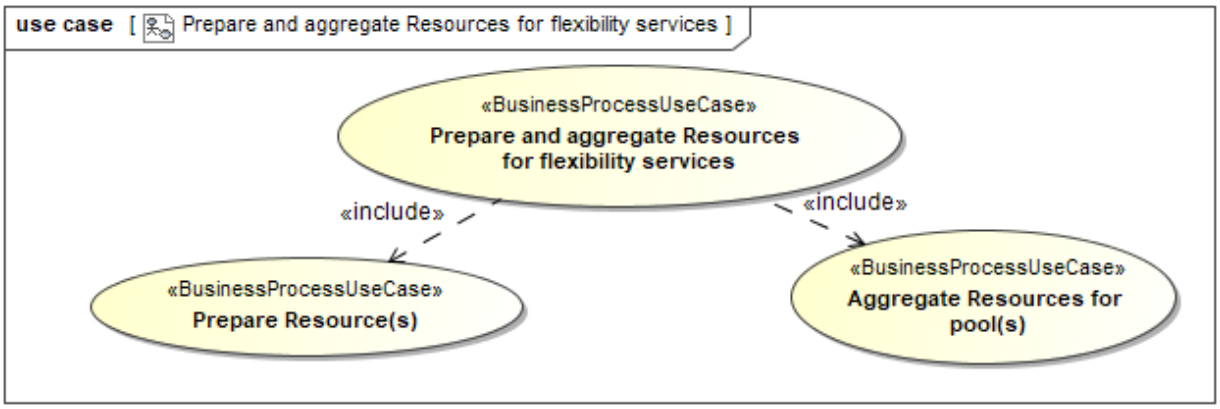

Figure 2 Business Process UseCase: Prepare and aggregate Resources for flexibility services

2.1 Description

UseCase description: **Prepare and aggregate Resources for flexibility services**	
definition	*This is an overview uses case.* In this process the Flexibility Service Provider prepares and equips one or more Resources for offering flexibility services, including verifying, contracting, registering and qualifying the Resources (grid pre-qualification and product pre-qualification), in order to use the Resource(s) in a flexibility product or to aggregate the Resource(s) in flexibility services pool(s) and to prepare the pool(s) for operation.
beginsWhen	When the Flexibility Service Provider wants to use or aggregate (a) Resource(s) to make an offering for flexibility services or prepare a pool of Resources for flexibility services.
preCondition	The Flexibility Service Provider is registered for the market.
endsWhen	When the Flexibility Service Provider has adjusted his pool(s) with one or more Resources.
postCondition	The Resource(s) or pool(s) of Resources are ready for trading and activating flexibility services in the operational phase.
exceptions	None.
actions	Not applicable at this level.

2.2 Prepare Resource(s) (Business Process UseCase)

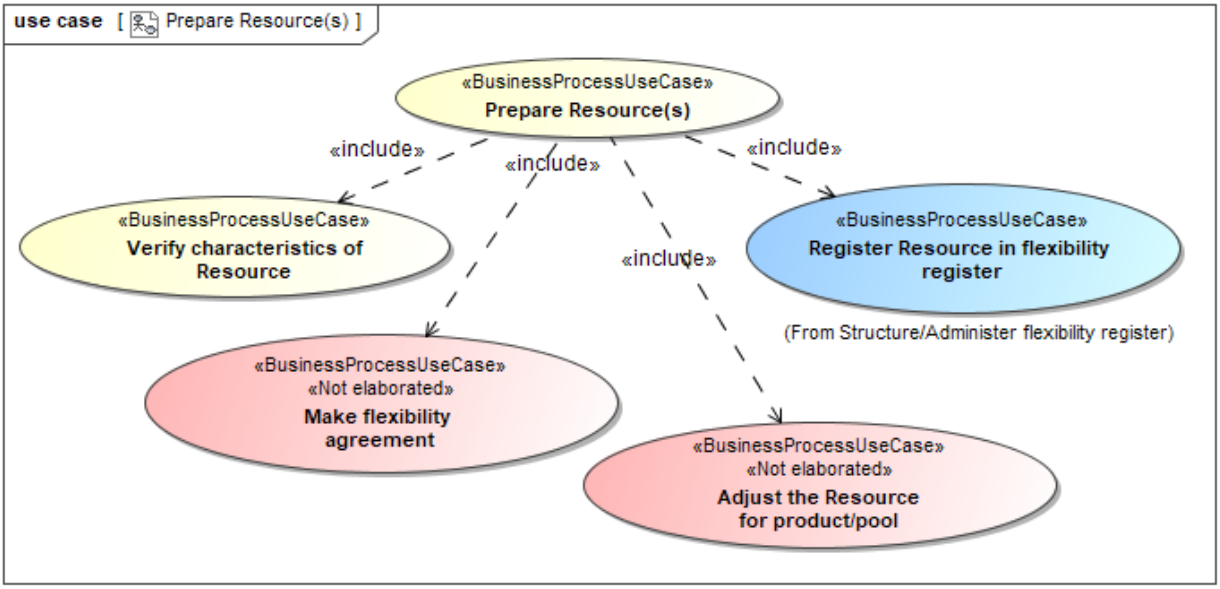

Figure 3 Business Process UseCase: Prepare Resource(s)

2.2.1 Description

UseCase description: **Prepare Resource(s)**	
definition	In this process the Flexibility Service Provider onboards and adjusts a Resource for a flexibility product or for a pool of Resources. He verifies and/or prepares the Resource, metering configuration (such as added remote control equipment) and other (contractual and/or technical) requirements related to the Accounting Point or the Resource itself, leading to a flexibility agreement with the Resource Provider[3]. The new and/or changed (updated) Resource(s) is (are) registered in the flexibility register.
beginsWhen	When the Flexibility Service Provider intends to make use of the Resource(s) for flexibility service offerings.
preCondition	• The Resource is linked to an Accounting Point. • The Accounting Point ID is known. • The link between the Resource Provider and the Accounting Point is verified.

[3] The UseCase includes the USEF recommendations 501 (combination of implicit and explicit demand response) and 504 (Resources belonging to profiled Accounting Points should be excluded).

endsWhen	When the Flexibility Service Provider has registered the Resource in the flexibility register after he obtained sufficient information to verify and resolve possible missing requirements and has adjusted the Resource to fit a flexibility service and/or flexibility pool.
postCondition	The Resource is technically ready for delivery of flexibility services from the Accounting Point. The Flexibility Service Provider and Resource are registered in the flexibility register. There is an agreement between the Resource Provider and the Flexibility Service Provider.
exceptions	The Resource does not fulfil the characteristics; hence the onboarding will be cancelled.
actions	See 2.2.2

2.2.2 Business Process

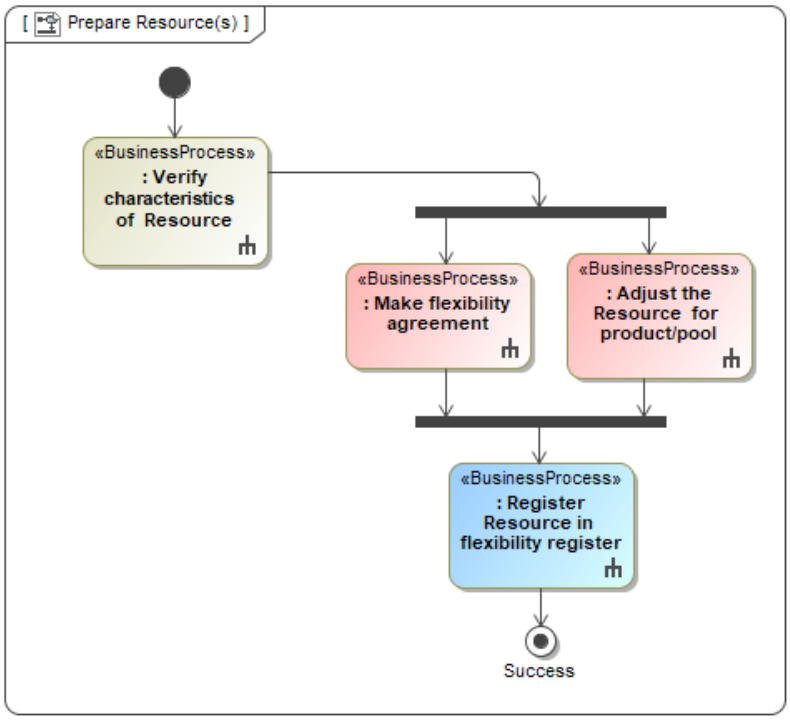

Figure 4 Business Process: Prepare Resource(s)

2.2.3 Verify characteristics of Resource (Business Process UseCase)

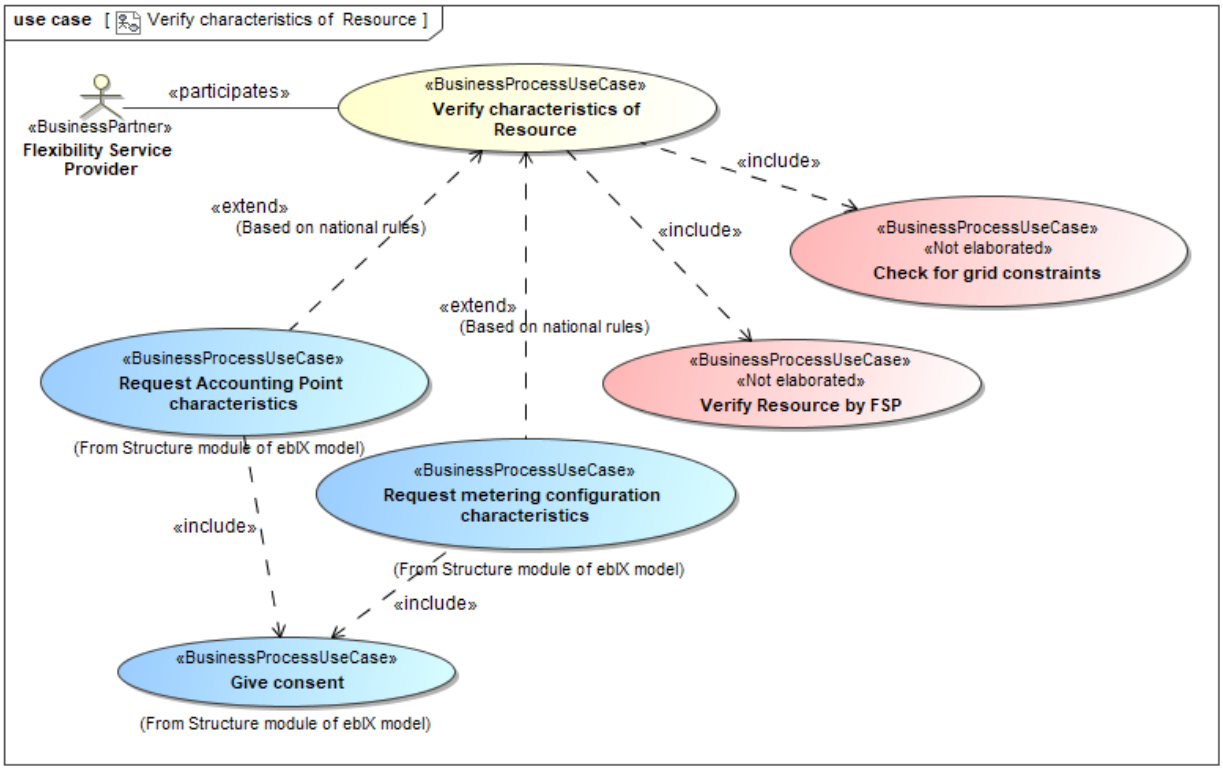

Figure 5 Business Process UseCase: Verify characteristics of Resource

2.2.3.1 Description

UseCase description: **Verify characteristics of Resource**	
definition	In this process the Flexibility Service Provider verifies technical characteristics (structural information), metering configuration, internal limitations to provide the intended flexibility, technical constraints and other (contractual) constraints related to the Resource, which he intends to onboard into a flexibility product or pool.
beginsWhen	When the Flexibility Service Provider intends to use a Resource in a flexibility product or pool and has an understanding with the Resource Provider to do so.
preCondition	• The Resource is linked to the Accounting Point. • The Accounting Point ID is known.
endsWhen	When the Flexibility Service Provider has obtained sufficient information to verify and resolve possible constraints.

postCondition	The Resource, metering and Accounting Point characteristics and grid constraints have been verified by the Flexibility Service Provider. The Resource can be contracted by the Flexibility Service Provider.
exceptions	The Resource does not fulfil the characteristics; hence the validation will be cancelled.
actions	See 2.2.3.2

2.2.3.2 Business Process

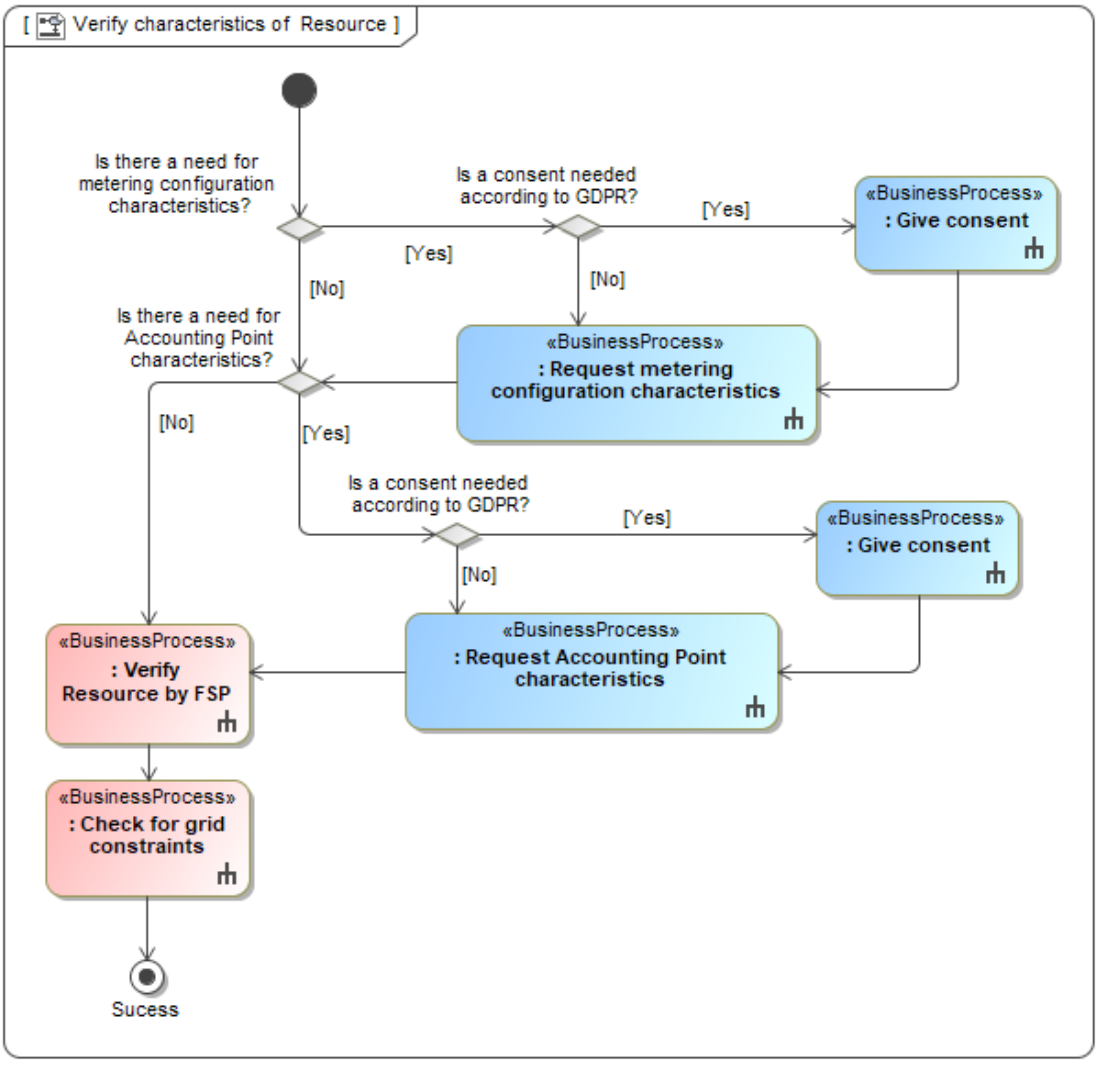

Figure 6 Business Process UseCase: Verify characteristics of Resource

2.2.3.3 Request Accounting Point characteristics (Business Process UseCase)

There may be a need by the Flexibility Service Provider to get Accounting Point characteristics (name, address, more technical data related to the Accounting Point, etc.) from the Metering Point Administrator before a Resource can be verified. The "Request Metering Point characteristics" process, which delivers the Accounting Point characteristics, is documented in the ebIX® BRS for Alignment of Accounting Point characteristics, see [5].

2.2.3.4 Request Metering Configuration characteristics (Business Process UseCase)

There may be a need by the Flexibility Service Provider to get Metering Configuration characteristics (voltage level, Meter technique etc.) from the Meter Administrator[4] before a Resource can be verified for flexibility services. The "Request Metering Configuration characteristics" process is documented in the ebIX® BRS for Alignment of metering configuration characteristics for a Metering Point, see [5].

2.2.3.4.1 Give consent (Business Process UseCase)

There may be a need to get explicit consent from the Customer at the Accounting Point, related to the Resource Provider, before:

- the Metering Point Administrator can send the requested Accounting Point characteristics.
- the Meter Administrator can send requested Metering Configuration characteristics.

to the Flexibility Service Provider, ref. General Data Protection Regulation (GDPR). The "Give consent" process is documented in ebIX® BRS for administration of consent, see [5].

[4] The Meter Administrator is responsible to register the relevant meters. The Meter Administrator for Meters on Accounting Point level can be different from the Meter Administrator for the one on Resource level.

2.2.3.5 Verify Resource by Flexibility Service Provider (Business Process UseCase)

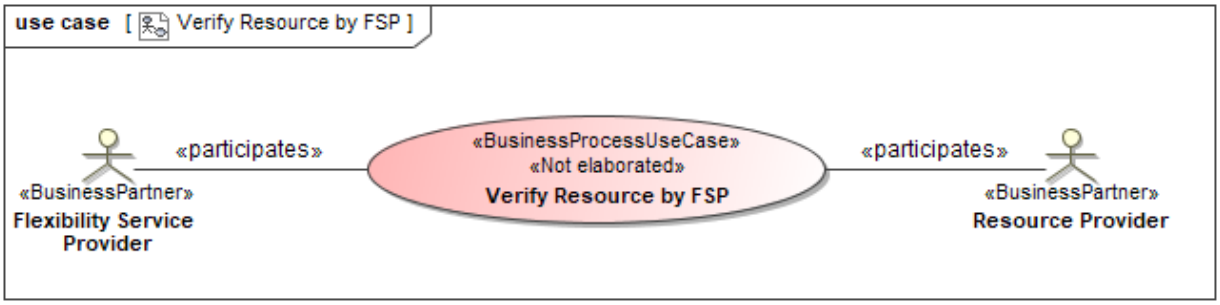

Figure 7 Business Process UseCase: Verify Resource by Flexibility Service Provider

2.2.3.5.1 Description

UseCase description: **Verify Resources by Flexibility Service Provider**	
definition	In this process the Flexibility Service Provider checks the characteristics of the Resource with the Resource Provider to validate if the Resource fits the needs for the intended flexibility service(s).
beginsWhen	The Flexibility Service Provider has gathered relevant characteristics.
preCondition	The Flexibility Service Provider has access to the Resource. The Flexibility Service Provider and the Resource Provider have or intend to settle a flexibility agreement for the Resource.
endsWhen	The Resource is verified by the Flexibility Service Provider for the intended flexibility service(s).
postCondition	The Resource has been verified for the intended flexibility service(s) by the Flexibility Service Provider.
exceptions	None.
actions	This is a non-standardised process, hence not further elaborated.

2.2.3.6 Check for grid constraints (Business Process UseCase)

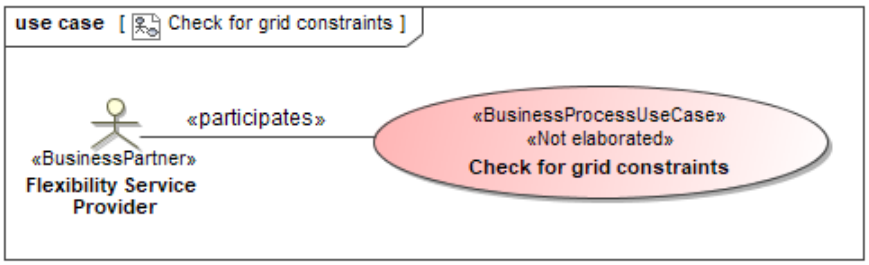

Figure 8 Business Process UseCase: Check for grid constraints

2.2.3.6.1 Description

UseCase description: **Check for grid constraints**[5]	
definition	In this process the Flexibility Service Provider checks for possible grid constraints, to the provision of flexibility, for the intended flexibility service(s) from the Resource at the Accounting Point.
beginsWhen	The Flexibility Service Provider wants to use the Resource at the Accounting Point for certain flexibility services.
preCondition	The relevant grid constraint data is publicly available. The Flexibility Service Provider knows the relevant grid(s).
endsWhen	When the Flexibility Service Provider has checked the intended flexibility services from the Resources against the relevant known (if any) grid constraints.
postCondition	The Accounting Point and all relevant Resources have been checked against grid constraints for the intended flexibility service(s) and the Resource can be prepared for application for grid-qualification.
exceptions	If there are no grid constraint data publicly available, the Flexibility Service Provider carries on as if there are no grid constraints.
actions	This is a non-standardised service, hence not further elaborated.

[5] Grid constraint corresponds to any issue beyond the Flexibility Service Provider and is related with the distribution or transmission grid, which could constraint the participation of the Flexibility Service Provider in delivery of flexibility services from the Accounting Point at some future time. The System Operator verifies this in the Flexibility Service Provider grid prequalification process, however not all situations can be foreseen or there can be unforeseen network contingences that lead to (new) constraints. Checking should also be done during operation.

2.2.4 Make flexibility agreement (Business Process UseCase)

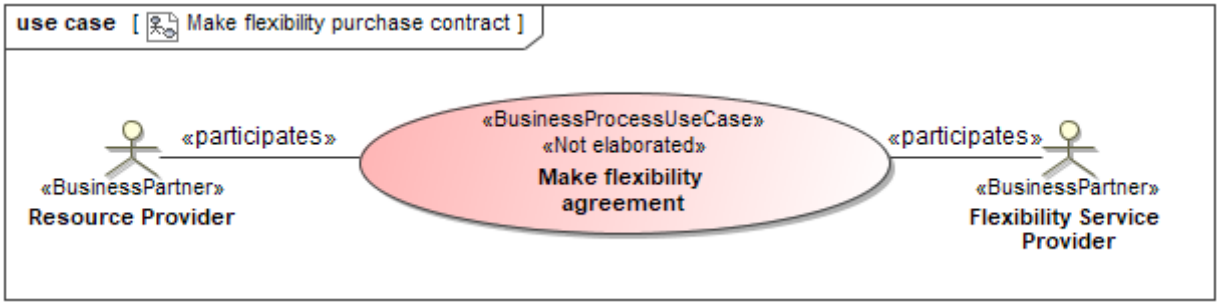

Figure 9 Business Process UseCase: Make flexibility agreement

2.2.4.1 Description

UseCase description: **Make flexibility agreement**	
definition	In this process the Flexibility Service Provider makes an agreement with the Resource Provider to make use of the Resource for the intended flexibility service(s).
beginsWhen	When the Flexibility Service Provider and the Resource Provider are ready to make the agreement.
preCondition	Both parties still intend to make an agreement.
endsWhen	The Flexibility Service Provider and the Resource Provider have settled the agreement.
postCondition	The Flexibility Service Provider has contracted the Resource and can add the Resource to the flexibility pool.
exceptions	None.
actions	This is a manual process between the Flexibility Service Provider and the Resource Provider, hence not further elaborated.

2.2.5 Adjust the Resource for product/pool of Resources (Business Process UseCase)

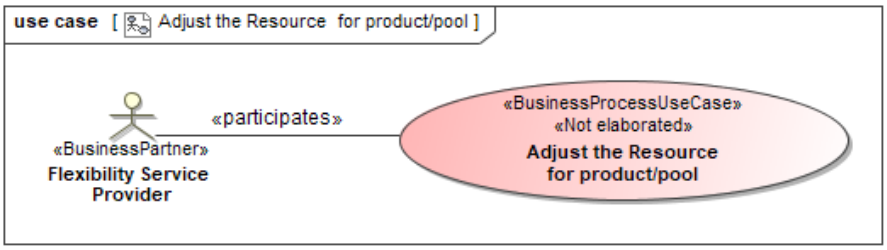

Figure 10 Business Process UseCase: Adjust the Resource for product/pool

2.2.5.1 Description

UseCase description: **Adjust the Resource for product/pool of Resources**	
definition	In this process the Flexibility Service Provider adjusts (prepares) the Resource for the flexibility product(s) and/or pool(s), such as adding a control device or a meter[6].
beginsWhen	The Flexibility Service Provider and the Resource Provider have an agreement.
preCondition	The Flexibility Service Provider has verified Accounting Point and grid constraints upfront.
endsWhen	The Resource is adjusted for the flexibility product(s) and/or pool(s).
postCondition	The Resource is adjusted for the intended flexibility service(s) and/or flexibility pool(s) and can go in operation.
exceptions	None.
actions	This is an internal process of the Flexibility Service Provider, hence not further elaborated.

2.3 Register Resource in flexibility register (Business Process UseCase)

After the Flexibility Service Provider has onboarded and adjusted the Resource, and potentially aggregated the Resource for one or more pool(s), the Flexibility Service Provider must register or update the characteristics of the Resource in the flexibility register. The “Register Resource in flexibility register” process, is documented in the ebIX® BRS for Flexibility register administration, see [5].

[6] This meter may also be known as submeter.

2.4 Aggregate Resources for pool(s) (Business Process UseCase)

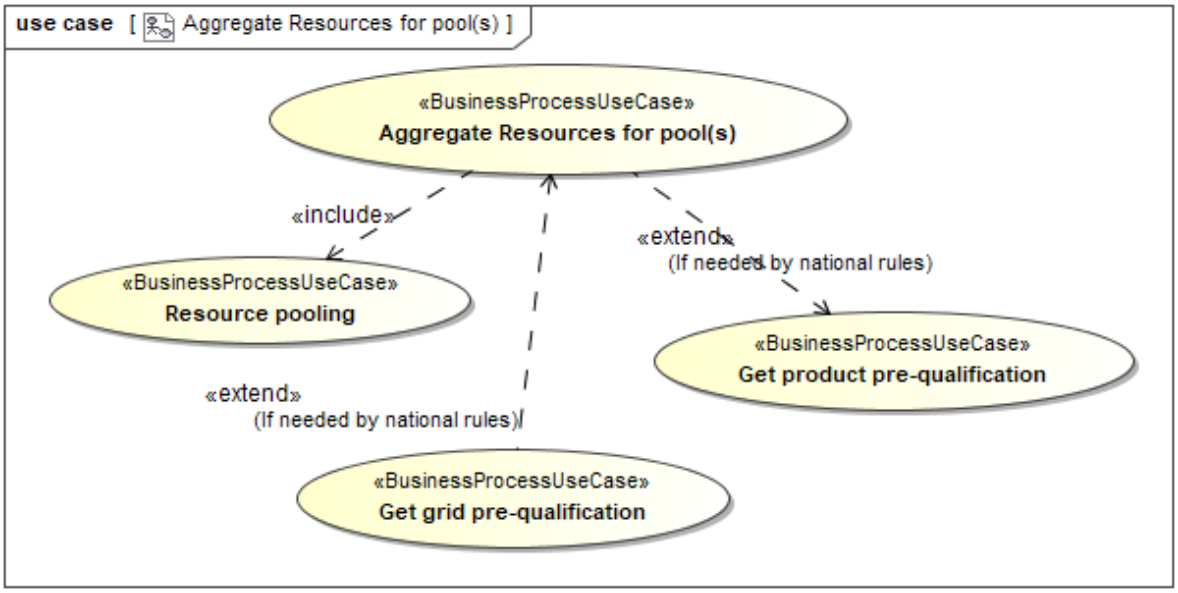

Figure 11 Business Process UseCase: Aggregate Resources for pool(s)

2.4.1 Description

UseCase description: **Aggregate Resources for pool(s)**	
definition	In this process the Flexibility Service Provider aggregates one or more Resources for a pool of Resources (Resource pooling) for preparing the pool of Resources for a flexibility service offering or flexibility product. If needed by national rules the pool of Resources is “product pre-qualified” and/or “grid pre-qualified”.
beginsWhen	When the Flexibility Service Provider has gathered Resources to form a pool or upgrade a pool of Resources for specific product needs.
preCondition	The Resources fulfil all applicable requirements.
endsWhen	The pool of Resources is adjusted and if needed grid and/or product pre-qualified.
postCondition	The pool of Resources, including the Resources, is ready for operation.
exceptions	None.
actions	See 2.4.2

2.4.2 Business Process

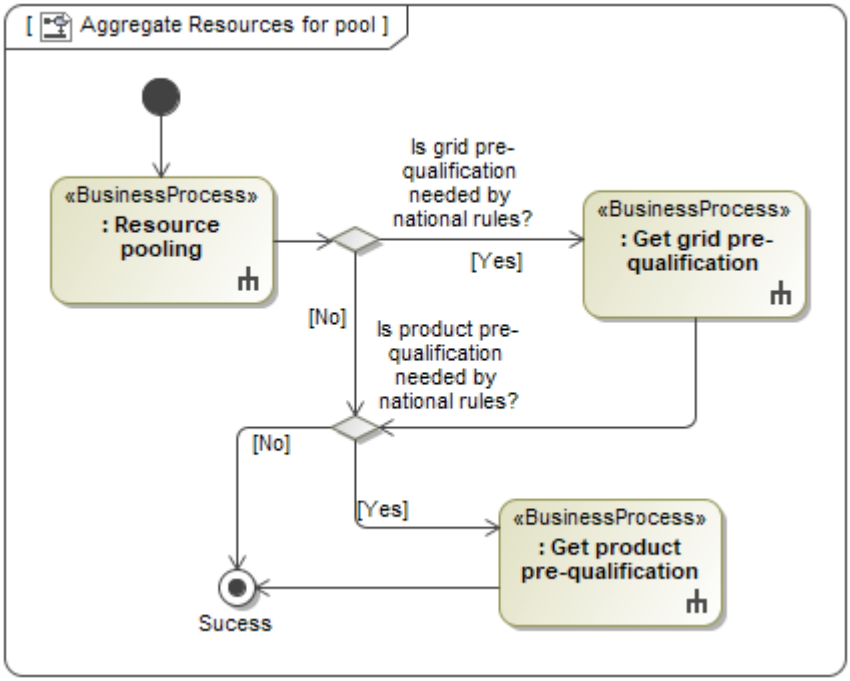

Figure 12 Business Process UseCase: Aggregate Resources for pool(s)

2.4.3 Resource pooling (Business Process UseCase)

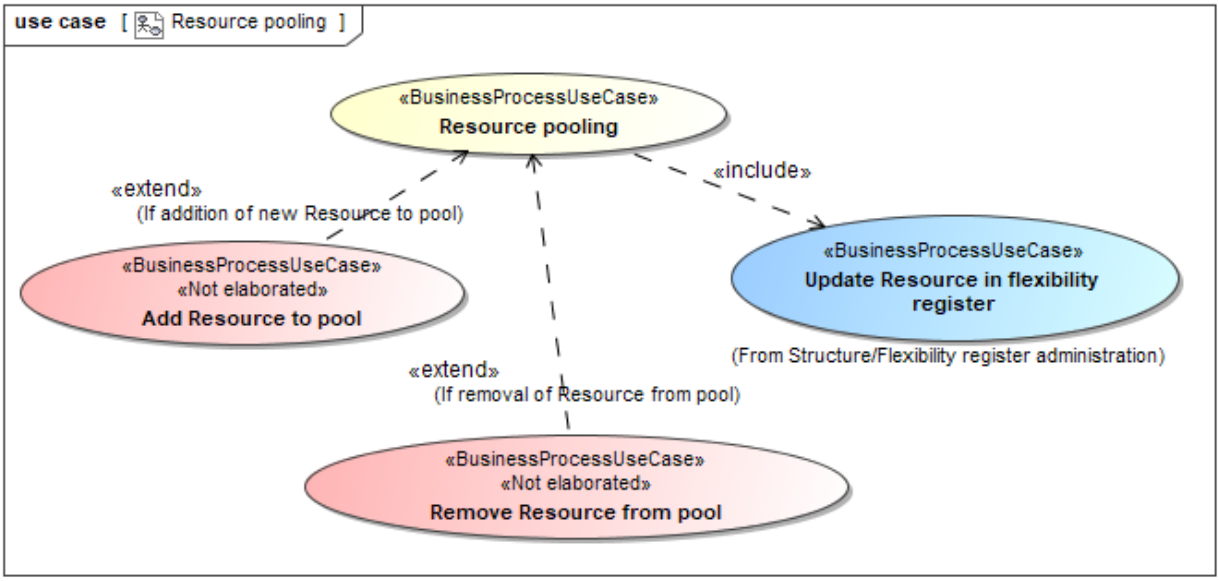

Figure 13 Business Process UseCase: Resource pooling

2.4.3.1 Description

UseCase description: **Resource pooling**	
definition	In this process the Flexibility Service Provider adjusts its pool of Resources to fit a relevant product for market needs, i.e. adding (a) Resource(s) to a pool of Resources and/or removing (a) Resource(s) from a pool of Resources. After adjustment of the pool of Resources, the flexibility register must be updated by the Flexibility Service Provider. This includes the notification by the Flexibility Register Administrator of the addition to Entitled Roles.
beginsWhen	When there is a need to change which Resources that belong to a Flexibility Service Providers pool of Resources.
preCondition	The Resource(s) fulfil(s) all relevant requirements.
endsWhen	The Flexibility Service Providers pool(s) is (are) adjusted according to the product specification and needs.
postCondition	The Flexibility Service Provider is ready to offer its pool(s) to the market and Entitled Roles are notified of the adjustment of the pool of Resources.
exceptions	None.
actions	Not relevant at this level.

2.4.3.2 Add Resource to pool of Resources (Business Process UseCase)

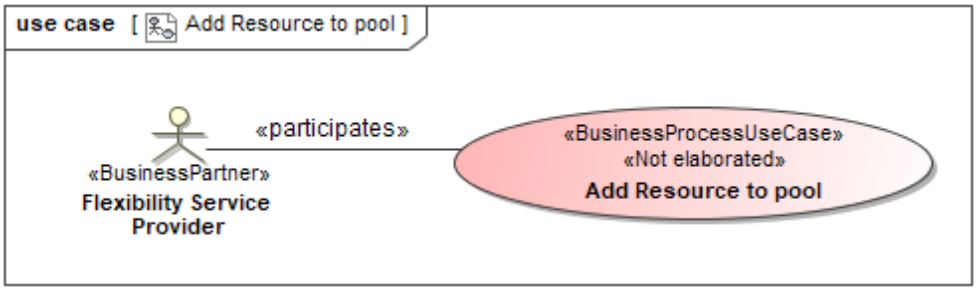

Figure 14 Business Process UseCase: Add Resource to pool of Resources

2.4.3.2.1 Description

UseCase description: **Add Resource to pool of Resources**[7]	
definition	In this process the Flexibility Service Provider adds a Resource to its pool of Resources to fit relevant market needs. Resources may be added one by one into a new or an existing pool of Resources.
beginsWhen	When the Flexibility Service Provider has the need to add a Resource to a pool of Resources.
preCondition	The Resource is successfully on-boarded, and the Flexibility Service Provider is registered in the flexibility register at the relevant Flexibility Register Administrator.
endsWhen	The Resource is added to the pool of Resources.
postCondition	The Flexibility Service Provider's pool of Resources updated.
exceptions	None
actions	This is an internal and manual service, hence not further elaborated.

[7] Depending on the capacity added to the pool, this might require a new prequalification.

2.4.3.3 Remove Resource from pool of Resources (Business Process UseCase)

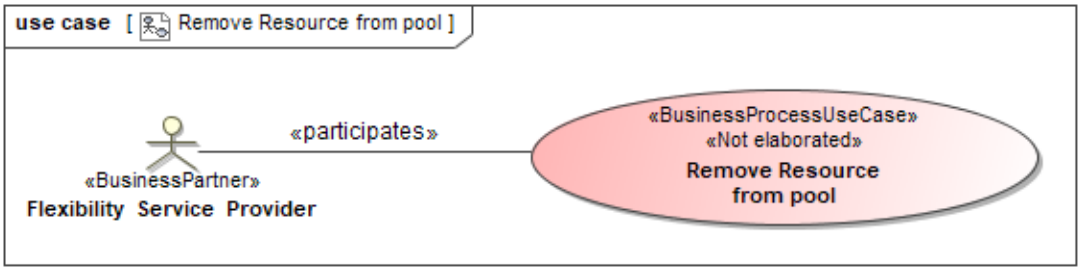

Figure 15 Business Process UseCase: Remove Resource from pool of Resources

2.4.3.3.1 Description

UseCase description: **Remove Resource from pool of Resources**	
definition	In this process the Flexibility Service Provider removes a Resource from a pool of Resources to fit relevant product specifications.
beginsWhen	When the Flexibility Service Provider has a need to remove a Resource from a pool of Resources.
preCondition	There is a need to remove a Resource from the pool of Resources.
endsWhen	The Resource is removed from the pool of Resources.
postCondition	The Flexibility Service Provider's pool of Resources is updated.
exceptions	None
actions	This is an internal and manual service, hence not further elaborated.

2.4.3.4 Update Resource in flexibility register (Business Process UseCase)

After adjustment of the pool of Resources, the flexibility register must be updated by the Flexibility Service Provider, which includes the notification by the Flexibility Register Administrator of the adjustment to Entitled Roles. This is documented in the ebIX® BRS for Flexibility register administration, see [5].

2.4.4 Get grid pre-qualification (Business Process UseCase)

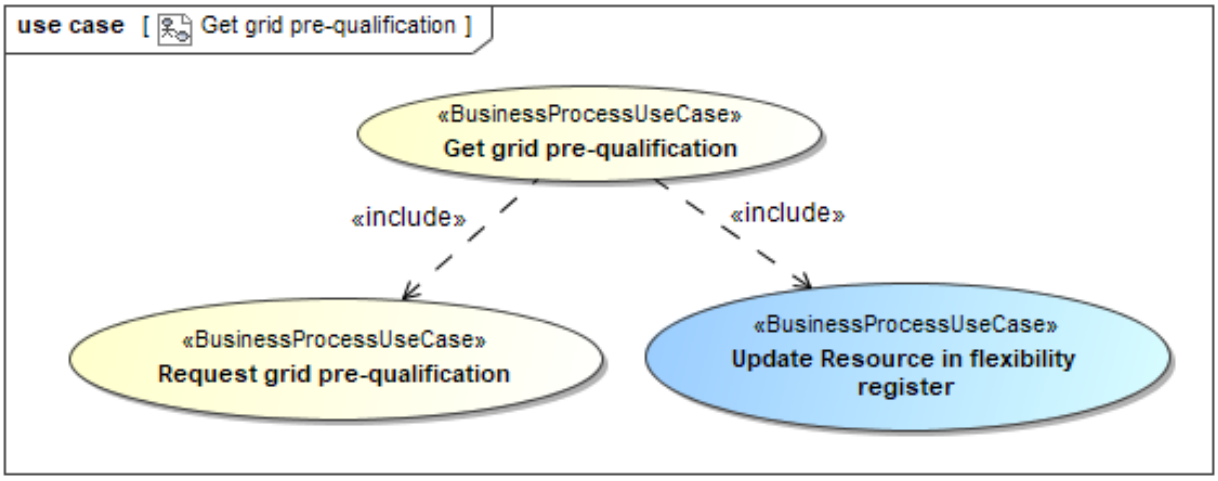

Figure 16 Business Process UseCase: Get grid pre-qualification

2.4.4.1 Description

UseCase description: **Get grid pre-qualification**	
definition	In this process the individual Resource or a pool of Resources with Resources and the linked metering configuration gets pre-qualified by the Flexibility Grid Qualifier, for delivery of flexibility service(s) through the grid[8, 9]. The pre-qualification includes a verification if the Resource or pool of Resources can violate the constraints in the grid. After the grid pre-qualification, the Flexibility Grid Qualifier request update of the flexibility register, which includes notification by the Flexibility Register Administrator of the grid pre-qualification to Entitled Roles.

[8] "ASM" report (TSO–DSO Report: An integrated approach to active system management, chapter 6.2): "The pre-qualification for the grid […] is defined as checking whether the grid can manage the delivery of the product that the unit wants to sell/deliver (both congestion management and balancing products), according to the agreement and applicable framework between the different system operators on pre-qualification.". https://eepublicdownloads.entsoe.eu/clean-documents/Publications/Position%20papers%20and%20reports/TSO-DSO_ASM_2019_190416.pdf"

[9] **Rationale** (from USEF recommendation 308)**:**
For grid management and grid safety analysis, both TSO and DSO need to know the structural information of the load and generation connected to their grid. This includes information about DR (Demand Response) contracts (available power, ramp up/down rates, type of flexibility service). This information exchange should however not be limited to DR contracts with an Aggregator. The DSO should e.g., also be informed about flexible load that is exposed to implicit DR by the Supplier.

beginsWhen	When the Flexibility Service Provider decides to apply for grid pre-qualification to offer relevant flexibility services to the System Operator or an existing Flexibility Service Provider's grid pre-qualification should be renewed.
preCondition	The Flexibility Grid Qualifier is informed of all constraints in the grid(s) of the relevant System Operator(s).
endsWhen	When the pre-qualification of the Resource(s) is notified to Entitled Roles by the Flexibility Register Administrator.
postCondition	The Flexibility Service Provider has got grid pre-qualification for the Resource(s) or for the pool of Resources for the desired flexibility service(s), and the Entitled Roles are notified of the grid pre-qualification by the Flexibility Register Administrator. The pre-qualification may be granted with limitations.
exceptions	The Resource does not pass pre-qualification and the process is aborted.
actions	See 2.4.4.2.

2.4.4.2 Business Process

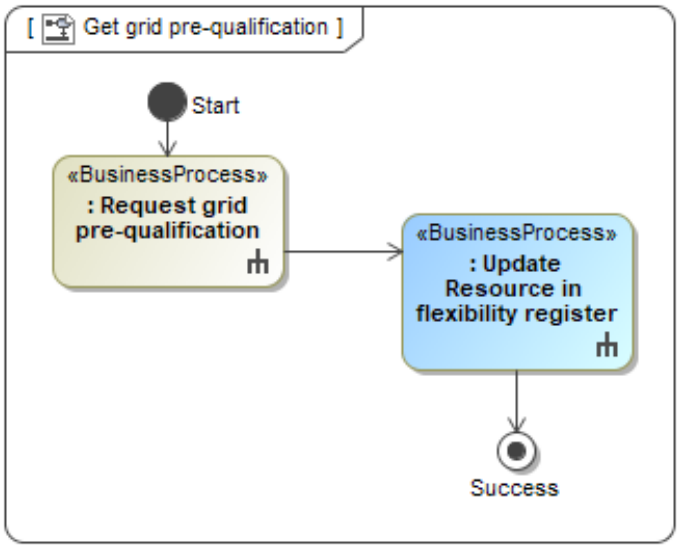

Figure 17 Business Process UseCase: Get grid pre-qualification

2.4.4.3 Request grid pre-qualification (Business Process UseCase)

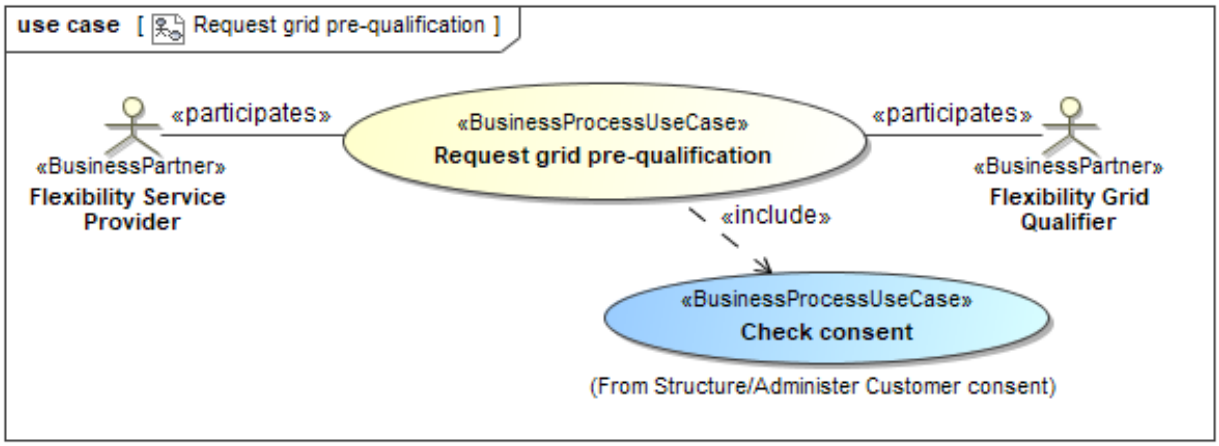

Figure 18 Business Process UseCase: Request grid pre-qualification

2.4.4.3.1 Description

UseCase description: **Request grid pre-qualification**	
definition	In this process the Flexibility Service Provider requests an individual (initial) grid pre-qualification for a Resource or a pool of Resources by the Flexibility Grid Qualifier, for delivery of certain flexibility service(s) to the corresponding System Operator (DSO or TSO). The pre-qualification includes a verification if the Resource or pool of Resources can violate the constraints in the grid. The UseCase includes sending of structural and/or technical information from the Flexibility Service Provider to the relevant System Operator.
beginsWhen	When the Flexibility Service Provider decides to apply for grid pre-qualification[10] to offer relevant flexibility service(s) through the grid, or an existing Flexibility Service Provider's grid pre-qualification should be renewed.
preCondition	The Resource or pool of Resources is prepared for flex services. The Flexibility Grid Qualifier is informed of all constraints in the grid(s) of the relevant System Operator(s). The Flexibility Service Provider has got a consent from the Customer linked to the Resource.
endsWhen	When the grid pre-qualification for the relevant Resource(s) or with the pool of Resources, is confirmed to the Flexibility Service Provider by the Flexibility Grid Qualifier.

[10] Dependent on national rules, the grid pre-prequalification can be per service (product).

postCondition	The Flexibility Service Provider has got grid pre-qualification for the Resource(s) or for the pool of Resources for the desired flexibility service(s). The pre-qualification may be granted with limitations.
exceptions	The Resource does not pass pre-qualification and the Flexibility Service Provider gets a rejection. A DSO or TSO may temporally limit or exclude the delivery of a given service from the Resource in this part of its Grid, despite having passed pre-qualification. This is an emergency measure, hence not further elaborated in this BRS[11].
actions	See 2.4.4.3.2.

[11] In the operational phase the checking has to be done dynamically.

2.4.4.3.2 Business Process

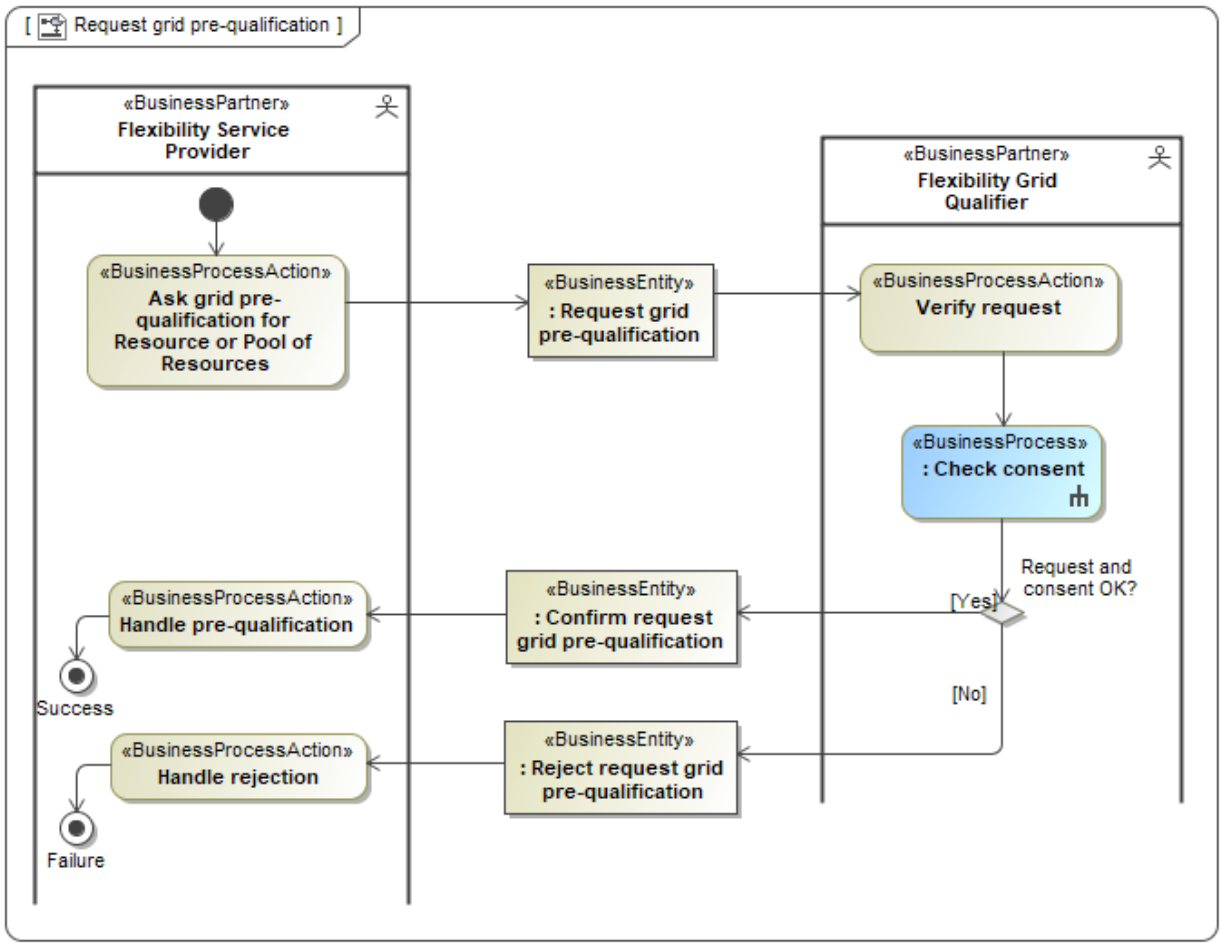

Figure 19 Business Process UseCase: Request grid pre-qualification

The data content of the three «Business entity» (Square boxes between the swim lanes) are found at:

a) 4.1 Request grid pre-qualification (Class Diagram).
b) 4.2 Confirm request grid pre-qualification (Class Diagram).
c) 4.3 Reject request grid pre-qualification.

2.4.4.3.3 Check Consent

Before the Flexibility Grid Qualifier can give a new grid pre-qualification for a Resource in the grid, the Flexibility Grid Qualifier must check the Flexibility Service Provider's consent from the Customer. The "Check Consent" process is documented in the ebIX® BRS for administration of consent, see [5].

2.4.4.4 Update Resource in flexibility register (Business Process UseCase)

When a Resource or a pool of Resources is grid pre-qualified, the Flexibility Grid Qualifier requests update of the flexibility register, which includes notification by the Flexibility Register Administrator of the grid pre-qualification to Entitled Roles. This is documented in the ebIX® BRS for Flexibility register administration, see [5].

2.4.5 Get product pre-qualification (Business Process UseCase)

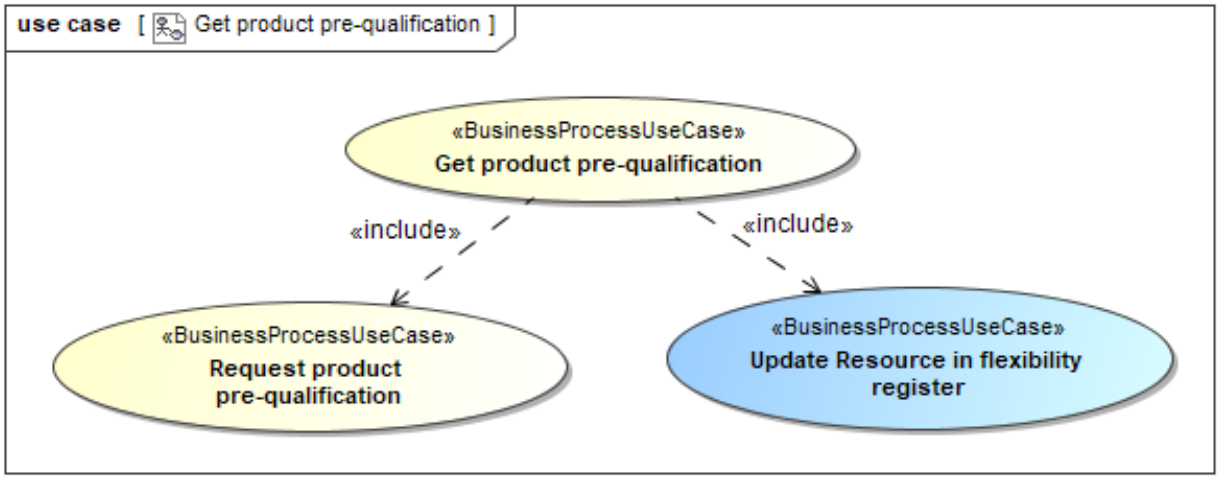

Figure 20 Business Process UseCase: Get product pre-qualification

2.4.5.1 Description

UseCase description: **Get product (market) pre-qualification**	
definition	In this process a single Resource or a pool of Resources gets pre-qualified by the Flexibility Product Qualifier for delivery of certain flexibility product(s).[12] After the product pre-qualification, the Flexibility Product Qualifier request update of the flexibility register of the qualification, which includes notification by the Flexibility Register Administrator of the product pre-qualification to Entitled Roles.
beginsWhen	When the Flexibility Service Provider decides to apply for product pre-qualification (per service) to offer relevant flexibility services or an existing Flexibility Service Provider's product pre-qualification should be renewed.
preCondition	The Resource or pool of Resources have been verified and prepared for the relevant flexibility service(s) to be offered to the market.
endsWhen	When the product pre-qualification for the Resource or pool of Resources has been notified to Entitled Parties.
postCondition	The Flexibility Service Provider has got pre-qualification for the Resource or the pool of Resources from the Flexibility Product Qualifier for the desired flexibility service(s), maybe with limitations, and the Entitled Parties have been informed.

[12] "ASM" report (TSO–DSO Report: An integrated approach to active system management, chapter 6.2): The pre-qualification for a product, in this report, is defined as checking whether the unit can (technically) deliver the product it wants to sell/deliver.

exceptions	The Resource does not pass product pre-qualification and the process is ended.
actions	See 2.4.5.2.

2.4.5.2 Business Process

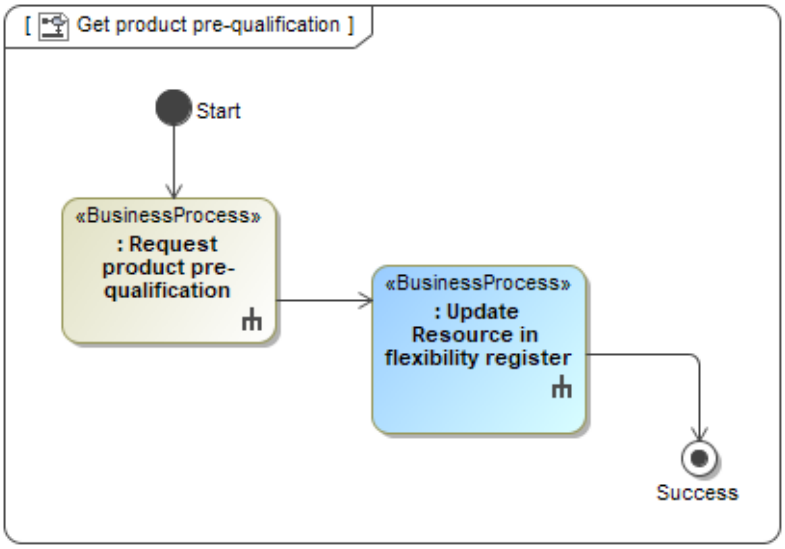

Figure 21 Business Process UseCase: Get product pre-qualification

2.4.5.3 Request product pre-qualification (Business Process UseCase)

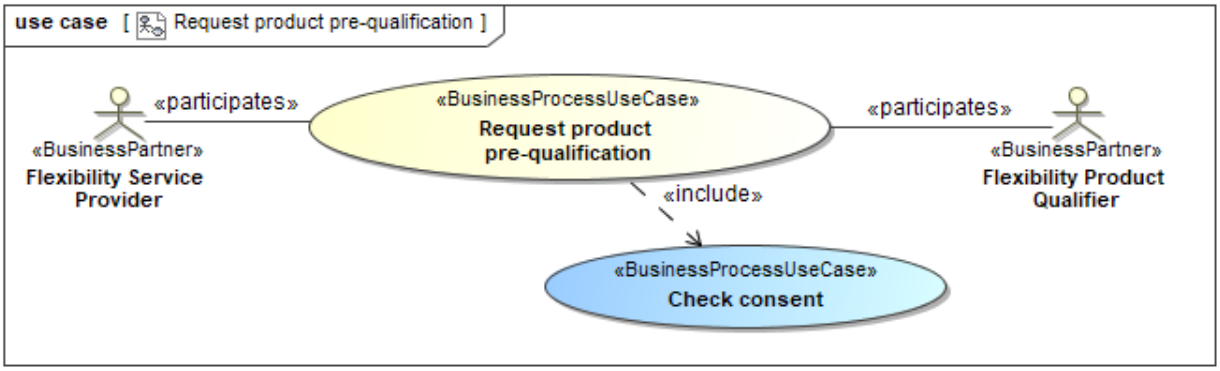

Figure 2 Business Process UseCase: Request product pre-qualification

2.4.5.3.1 Description

UseCase description: **Request product pre-qualification**	
definition	In this process the Flexibility Service Provider requests pre-qualification for an individual product to be delivered by a Resource or a pool of Resources at the Flexibility Product Qualifier.
beginsWhen	When the Flexibility Service Provider decides to apply for product pre-qualification (per service) to offer relevant flexibility services or an existing Flexibility Service Provider's product pre-qualification should be renewed.
preCondition	The Resource(s) have been verified and prepared for the relevant flexibility service(s) to be offered to the market. The Flexibility Service Provider has got a consent from the Customer linked to the Resource.
endsWhen	When the product pre-qualification of the relevant Resource or of the pool of Resources, is confirmed by the Flexibility Product Qualifier to the Flexibility Service Provider.
postCondition	The Flexibility Service Provider has got product pre-qualification for the Resource or for the pool of Resources for the desired flexibility service(s).
exceptions	The Resource does not pass product pre-qualification and the process is ended.
actions	See 2.4.5.3.2

2.4.5.3.2 Business Process

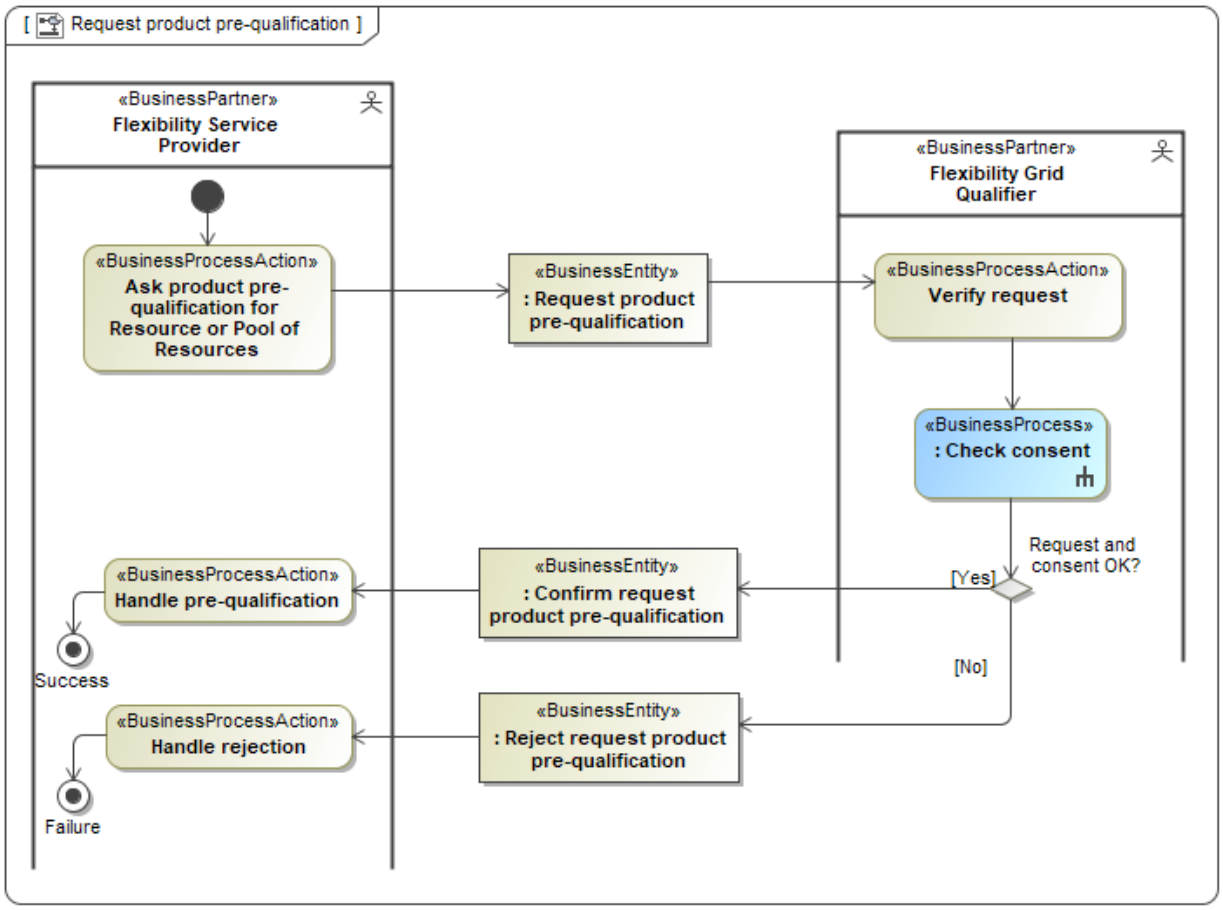

Figure 22 Business Process UseCase: Request product pre-qualification

The data content of the three «Business entity» (Square boxes between the swim lanes) are found at:

a) 4.4 Request product pre-qualification (Class Diagram).
b) 4.5 Confirm request product pre-qualification (Class Diagram).
c) 4.6 Reject request product pre-qualification.

2.4.5.3.3 Check Consent

Before the Flexibility Product Qualifier can verify the data in order to give a new product pre-qualification for a Resource, the Flexibility Product Qualifier must check the Flexibility Service Provider's consent from the Customer. The "Check Consent" process is documented in the ebIX® BRS for administration of consent, see [5].

2.4.5.4 Update Resource in flexibility register (Business Process UseCase)

When a Resource or a pool of resources are product pre-qualified, the Flexibility Product Qualifier request update of the flexibility register, which includes notification by the Flexibility Register Administrator of the product pre-qualification to Entitled Roles. This is documented in the ebIX® BRS for Flexibility register administration, see [5].

3 Business Partner View: Prepare and aggregate Resources for flexibility services

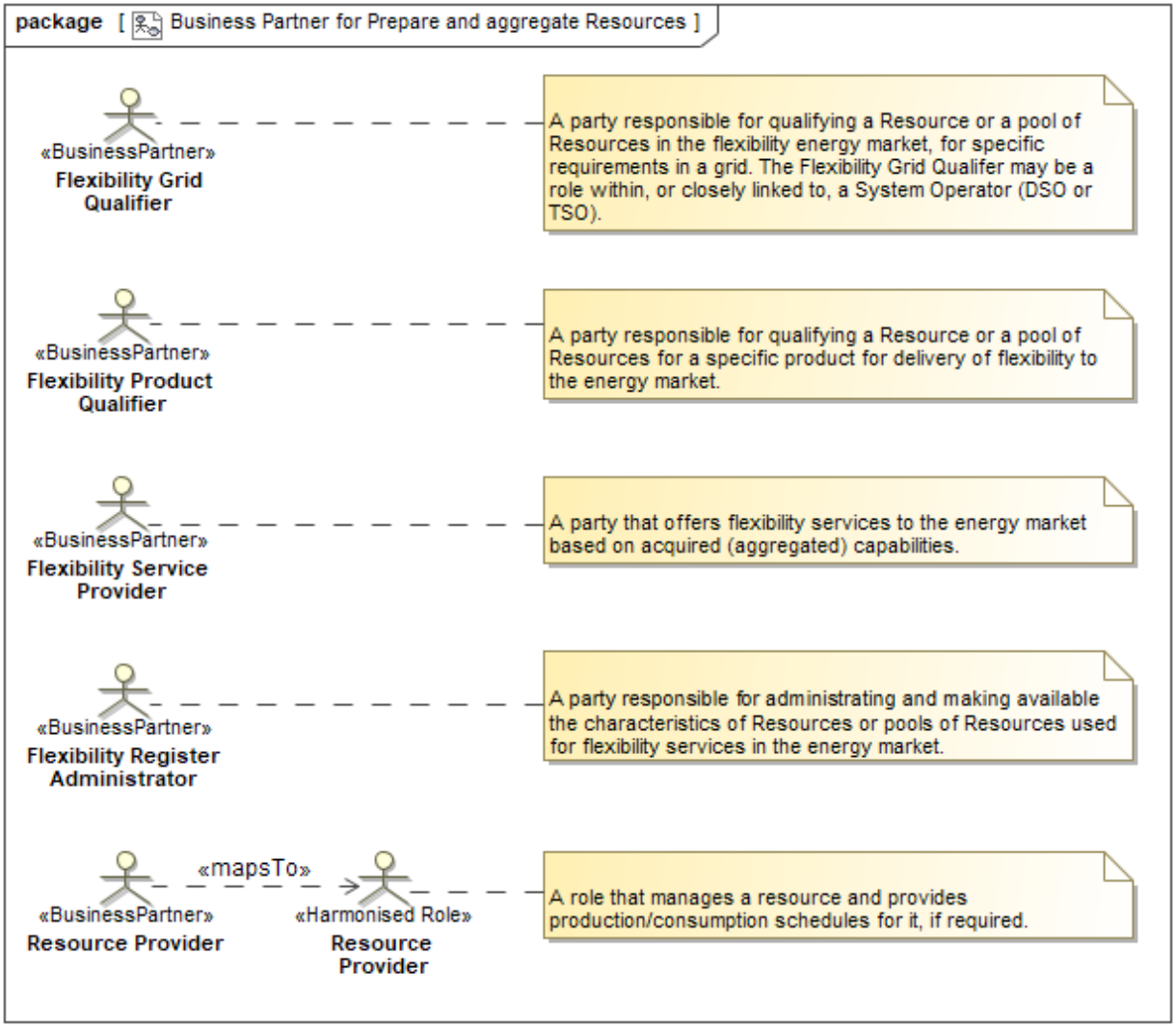

Figure 23 Business Partner View: Prepare and aggregate Resources for flexibility services[13]

[13] **Note:** The Flexibility Service Provider may be mapped to yet undefined roles.

4 Business Entity View

A general introduction to the Business Entity View can be found in the Introduction to ebIX® Business Requirements and Business Information Models [1].

4.1 Request grid pre-qualification (Class Diagram)

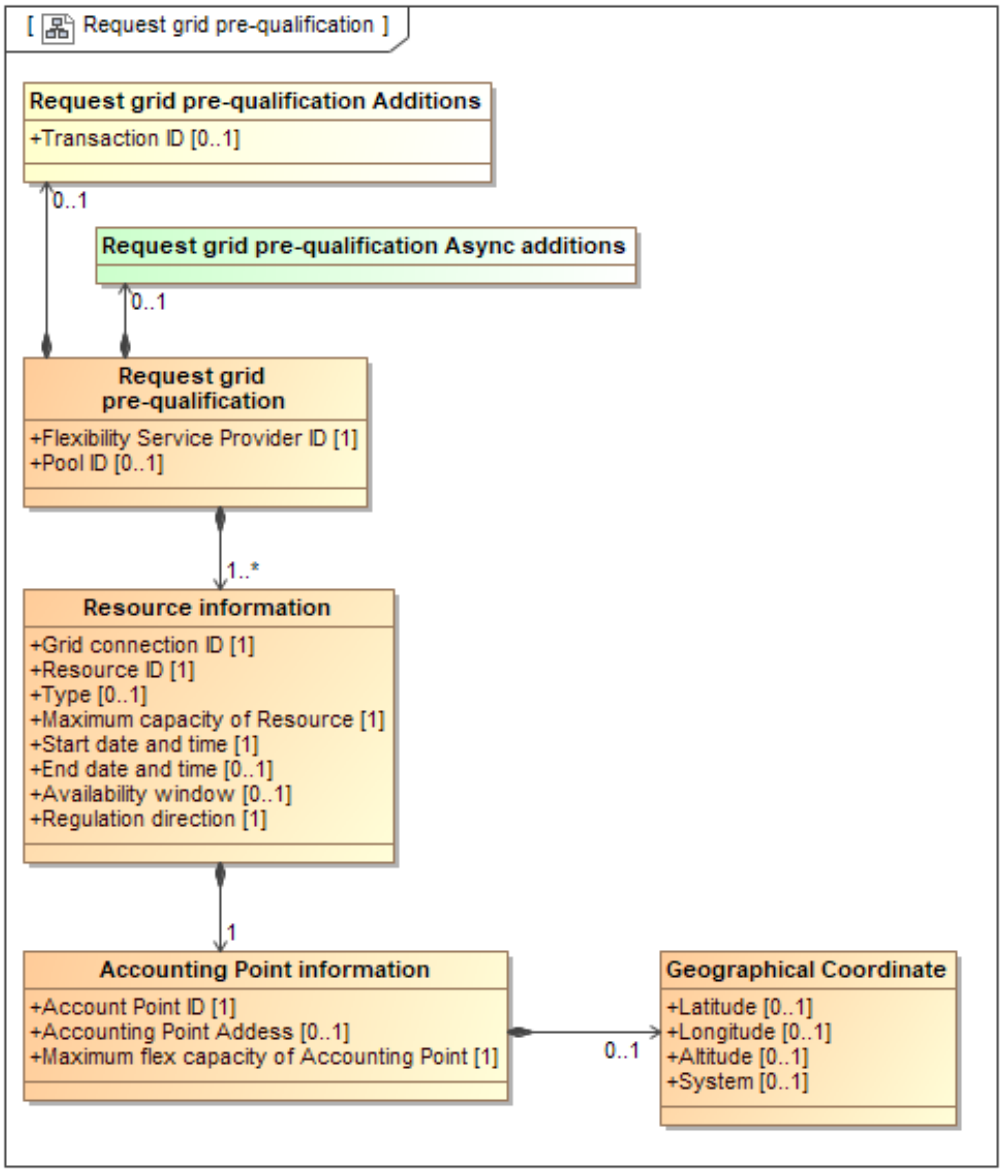

Figure 3 Class diagram: Request grid pre-qualification

4.1.1 Element definitions: Grid qualification information

Class/attribute	Sector[14]	Description
Request grid pre-qualification		The information set to be sent by a Flexibility Service Provider to the Flexibility Grid Qualifier when getting grid qualification for a Resource or a pool of Resources.
Flexibility Service Provider ID		The unique identification of the Flexibility Service Provider requesting grid pre-qualification.
Pool ID		The unique identification of the pool of Resources that is under grid qualification.

[14] It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

Class/attribute	Sector[14]	Description
Resource information		Grid qualification information related to the relevant Resource in the pool of Resources.
Grid connection ID		The unique identification of the grid connection the Resource and/or the Accounting Point is/are connected to.
Resource ID		The unique identification of the Resource, which is under grid qualification.
Type		The type of energy production/consumption of the Resource, such as solar, wind, hydro, thermal or battery.
Maximum capacity of Resource		The maximum capacity that can be used for the intended flexibility purposes from this Resource.
Start Date		The date from which this Resource is ready for delivery of flexibility services and needs grid qualification.
End Date		The date from when this Resource will no longer deliver flexibility services that need grid qualification.
Availability window		An indication of the time window(s) when this Resource is available for activation.
Regulation direction		The regulation direction possible for this Resource at the Accounting Point: up, down or both.
Accounting Point information		Grid qualification information related to the Accounting Point the Resource is linked to.
Accounting Point ID		The unique identification of the Accounting Point the Resource is linked to.
Accounting Point address		The physical address of this Accounting Point.
Maximum flex capacity of Accounting Point		The maximum capacity that can be used for flexibility purposes for this Accounting Point.
Geographical Coordinate		The set of geographical coordinates of this Accounting Point.
Latitude		The measure of the latitude as an angular distance north or south from the Equator meridian to the meridian of this Accounting Point for this geographical coordinate. (Reference ISO 6709).
Longitude		The measure of the longitude as an angular distance east or west from the Greenwich meridian to the meridian of this Accounting Point (Reference ISO 6709).
Altitude[15]	Gas	The measure of the altitude that reflects the vertical elevation of this Accounting Point above a surface for this geographical coordinate (Reference ISO 6709).

[15] The altitude of the meter may be used in the gas sector for correction purposes.

Class/attribute	Sector[14]	Description
System		The unique identifier of the reference system used for measuring this geographical coordinate.
Request grid pre-qualification Additions		Additional information needed for technical reasons or to be agreed on a national level.
Transaction ID		The unique identification of this set of information given by the Flexibility Service Provider.
Request grid pre-qualification Async additions		Additional information needed when using asynchronous communication.

4.2 Confirm request grid pre-qualification (Class Diagram)

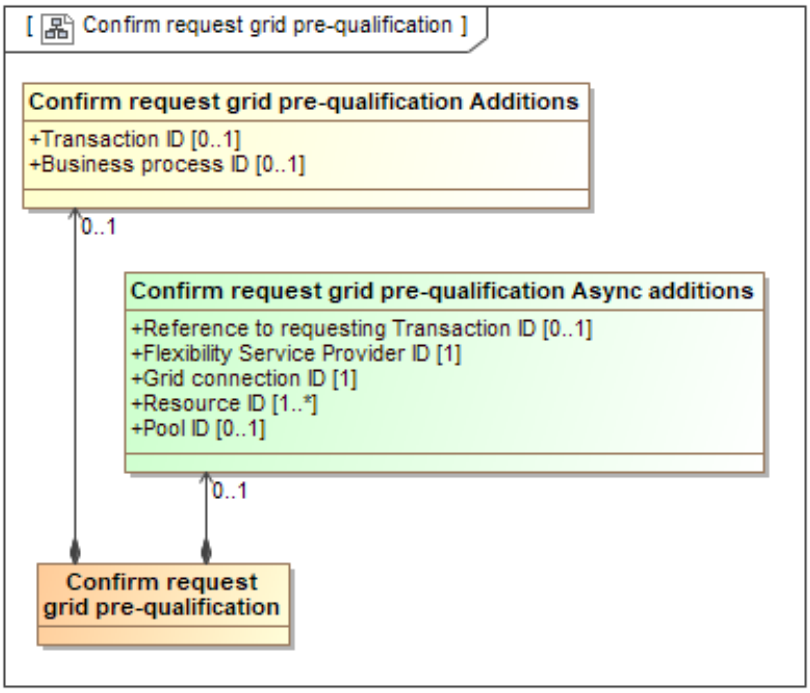

Figure 4 Class diagram: Confirm request grid pre-qualification

4.2.1 Element definitions: Confirm request grid pre-qualification

Class/attribute	Sector [16]	Description
Confirm request grid pre-qualification		The information set to be sent by the Flexibility Grid Qualifier to the Flexibility Service Provider to confirm his Request for grid pre-qualification for a Resource or pool of Resources.
Confirm request grid pre-qualification Additions		Additional information needed for technical reasons or to be agreed on a national level.
Transaction ID		The unique identification of this set of information.
Business process ID		The unique identification of the instance of the process that this transaction is a part of.
Confirm request grid pre-qualification Async Additions		Additional information needed when using asynchronous communication.
Reference to requesting Transaction ID		The Transaction ID from the request.
Flexibility Service Provider ID		The unique identification of the Flexibility Service Provider requesting grid pre-qualification.

[16] It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

Class/attribute	Sector [16]	Description
Grid connection ID		The unique identification of the grid connection the Resource and/or the Accounting Point is/are connected to.
Resource ID		The unique identification of the Resource for which the grid pre-qualification is confirmed.
Pool ID		The unique identification of the pool of Resources for which the grid pre-qualification is confirmed.

4.3 Reject request grid pre-qualification

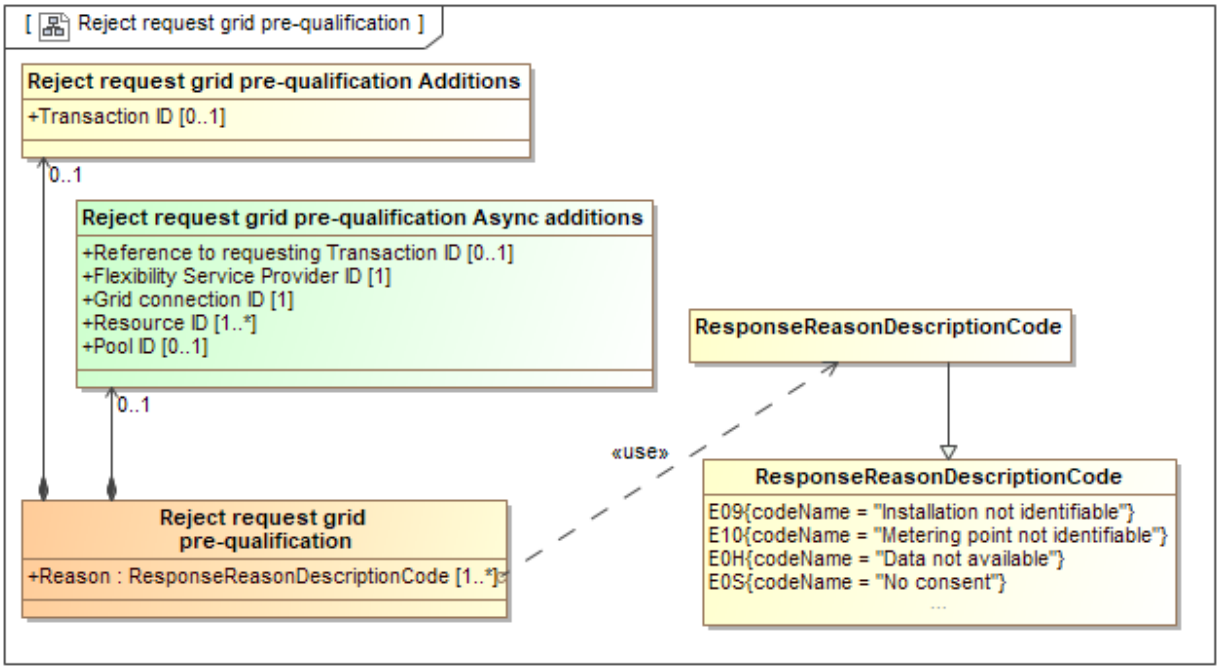

Figure 5 Class diagram: Reject request grid pre-qualification

4.3.1 Element definitions: Reject request grid pre-qualification

Class/attribute	Sector[17]	Description
Reject request grid pre-qualification		The information set to be sent by the Flexibility Grid Qualifier to the requesting Flexibility Service Provider to reject this request for grid pre-qualification for a Resource or pool of Resources.
Reason		A code specifying (one of) the reason(s) for the rejection of the request for grid pre-qualification.
Reject request grid pre-qualification Additions		Additional information needed for technical reasons or to be agreed on a national level.
Transaction ID		The unique identification of this set of information given by the Flexibility Grid Qualifier.
Reject request grid pre-qualification Async Additions		Additional information needed when using asynchronous communication.
Reference to requesting Transaction ID		The Transaction ID from the request given by the requestor.
Flexibility Service Provider ID		The unique identification of the Flexibility Service Provider that requested grid pre-qualification that is rejected.

[17] It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

Class/attribute	Sector[17]	Description
Grid connection ID		The unique identification of the grid connection the Resource and/or the Accounting Point is/are connected to.
Resource ID		The unique identification of the Resource the grid pre-qualification is rejected for.
Pool ID		The unique identification of the pool of Resources the grid pre-qualification is rejected for.

4.4 Request product pre-qualification (Class Diagram)

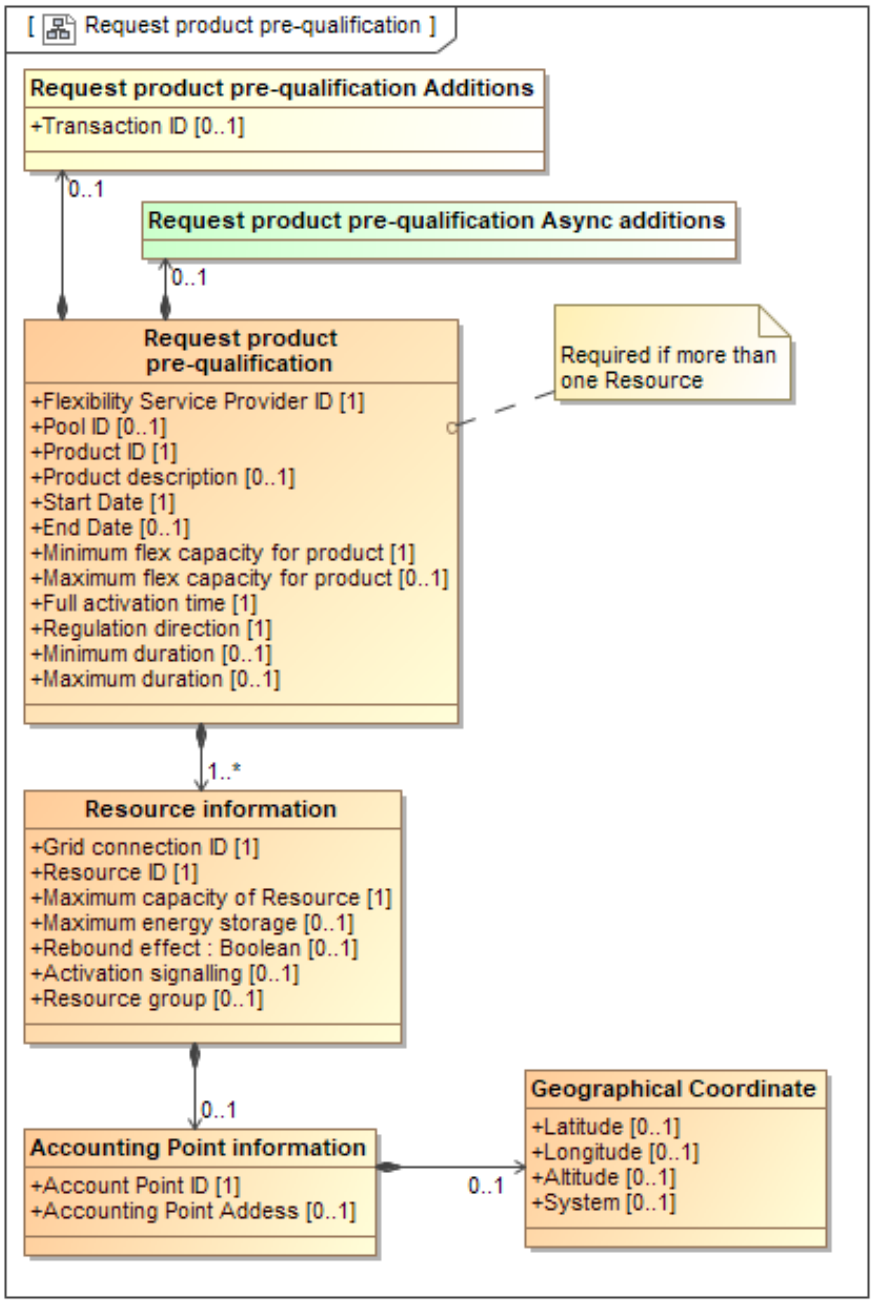

Figure 6 Class diagram: Request product pre-qualification

4.4.1 Element definitions: Product qualification information

Class/attribute	Sector[18]	Description
Request product pre-qualification		The information set to be sent by a Flexibility Service Provider to the Flexibility Product Qualifier when requesting product qualification for a Resource or a pool of Resources.
Flexibility Service Provider ID		The unique identification of the Flexibility Service Provider requesting product qualification.
Pool ID		The unique identification of the pool of Resources product qualification is requested for.
Product ID		The unique identification of the product to be delivered from Resource or the pool of Resources product qualification is requested for.
Product description		A textual description of the product.
Start Date		The date from which this pool of Resources or Resource wants to act in the market and needs Product qualification
End Date		The date from when the pool of Resources or the Resource will no longer act in the market and does not need this Product qualification anymore.
Minimum flex capacity for product		The minimum flexibility capacity that can be activated for this flexibility product from this Resource or pool of Resources.
Maximum flex capacity for product		The maximum capacity that can be activated for this flexibility product from this Resource or pool of Resources.
Full activation time		The time period between the activation request and the corresponding full activation of this product from the pool of Resources or the Resource.
Regulation direction		The regulation direction possible for this Resource or pool of Resources: up, down or both.
Minimum duration		The minimum time for which this Resource or pool of Resources can be activated for this product.
Maximum duration		The maximum time for which this Resource or pool of Resources can be activated for this product.

[18] It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

Class/attribute	Sector[18]	Description
Resource information[19]		Product qualification information related to the relevant Resource.
Grid connection ID		The unique identification of the grid connection the Resource and/or the Accounting Point is/are connected to.
Resource ID		The unique identification of the Resource for which product qualification for the indicated product is requested for.
Maximum capacity of Resource		The maximum capacity that can be used for the flexibility product for this Resource (e.g. kW or MW).
Maximum energy storage		The maximum of energy storage capacity (in kWh or MWh) of the Resource available for this flexibility product.
Rebound effect		Indicates if an activation of the Resource impacts future consumption and/or production from the Resource.
Activation signalling		Indicates if the Resource can respond on direct activation signals (from the Buyer of Flexibility) for this product, such as "continuous", "stepwise" or "only on/off".
Resource group		Indicates the group of Resources within this pool of Resources this Resource belongs to. The Resource group is typically used to group different technologies within a pool of Resources.
Accounting Point information		Product qualification information related to the Accounting Point the Resource is linked to.
Accounting Point ID		The unique identification of the Accounting Point the Resource is linked to.
Accounting Point address		The physical address of this Accounting Point.
Geographical Coordinate		The set of geographical coordinates of this Accounting Point.
Latitude		The measure of the latitude as an angular distance north or south from the Equator meridian to the meridian of this Accounting Point for this geographical coordinate. (Reference ISO 6709).
Longitude		The measure of the longitude as an angular distance east or west from the Greenwich meridian to the meridian of this Accounting Point (Reference ISO 6709).

[19] For emergency reasons, some countries also exchange information like “Under-frequency load shedding” and “Grid limitations”, however this not seen as part of this UseCase.

Class/attribute	Sector[18]	Description
Altitude[20]	Gas	The measure of the altitude that reflects the vertical elevation of this Accounting Point above a surface for this geographical coordinate (Reference ISO 6709).
System		The unique identifier of the reference system used for measuring this geographical coordinate.
Request product pre-qualification Additions		Additional information needed for technical reasons or to be agreed on a national level.
Transaction ID		The unique identification of this set of information given by the Flexibility Service Provider.
Request product pre-qualification Async additions		Additional information needed when using asynchronous communication.

[20] The altitude of the meter may be used in the gas sector for correction purposes.

4.5 Confirm request product pre-qualification (Class Diagram)

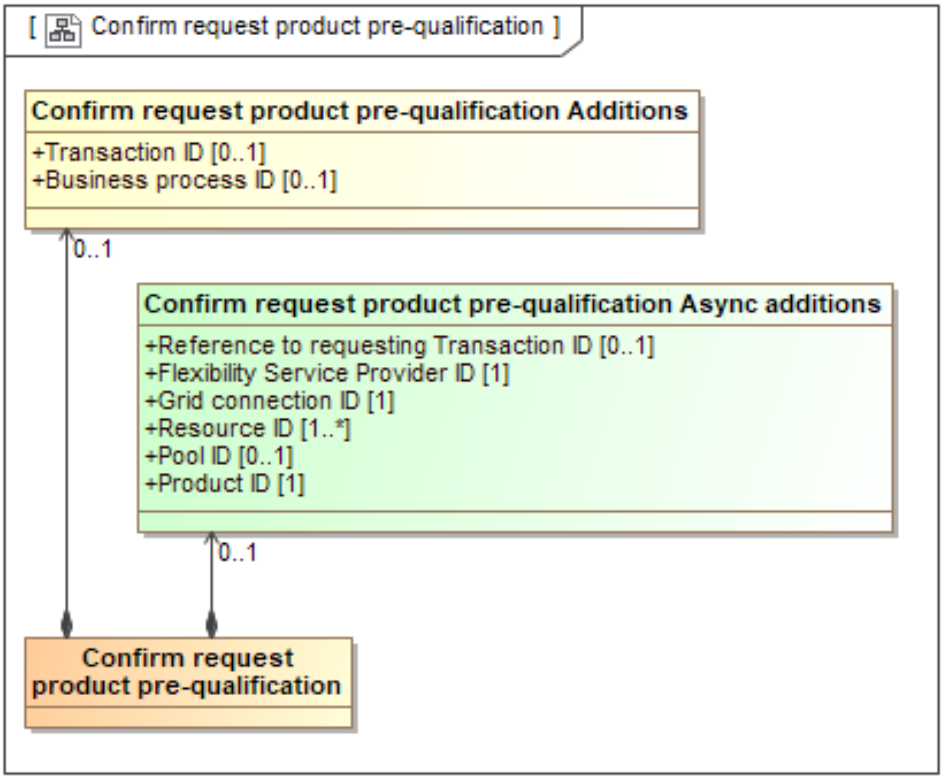

Figure 7 Class diagram: Confirm request product pre-qualification

4.5.1 Element definitions: Confirm request grid pre-qualification

Class/attribute	Sector[21]	Description
Confirm request product pre-qualification		The information set to be sent by the Flexibility Product Qualifier to the Flexibility Service Provider to confirm product pre-qualification for a Resource or pool of Resources.
Confirm request product pre-qualification Additions		Additional information needed for technical reasons or to be agreed on a national level.
Transaction ID		The unique identification of this set of information.
Business process ID		he unique identification of the instance of the process that this transaction is a part of.
Confirm request product pre-qualification Async Additions		Additional information needed when using asynchronous communication.
Reference to requesting Transaction ID		The Transaction ID from the corresponding request.

[21] It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

Class/attribute	Sector[21]	Description
Flexibility Service Provider ID		The unique identification of the Flexibility Service Provider the Resource or pool of Resources is product qualified for.
Grid connection ID		The unique identification of the grid connection the Resource and/or the Accounting Point is/are connected to.
Resource ID		The unique identification of the Resource that is qualified for the product.
Pool ID		The unique identification of the pool of Resources that has been product qualified.
Product ID		The unique identification of the product the Resource or pool of Resources is qualified for

4.6 Reject request product pre-qualification

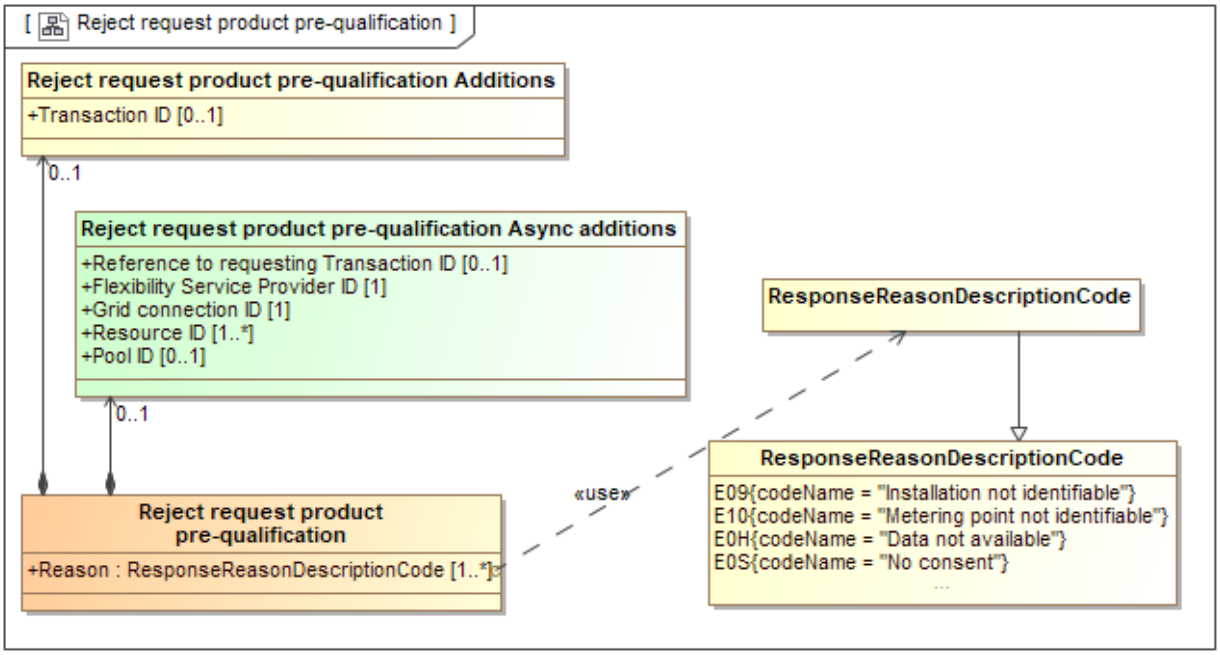

Figure 8 Class diagram: Reject request product pre-qualification

4.6.1 Element definitions: Reject request product pre-qualification

Class/attribute	Sector[22]	Description
Reject request product pre-qualification		The information set to be sent by the Flexibility Product Qualifier to the requesting Flexibility Service Provider to reject his request for product qualification for a Resource or pool of Resources.
Reason		A code specifying (one of) the reason(s) for the rejection of the request for product qualification.
Reject request product pre-qualification Additions		Additional information needed for technical reasons or to be agreed on a national level.
Transaction ID		The unique identification of this set of information given by the Flexibility Grid Qualifier.
Reject request product pre-qualification Async Additions		Additional information needed when using asynchronous communication.
Reference to requesting Transaction ID		The Transaction ID from the request given by the requestor.
Flexibility Service Provider ID		The unique identification of the Flexibility Service Provider that requested the product qualification that is rejected.

[22] It is assumed that Metering Points are uniquely dedicated to either electricity or to gas.

Class/attribute	Sector[22]	Description
Grid connection ID		The unique identification of the grid connection the Resource and/or the Accounting Point is/are connected to.
Resource ID		The unique identification of the Resource for which product qualification is rejected.
Pool ID		The unique identification of the pool of Resources for which the requested product -qualification is rejected

Appendix A. Header and Context information for the class diagrams

This appendix shows the header and context information to be used when transferring documents through an electronic network. The information is on a technical level and meant for those who implements electronic documents in EDI-software.

A.1. Header and Context Information attributes definitions

Class/attribute	Sector[23]	Description
Header and Context Information		The set of information specifying the information to be added to this payload to enable the exchange as a document.
Document Type		A code representing the document type used for the exchange of this set of information.
Business Reason		A code representing the business reason for the exchange of this set of information.
Ancillary Business Process Role		A code representing the market role taking part in this exchange together with the Responsible Role, responsible for the process/this exchange.

A.2. Request grid pre-qualification

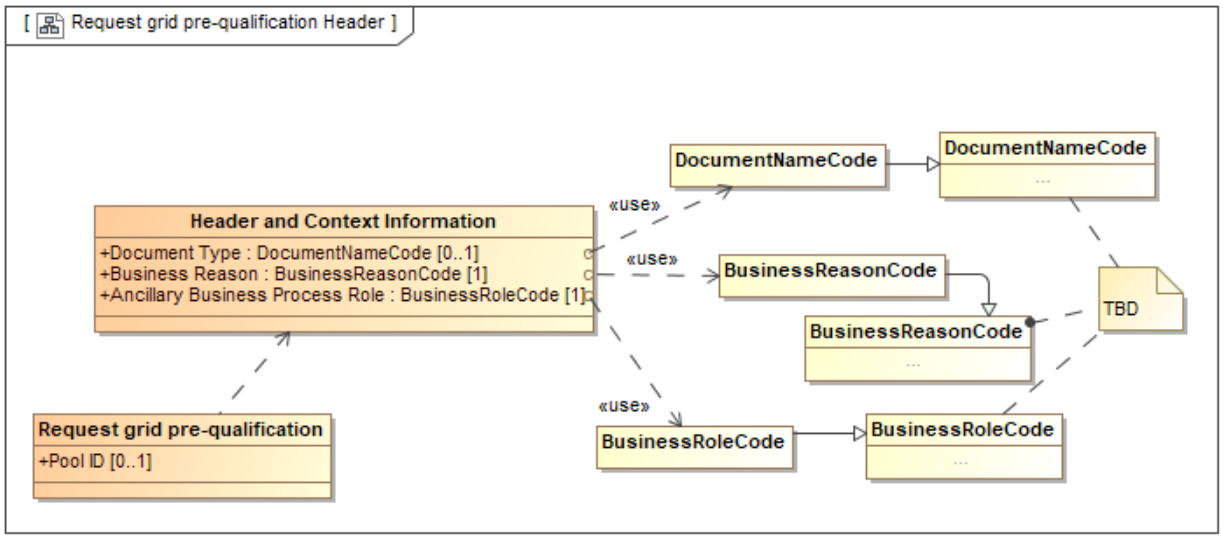

Figure 9 Class diagram: Header and Context information: Request grid pre-qualification

[23] It is assumed that Accounting Points are uniquely dedicated to either electricity or to gas.

A.3. Confirm request grid pre-qualification

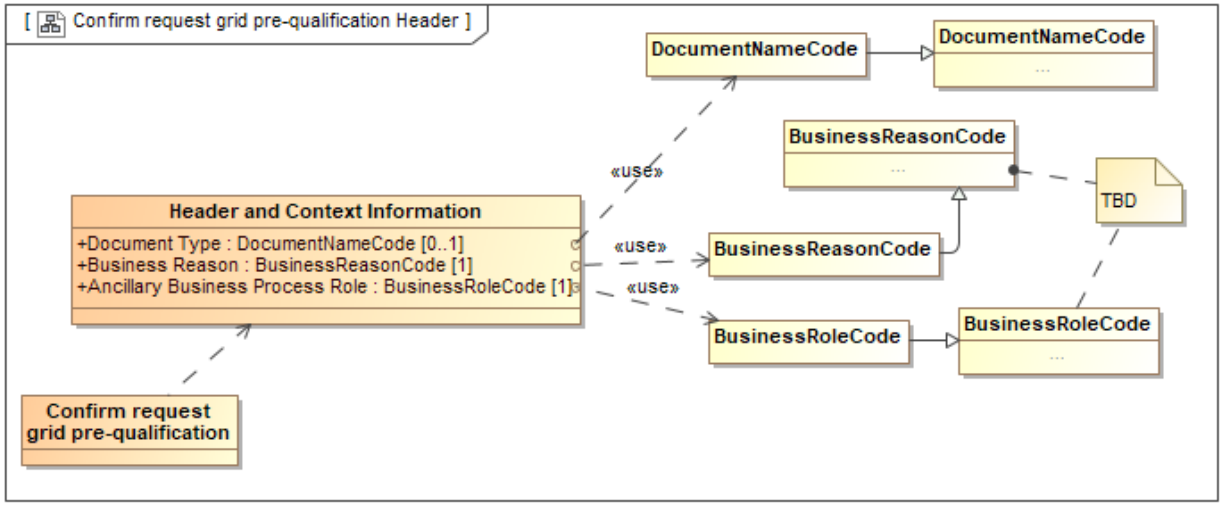

Figure 10 Class diagram: Header and Context information: Confirm request grid pre-qualification

A.4. Reject request grid pre-qualification

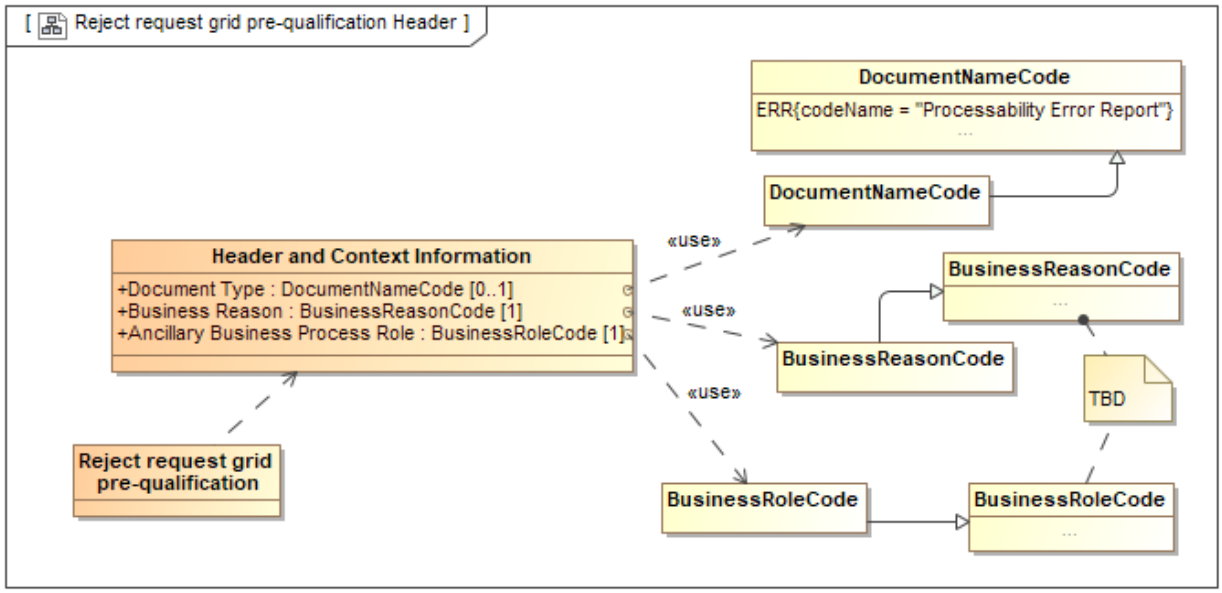

Figure 11 Class diagram: Header and Context information: Reject request grid pre-qualification

A.5. Request product pre-qualification

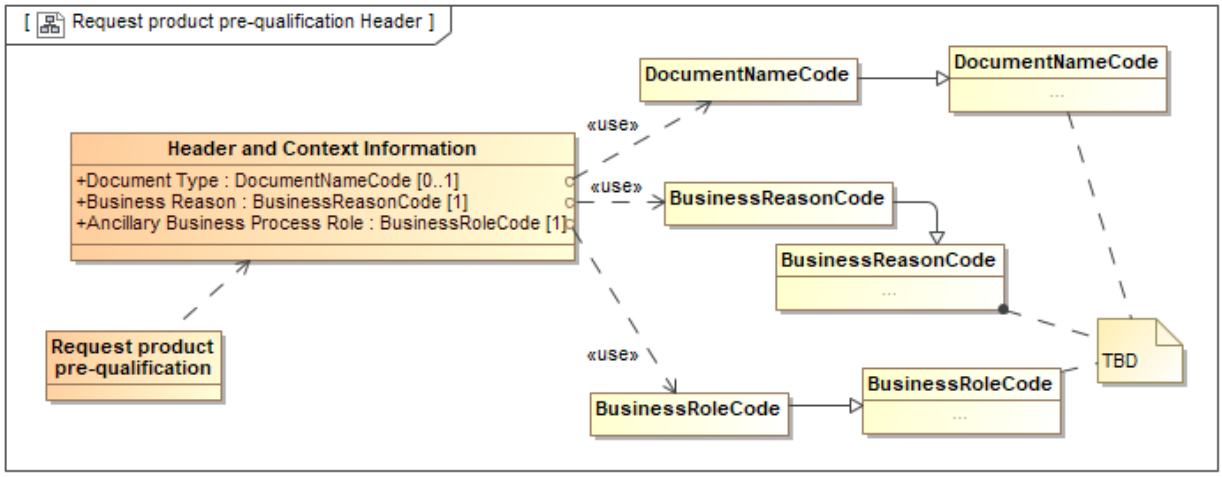

Figure 12 Class diagram: Header and Context information: Request product pre-qualification

A.6. Confirm request product pre-qualification

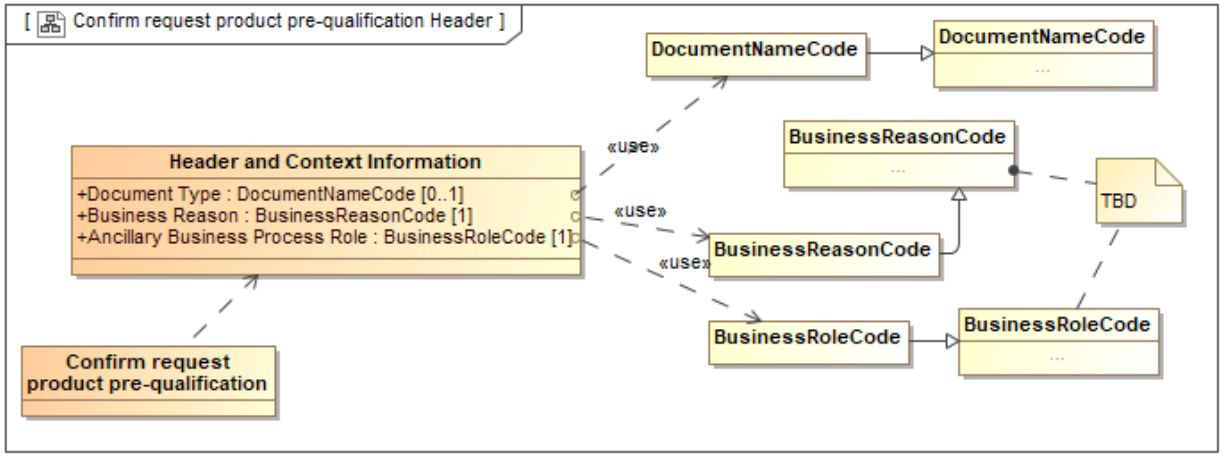

Figure 13 Class diagram: Header and Context information: Confirm request product pre-qualification

A.7. Reject request product pre-qualification

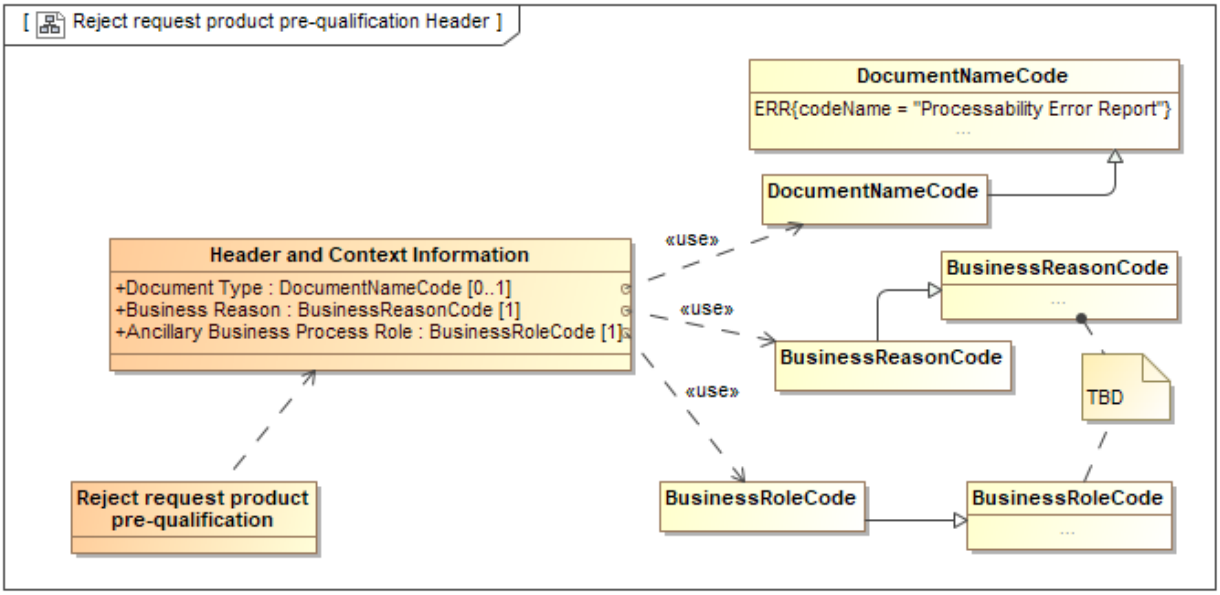

Figure 14 Class diagram: Header and Context information: Reject request product pre-qualification

Appendix B. Overview of UseCases elaborated in this BRS for Prepare and aggregate Resources for flexibility services

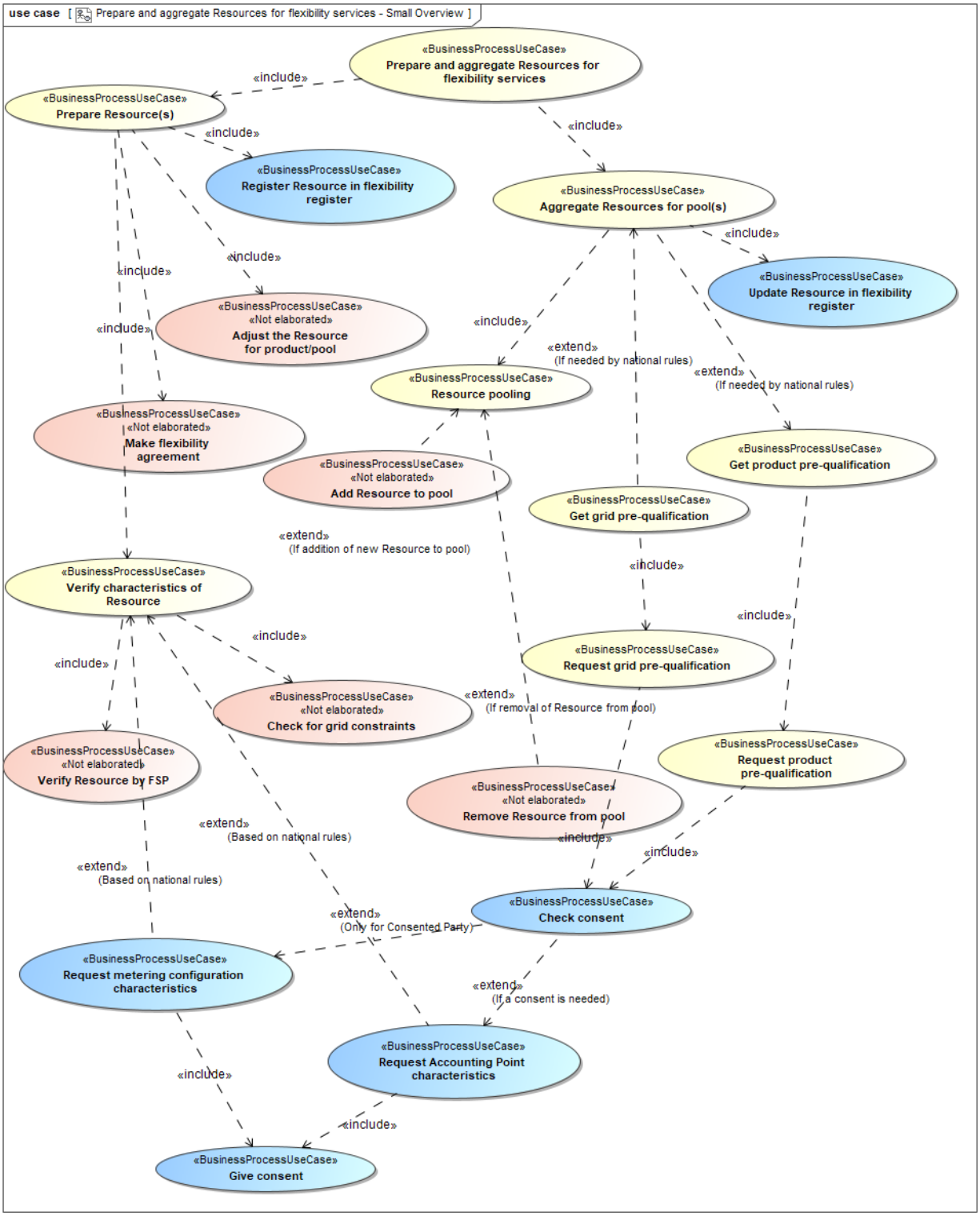

Figure 15: Overview of UseCases elaborated in this BRS for Prepare and aggregate Resources for flexibility services