



# **Green eMotion**

## **Development of a European Framework for Electro-mobility**

### **Deliverable 3.5**

**Core services and transactions design specification  
Release 1**

#### **Prepared by:**

Better Place, BMW, Bosch, Daimler, Endesa, Enel, SAP, Siemens  
Under the lead of IBM

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## Document Information

### Authors

	Name	Company
Key author	Jan Laczay	IBM
Key author	Chapter 4 – Karsten Mirtschin, Torben Fog	Siemens, Better Place
Key author	Chapter 5 – Tom Kienes, Bijan Rahnema	SAP
Key author	Chapter 6 – Giovanni Coppola	Enel
Key author	Chapter 7 – Norbert Reschauer, Ruth Schilling	IBM
Additional author	Thomas Stiffel	Bosch
Additional author	Luca di Stefano, Gianluca Troiano, Teresa Casacchia	Enel
Additional author	Volker Fricke, Andreas Dannhauer	IBM
Additional author	Thomas Gereke, Robert Wiedemann	Siemens
Additional author	Stephan Cater	RWE

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## List of Abbreviations

B2B	<b>Business to Business</b>
B2C	<b>Business to Consumer (aka: Business to Customer)</b>
BC	<b>Business Component</b>
BIN	<b>Battery Identification Number</b>
BO	<b>Business Object</b>
BSS	<b>Battery Switch Station</b>
CDR	<b>Charge Detail Record</b>
CEE	<b>Commission on the Rules for the Approval of the Electrical Equipment</b>
CHAdemo	<b>CHARGE de MOve</b>
CLM	<b>Charging Location Management</b>
CM	<b>Congestion Management</b>
CP	<b>Charging Point</b>
DC	<b>Direct Current</b>
DIN	<b>Deutsches Institut für Normung</b>
DM	<b>Domain Model</b>
DSO	<b>Distribution System Operator</b>
ENUM	<b>Enumeration</b>
EV	<b>Electric Vehicle</b>
EVCOID	<b>Electric Vehicle Contract ID</b>
EVSE	<b>Electric Vehicle Supply Equipment</b>
EVSEID	<b>Electric Vehicle Supply Equipment ID (Charge Point / Unit)</b>
EVSP	<b>Electric Vehicle Service Provider</b>
FD	<b>Functional Decision</b>
GeM	<b>Green eMotion</b>
HTTP	<b>Hypertext Transfer Protocol</b>
HTTPS	<b>Hypertext Transfer Protocol Secure</b>
IANA	<b>Internet Assigned Numbers Authority</b>
IEC	<b>International Electrotechnical Commission</b>
IETF	<b>Internet Engineering Task Force</b>
ISO	<b>International Organisation for Standardisation</b>
IT	<b>Information technology</b>
kWh	<b>Kilowatt hour</b>
LA	<b>Load area</b>
LMDR	<b>Load Management Detail Record</b>
LV	<b>Low voltage</b>
MV	<b>Medium voltage</b>
OEM	<b>Original Equipment Manufacturer</b>
POD	<b>Point of delivery</b>
POI	<b>Point of Interest</b>
RFC	<b>Request for Comments</b>
RRC	<b>Rational Requirements Composer</b>
SAE	<b>Society of Automotive Engineers</b>
SDR	<b>Service Detail Record</b>
SKT	<b>Sketch</b>
SOA	<b>Service Oriented Architecture</b>
SOAP	<b>Simple Object Access Protocol</b>
SRV	<b>Service Interface</b>
UC	<b>Use Case</b>

UML	<b>Unified Modeling Language</b>
URI	<b>Uniform Resource Identifier</b>
V2G	<b>Vehicle to Grid</b>
VDE	<b>Verein Deutscher Elektrotechniker</b>
VIN	<b>Vehicle Identification Number</b>
WP	<b>Work Package</b>
WSDL	<b>Web Service Definition Language</b>
XML	<b>Extensible Markup Language</b>
XSD	<b>XML Schema Definition</b>

# 1 Executive summary

This deliverable comprises the specification of the key business components, service interfaces and user interfaces for the Green eMotion Marketplace eco-system, which was previously outlined in use cases defined in the requirements documentation (Deliverable 3.3). A subset of the most relevant use cases was identified as a basis for this specification by the partners working on the deliverable 3.3. The identified subset includes only the base functionality that is required for the eco-system to exist and only includes a basic set of functionality on top of that. Also some use cases will only be reflected partly in this specification since functionality that was not crucial for the first release was postponed to the second release. This is done due to the fact that the initial setup of the environment for release 1 is more complex than incrementally adding new functionality to an existing environment.

The use cases, identified as **scope for release 1**, were analyzed in a first step to identify the involved systems (business components) that need to communicate in order to implement a use case. In a second step the service interfaces between these systems have been specified. However, this does not include interfaces to the end-user systems, since these are mostly in place already and will not be standardized as part of WP 3. Therefore this specification only considers service interfaces between the back-end systems of the involved partners on business-to-business (B2B) level.

Primary goal of this deliverable D3.5 is the provision of requirements to the software development of the Green eMotion market place to be demonstrated in WP8. Hence the methodology that was used builds on the “Structured Requirements Management Method” with the use of the IBM Rational Requirements Composer (RRC), that was used for the requirements specification process and extends the previously used meta-model to include “Business Components” and “Service Interfaces” by all Partners in WP3. These will be linked to each other and also to the previously defined use cases in order to offer a seamless traceability from the requirements up to the specification. As mentioned before some use cases will only be specified and later on implemented in part in order to have a realistic scope for release 1. These decisions are documented as “Functional Decision” in this document to offer even greater traceability.

Deliverable D3.5 is a comprehensive export from the RRC tool, which was used as collaborative tool to create this document. It contains 41 use cases that are specified by business components and service interfaces grouped in 4 chapters:

**Charging/Driving services** – described in chapter 4 and led by Betterplace and Siemens

The central Charging services that were identified for release 1 are the “Search for a suitable EVSE” and the “Charging Location Management”. The “Charging Location Management” is especially important since it also is a core component which keeps all charging data and conditions and is therefore involved in many use cases outside the Charging domain.

**Roaming services** – described in chapter 5 and led by SAP

The Roaming services that enable the basic functionality of contractual clearing by the Clearing House as a first step towards the overall goal for an interoperable charging infrastructure are described in this chapter. All required service interfaces for the contractual clearing are present. However, they were intentionally kept simple for the first release. In future releases these service interfaces might be extended to allow for more complex roaming scenarios (e.g. to allow for further services besides charging).

**Energy services** - described in chapter 6 and lead by Enel

The Energy services outlined in this document enable the load and congestion management scenarios between a DSO and an EVSE operator. Additionally services that make available current and historical usage data of EVSEs are specified. These services might be used in several business scenarios that therefore have not been specifically defined yet.

**Core/platform marketplace services** – described in chapter 7 and lead by IBM

The Core Marketplace service interfaces enable the use of the Marketplace to call services that have been contracted on a B2B level between service requesters like EVSPs and service providers such as EVSE Operators. In addition to that the Marketplace is closely linked with the Clearing House for the validation of roaming agreements that will be managed within the Marketplace.

In addition to these service interfaces, the Marketplace offers functionality for the offering and contracting of services through user interfaces.

This deliverable comprises 21 service interfaces, which have been agreed by major e-mobility partners. These service interfaces will enable use cases that are believed to be of high value and will also build the foundation for further services and further innovation in the emerging e-mobility market. This specification is also vital for the implementation of the components that make up the Green eMotion Marketplace ecosystem since it defines the common service interfaces which are required to integrate the systems that will be built by individual partners. The following deliverables (especially demo prototype and system release 1) will therefore build upon this deliverable in the same way that D3.5 builds upon the previous work.

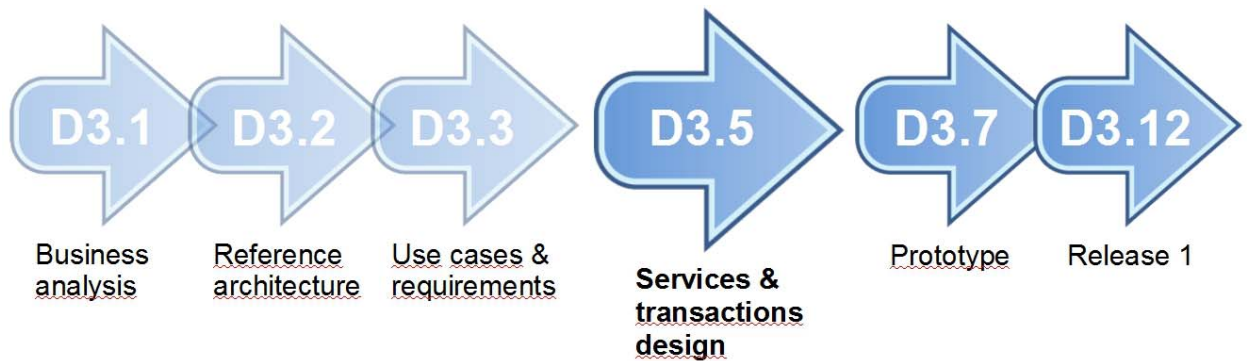


Figure 1 Sequence of deliverables in GeM

*Note: To achieve efficient retrieval of desired content from this comprehensive deliverable please refer to section “How to read this document” at the end of the Introduction chapter.*



## 2 Introduction

This deliverable provides a thorough specification for the first release of the Green eMotion Marketplace eco-system. The basis for this specification was a subset of Use Cases from D3.3 that was selected based on the value it offers for the e-mobility mass market preparation supported by the involved partners and finally for the end-users. Additionally it was critical to identify dependencies between the existing Use Cases to define a scope that is self-contained and can be fully realized and demonstrated in the first release.

The creation of this deliverable uses the same process that was established for the Business Scenario and Use Case definition. This process is enabled by the use of the IBM Rational Requirements Composer Tool as central tool for the collaborative management of requirements and specification. This document is an export of the information maintained in this tool and requires the reader to understand its structure to be able to retrieve desired information efficiently. For detailed information, and for hints on efficient retrieving of content please refer to the section “How to read this document” at the end of this Introduction chapter.

To facilitate the specification process, the same functional domains, which were previously derived from the stakeholders (WP3 partners) expertise areas for D3.3, were used to create working groups. The structure of this document reflects this classification of the specification. A more detailed description of the grouping and hierarchy of the specification is presented in this introductory chapter separately in the section “Division into functional domains”.

The methodology used for the specification builds upon the Structured Requirements Management Method that was already used in the requirements gathering process. The meta-model that was previously used was extended to enable the identification and specification of Business Components and Service Interfaces which make up the building blocks for a Service Oriented Architecture (SOA).

To conclude, the D3.3 deliverable comprises functional aspects of e-mobility under the assumption of the use of shared information platform(s), the GeM Marketplace eco-system. Partners from relevant e-mobility related industries participating in this work package (WP3) have specified detailed interfaces for defined services, which are from their perspective most likely to be used in the demo regions already during the first release. These interfaces will enable the demo regions to decide which Use Cases they will be demonstrating and to identify the tasks that are required from their sides for the implementation of the according Service Interfaces. For the next Release this specification will be reworked to extend certain Service Interfaces to offer more functionality. Also new Business Components and Service Interfaces will be added that will enable the demonstration of additional Use Cases.

### 2.1 Division of requirements into functional domains

The input for this deliverable was created in four working groups working on separate Functional Domains. These domains have already been defined for the Use Case definition in D3.3. Deviating from the previous structure the Domains Charging and Driving have been merged for the work on this deliverable, since the Use Cases that were selected for Release 1 had some overlaps in these two Domains. Each Domain involved multiple stakeholders but was led by a party with strong background in the specific domain.

- Charging/Driving Domain working group was led by Better Place and Siemens
- Roaming Domain working group was led by SAP
- Energy Domain working group was led by Enel
- Marketplace Domain working group was led by IBM

Although these domains are inseparable for EV, and contain substantial overlap, this approach made it possible to create substantial progress in a short time frame. The coherence was achieved by joint working sessions and by the participation of stakeholders across all working groups. This structure is also clearly visible in the design of this document.

The **Charging/Driving Domain** is described in Chapter 4. The Charging Domain describes the Service Interfaces for two separate scenarios: “Search for a suitable EVSE” and “Charging Location Management”. These scenarios have been defined in several Use Cases that contained some overlaps. For the specification this was resolved and resulted in one Service Interface specification. To maintain the traceability all Use Cases in this domain that were selected for Release 1 are listed in this specification even if they reference the same Business Components and Service Interfaces.

The **Roaming Domain** is described in Chapter 5. The Roaming services that enable the basic functionality of contractual clearing by the Clearing House are described in this chapter. All required Service Interfaces for the contractual clearing are present. However they were intentionally kept simple for the first Release. In future Releases these Service Interfaces might be extended to allow for more complex Roaming scenarios (e.g. to allow for further Services besides Charging). This Domain also relies on Service Interfaces described in the Marketplace Domain. For easier readability and to make this chapter self-contained these Interfaces are also listed in this Domain.

The **Energy Domain** is described in Chapter 6. The Use Cases that have been selected for Release 1 include the load and congestion management scenarios between a DSO and an EVSE operator. Furthermore the services that make available current and historical usage data of EVSEs are specified. These services might be used in several business scenarios that therefore have not been specifically defined yet. This means that there is currently no Business Component that will require these Service Interfaces and therefore act as a client.

The **Marketplace Domain** is described in Chapter 7. The Core Marketplace Service Interfaces enable the use of the Marketplace to call services that have been contracted between B2B partners. In addition to that the Marketplace is closely linked with the Clearing House for the validation of Roaming agreements that will be managed within the Marketplace.

Apart of these Service Interfaces, the Marketplace offers functionality through User Interfaces for the offering and contracting of Services. The images that are provided for these User Interfaces are still considered work in progress, since the timeline for the Usability Task 3.7 is not completely aligned with the timeline for this Deliverable. Therefore restrictions were added that clarify the scope of the User Interfaces of the Marketplace for the first Release.

## 2.2 Methodology

In D3.3 the WP3 team developed a series of use cases that realize the business scenarios defined for the Green eMotion project.

These use cases were already defined as structured content within the Rational Requirements Composer (RRC) tool. Therefore it was easy to build upon the existing content and to take the next step to define a specification that links to the existing use cases. For this purpose the WP3 team used the Component Modeling Methodology to identify and specify the components and interfaces required for the realization of the previously defined use cases.

In order to support this methodology, the previously defined meta model had to be extended by the following new artifacts:

- **Business Component** – Logical part of an IT system that aggregates similar functionality and has a clear responsibility. Measures for a good definition of components are a high level of cohesion, a

- weak coupling with other components and a high level of isolation.
- **Service Interface** – formal description of services provided or required by a business component in order to fulfill its responsibilities.

Furthermore the previously defined business objects were adapted and new business objects were defined, in order to unambiguously define the data structures used in the service interfaces. The business objects that are referenced in this specification use a more formalized notation commonly used in data modeling. For more complex structures domain models were created using the Unified Modeling Language (UML) notation, to illustrate the relationships between business objects.

Before beginning the work on the specification, the WP3 team decided which use cases they wanted to focus on for the first release, in order to have a manageable scope. These decisions were documented in the RRC tool. Only the use cases that were selected to be relevant for release 1 were subsequently considered for this specification.

In the following specification process the WP3 team had to make sure that the use cases have a consistent level of granularity. Use cases that describe a more general perspective of activities were linked with use cases that describe certain parts of these activities in more detail. Furthermore overlaps between use cases had to be identified, to avoid duplicate efforts in the specification.

In the next step business components were defined which will implement the use cases by offering services and by interacting with each other. The identified services had to be defined with service interfaces that exactly define which data is needed as input and what output will be created. This was a very time intensive task, as all the data had to be complete and described in an unambiguous way. In order to ease the integration of several services, common domain models were defined that describe the data structures either for a specific domain or for the overall project.

For the implementation the business components can now be assigned to one or more partners that will provide the described functionality for the demonstration. The service interfaces will be used to derive technical interfaces that allow the integration of the applications that will be developed.

The following pictures illustrate the extensions that have been made for the existing requirements management meta model.

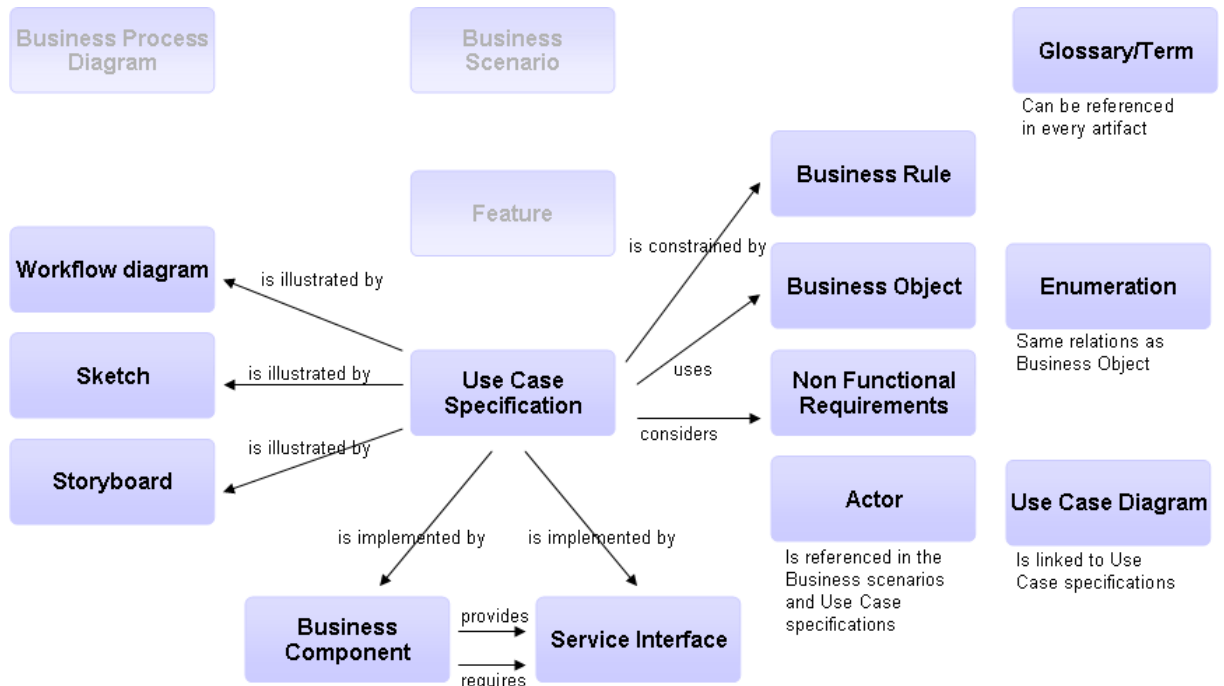


Figure 2 Extending the existing artifacts and relations

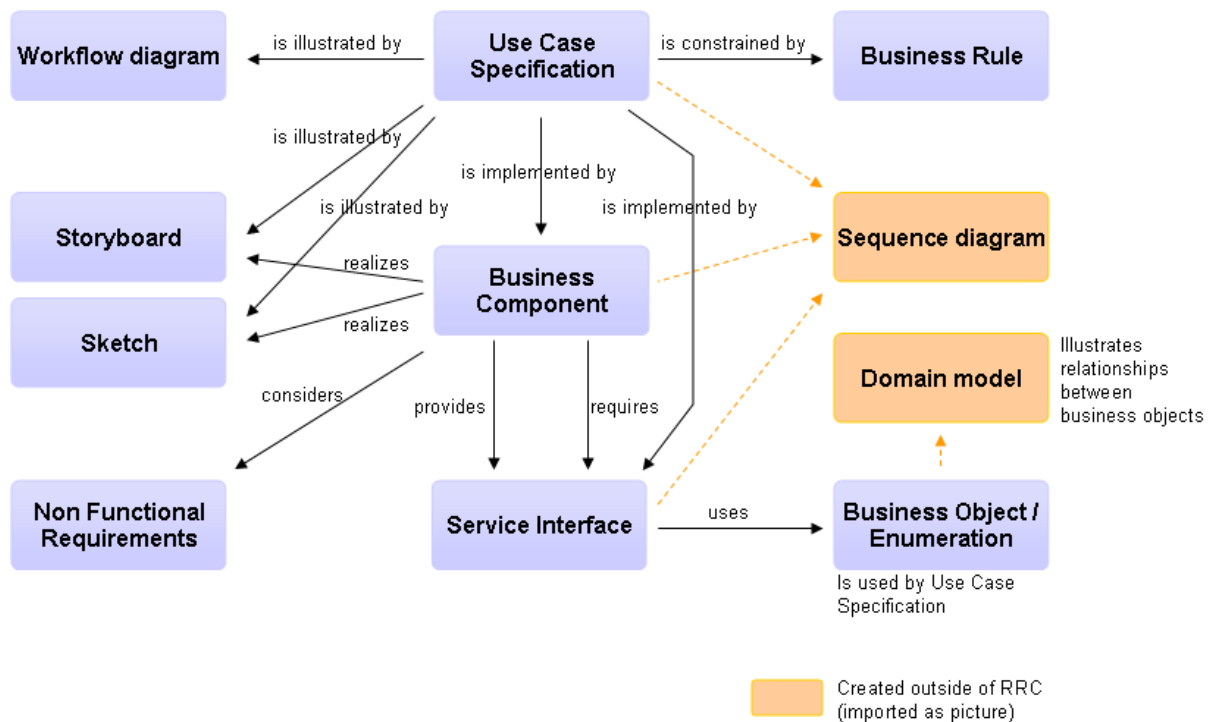


Figure 3 Overview of relevant artifacts for the specification

## 2.3 How to read this document

The main goal of this deliverable is to provide a reference for the implementation of the selected use cases for all partners. It is therefore assumed that the use cases defined in D3.3 are already known before reading this document. In order to create the link to D3.3, this document is divided into the same functional domains, which are further subdivided into the previously defined use cases.

The WP3 team suggests the following approach to reading this document:

1. Read the introduction first
2. Select the use case of interest (if required reference to D3.3 to understand the scenario described by the use case)
3. Read the descriptions of the involved business components and service interfaces. If available, the included sequence diagrams can give you a quick overview of the interactions defined for the use case.
4. To go into more detail you can read the attribute definitions for each service interface. You may need to refer to the domain model chapter of the functional domain if the service interface references common business objects defined for this domain.

Each functional domain starts with the chapters “Functional Decisions” and “Domain Model”, if those were defined for the domain. These contain information about the functionality and the data structures of the domain and are relevant for several use cases.

The chapters “Service Specification” and “User Interface Specification” are both divided into chapters for each use case. Service interfaces and business components that are relevant for several use cases are only included once and are only referenced in subsequent use cases.

The service interface and business object definitions use a similar format to define the data structures:

Attributes	Datatype	Constraints	Description
Name of an attribute of either a business object or a service interface	Definition of the data type of the attribute. This can be either a primitive type (as defined in XSD standard: <a href="http://www.w3.org/TR/xmlschema-2/#built-in-primitive-datatypes">http://www.w3.org/TR/xmlschema-2/#built-in-primitive-datatypes</a> ) or a reference to a business object.	Constraints those are relevant for this attribute. This usually includes multiplicities, min and max values or other validation logic that can be formally described. Constraints can be defined for business objects or service interfaces. If a service interface references a business object, all constraints defined for the business object also apply for the service interface.  A multiplicity of 0..1 or 0..* is equivalent to optional while 1 or 1..* is equivalent to required.	This describes what this attribute represents and may also clarify the meaning of specific values, or of constraints that were described in the column before.

For service interfaces it is also required to list business objects that are only indirectly referenced by another business object but that will be part of the request or response data structure. This is required because the business objects that are referenced in service interfaces may be part of a complex domain

model with many relations to other business objects that again might reference even more business objects. For a service interface you have to define which of these indirectly referenced business objects are relevant and which ones are not included in the request or response.

Therefore business objects which are only indirectly referenced are included in the table, but instead of an attribute name it is stated by which business object they are referenced. The constraints column might list additional constraints (e.g. a multiplicity that is defined in the domain model as 1..\* might be defined for a service interface as 1), however the original constraints still apply.

### 3 Cross Domain

#### 3.1 Synchronous vs. asynchronous communication

All service interfaces defined in this specification can be implemented using either synchronous or asynchronous communication. That means that for synchronous calls the requester will wait for the response to be returned in the same technical transaction on protocol level (e.g. HTTP). For asynchronous requests the service provider will just acknowledge that he received the request and the technical transaction will be closed. The response, if any, will be returned in a separate call from the service provider to the service requester. Since in this case there is no technical transaction spanning across the request and the response, it is mandatory to include a transaction ID in the request that will then be added to the corresponding response by the service provider. This allows the service requester to correlate the matching requests and responses.

Asynchronous communication is usually used for services that have a long or unpredictable response time.

#### 3.2 Common Business Objects

This domain model includes business objects that are not specific to a certain functional domain but should be used throughout the project in order to enhance the interoperability of service interfaces by using the same data types for common elements.

##### 2130: BO EVSEOperatorID

This object describes the unique identifier of an EVSE operator.

The EVSEOperatorID consists of the first two parts of the EVSE ID (Country Code - 1 to 3 numeric digits, Spot Operator ID - 3 to 6 numeric digits). For further information on the EVSE ID, see 2127: BO EVSEID. The Spot Operator IDs will be managed by the consortium during the demonstration phase. Afterwards, it is mandatory to create one authority or a system of authorities which manage the Provider IDs as well as the Spot Operator IDs.

Attributes	Datatype	Constraints	Description
id	string	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>required</li> </ul>	Unique identifier of the EVSE or spot operator

##### 2127: BO EVSEID

This object describes the unique identifier of single EVSE. An EVSE can represent a Charging Point or a Battery Switch Station.

For the demonstration it will not be possible to fully implement one common standard for the EVSE ID, because the existing systems and infrastructure cannot be changed in this short timeframe. As a first step towards harmonization of the EVSE ID it was agreed to adopt the format specification, which is outlined in D3.9 (chapter 3.4), for the first two parts of the EVSE ID (Country Code - 1 to 3 numeric digits, Spot Operator ID - 3 to 6 numeric digits). The existing EVSE IDs will have to be mapped to the common format by the EVSE operator backend.

In the end all involved partners will strive for one common standard. The format that is currently discussed is outlined in D3.9 (chapter 3.4) and was submitted for standardization by RWE.

The Spot Operator IDs will be managed by the consortium during the demonstration phase. Afterwards, it is mandatory to create one authority or a system of authorities which manage the Provider IDs as well as the Spot Operator IDs.



Attributes	Datatype	Constraints	Description
id	string	max. length: 255 required <EVSEID>=<Country Code> "*" <Spot Operator ID> "*" <Power Outlet ID>	The EVSEID identifies a concrete charging point. If a charging station has multiple charging points, multiple EVSEIDs have to be used.

### 2115: BO MultilingualText

Represents a human readable text in a specific language. To support multiple languages an attribute of a BO can reference this BO as data type with the multiplicity 1..\* or \*

Attributes	Datatype	Constraints	Description
language	string	IETF language tag (defined in RFC 5645 and RFC 4647)	Language of the text
text	string		Any text in the defined language

### 2165: BO EVCOID

The EVCOID describes the unique identifier of the contract between an EVSP and an EV customer. For the demonstration it will not be possible to fully implement one common standard for the contract ID, because the existing systems and infrastructure cannot be changed in this short timeframe. As a first step towards harmonization of the EVCOID it was agreed to adopt the format specification, which is outlined in D3.9 (chapter 3.4), for the first two parts of the contract ID (Country Code - 2 alphanumeric digits, Provider ID - 3 alphanumeric digits). In cases where the Provider ID of existing EVCOIDs exceeds three digits, only the first three digits will be used and the remaining digits will be ignored. The format of the customer ID that is contained in the EVCOID will not be harmonized for the demonstration. In the end all involved partners will strive for one common standard. The format that is currently discussed is outlined in D3.9 (chapter 3.4) and was submitted for standardization by RWE. The Provider IDs will be managed by the consortium during the demonstration phase. Afterwards, it is mandatory to create one authority or a system of authorities which manage the Provider IDs as well as the Spot Operator IDs.

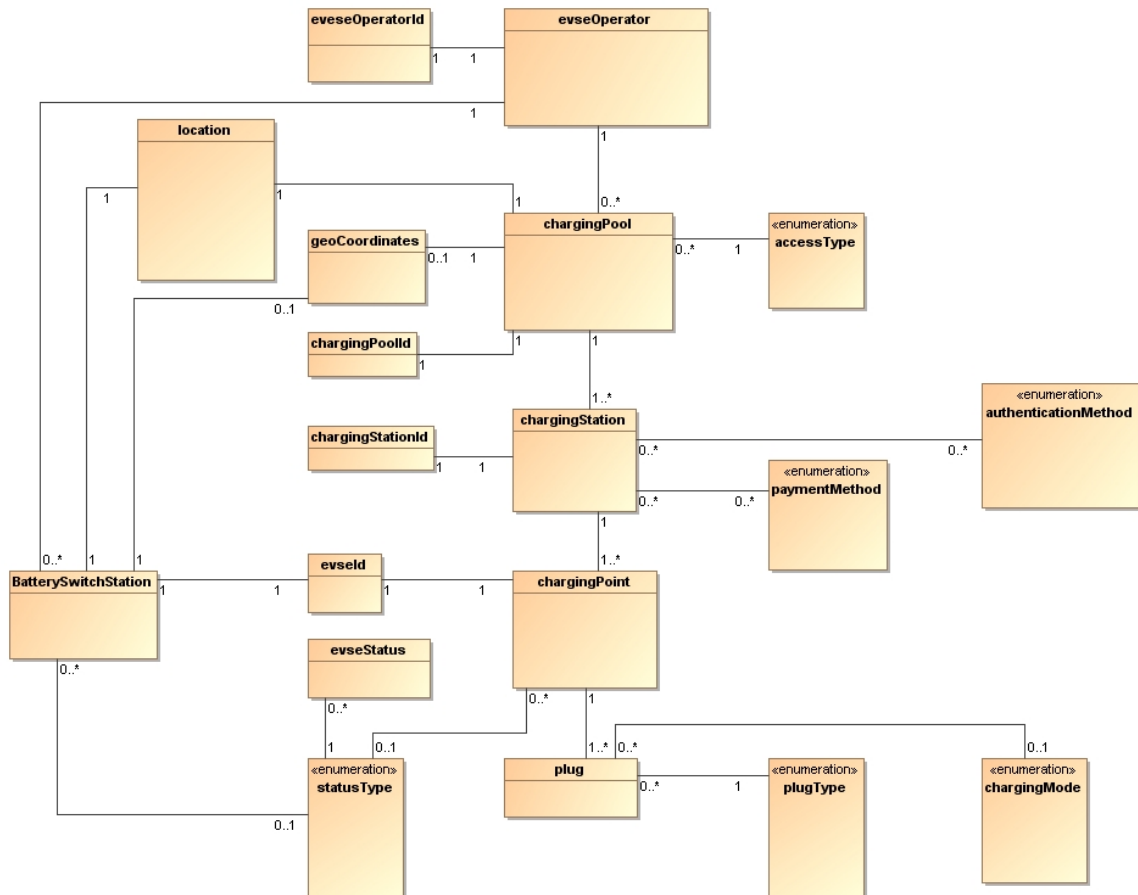


Attributes	Datatype	Constraints	Description
id	string	cardinality: 1 max. length: 255	<p>Contract ID which contains EVSP ID and Customer ID; case insensitive</p> <p><b>Schema:</b> &lt;EVCOID&gt; = &lt;Country Code&gt; "*" &lt;EVSPID&gt; "*" &lt;CustomerID&gt;            &lt;Country Code&gt;: 2 alphanumeric digits            &lt;EVSPID&gt;: at least 3 alphanumeric digits            The "*" stands for an optional separator  <b>Example:</b> DE-004-1T34CV78</p>

## 4 Charging Domain

### 4.1 Domain Model

#### 1990: DM EVSE Domain



#### 1985: BO ChargingPoint

The object ChargingPoint inherits from the object EVSE and describes a single charging point as part of a charging station.

A charging station can be equipped with one or more charging points.

A charging point can be equipped with one or more plugs.

Attributes	Datatype	Constraints	Description
evseId	BO EVSEId	<ul style="list-style-type: none"> <li>required</li> </ul>	Globally unique identifier of a single EVSE (charging point)

plugs	BO Plug	<ul style="list-style-type: none"> <li>Multiplicity: 1..*</li> </ul>	Available connection plugs
accessType	ENUM AccessType	optional	General access type of the CP
model	BO MultilingualText	5 Multiplicity: 1..*	Information about manufacturer and type e.g. "Siemens CP500" in different languages
description	BO MultilingualText	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	Textual description of this CP and/or the location e.g. number "5" or "CP left to entry" ' in different languages

### 1988: BO Location

This object provides address of a POI.

Attributes	Datatype	Constraints	Description
country	string	<ul style="list-style-type: none"> <li>max. length: 2</li> <li>required</li> </ul>	country code according to DIN EN ISO-3166-1
region	string	<ul style="list-style-type: none"> <li>max. length: 50</li> <li>optional</li> </ul>	Region where the POI is located
city	string	<ul style="list-style-type: none"> <li>max. length: 50</li> <li>required</li> </ul>	name of the city in national language
zipCode	string	<ol style="list-style-type: none"> <li>max. length: 10</li> <li>optional</li> </ol>	Zip code / postal code, required, if country specific address format requires zip code
street	string	<ul style="list-style-type: none"> <li>max. length: 100</li> <li>required</li> </ul>	Name of the street

houseNumber	string	<ul style="list-style-type: none"> <li>max. length: 10</li> <li>optional</li> </ul>	House number
floorLevel	string	<ul style="list-style-type: none"> <li>max. length: 10</li> <li>optional</li> </ul>	Indicates the floor level in which the POI is located.
timezone	string	<ul style="list-style-type: none"> <li>max. length: 50</li> <li>optional</li> </ul>	Identifies the timezone of the POI, see the zone names defined in IANA Time Zone Database for valid values, e.g. "Europe/London", "Europe/Berlin"

### 1986: BO Plug

This object describes a single plug of a BO ChargingPoint. Each charging point can have one or more plugs, but only one plug can be used per time.

Attributes	Datatype	Constraints	Description
plugType	ENUM PlugType	A. required	Type of the plug
maxAmpere	double	1. optional	Maximum load in Ampere
chargingMode	ENUM ChargingMode	<ul style="list-style-type: none"> <li>optional</li> </ul>	Mode of charging as defined in IEC 61851

### 1987: BO EVSEOperator

This object describes a EVSE operator which provides a charging pool or a battery switch station.

Attributes	Datatype	Constraints	Description
evseOperatorId	BO EVSEOperatorId	<ul style="list-style-type: none"> <li>required</li> </ul>	Unique identifier of the EVSE or spot operator
name	string	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>optional</li> </ul>	Name of the EVSE operator

web	string	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>optional</li> </ul>	Home page address
eMail	string	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>optional</li> </ul>	Contact e-Mail address
phone	string	<ul style="list-style-type: none"> <li>max. length: 20</li> <li>optional</li> </ul>	Contact phone number

### 2014: BO ChargingStation

This object describes a Charging Station. A charging station consists of one or more charging points and belongs to a charging pool.

Attributes	Datatype	Constraints	Description
stationId	BO ChargingStationId	A. required	Identifier of a single charging station.
chargingPoints	BO ChargingPoint	<ul style="list-style-type: none"> <li>Multiplicity: 1..*</li> </ul>	A set of the charging points the station consists of.
paymentMethod	ENUM Payment-Method	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	Methods to pay at the station
authenticationMethod	ENUM AuthenticationMethod	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	Methods to authenticate at the station
restrictions	BO MultilingualText	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>Multiplicity: 0..*</li> </ul>	Special restrictions like max. car dimensions or battery type in different languages
description	BO MultilingualText	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	Textual description of this station

model	BO MultilingualText	<ul style="list-style-type: none"> <li>• Multiplicity: 0..*</li> </ul>	Information about manufacturer and type e.g. "Siemens CP500" in different languages
bookable	boolean	<ul style="list-style-type: none"> <li>• required</li> <li>• default: false</li> </ul>	True, if the charging points of this station can be reserved

### 2015: BO BatterySwitchStation

This object describes a single Battery Switch Station, which represents an EVSE.

Attributes	Datatype	Constraints	Description
evseId	BO EVSEId	<ul style="list-style-type: none"> <li>• required</li> </ul>	Globally unique identifier of a single EVSE (BatterySwitchStation)
evseOperator	BO EVSEOperator	<ul style="list-style-type: none"> <li>• required</li> </ul>	Identifies the operator that operates this BatterySwitchStation
location	BO Location	<ul style="list-style-type: none"> <li>• required</li> </ul>	Address of the BatterySwitchStation
geoCoordinates	BO GeoCoordinates	<ul style="list-style-type: none"> <li>• optional</li> </ul>	Geo coordinates of the BatterySwitchStation
status	ENUM StatusType	<ul style="list-style-type: none"> <li>• optional</li> </ul>	Information about the current status of the BatterySwitchStation
openHours	BO MultilingualText	<ul style="list-style-type: none"> <li>• Multiplicity: 0..*</li> </ul>	General information about opening hours and days in different languages
restrictions	BO MultilingualText	<ul style="list-style-type: none"> <li>• max. length: 255</li> <li>• Multiplicity: 0..*</li> </ul>	Special restrictions like max. car dimensions or battery type in different languages
model	BO MultilingualText	<ul style="list-style-type: none"> <li>• Multiplicity: 1..*</li> </ul>	Information about manufacturer and type in different languages

### 1989: BO EVSEStatus

This object describes the current status of a EVSE (Charging Point or Battery Switch Station).

Attributes	Datatype	Constraints	Description
evseId	BO EVSEId	<ul style="list-style-type: none"> <li>required</li> </ul>	Identifier of the related EVSE
status	ENUM StatusType	<ul style="list-style-type: none"> <li>required</li> </ul>	Information about the current status of the EVSE
lastChanged	dateTime	<ul style="list-style-type: none"> <li>optional</li> </ul>	Date and time of last status update

### 2120: BO GeoCoordinates

This object provides geo coordinates.

Attributes	Datatype	Constraints	Description
latitude	double	<ul style="list-style-type: none"> <li>required</li> </ul>	Geo position: latitude
longitude	double	<ul style="list-style-type: none"> <li>required</li> </ul>	Geo position: longitude

### 2110: ENUM StatusType

The Object ENUM StatusType contains the possible values for the state of an EVSE.

Values	Description
Charging	EVSE is charging
Free	EVSE is free
Offline	EVSE is offline
OutOfOrder	EVSE is out of order
Reserved	EVSE is reserved
Planned	EVSE is in planning
Unknown	EVSE status is unknown

### 2114: ENUM ChargingMode

The Object ENUM ChargingMode contains the possible values for the modes of charging provided via a charging point plug. This list will need to be extended in the future as the market develops and new standards arise.

Values	Description
Mode_1	Mode 1 defined in IEC 62196
Mode_2	Mode 2 defined in IEC 62196
Mode_3	Mode 3 defined in IEC 62196
Mode_4	Mode 4 defined in IEC 62196
CHAdEMO	In addition to Mode_4
Inductive	Inductive charging, not yet standardized

### 2118: ENUM PaymentMethod

The Object ENUM PaymentMethod contains the values for the possible payment methods at an EVSE. This list will need to be extended in the future as the market develops and new standards arise.

Values	Description
PNCH	Park & Charge
CREDIT	Credit card
CASH	Cash
DEBIT	Debit
NONE	Free charging
CONTRACT	Pay via contract

### 2119: ENUM AccessType

The Object ENUM AccessType contains the possible values for the access types of a charging point.

Values	Description
PRIVATE	Restricted to residents use only
COMPANY	Restricted to company use only



PUBLIC	Freely accessible to the public
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### 2117: ENUM AuthenticationMethod

The Object ENUM AuthenticationMethod contains the values for the possible authentication methods at an EVSE. This list will need to be extended in the future as the market develops and new standards arise.

Values	Description
RFID	Via RFID card
SMS	Via sms to EVSE operator
CALL	Via call to EVSE operator
V2G_CI	Vehicle to grid communication
PARKNCH	Park & charge
NONE	None authentication necessary
APP	Via smart phone app
PLUGNCH	Via Plug&Charge

### 2111: ENUM PlugType

The Object ENUM PlugType contains the possible values for the type of a charging point plug. This list will need to be extended in the future as the market develops and new standards arise.

Values	Description
Type_1	SAE J1772, 5 pin, Type1 in IEC62196
Type_2	VDE-AR-E 2623-2-2 (Mennekes), 7 pin, Type 2 IEC62196
Type_3	EV plug alliance, Type 3 in IEC62196
Combo_Type_2	Fast charging, DC & AC
CHAdeMO	Fast charging, DC
Camping	Camping plug, 230V/16A, 3 pin
CEE_3_Phase	CEE, 400V/16A, 5 pin

CEE_7_4	CEE 7/4, Shuko, 230V/16A
CEE_7_7	CEE 7/7, 230V/16A

## 2172: BO ChargingPool

This object describes a Charging Pool. A charging pool consists of one or more charging stations. The EVSE operator is able to group a set of his charging points with the same location to a charging pool.

Attributes	Datatype	Constraints	Description
poolId	BO Charging-PoolId	<ul style="list-style-type: none"> <li>required</li> </ul>	Identifier of a single charging pool
evseOperator	BO EVSEOperator	<ul style="list-style-type: none"> <li>required</li> </ul>	Identifies the operator that operates this charging pool, e.g. spot operator
stations	BO ChargingStations	<ul style="list-style-type: none"> <li>Multiplicity: 1..*</li> </ul>	A set of the charging stations the pool consists of.
location	BO Location	<ul style="list-style-type: none"> <li>required</li> </ul>	Address of the charging pool
geoCoordinates	BO GeoCoordinates	<ul style="list-style-type: none"> <li>optional</li> </ul>	Geo coordinates of the charging pool
openHours	BO Multilingual-Text	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	General information about opening hours and days in different languages
accessType	ENUM AccessType	<ul style="list-style-type: none"> <li>optional</li> </ul>	General access type of the charging stations within the pool

## 2167: BO ChargingPoolID

This object describes the unique identifier of a Charging Pool. A charging pool describes one or more charging stations at the same location, provided by one EVSE operator. The EVSE operator is responsible to set the ChargingPoolId and to ensure, that the ID is unique within all of his charging pools.

Attributes	Datatype	Constraints	Description
id	string	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>required</li> </ul>	The ChargingPoolId identifies a concrete charging pool, which is unique per EVSE operator.

## 2168: BO ChargingStationID

This object describes the unique identifier of a Charging Station. A charging station belongs to a charging pool and provides one or more charging points. The EVSE operator is responsible to set the ChargingStationId and to ensure, that the ID is unique within the charging pool.

Attributes	Datatype	Constraints	Description
id	string	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>required</li> </ul>	The ChargingStationId identifies a concrete charging station, which is unique per charging pool.

## 5.1 Service Specification

### 1502: UC EV Identification, Authentication and Authorization

This Use Case is further specified by the following embedded Use Cases. The specification for these Use Cases is not listed in this chapter.

- 1512: UC Start a roaming charging process with Clearinghouse

### 1510: UC Before charging

This Use Case is further specified by the following embedded Use Cases. The specification for these Use Cases is not listed in this chapter.

- 1527: UC Search for EVSE

### 1518: UC During charging

This Use Case is further specified by the following embedded Use Cases. The specification for these Use Cases is not listed in this chapter.

- 1512: UC Start a roaming charging process with Clearinghouse

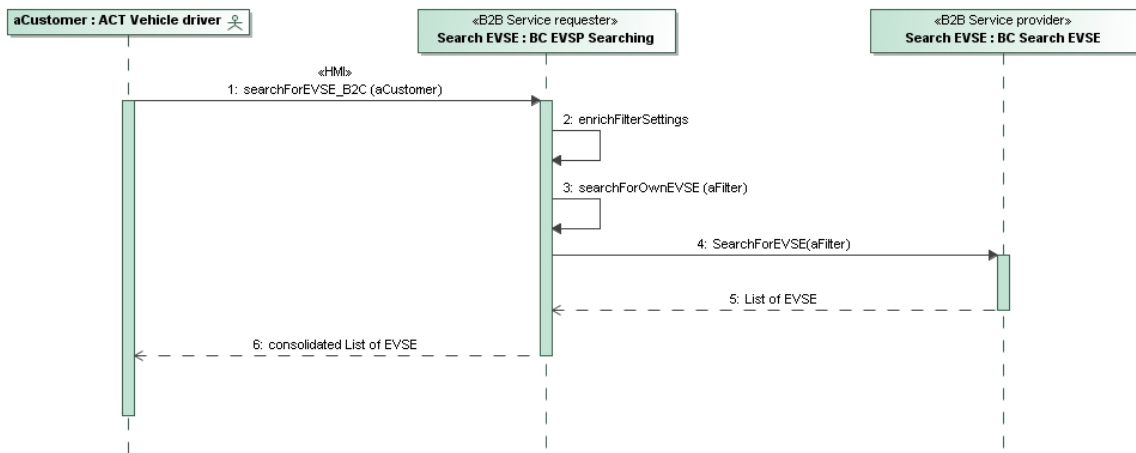
### 1519: UC After charging

This Use Case is further specified by the following embedded Use Cases. The specification for these Use Cases is not listed in this chapter.

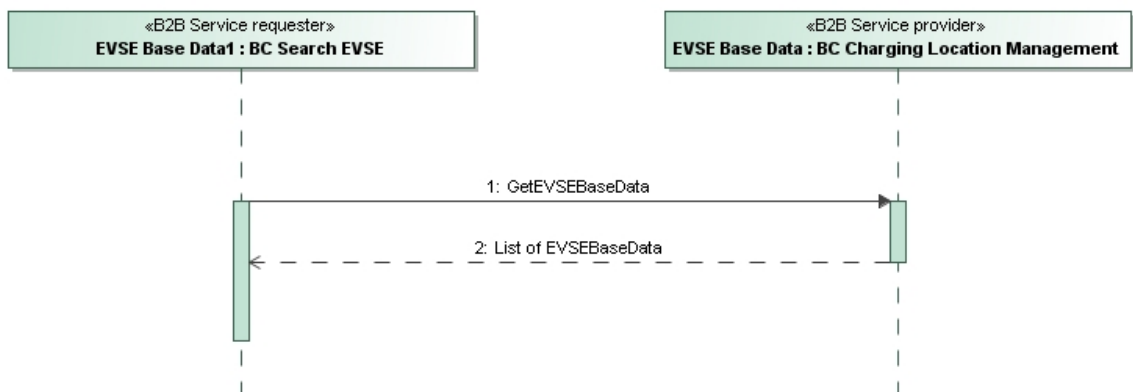
- 1511: UC End a roaming charging process with Clearinghouse

### 1527: UC Search for EVSE

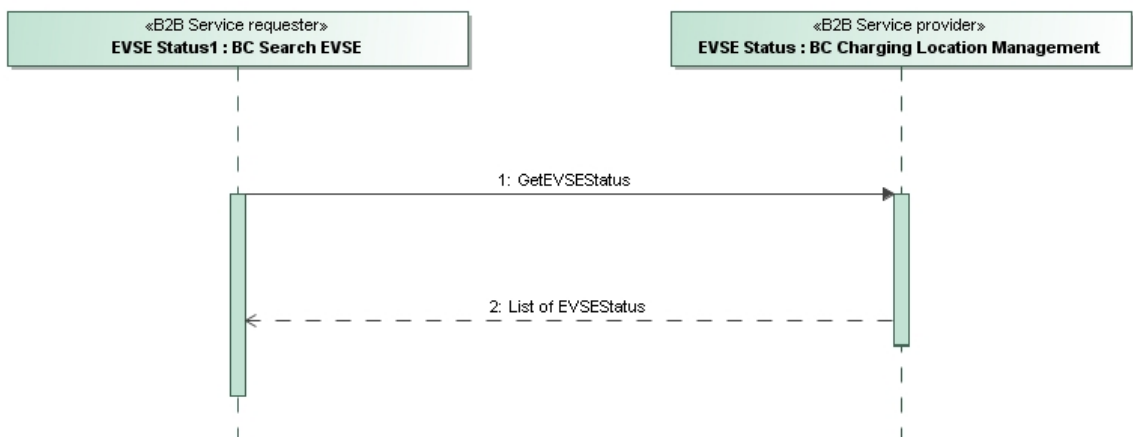
#### 2021: SQD Search EVSE



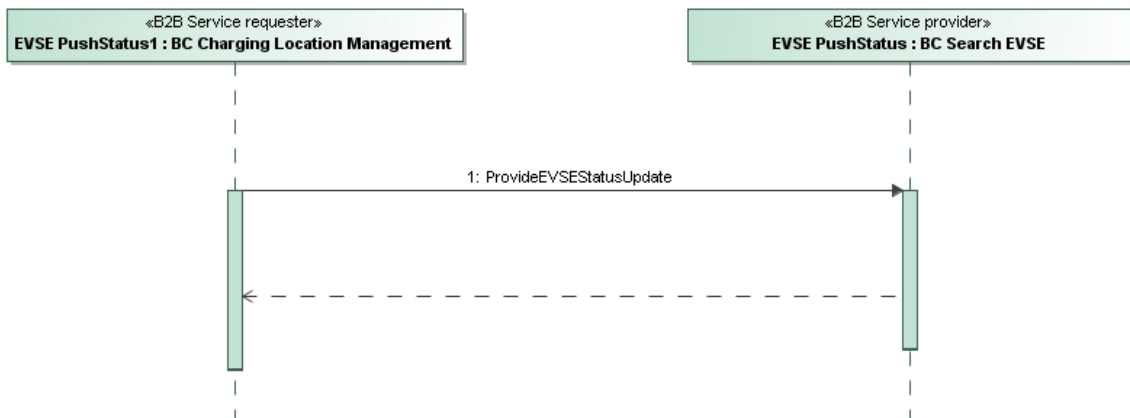
#### 2047: SQD EVSE Base Data



#### 2049: SQD EVSE Status



## 2066: SQD EVSE Push Status



## 2018: BC Search EVSE

The BC Search EVSE provides the functionality to search for EVSEs like Charging Point or Battery Switch Station based on several search criteria.

A search request will be initiated by a contracted EVSP.

The BC Search EVSE internally stores a set of EVSE-s including base and status data, which can be updated in the following ways:

- a CLM operating the EVSE uploads base or status data changes via the provided interfaces of BC Search EVSE
- the BC Search EVSE requests data updates from CLM-s in a defined time interval

<b>Provided Services</b>	2012: SRV SearchForEVSE 2065: SRV PushEVSEStatus 2129: SRV InsertEVSE 2131: SRV DeleteEVSE 2132: SRV UpdateEVSE
<b>Required Services</b>	2045: SRV EVSEBaseData 2046: SRV EVSEStatus

## 2012: SRV SearchForEVSE

This service accepts a EVSEsearch object with a set of optional search criteria and returns a search result class with lists of all EVSE-s with different types (CP, BatterySwitchStation), which match the given search criteria. If a search criterion is not set, it will be ignored.

The return of an empty lists means, that none EVSE of that type is available.

### SearchForEVSERequest

Attributes	Datatype	Constraints	Description
searchCriteria	1993: BO EVSE-Search	Multiplicity: 1	The search criteria which will be used to refine the EVSE search results.

### SearchForEVSEResponse

Attributes	Datatype	Constraints	Description
searchResult	2106: BO EVSECollection	Multiplicity:1	The search results contains lists of EVSEs with different types (CP, BatterySwitchStation) which match the given filter criteria.
<i>Referenced by BO EVSECollection</i>	2167: BO ChargingPool	Multiplicity: 0..*	List with found ChargingPool-s where at least one charging station meets the search criteria
<i>Referenced by BO ChargingPool</i>	2014: BO ChargingStation	Multiplicity: 1..*	List of charging stations of a pool, where at least one charging point meets the search criteria
<i>Referenced by BO ChargingStation</i>	1985: BO ChargingPoint	Multiplicity: 1..*	List of available charging points of a charging station
<i>Referenced by BO ChargingPoint</i>	1986: BO Plug	Multiplicity: 1..*	Available connection plugs at the CP
<i>Referenced by BO EVSECollection</i>	2015: BO BatterySwitchStation	Multiplicity: 0..*	List with found BatterySwitchStations-s

### Service specific Business Objects (Not part of Domain Model)

#### 1993: BO EVSESearch

This business object BO EVSESearch describes the search criteria of an EVSE search request.

Attributes	Datatype	Constraints	Description
critEVSEType	enum	<ul style="list-style-type: none"> <li>values: "CP", "BSS"</li> <li>optional</li> </ul>	Search criteria, if search for CP or battery switch station only
critEVSEOperatorId	BO EVSEOperatorId	<ul style="list-style-type: none"> <li>multiplicity 0..*</li> </ul>	Search list with ID-s of EVSE operators to search for
critEVSEOperatorName	string	<ul style="list-style-type: none"> <li>max. length: 255</li> <li>optional</li> </ul>	Search criteria for a single EVSE operator name (see BO EVSEOperator name)
critMaxAmpere	double	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for the max. allowed load. EVSE has to provide a maximum load equal to the filter value or more.
critChargingMode	ENUM ChargingMode	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for charging mode
critPlugType	ENUM Plug-Type	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for plug type
critAccessType	ENUM AccessType	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for the general access type of the CP
critPaymentMethod	ENUM PaymentMethod	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for payment methods at the EVSE
critBookable	boolean	<ul style="list-style-type: none"> <li>optional</li> </ul>	True, if search only on bookable EVSEs.
critGeoCoordinates	BO GeoCoordinates	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for search based on geo position. Requires the setting of the attribute critRadius.
critRadius	integer	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search radius in km for the proximity search based on geo position. Proximity search is only possible if the attribute critGeoCoordinates is also set.
critCountry	string	<ul style="list-style-type: none"> <li>max. length: 3</li> <li>optional</li> </ul>	Search criteria for country

critCity	string	<ul style="list-style-type: none"> <li>max. length:50</li> <li>optional</li> </ul>	Search criteria for city
critZipCode	string	<ul style="list-style-type: none"> <li>max. length:10</li> <li>optional</li> </ul>	Search criteria for zip code
critRegion	string	<ul style="list-style-type: none"> <li>max. length:50</li> <li>optional</li> </ul>	Search criteria for region
critStreet	string	<ul style="list-style-type: none"> <li>max. length:100</li> <li>optional</li> </ul>	Search criteria for street
critStatus	ENUM StatusType	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for current status of EVSE
critAuthenticationMethod	ENUM Authentication-Method	<ul style="list-style-type: none"> <li>optional</li> </ul>	Search criteria for authentication method

#### 2106: BO EVSECollection

The object EVSECollection acts as a wrapper object for the EVSEs and embeds a list for charging pools with available charging points and a list for available battery switch stations.

Attributes	Datatype	Constraints	Description
chargingPools	BO ChargingPool	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	List of charging pools with available charging points
batterySwitchStations	BO BatterySwitch-Station	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	List of available battery switch stations

#### 2065: SRV PushEVSEStatus

SRV PushEVSEStatus will be provided by a BC which deals with status information of EVSE-s (e.g. BC EVSESearch). The BC will request base data from the the CLM (2045: SRV EVSEBaseData) and may request status data regularly. But to enhance the timeliness of provided status data, a CLM may be obligated to push the information about each status change in a certain time interval to the BC. Therefore this service is embedded in the Service 2046: SRV EVSE Status.



Each subscribed CLM has to call this service after each status change in a configured time interval (e.g. once per minute).

If none of the connected EVSE-s changed the status since the last status change was propagated by the CLM, the CLM does not have to call this service.

The CLM has to call the services of all BC, with whom an enhanced EVSEStatus contract exists.

Note: The Market Place has to provide the possibility to initiate data transfer within the same contract not only from the service requester to the service provider, but also vice versa.

#### EVSEPushStatusRequest

Attributes	Datatype	Constraints	Description
evseOperatorId	2130: BO EVSE-OperatorId	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	Unique identifier of the CLM or EVSE operator
status	1989: BO EVSEStatus	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	A list of all EVSE status data from the providing CLM, which changed since the last push of status data

#### EVSEPushStatusResponse

Empty Response

#### 2129: SRV InsertEVSE

This service enables a CLM component to insert new EVSE-s into the EVSE data storage of a central service component like BC EVSE Search.

#### InsertEVSERequest

Attributes	Datatype	Constraints	Description
evseOperatorId	2130: BO EVSEOperatorId	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	Unique identifier of the CLM or EVSE operator
insert	2106: BO EVSECollection	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	An EVSE collection object with lists of new EVSE-s to be inserted into the data storage of the central service component.

#### InsertEVSEResponse

Attributes	Datatype	Constraints	Description
insertErrors	2128: BO EVSEUpdateError	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	A list with information about failed insert operations. An empty list means that all EVSE-s were inserted successfully.

## Service specific Business Objects (Not part of Domain Model)

### 2128: BO EVSEUpdateError

This object describes a problem which occurred while trying to insert, update or delete a single EVSE within the data storage of a service component like BC Search EVSE.

Possible error scenarios are e.g.:

- a requester tried to delete an EVSE which does not exist before
- a requester tried to insert an EVSE which already exists before

Attributes	Datatype	Constraints	Description
evseId	BO EVSEId	<ul style="list-style-type: none"> <li>• required</li> </ul>	Globally unique identifier of a single EVSE
code	integer	<ul style="list-style-type: none"> <li>• required</li> </ul>	Code identifying the occurred problem (a list of possible error codes will be provided during implementation)
description	string	<ul style="list-style-type: none"> <li>• optional</li> <li>• max. length: 255</li> </ul>	Description of the error

### 2106: BO EVSECollection

This Business Object was exported [before](#).

### 2131: SRV DeleteEVSE

This service enables a CLM component to delete EVSE-s from the EVSE data storage of a central service component like BC EVSE Search.

#### deleteEVSERequest

Attributes	Datatype	Constraints	Description
evseOperatorId	2130: BO EVSE-OperatorId	<ul style="list-style-type: none"> <li>• Multiplicity: 1</li> </ul>	Unique identifier of the CLM or EVSE operator
delete	2127: BO EVSEId	<ul style="list-style-type: none"> <li>• Multiplicity: 1..*</li> </ul>	A list of EVSE Id-s to be deleted from the data storage of the central service component.

#### deleteEVSEResponse

Attributes	Datatype	Constraints	Description
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deleteErrors	2128: BO EVSEUpdateError	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	A list with information about failed delete operations. An empty list means that all EVSE-s were deleted successfully.
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### Service specific Business Objects (Not part of Domain Model)

#### 2128: BO EVSEUpdateError

This Business Object was exported [before](#).

#### 2132: SRV UpdateEVSE

This service enables a CLM component to update the base data of changed EVSE-s within the EVSE data storage of a central service component like BC EVSE Search.

#### updateEVSERequest

Attributes	Datatype	Constraints	Description
evseOperatorId	2130: BO EVSEOperatorId	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	Unique identifier of the CLM or EVSE operator
update	2106: BO EVSECollection	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	An EVSE collection object with lists of EVSE-s to be updated within the data storage of the central service component.

#### updateEVSEResponse

Attributes	Datatype	Constraints	Description
updateErrors	2128: BO EVSEUpdateError	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	A list with information about failed update operations. An empty list means that all EVSE-s were updated successfully.

### Service specific Business Objects (Not part of Domain Model)

#### 2128: BO EVSEUpdateError

This Business Object was exported [before](#).

#### 2106: BO EVSECollection

This Business Object was exported [before](#).

#### 1958: BC Charging location management

The charging location management (CLM) is part of the Electric Vehicle supplier equipment (EVSE) in the GeM. It represents a basic service primarily related to the *charging points focusing on the EV Enduser via the EV service provider (EVSP)*. In that manner it helps finding, maintaining and controlling a certain

charging point. It also helps transferring the final load information called the service detail record (SDR) from the charging point (CP) to a european EVSP.

<b>Provided Services</b>	2045: SRV EVSEBaseData 2046: SRV EVSEStatus
<b>Required Services</b>	2065: SRV PushEVSEStatus 2020: SRV Authorization 2032: SRV SDR Forwarding 2129: SRV InsertEVSE 2131: SRV DeleteEVSE 2132: SRV UpdateEVSE

### 2045: SRV EVSEBaseData

This service returns the base data of all EVSE-s which will be operated by EVSE Operators connected to the CLM. Information about the current status of EVSE-s will be provided by an additional service SRV EVSEStatus.

The EVSEBaseData service may be used by a EVSESearch component to provide EVSE data from different CLM-s and should be called in a configured interval (e.g. once per week).

#### EVSEBaseDataRequest

Attributes	Datatype	Constraints	Description
filterTimestamp	dateTime	Multiplicity: 0..1	If filterTimestamp ist set, the CLM returns only the base data of those EVSE-s, where the base data have changed since that point in time. Otherwise the base data of all EVSE-s will be returned.

#### EVSEBaseDataResponse

Attributes	Datatype	Constraints	Description
searchResult	2106: BO EVSECollection	Multiplicity: 1	The eveseCollection contains lists of EVSEs, which will be operated by the called CLM. None status information will be provided.
<i>Referenced by BO EVSECollection</i>	2167: BO ChargingPool	Multiplicity: 0..*	List with found ChargingPool-s operated by the CLM
<i>Referenced by BO ChargingPool</i>	2014: BO ChargingStation	Multiplicity: 1..*	List of charging stations of a pool
<i>Referenced by BO ChargingStation</i>	1985: BO ChargingPoint	Multiplicity: 1..*	List of charging points of a charging station
<i>Referenced by BO ChargingPoint</i>	1986: BO Plug	Multiplicity: 1..*	Connection plugs at the CP

<i>Referenced by BO EVSECollection</i>	2015: BO BatterySwitchStation	Multiplicity: 0..*	List with BatterySwitchStations-s
----------------------------------------	-------------------------------	--------------------	-----------------------------------

## Service specific Business Objects (Not part of Domain Model)

### 2106: BO EVSECollection

This Business Object was exported [before](#).

### 2046: SRV EVSEStatus

This service returns the current status data of all EVSE-s which will be operated by EVSE Operators connected to the CLM. Information about the base data of EVSE-s will be provided by an additional service SRV EVSEBaseData. Due to performance reasons the timestamp of the latest status update can be used to reduce the number of returned values.

The EVSEStatus service may be used by a EVSESearch component to provide current status EVSE data from different CLM-s and should be called in a configured interval (e.g. once per 15 minutes) or on request.

#### EVSEStatusRequest

Attributes	Datatype	Constraints	Description
filterTimestamp	dateTime	<ul style="list-style-type: none"> <li>optional</li> </ul>	If filterTimestamp is set, the CLM returns only the status of those EVSE-s, where the status has changed since that point in time.
filterEVSEId	BO EVSEId	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	A list of EVSEId-s for which current status information are requested. If the list is empty, the status information for all EVSE-s will be requested.

#### EVSEStatusResponse

Attributes	Datatype	Constraints	Description
status	1989: EVSEStatus	<ul style="list-style-type: none"> <li>Multiplicity: 0..*</li> </ul>	A list of all EVSE status data, which will be operated by the called CLM and match the filter criteria. If a requested EVSE does not exist, the filter request will be ignored. An empty list may indicate, that none status has changed since the latest status request.

### 1529: UC Charging Location Management

This Use Case is further specified by the following embedded Use Cases. The specification for these Use Cases is not listed in this chapter.

- 1557: UC Parking Space Management

1958: BC Charging location management

This BC was exported [before](#).

2054: SRV CLM ActualChargingStatus

This service interface serves for the description of the load data to be delivered to the requestor

#### **ActualChargingStatusRequest**

Attributes	Datatype	Constraints	Description
ReqEVSEID	BO EVSEId	<ul style="list-style-type: none"> <li>required</li> </ul>	defines the actual charging status of a certain charging point to be delivered

#### **ActualChargingStatusResponse**

Attributes	Datatype	Constraints	Description
ActualChargingstatus	2040: BO PowerOutletStatus	<ul style="list-style-type: none"> <li>required</li> </ul>	transmitted data field to the requestor; returns "0" if unknown

Service specific Business Objects (Not part of Domain Model)

2040: BO PowerOutletStatus

This object describes all actual current status of a power outlet point like Charging Point or Battery Switch Station.

Attributes	Datatype	Constraints	Description
EVSEBasicStatus	1989: BO EVSEs-tatus	<ul style="list-style-type: none"> <li>required</li> </ul>	Identifies the poweroutletpoint
ActualPowerconsumption	float	<ul style="list-style-type: none"> <li>required</li> <li>not negative</li> </ul>	actual consumption of power in [KW]
ActualDateAndTime	datetime	<ul style="list-style-type: none"> <li>required</li> </ul>	date and time of consumption measurement
Alarm	ENUM Alarm	<ul style="list-style-type: none"> <li>optional</li> </ul>	Information about a current alarm
ErrorCode	long uint	<ul style="list-style-type: none"> <li>optional</li> </ul>	number of an ocurred error; 0 means no error
ErrorString	string	<ul style="list-style-type: none"> <li>optional</li> </ul>	short description of the error

## 6 Roaming Domain

### 6.1 Functional Decisions

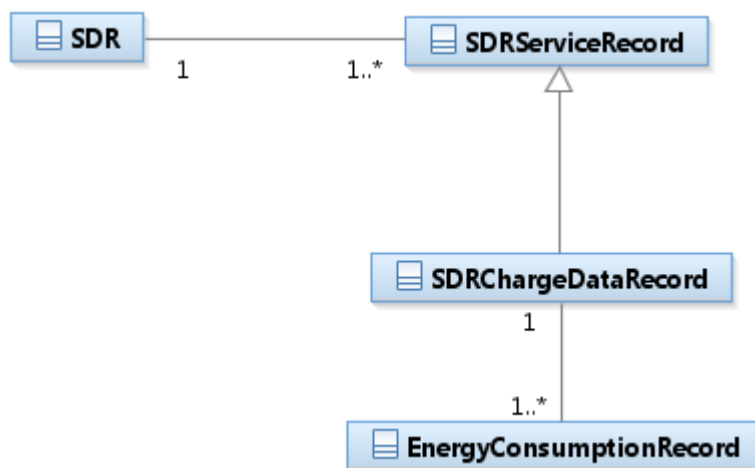
#### 1991: FD Management of EVSP/EVSE Contracts

Affected Use Cases 1512: UC Start a roaming charging process with Clearinghouse

EVSP/EVSE Contracts will be managed in the Marketplace. The Clearing House will use a Marketplace Service to check if a contract exists for a specific Roaming transaction. In Release 1 this Service will be implemented by the marketplace. However the final process for creating and modifying the EVSP/EVSE Contracts will not be in place for Release 1. The creation of these contracts - which is required to demonstrate the Roaming scenario - will either be handled by a simplified UI or with administrative tools that are not available to users registered on the marketplace. Therefore UCs, that are related to the management of EVSP/EVSE Contracts will not be specified for Release 1.

### 6.2 Domain Model

#### 2141: DM Roaming Domain



#### 2033: BO SDR

Service Detail Record

Attributes	Datatype	Constraints	Description
sessionId	string	1	will be created by EVSE operator backend system (just unique in one EVSE Operator system)
EVCOID	2165: BO EVCOID	1	Contract ID which contains EVSP ID and Customer ID
services	2034: BO SDR Service Record	1..*	A list of services which are tracked in the SDR, so that the EVSP can bill his customer accordingly.



### 2035: BO SDR ChargeDataRecord

Shows the structure of the ChargeDataRecord which can be part of the SDR.  
The SDR ChargeDataRecord inherits from the superclass BO SDR Service Record.

Attributes	Datatype	Constraints	Description
EVSEID	2127: BO EVSEID	1	ID of the charge point where the charging took place.
startOfCharging	dateTime	1	the date and time at which the charging point activates its electric contactor and starts the power supply to the car
endOfCharging	dateTime	1	the date and time at which the charging point deactivates its electric contactor and stops the power supply to the car
energyConsumptionList	2036: BO Energy-ConsumptionRecord	1..*	A list of records which indicate how much energy was used during a specific periode of time.

### 2036: BO EnergyConsumptionRecord

A record which indicates how much energy was used during a specific periode of time.

Attributes	Datatype	Constraints	Description
start	dateTime	1	start of the time interval
end	dateTime	1	end of the time interval
consumedEnergy	float	1	the amount of consumed energy during the specified time interval in kWh

### 2034: BO SDR Service Record

This business object represents a generic superclass for services used in the service detail record.  
Other business objects inherit from the SDR Service Record type:  
For release 1 this is only the ChargeDataRecord (2035). In future releases other business objects might be added (e.g. ReservationDataRecord)

## 6.3 Service Specification

### 1511: UC End a roaming charging process with Clearinghouse

## 2038: BC Clearing House

The Clearing House deals with incoming authorization request and SDRs. It is used to enable roaming.

<b>Provided Services</b>	2032: SRV SDR Forwarding 2020: SRV Authorization
<b>Required Services</b>	1967: SRV ContractValidation 2020: SRV Authorization 2032: SRV SDR Forwarding

## 2032: SRV SDR Forwarding

Interface to forward the service detail record from one place to another.

This interface is provided by the clearing house and the EVSPs.

In that way, the EVSE operator can send the SDR to the clearing house and the clearing house can forward the SDR to the respective EVSP.

### ***SDRForwarding***

Attributes	Datatype	Constraints	Description
serviceDetailRecord	2033: BO SDR	Multiplicity: 1	
<i>referenced by SDR class</i>	2034: BO SDR Service Record	Multiplicity: 1..*	
<i>referenced by SDR class</i>	2035: BO SDR ChargeDataRecord	Multiplicity: 0..1	One SDR could contain one ChargeDataRecord
<i>referenced by SDR ChargeDataRecord</i>	2036: EnergyConsumptionRecord	Multiplicity: 1..*	One ChargeDataRecord can contain multiple EnergyConsumptionRecords

### ***SDRForwardingResponse***

Attributes	Datatype	Constraints	Description
responseCode	2174: ENUM ResponseCode	Multiplicity: 1	

## Service specific Business Objects (Not part of Domain Model)

### 2174: ENUM ResponseCode

The enumeration ENUM ResponseCode contains the possible values for the response sent for the SDR Forwarding in the roaming domain. The values are based upon the definition of HTTP return codes but do not relate to the response on HTTP level but rather describe the response on the application level.

Values	Description
200	OK
400	Bad Request (Syntax Error)
500	Internal Server Error (Application Error)

## 1512: UC Start a roaming charging process with Clearinghouse

Related Functional Decisions 1991: FD Management of EVSP/EVSE Contracts

### 1966: BC Business Services

The "Business Services" component relates to the Business Services Sub Domain of the Marketplace described in the GeM Reference Architecture. The component will implement the following functionality and expose it to users of the marketplace through User Interfaces and - for some functionalities that need to be accessed by other systems, as the Clearing House - also through Service Interfaces:

- Service Store: Is used to browse and sell or buy Services. Service Requesters are using this functionality to browse through offered Services. During the purchase process a contractual relationship is established between the Business Partners. Furthermore the Service Store is used to bring in and remove services to/from the Marketplace.
- Partner Management: It offers functionality to manage "customer data" of all Marketplace participants. Customers in the Marketplace context are the Service Providers and Service Requesters.
- Contract Management: It offers functionality to administrate the relations between Marketplace participants. It maintains the information which service requester has contracted which services. This includes contracts for IT services, which are usually delivered through the marketplace, as well as conventional contracts that do not relate to an IT service (e.g. Roaming contracts).
- Not in scope: Payment and Billing, which is also described in the Reference Architecture, is currently not in scope for implementation.

<b>Provided Services</b>	1967: SRV ContractValidation
<b>Required Services</b>	

### 1967: SRV ContractValidation

This service is used to check if a contract of a defined category (e.g. Roaming) exists in the marketplace between a Service Provider and a Service Requester.

The Service Provider and Service Requester are usually identified with their Marketplace Business Partner ID. To support the Roaming scenario (where the Clearing House does not know the Marketplace Business Partner ID) it is also possible to use the Spot Operator ID (part of the EVSEID) and the Provider ID (part of the EVCOID) to identify the business partners. The contract validation is exclusively an interaction between the clearing house and the marketplace. Therefore, this service interface will not be implemented by service providers and service requesters.

#### ContractValidationRequest

Attributes	Datatype	Constraints	Description
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provider	String		Matches the partnerId defined in 1461: BO BusinessPartner. This represents the Service Provider in the marketplace for the contract, that is to be checked.
alternativeProviderId	2064: BO AdditionalId	Multiplicity: 0..1 Either "provider" or "alternativeProviderId" must be set Only "EVSEOperatorID" is allowed as idType for the BO AdditionalId.	Can be used to identify the Service Provider if the Business Partner ID is unknown - e.g. in the Roaming scenario where only the Operator ID is known which is part of the EVSEID (suggested for standardization)
requester	String		Matches the partnerId defined in 1461: BO BusinessPartner. This represents the Service Requester in the marketplace for the contract, that is to be checked.
alternativeRequesterId	2064: BO AdditionalId	Multiplicity: 0..1 Either "requester" or "alternativeRequesterId" must be set Only "EVCOProviderID" is allowed as idType for the BO AdditionalId.	Can be used to identify the Service Provider if the Business Partner ID is unknown - e.g. in the Roaming scenario where only the Provider ID is known which is part of the EVCOID (suggested for standardization)
service	String	alphanumeric identifier	Matches the serviceTypeId defined in 2087: BO ServiceType Identifies the contract type that will be checked for the provider and requester. For example "Roaming" will check if a roaming agreement exists between the two parties.

#### ContractValidationResponse

Attributes	Datatype	Constraints	Description
result	boolean		<b>True</b> if a valid contract of the defined category exists between requester and provider. <b>False</b> if no valid contract of the defined category exists between requester and provider.

#### 2038: BC Clearing House

This BC was exported [before](#).

## 2020: SRV Authorization

The clearing house interface which deals with requests from EVSE operators to determine if an EV driver is allowed to charge.

The same interface is implemented by the EVSPs so that the clearing house can ask the EVSP if a customer is allowed to charge at the specified charge point.

### AuthorizationRequest

Attributes	Datatype	Constraints	Description
sessionId	string	1	will be created by EVSE operator backend system (just unique in one EVSE Operator system)
EVCOID	2165: BO EVCOID	1	Contract ID which contains EVSP ID and Customer ID
EVSEID	2127: BO EVSEID	1	Charge Point ID
VIN	string	0..1 see ISO 3779 and others	Vehicle identification number
BIN	string	0..1	Battery identification number

### AuthorizationResponse

Attributes	Datatype	Constraints	Description
sessionId	string	1	will be created by EVSE operator backend system (just unique in one EVSE Operator system)
responseValue	boolean	1	if true is sent back to the EVSE operator system, the customer is allowed to charge, if false is returned, the customer is not allowed to charge

## 7 Energy Domain

### 7.1 Service Specification

#### 1572: UC Reduce Charge Power by DSO

##### 2122: BC EVSE energy back-end

The EVSE energy back-end business component is run by the Charge Management System and it is used to provide energy related services to the DSO.

<b>Provided Services</b>	2019: SRV Load Management Target 1909: SRV EVSE History Use 2013: SRV Load Curve 2017: SRV DSO predefines peaks 2016: SRV Current EV Charge Data
<b>Required Services</b>	2024: SRV Load Management Tracking 2025: SRV Congestion Management Tracking 2126: SRV Get Load Areas Update from DSO 2023: SRV Congestion Management Target

##### 2017: SRV DSO predefines peaks

DSO predefines peaks to manage hosting capacity of LV grid as a preliminary condition for electric mobility infrastructure to be installed and later on operated in a certain load area. EVSE Op. should be subscribed to this service in order to guarantee network safety while operating charging points.

##### DSOpredefinesPEAKS request

Attributes	Datatype	Constraints	Description
loadAreaID	string	Multiplicity: 1	loadAreaID as defined in 2138: BO LoadArea
peakCurveWinterTime	<a href="#">2133: BO Load Curve</a>		Target load curve defined by the DSO for winter time for load management request
peakCurveSpringTime	<a href="#">2133: BO Load Curve</a>		Target load curve defined by the DSO for spring time for load management request
peakCurveSummerTime	<a href="#">2133: BO Load Curve</a>		Target load curve defined by the DSO for summer time for load management request
peakCurveFallTime	<a href="#">2133: BO Load Curve</a>		Target load curve defined by the DSO for fall time for load management request

### DSOpredefinesPEAKS response

Attributes	Datatype	Constraints	Description
fulfilledDSOpredefinesPEAKSAcknowledge	boolean	TRUE/FALSE	If TRUE the request has been fulfilled
falseDSOpredefinesPeaksAcknowledge	string	Multiplicity: 1..*	If acknowledge is FALSE, this field contains the error code. List of predefined error codes.
falseDSOpredefinesPeaksDescription	string	Multiplicity: 1..*	Textual error description. If acknowledge is FALSE, this field contains the error description.

### Service specific Business Objects (Not part of Domain Model)

#### 2133: BO Load Curve

The Load Curve Business Object indicates the average daily load curve of an EVSE or EVSEs within a Load Area, described by a list of average power consumed each quarter of hour in the 24 hours. It's a vector of the sum of the power [kW] of meter readings from the EVSE(s) within a Load Area. The daily load curves can be averaged over different time periods as weekdays, Saturdays and holidays.

Attributes	Datatype	Constraints	Description
loadCurve	double	Multiplicity: *	List of power each quarter of hour in the 24 hours of the day.
typicalWeekDaysLoadCurve	double	Multiplicity: *	Daily load curves averaged on the week days
typicalSaturdayLoadCurve	double	Multiplicity: *	Daily load curve averaged on Saturdays
typicalHolidayLoadCurve	double	Multiplicity: *	Daily load curve averaged on holidays

#### 2123: BC DSO Load Management

The DSO Load Management business component is run by the DSO and it is used to request load / congestion management services and other energy related services to the EVSE energy back-end business component.

<b>Provided Services</b>	2024: SRV Load Management Tracking 2025: SRV Congestion Management Tracking 2023: SRV Congestion Management Target
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<b>Required Services</b>	2017: SRV DSO predefines peaks 2019: SRV Load Management Target
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## 1598: UC Aggregated EV charge overview by the DSO

2122: BC EVSE energy back-end

This BC was exported [before](#).

### 2016: SRV Current EV Charge Data

Retrieves either current or historical information of EVs State of Charge within a specific load area. This is a fundamental service to be run in order to:

- Sustain V2G scenarios because it delivers the first glance picture of power availability on LV grid.
- Perform statistical analysis and create value in the customer use patterns.
- Decide priorities among recharge process according to the customer requests and state of charge of their EV.

#### EVChargeData Request

Attributes	Datatype	Constraints	Description
loadAreaID	string	Multiplicity: 1	loadAreaID as defined in 2138: BO LoadArea Identifies the Load Area for which the requestor wants visibility of current EV charge data, if load area aggregation criteria is chosen. The load area is one of the possible families of aggregation criteria.
EVdataRangeStartTime	dateTime	Multiplicity: 1 ISO 8601 format YYYY-MM-DDTHH:MM:SSZ	Defines the start of the search range. The range defines the recharges that are/were active in this range. The start time cannot be more than 5 days in the past. If start time is not valued, the service returns only the active recharges
EVdataRangeEndTime	dateTime	<ul style="list-style-type: none"> <li>• Optional</li> <li>• ISO 8601 format YYYY-MM-DDTHH:MM:SSZ</li> </ul>	Defines the end of the search range. If start time has no value, the end time must have no value.



### EVChargeData Response

Attributes	Datatype	Constraints	Description
EVchargedataResponse	<a href="#">2146: EV charge data item</a>	Multiplicity: *	Contains data to be forwarded by the system that gathers EV charge data.

### Service specific Business Objects (Not part of Domain Model)

#### 2146: EV charge data item

This Business Object identifies the data of EV charge data response.

Attributes	Datatype	Constraints	Description
rechargeID	string	Multiplicity: 1	Unique identifier of the recharge session of the EVSE operator
VIN	string	Multiplicity: 1	ISO 3779 offers a worldwide unambiguous identification number of a vehicle that allows the DSO and other stakeholders to identify the vehicle. If this standard will be adopted by the DSO it is possible to identify the EVs recharge patterns for statistical purposes or energy availability for future V2G applications. The use of a common VIN standard by all EVSE Operator back-ends has to take into consideration, however (out of demo scope), privacy issues.
startBatteryCharge	double	Multiplicity: 1 value between 0 and 100	percentage of the battery charge at the beginning of the recharge session (if not available from the EV, default 0)
startBatteryKwh	double	Multiplicity: 1 value equal or greater than 0	Initial stored energy at the beginning of the recharge session (if not available from the EV, default 0)
lastBatteryCharge	double	Multiplicity: 1 value between 0 and 100	last known percentage of the battery charge. If the recharge session is over this is the final percentage
lastBatteryKwh	double	Multiplicity: 1 value equal or greater than 0	last known stored energy. If the recharge session is over this is the final stored energy into the battery
rechargeState	char	Multiplicity: 1 "A" for active, "F" for finished	

rechargeStartTime	date	Multiplicity: 1 ISO 8601 format YYYY-MM-DDTHH:MM:SSZ	
rechargeEndTime	date	Multiplicity: 1 ISO 8601 format YYYY-MM-DDTHH:MM:SSZ	

### 2125: BC DSO Mobility Management

The DSO Mobility Management business component is run by the DSO and it is used to request mobility services to the EVSE energy back-end business component.

<b>Provided Services</b>	2126: SRV Get Load Areas Update from DSO
<b>Required Services</b>	1909: SRV EVSE History Use 2013: SRV Load Curve 2016: SRV Current EV Charge Data

### 1599: UC History of EVSE use

#### 2122: BC EVSE energy back-end

This BC was exported [before](#).

#### 1909: SRV EVSE History Use

Retrieves historical use of EVSEs aggregated either per EVSE ID or Load Area.

#### EVSEHistoryUseRequest

Attributes	Datatype	Constraints	Description
aggregationParameter	string	required Multiplicity: 1 Possible values: "Load Area" "EVSE ID"	aggregationParameter is the aggregation criteria of the data to be fed back to the Service Requestor from the Service Provider (in this case the EVSE energy back-end). If the aggregation parameter is not provided, a Denial Of Service should be reported back.

loadAreaID	string	Multiplicity: 1	loadAreaID as defined in 2138: BO LoadArea Identifies the laod area that encompasses the EVSEs for which the Service Re-questor wants history of use
evseID	2127: BO EVSEID		The EVSE is one of the possible families of aggregation criteria. Example: "ITX0KKalphabetagamma" If EVSE aggregation criteria is chosen, the EVSE ID has to be specified.
startDay	Date	Multiplicity: 1 Format ISO 8601: "YYYY-MM-DD"	Identifies the start of the timeslot in which the data aggregation has to be narrowed inlf it's not provided all data retrieved according to the aggregation criteria will be provided since the first item recorded in the system.
endDay	Date	Multiplicity: 1 Format ISO 8601: "YYYY-MM-DD"	Identifies the end of the timeslot in which the data aggregation has to be narrowed in. If it's not provided all data retrieved according to the aggregation criteria will be provided up to the last item recorded in the system.

### EVSEHistoryUseResponse

Attributes	Datatype	Constraints	Description
evseID	2127: BO EVSEID	Multiplicity: 1	The EVSE ID is the Primary Key of EVSE Item.
numberOfFailedAuthorization	integer	Multiplicity: 1	This interface only will allow a maximum of 1000 results for performance reasons.
usagePercentage	float	Multiplicity: 1 valid range: 0.0-100.0	Shows the usage percentage of the specified EVSE(s) in the specified time slot.
consumedEnergy	float	Multiplicity: 1	It reports the amount of energy consumed for the specified EVSE(s) in the specified time slot in [KWh]
numberOfRecharges	integer	Multiplicity: 1	It counts only recharges with energy consumption in the specified time slot.
averageEnergyPerRecharge	float	Multiplicity: 1	in [Watt hour]

averagePowerOfMeterReading	double	Multiplicity: 1	Average power of all meter readings
averagePowerOfRecharges	double	Multiplicity: 1	Average power of all recharges
nominalPowerOfEvse	double	Multiplicity: 1	Nominal power linked to EVSE ID

### 2013: SRV Load Curve

Retrieves historical use of EVSEs aggregated either per EVSE ID or load area. The information to be provided is specified for a definite time frame and consists of daily typical load curves during weekdays, Saturdays or holidays.

#### LoadCurveRequest

Attributes	Datatype	Constraints	Description
aggregationParameter	string	Multiplicity: 1 Possible values: "Load Area" "EVSE ID"	aggregationParameter is the aggregation criteria of the EVSE history use data to be fed back to the Service Requestor. If the aggregation parameter is not provided, a Denial Of Service should be reported back.
loadAreaID	string	Multiplicity: 1	loadAreaID as defined in 2138: BO LoadArea. The Load Area is one of the possible aggregation criteria
evseID	<a href="#">2127: BO EVSEID</a>		The EVSE is one of the possible families of aggregation criteria. If EVSE aggregation criteria is chosen, the EVSE ID has to be specified. Example: "ITXOKKAlphabetagamma"
startDay	DateTime	Multiplicity: 1 Format ISO 8601: "YYYY-MM-DDThh:mm:ss"	Identifies the beginning of the timeslot in which the data aggregation has to be narrowed in. If it's not provided all data retrieved according to the aggregation criteria will be provided since the first item recorded in the system.
endDay	DateTime	Multiplicity: 1 Format ISO 8601: "YYYY-MM-DDThh:mm:ss"	Identifies the end of the timeslot in which the data aggregation has to be narrowed in. If it's not provided all data retrieved according to the aggregation criteria will be provided since the first item recorded in the system.

### LoadCurveResponse

Attributes	Datatype	Constraints	Description
loadCurve	<a href="#">2133: BO Load Curve</a>		Average load curve per load area or EVSE as requested for specified time periods

### Service specific Business Objects (Not part of Domain Model)

#### 2133: BO Load Curve

This Business Object was exported [before](#).

#### 2016: SRV Current EV Charge Data

This Service Interface was exported [link](#).

#### 2125: BC DSO Mobility Management

This BC was exported [before](#).

#### 2126: SRV Get Load Areas Update from DSO

The DSO dynamically defines, over time, Load Areas (LA) within its network (for instance based a maximum hosting capacity) and notifies either directly or via the Marketplace the updated Load Areas to the EVSE energy back-end, so that they speak a common language in terms of areas interested by a load or congestion management issue.

The EVSE Op. subscribes to a notification service that automatically sends updated LAs to its energy back-end sub-system whenever the DSO changes their definition. Therefore, the only request of this interface might be the loadAreaID: without specifying the loadAreaID field, updates on all Load Areas are downloaded in the EVSE Operator backend.

Once the EVSE Op. receives updates on the LAs (which practically are a list of PODs as described in Business Object load area), it will be able to see which EVSEs (univoquely associated to a POD) are contained in specific LA and, therefore, perform Load/Congestion Management. In other words, there is a 1:N relationship LA-POD defined by the DSO and a 1:1 relationship POD-EVSE defined by the EVSE energy back-end, where the LA-POD relationship changes over time.

### LAUpdate request

Attributes	Datatype	Constraints	Description
loadAreaID	string	Multiplicity: *	loadAreaID as defined in 2138: BO LoadArea. Identifies the load area that encompasses EVSEs for which the Service Requestor wants history of use

### LAUpdate response

Attributes	Datatype	Constraints	Description
loadAreaUpdated	<a href="#">2138: BO Load Area</a>		list of updated definitions of load areas

## Service specific Business Objects (Not part of Domain Model)

### 2138: BO Load Area

The Business Object Load Area (LA) indicates LV/MV network sub-area, which is dynamically defined by the DSO under certain criteria, for instance, maximum hosting capacity.

The format of a LA can be a list of PODs, within a specific network area (e.g. under LV substations in a defined geographic area) which cumulated capacity does not exceed the maximum hosting capacity. The aim of defining LAs is to provide DSO and EVSE operators with a common term to univocally identify the location where a congestion or load management need occur.

Attributes	Datatype	Constraints	Description
loadAreaID	string	Multiplicity: 1	Identification of the load area defined by the DSO
loadAreaValidityStartDate	date	Multiplicity: 1 ISO 8601 format YYYY-MM-DDTHH:MM:SSZ	Start date of the validity of the Load Area update
loadAreaValidityDate	date	Multiplicity: 1 ISO 8601 format YYYY-MM-DDTHH:MM:SSZ	End date of the validity of the Load Area update. This value is specified only for old updates and not current ones
LAcontent	string	Multiplicity: *	list of PODs (Points of Delivery) within a specific load area in the DSO's network. The DSO defines this value under specific criteria set by the DSO itself.

### 1602: UC flexible load for congestion management

#### 2122: BC EVSE energy back-end

This BC was exported [before](#).

#### 2019: SRV Load Management Target

Load Management Target service. Derived from Network Congestion / Flexible Load Management use cases.

Sets the target that should be accomplished by either the EVSE Op. or the EVSP to fulfill DSO needs and get remunerated.

From a DSO point of view, while SRV 2019 has a "pull" approach, where EVSE operators bid for Load Management Target services and the DSO pulls the best offer, the SRV 2023 here described has a push approach because the DSO detects a urgent congestion issue within a Load Area and pushes the Congestion Management Target service to the EVSE Operator.

### LMTARGET request

Attributes	Datatype	Constraints	Description
DSOrequestID	string	Multiplicity: 1	Unique identification of the load management request form the DSO.
loadAreaID	string	Multiplicity: 1	loadAreaID as defined in 2138: BO Load Area
targetLoadCurve	<a href="#">2133: BO Load Curve</a>		Maximum forecast depth is 48 hours from the current time. These are the values of target power to be achieved from the EVSE operator backend
priority	integer	Multiplicity: 1 value range is from 1 (max priority) to 5 (lowest priority).	

### LMTARGET response

Attributes	Datatype	Constraints	Description
fulfilledLMTARGETrequestAcknowledge	boolean	TRUE/FALSE	If TRUE, the the EVSE energy back-end notifies the DSO load mgmt of accomplished request
maxTargetTime	time	Multiplicity: 1 MM:SSz	This field states till which time the EVSE backend will comply to the DSO request, after this time the EVSE backend will not anymore consider the DSO request
errorCode	string	Multiplicity: *	List of predefined error codes. If acknowledge is FALSE, this field contains the error code
errorDescription	string	Multiplicity: *	Textual error description. If acknowledge is FALSE, this field contains the error description

### 2123: BC DSO Load Management

This BC was exported [before](#).

### 2024: SRV Load Management Tracking

Load Management Tracking service. Derived from Network Congestion / Flexible Load Management use cases.

At the end of each load management transaction, the EVSE operator forwards to the DSO the Load Management Detail Record (LMDR) in order to be remunerated based on the load shedding details provided in the LMDR.

Verifies that the LM target has been accomplished by either the EVSE Op. or the EVSP in order to fulfill DSO needs and get remunerated.

#### LMTRACKING request

Attributes	Datatype	Constraints	Description
DSOrequestID	string	Multiplicity: 1	Identifies the request made previously by the DSO.
declinedAUTH	integer	Multiplicity: 1	Number of declined authorization because of the DSO load mgmt request
sheddingEventsDetails	<a href="#">2139: BO Load Management Detail Record</a>		Provides the details of shedding events offered by the EVSE Operator to the DSO

#### LMTRACKING response

Attributes	Datatype	Constraints	Description
LMDReceiptAcknowledge	boolean	TRUE/FALSE	if TRUE the LMDR had been correctly received by the DSO Load Management BC
errorCode	string	Multiplicity: *	list of predefined error codes . If acknowledge is FALSE, this field contains the error code
errorDescription	string	Multiplicity: *	Textual error description . If acknowledge is FALSE, this field contains the error description

#### Service specific Business Objects (Not part of Domain Model)

##### 2139: BO Load Management Detail Record

The Business Object Load Management Detail Record (LMDR) is generated for each load/congestion management event occurred within a recharge transaction and accomplished by the EVSE Op. or EVSP. The LMDR is sent to the DSO in order for him to be rewarded.

Attributes	Datatype	Constraints	Description
LMDRID	string	Multiplicity: 1	Unique identification of the load management detail record. It will be created by the EVSE Load Management business component



EVSErechargeID	string	Multiplicity: 1	Unique identification of the recharge transaction in which load/congestion management occurred. It will be created by EVSE operator back-end
eventStartTimeStamp	dateTime	Multiplicity: 1..* YYYY:MM:DD HH:MM:SS	time stamp at the beginning of each load curtailment session that occurred within a recharge transaction
eventDuration	float	Multiplicity: 1..*	duration between time-stamps of the load curtailment sessions
curtailedPower	float	Multiplicity: 1..*	amount of power curtailed by the EVSE operator in each curtailment session occurred within a recharge transaction
priority	enum	Multiplicity: 1 value range is from 1 (max priority) to 5 (lowest priority)	indicates the type of urgency/priority of the DSO request to which the EVSE Operator responded

## 2025: SRV Congestion Management Tracking

Congestion Management Tracking service. Derived from Network Congestion / Flexible Load Management use cases.

At the end of each congestion management transaction, the EVSE operator forwards to the DSO the Load Management Detail Record (LMDR) in order to be remunerated based on the load shedding details provided in the LMDR.

Verifies that the Congestion Management target has been accomplished by either the EVSE Op. or the EVSP in order to fulfill DSO needs and get remunerated

### CMTrackingRequest

Attributes	Datatype	Constraints	Description
DSOrequestID	string	Multiplicity: 1	Identifies the request made previously by the DSO.
declinedAUTH	integer	Multiplicity: 1	Number of declined authorization because of the DSO mgmt request
sheddingEventsDetails	<a href="#">2139: BO Load Management Detail Record</a>		Provides the details of shedding events offered by the EVSE Operator to the DSO

### CMTrackingResponse

Attributes	Datatype	Constraints	Description
LMDReceiptAcknowledge	boolean	TRUE/FALSE	if TRUE the LMDR had been correctly received by the DSO Load Management BC
errorCode	string	Multiplicity: *	list of predefined error codes . If acknowledge is FALSE, this field contains the error code
errorDescription	string	Multiplicity: *	Textual error description . If acknowledge is FALSE, this field contains the error description

### Service specific Business Objects (Not part of Domain Model)

#### 2139: BO Load Management Detail Record

This Business Object was exported [before](#).

#### 2023: SRV Congestion Management Target

Congestion Management Target service. Derived from Network Congestion / Flexible Load Management use cases.

Sets the mandatory asynchronous demand that should be accomplished by either the EVSE Op. or the EVSP to fulfill DSO issues regarding congestion over LV grid.

From a DSO point of view, while SRV 2019 has a "pull" approach, where EVSE operators bid for Load Management Target services and the DSO pulls the best offer, the SRV 2023 here described has a push approach because the DSO detects a urgent congestion issue within a Load Area and pushes the Congestion Management Target service to the EVSE Operator.

### CMtarget request

Attributes	Datatype	Constraints	Description
DSORequestID	string	Multiplicity: 1	Unique identification of the congestion managemtn request from the DSO.
loadAreaID	string	Multiplicity: 1	loadAreaID as defined in 2138: BO LoadArea Indicates the Load Areas targeted for the Congestion Management request.
targetLoadCurve	<a href="#">2133: BO Load Curve</a>	Multiplicity: 1 maximum forecast depth is 48 hours from the current time	These are the values of target power to be achieved from the EVSE operator backend
priority	enum	Multiplicity: 1 only value is 1 (max priority)	congestion event refers to a high priority request

### CMtarget data response

Attributes	Datatype	Constraints	Description
fulfilledCMtargetAcknowledge	boolean	TRUE/FALSE	if TRUE the EVSE energy back-end has accomplished the congestion management request
maxTargetTime	time	Multiplicity: 1 MM:SSz	This field states till which time the EVSE backend will comply to the DSO request, after this time the EVSE backend will not anymore consider the DSO request
errorCode	string	Multiplicity: *	List of predefined error codes. If acknowledge is FALSE, this field contains the error code
errorDescription	string	Multiplicity: *	Textual error description. If acknowledge is FALSE, this field contains the error description

### Service specific Business Objects (Not part of Domain Model)

#### 2133: BO Load Curve

This Business Object was exported [before](#).

## 8 Marketplace Domain

The specification of the Marketplace Domain describes the necessary functionality (core services) to enable services defined in the other domains by providing a common platform. The core services will mainly be offered by user interfaces for the purpose of enabling business partners to sell and buy electro-mobility related services.

Moreover, the marketplace will offer service interfaces to enable the marketplace to act as central gateway for the usage of the offered services. It will provide security features such as access restrictions as well as information needed for the accounting. In addition to that a service interface will be offered to verify contracts closed by business partners in case of roaming scenarios.

### 8.1 Functional Decisions

#### **2143: FD Search for Services**

Affected Use Cases 1239: UC Search and Select Services

Due to the fact, that there is a very limited number of services available in Release 1, a search functionality will not be implemented. Instead a list of available services is presented to the user.

#### **2147: FD Search of Business Partner**

Affected Use Cases 1373: UC Search and Select Business Partner

In the first release the search functionality of a business partner will be used internally. There will be no user interfaces.

#### **2159: FD Transaction Details Not Required**

Affected Use Cases 1471: UC View Service Transaction Details

Due to the fact that there will only be a minimal set of data recorded with service transactions in release 1, there will be no detailed view of single service transactions. Instead all service transactions will be listed in a table that shows all necessary information for each service transaction. For future releases this might change when additional data is recorded with service transactions.

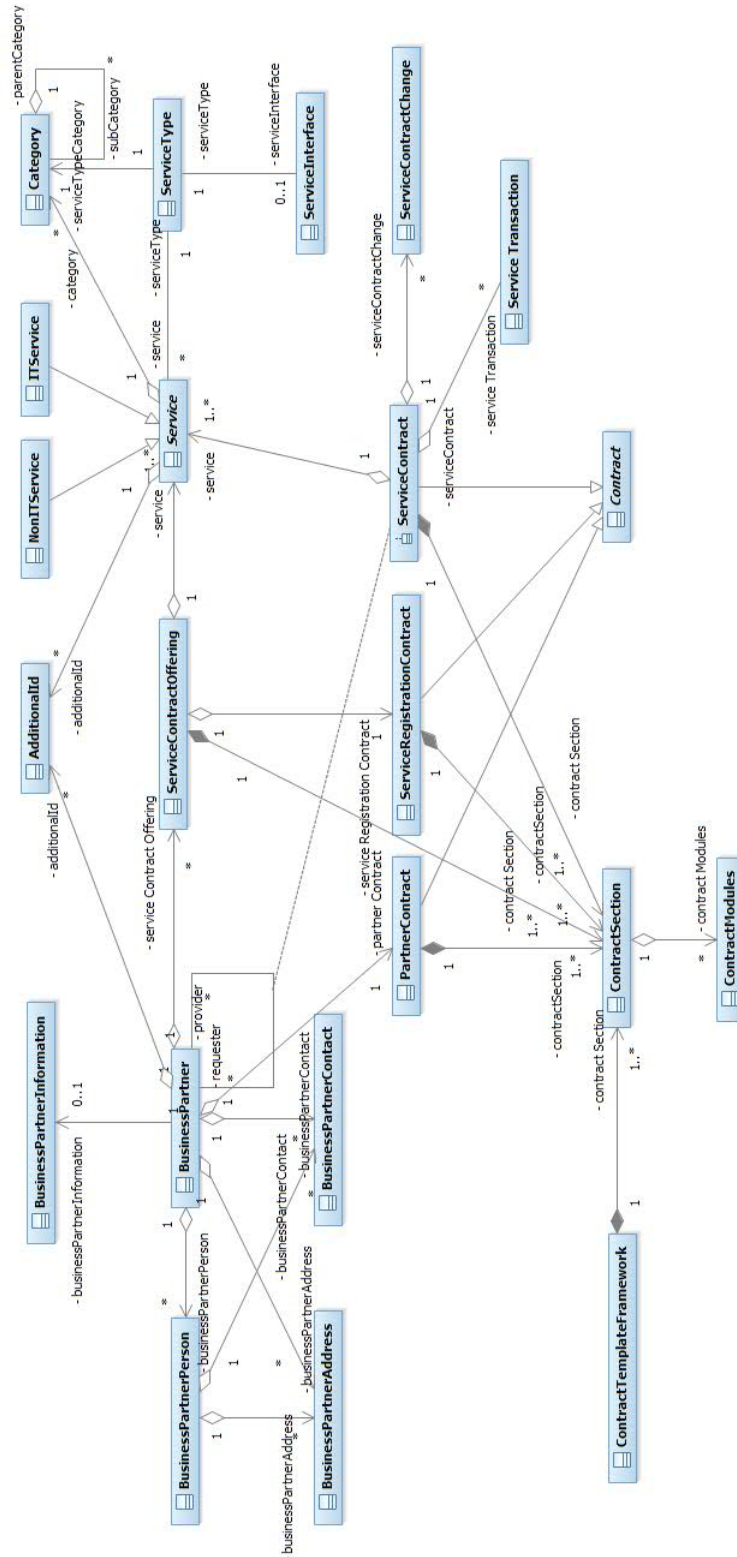
#### **2166: FD Use of existing administrative tools**

Affected Use Cases 1255: UC Start/Stop Service  
1250: UC Register Service

Use cases that exclusively describe administrative tasks and do not involve actors of the business partner hierarchy (see Actors defined in D3.3 chapter 8.2) will not be specified if the functionality that is described can be provided by existing administrative tools.

## 8.2 Domain Model

### 2077: DM Marketplace Domain



## 2076: BO Contract

The business object "BO Contract" is a data container representing all types of contracts as an abstract object.

Attributes	Datatype	Constraints	Description
contractId	string	<ul style="list-style-type: none"> <li>7 alphanumeric characters</li> <li>Required</li> </ul>	Identifier of the contract
contractDate	dateTime	Required	Timestamp of the last contract change.
validFrom	dateTime	9 Required	Timestamp of the start date of the contract.
validThrough	dateTime	<ul style="list-style-type: none"> <li>Optional</li> </ul>	Timestamp of the end date of the contract.

## 1460: BO ServiceContractOffering

The business object "BO ServiceContractOffering" is a data container representing a service offer of a Business Partner (Service Provider) on the marketplace.

Attributes	Datatype	Constraints	Description
offeringId	string	<ul style="list-style-type: none"> <li>7 alphanumeric characters</li> <li>Required</li> </ul>	Identifier of the offering
offeringDate	dateTime	<ul style="list-style-type: none"> <li>Required</li> </ul>	Timestamp of the last offering change.
validFrom	dateTime	<ul style="list-style-type: none"> <li>Required</li> </ul>	Timestamp of the start date of the offering.
validThrough	dateTime	7. Optional	Timestamp of the end date of the offering.
offeringStatus	string	<ul style="list-style-type: none"> <li>Enumeration</li> <li>Required</li> </ul>	Status of the offering. Possible status in Release 1: <ul style="list-style-type: none"> <li>Submitted</li> <li>Published</li> </ul>

contractSection	<a href="#">2079 BO Contract-Section</a>	<ul style="list-style-type: none"> <li>Multiplicity: *</li> </ul>	Text sections of the contract offering
service	<a href="#">544 BO Service</a>	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	In further releases the multiplicity will change to 1..*
serviceRegistrationContract	<a href="#">1464 BO ServiceRegistration-Contract</a>	B. Multiplicity: 1	Contract between the service provider and the marketplace.

### 1996: BO BusinessPartnerAddress

The business object "BO BusinessPartnerAddress" is a data container for an address used by the BusinessPartner or by the BusinessPartnerPerson.

Attributes	Datatype	Constraints	Description
addressType	string	<ol style="list-style-type: none"> <li>Enumeration: "Postal Address", "Street Address"</li> <li>Required</li> </ol>	Type of the specified address, i.e. postal address (address with pobox) or street address.
street	string	<ul style="list-style-type: none"> <li>Max. length: 100 characters</li> <li>Optional, but required on addressType "Street Address"</li> </ul>	First addressline.
street2	string	<ul style="list-style-type: none"> <li>Max. length: 100 characters</li> <li>Optional</li> </ul>	Second addressline.
poBox	string	<ul style="list-style-type: none"> <li>Max. length: 50 characters</li> <li>Optional, but required on addressType "PostalAddress"</li> </ul>	Post office box.
city	string	<ul style="list-style-type: none"> <li>Max. length: 50 characters</li> <li>Required</li> </ul>	Town or city of the address.
zip	string	<ul style="list-style-type: none"> <li>Max. length: 10 characters</li> <li>Required</li> </ul>	Postal code of the address

region	string	<ul style="list-style-type: none"> <li>• Max. length: 50 characters</li> <li>• Optional</li> </ul>	State or province of the address
countryCode	string	<ul style="list-style-type: none"> <li>B. Max. length: 2 characters</li> <li>C. Required</li> </ul>	Country code defined by ISO 3166-1

### 1461: BO BusinessPartner

The business object "BO BusinessPartner" is a data container for a legal entity (company) registered at the marketplace acting as service provider and/or service requester.

Attributes	Datatype	Constraints	Description
partnerId	string	<ul style="list-style-type: none"> <li>• 7 alphanumeric characters</li> <li>• Required</li> </ul>	Identifier of the Business Partner
additionalId	<a href="#">2064 BO AdditionalId</a>	<ul style="list-style-type: none"> <li>• Multiplicity : *</li> </ul>	Additional Ids of the Business Partner, e.g. EVCOID, EVSEID
dn	string	<ul style="list-style-type: none"> <li>• 150 alphanumeric characters</li> <li>• Required</li> </ul>	Distinguished name of the Business Partner
companyName	string	<ul style="list-style-type: none"> <li>• Max. length: 50 characters</li> <li>• Required</li> </ul>	Official name of the Business Partner
companyAcronym	string	<ul style="list-style-type: none"> <li>• Max. length: 5 characters</li> <li>• Optional</li> </ul>	Acronym of the company's name
legalRegistration	string	<ul style="list-style-type: none"> <li>• Max. length: 100 characters</li> <li>• Optional</li> </ul>	ID of the local legal registration



status	string	<ul style="list-style-type: none"> <li>• Enumeration: "R", "A", "I"</li> <li>• Required</li> </ul>	Status of the Business Partner: <ul style="list-style-type: none"> <li>• R: Registered, unconfirmed</li> <li>• A: Active, confirmed</li> <li>• I: Inactive, confirmed</li> </ul>
businessPartnerAddress	<a href="#">1996 BO BusinessPartnerAddress</a>	<ul style="list-style-type: none"> <li>• Multiplicity : 1..*</li> </ul>	Addresses of the Business Partner
businessPartnerContact	<a href="#">1997 BO BusinessPartnerContact</a>	<ul style="list-style-type: none"> <li>• Multiplicity: 1..*</li> </ul>	Contacts of the Business Partner
businessPartnerInformation	<a href="#">2003 BO BusinessPartnerInformation</a>	<ul style="list-style-type: none"> <li>• Multiplicity: 1</li> </ul>	Additional information on the Business Partner
businessPartnerPerson	<a href="#">2004 BO BusinessPartnerPerson</a>	<ul style="list-style-type: none"> <li>• Multiplicity: 1..*</li> </ul>	Users of the Business Partner
provider	1461 BO BusinessPartner	<ul style="list-style-type: none"> <li>• Multiplicity : *</li> </ul>	Business Partners, acting as providers against the given Business Partner, connected by the <a href="#">547 BO Service Contract</a> .
requester	1461 BO BusinessPartner	<ul style="list-style-type: none"> <li>• Multiplicity : *</li> </ul>	Business Partners, acting as requesters against the given Business Partner, connected by the <a href="#">547 BO Service Contract</a> .
partnerContract	<a href="#">1462 BO PartnerContract</a>	<ul style="list-style-type: none"> <li>• Multiplicity: 1</li> </ul>	Registration contract of the marketplace.
serviceContractOffering	<a href="#">1460 BO ServiceOffering</a>	<ul style="list-style-type: none"> <li>• Multiplicity: *</li> </ul>	Set of the service offerings of the Business Partner.

### 1997: BO BusinessPartnerContact

The business object "BO BusinessPartnerContact" is a data container for the contacts of a BusinessPartner or a BusinessPartnerPerson.

Attributes	Datatype	Constraints	Description
id	string	<ul style="list-style-type: none"> <li>Required</li> </ul>	Unique identifier of the contact
contactType	string	<ul style="list-style-type: none"> <li>Enumeration: "Email", "Phone (Office)", "Phone (Mobile)", "Fax"</li> <li>Required</li> </ul>	Type of the specified contact.
contact	string	<ul style="list-style-type: none"> <li>Max. length: 100 characters</li> <li>Required</li> </ul>	Phone number or email address

#### 1462: BO PartnerContract

The business object "BO PartnerContract" is a data container representing contract type which has to be accepted during the registration of a Business Partner.

Attributes	Datatype	Constraints	Description
contractStatus	string	<ul style="list-style-type: none"> <li>Enumeration</li> <li>Required</li> </ul>	Status of the contract
contractSection	<a href="#">2079 BO ContractSection</a>	<ul style="list-style-type: none"> <li>Multiplicity: *</li> </ul>	Text sections of the contract

#### 1464: BO ServiceRegistrationContract

The business object "BO ServiceRegistrationContract" is a data container representing contract type which has to be accepted during the registration of a service by the Business Partner (Service Provider).

Attributes	Datatype	Constraints	Description
contractStatus	string	<ul style="list-style-type: none"> <li>Enumeration</li> <li>Required</li> </ul>	Status of the contract
contractSection	<a href="#">2079 BO ContractSection</a>	<ul style="list-style-type: none"> <li>Multiplicity: *</li> </ul>	Text sections of the contract

### 2007: BO NonITService

The business object "BO NotITService" is a data container representing a single non-IT related service offered at the marketplace. It is used to handle contracts that does not cover IT services, e.g. Roaming Contracts.

The object itself provides no additional attributes upon the attributes provided by the parent BO Service Object.

### 2004: BO BusinessPartnerPerson

The business object "BO BusinessPartnerPerson" is a data container for an employee (user) of a company registered at the marketplace acting as service provider and/or service requester.

Attributes	Datatype	Constraints	Description
personId	string	<ul style="list-style-type: none"> <li>7 alphanumeric characters</li> <li>Required</li> </ul>	Identifier of the Business-PartnerPerson (User)
dn	string	<ul style="list-style-type: none"> <li>Max. length: 150 characters</li> <li>Required</li> </ul>	Distinguished name of the user
firstName	string	<ul style="list-style-type: none"> <li>Max. length: 50 characters</li> <li>Required</li> </ul>	Firstname of the user
middleName	string	<ul style="list-style-type: none"> <li>Max. length: 50 characters</li> <li>Optional</li> </ul>	Middlename of the user
lastName	string	<ul style="list-style-type: none"> <li>Max. length: 50 characters</li> <li>Required</li> </ul>	Lastname of the user
nameSuffix	string	<ul style="list-style-type: none"> <li>Max. length: 10 characters</li> <li>Optional</li> </ul>	Name suffix of the user, e.g. Jr., Sr. ,...
role	string	<ul style="list-style-type: none"> <li>Enumeration: "Administrator"</li> <li>Required</li> </ul>	In release 1 there is only one user per company with the administrator role

department	string	<ul style="list-style-type: none"> <li>Max. length: 50 characters</li> <li>Optional</li> </ul>	Department of the user
preferredLang	string	<ul style="list-style-type: none"> <li>2 characters</li> </ul>	Corresponding language id to ISO 639-1
businessPartnerAddress	<a href="#">1996 BO Business-PartnerAddress</a>	<ul style="list-style-type: none"> <li>Multiplicity : *</li> </ul>	Addresses of the user
businessPartnerContact	<a href="#">1997 BO Business-PartnerContact</a>	<ul style="list-style-type: none"> <li>Multiplicity: *</li> </ul>	Contacts of the user
preferredContact	<a href="#">1997 BO Business-PartnerContact</a>	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	Preferred contact of the user

#### 2064: BO AdditionalId

The business object "BO AdditionalId" is a data container for additional IDs represented as key/value pairs.

Attributes	Datatype	Constraints	Description
idType	string	<ul style="list-style-type: none"> <li>Max. length: 20 characters</li> <li>Required</li> </ul>	Key of the ID Currently defined key values: ProviderID (contained in 2165: BO EVCOID) EVSEOperatorID (equivalent to 2130: BO EVSEOperatorID)
idValue	string	<ul style="list-style-type: none"> <li>Max. length: 20 characters</li> <li>Required</li> </ul>	Value of the ID.

#### 2003: BO BusinessPartnerInformation

The business object "BO BusinessPartnerInformation" is a data container for additional information on a Business Partner (company).

Attributes	Datatype	Constraints	Description
companyDescription	string	<ul style="list-style-type: none"> <li>Max. length: 1000 characters</li> <li>Optional</li> </ul>	Description of the company
companyUrl	string	<ul style="list-style-type: none"> <li>Max. length: 150 characters</li> <li>Optional</li> </ul>	URL of the website of the company
companyType	string	<ul style="list-style-type: none"> <li>Enumeration</li> <li>Optional</li> </ul>	Possible values are, e.g.: <ul style="list-style-type: none"> <li>Energy Retailer</li> <li>OEM</li> <li>Non-profit organization</li> <li>...</li> </ul>
companyEmployees	string	<ul style="list-style-type: none"> <li>Enumeration</li> <li>Optional</li> </ul>	Possible values are, e.g.: <ul style="list-style-type: none"> <li>1 -10 Employees</li> <li>10 - 100 Employees</li> <li>100 -1000 Employees</li> <li>more than 1000 Employees</li> </ul>
companyRevenue	string	<ul style="list-style-type: none"> <li>Enumeration</li> <li>Optional</li> </ul>	Possible values are, e.g.: <ul style="list-style-type: none"> <li>less than 1 M €</li> <li>1 M - 10 M €</li> <li>10 M - 100 M €</li> <li>more than 1000 M €</li> </ul>

### 2069: BO Category

The business object "BO Category" is a data container representing categories in a hierarchical structure, e.g. service category , region.

Attributes	Datatype	Constraints	Description
categoryId	string	<ul style="list-style-type: none"> <li>Max. length: 5 characters</li> <li>Required</li> </ul>	Identifier of the category entry
categoryValue	string	<ul style="list-style-type: none"> <li>Max. length: 100 characters</li> <li>Required</li> </ul>	Value of the category entry

parentCategory	<a href="#">2069 BO Category</a>	<ul style="list-style-type: none"> <li>• Multiplicity : 0..1</li> </ul>	
subCategory	<a href="#">2069 BO Category</a>	<ul style="list-style-type: none"> <li>• Multiplicity : *</li> </ul>	

### 2006: BO ITService

The business object "BO ITService" is a data container representing a single IT related service offered at the marketplace.

Attributes	Datatype	Constraints	Description
input	string	<ul style="list-style-type: none"> <li>• Max. length: 1000 characters</li> <li>• Required</li> </ul>	Textual description of the input parameters.
output	string	<ul style="list-style-type: none"> <li>• Max. length: 1000 characters</li> <li>• Required</li> </ul>	Textual description of the output parameters.

### 544: BO Service

The business object "BO Service" is a data container representing a single service offered at the marketplace.

Attributes	Datatype	Constraints	Description
serviceId	string	<ul style="list-style-type: none"> <li>• 7 alphanumeric characters</li> <li>• Required</li> </ul>	Identifier of the service
additionalId	<a href="#">2064 BO AdditionalId</a>	<ul style="list-style-type: none"> <li>• Multiplicity : *</li> </ul>	Additional Ids of the service
subject	string	<ul style="list-style-type: none"> <li>• Max. length: 100 characters</li> <li>• Required</li> </ul>	Subject of the service

description	string	<ul style="list-style-type: none"> <li>Max. length: 1000 characters</li> <li>Required</li> </ul>	Textual description of the service
category	<a href="#">2069 BO Category</a>	<ul style="list-style-type: none"> <li>Multiplicity : *</li> </ul>	Different categories for ordering services, e.g. <ul style="list-style-type: none"> <li>Service Category: Charging, Roaming</li> <li>Region</li> <li>Target Customer</li> </ul>
serviceType	<a href="#">2087 BO ServiceType</a>	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	Service type of the service

#### 554: BO ServiceInterface

The business object "BO ServiceInterface" is a data container representing the service interface of an IT service.

Attributes	Datatype	Constraints	Description
servicelfld	string	<ul style="list-style-type: none"> <li>7 alphanumeric characters</li> <li>Required</li> </ul>	Identifier of the service
wSDLFileUrl	string	<ul style="list-style-type: none"> <li>Max. length: 500 characters</li> <li>Required</li> </ul>	URL directing to the WSDL file of the service interface.
service	<a href="#">2087 BO ServiceType</a>	<ul style="list-style-type: none"> <li>Multiplicity : 1</li> </ul>	Service type implementing the service interface.

#### 546: BO ServiceTransaction

The business object "BO ServiceTransaction" is a data container representing log data of the call of a service.

Attributes	Datatype	Constraints	Description
transactionId	string	<ul style="list-style-type: none"> <li>Max Length: 50 characters</li> <li>Required</li> </ul>	Identifier of the transaction
transactionDate	dateTime	<ul style="list-style-type: none"> <li>Required</li> </ul>	Timestamp of the completed transaction
transactionStatus	string	<ul style="list-style-type: none"> <li>Required</li> </ul>	Status of the completed transaction
transactionText	string	<ul style="list-style-type: none"> <li>Optional</li> </ul>	Additional textual information of the transaction.
serviceContract	<a href="#">547 BO Service-Contract</a>	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	Reference to the corresponding contract.

#### 547: BO ServiceContract

The business object "BO ServiceContract" is a data container representing contract type which is created between two Business Partners (Service Provider and Service Requester).

Attributes	Datatype	Constraints	Description
contractStatus	string	<ul style="list-style-type: none"> <li>Enumeration</li> <li>Required</li> </ul>	Status of the contract
contractSection	<a href="#">2079 BO ContractSection</a>	<ul style="list-style-type: none"> <li>Multiplicity: *</li> </ul>	Text sections of the contract
service	<a href="#">544 BO Service</a>	<ul style="list-style-type: none"> <li>Multiplicity: 1</li> </ul>	In further releases the multiplicity will change to 1..*
serviceTransaction	<a href="#">546 BO ServiceTransaction</a>	<ul style="list-style-type: none"> <li>Multiplicity: *</li> </ul>	Set of transactions belonging to the contract.
serviceContractChange	<a href="#">2116 BO ServiceContractChange</a>	<ul style="list-style-type: none"> <li>Multiplicity: *</li> </ul>	Set of change objects belonging to the contact.



## 2087: BO ServiceType

The business object "BO ServiceType" is a data container representing a type for services offered at the marketplace. In case of IT Services a service type is characterized by its service interface. For Non-IT Services the service interface remains null.

Attributes	Datatype	Constraints	Description
serviceTypeid	string	<ul style="list-style-type: none"> <li>7 alphanumeric characters</li> <li>Required</li> </ul>	Identifier of the service type.
description	string	<ul style="list-style-type: none"> <li>Max. length: 1000 characters</li> <li>Required</li> </ul>	Textual description of the service type.
standardType	boolean	<ul style="list-style-type: none"> <li>Required</li> </ul>	Indicator, if the service type represents a standard or not, i.e. a standard type with a service interface represents a standard interface.
category	<a href="#">2069 BO Category</a>	<ul style="list-style-type: none"> <li>Multiplicity : 1</li> </ul>	The main category for ordering services, e.g. Service Category: Charging, Roaming
serviceInterface	<a href="#">554 BO ServiceInterface</a>	<ul style="list-style-type: none"> <li>Multiplicity: 0..1</li> </ul>	Service interface that characterizes the service type in case of an IT service.
service	<a href="#">544 BO Service</a>	<ul style="list-style-type: none"> <li>Multiplicity : *</li> </ul>	Services belonging to the service type.

## 8.2 Service Specification

### 1241: UC Call of Service

#### 1965: BC Service Brokerage

The "Service Brokerage" component relates to the Service Brokerage Sub Domain of the Marketplace described in the GeM Reference Architecture. The component will implement the following functionality and expose it to users of the marketplace through Service Interfaces:

- Service Requester Access Gateway: It is the initial entry point for Service Requesters to access Services offered on the Marketplace.
- Service Proxy Environment: It manages the interactions with Services executed outside the Marketplace.
- Service Selection Engine: This is a service allowing Service usage based on certain criteria. Service interfaces may contain certain properties. Based on these properties, services can be selected. In this case the Service Requester requests a certain service and a certain criteria just from the Marketplace and not from a special Service Provider. The Selection Engine selects an

appropriate Service based on the given criteria and the subscriptions of the Service Requester.  
 Release 1 scope: For Release 1 the Service Selection Engine will only be able to select a service based on the Service ID and the Provider ID that has to be specified when calling a service.

- Not in scope: Service Aggregation Engine is currently not in scope for Release 1 and will be added for Release 2

<b>Provided Services</b>	1968: SRV DynamicServiceGateway
<b>Required Services</b>	

### 1968: SRV DynamicServiceGateway

The "DynamicServiceGateway" service will allow marketplace users to call services that they contracted on the Marketplace. The service will take care of authentication of the Service Requester, will check if a valid contract with the Service Provider exists for the service that is called and will then route the service call to the Service Provider. Additionally the service will create a Service Transaction for the service call. This Service Interface differs from other Service Interfaces that are provided by or offered on the marketplace, because it will not directly be used in the implementation of client applications. Those applications will be created using the Service Interface (WSDL) provided by the Service Provider. To use the Marketplace DynamicServiceGateway only the URI of the service call will be modified to the address of this marketplace service. The URI will also contain the required parameters for selection of the correct Service by the Marketplace.

Authentication will be required using the HTTPS protocol with a valid certificate that is associated with the Marketplace account of the Service Requester. The user ID of the Service Requester will be added to the service call to the Service Provider as HTTP "X-On-Behalf-Of" header attribute, so that the Service Provider can identify the source of the request. The Service Provider can use this for example to provide user specific data via a service offered on the marketplace. However the Service Provider does not need to implement an authorization mechanism itself based on this attribute, since this is already taken care of by the marketplace.

Notes:

- For the demonstration (at least for the first release) only SOAP 1.1/1.2 over HTTPS will be supported as protocol for service calls. This is to enable maximum compatibility for the demonstration with justifiable efforts. For a commercial marketplace multiple other protocols should be supported to allow as many business partners as possible to integrate new and existing systems.
- Although this service will be involved in most UCs, it will not be explicitly included in the specification. In general all services outside the marketplace domain can be invoked using the "DynamicServiceGateway" service.

### DynamicServiceGatewayRequest

Attributes	Datatype	Constraints	Description
provider	String		Matches the partnerId defined in 1461: Bo BusinessPartner. This identifies the Service Provider for the service that will be called. The attribute will be passed to the DynamicServiceGateway Service as parameter in the URI and will not be part of the payload of the message.

alternativeProviderId	2064: BO AdditionalId	Multiplicity: 0..1 Either "provider" or "alternativeProviderId" must be set Only "EVCOProviderID" is allowed as id-Type for the BO AdditionalId.	Can be used to identify the Service Provider if the Business Partner ID is unknown - e.g. in the Roaming scenario where only the Provider ID is known which is part of the EVCOID (suggested for standardization)
service	String		ID of service to call Either the ID of an individual service offered on the marketplace or the ID of a standard interface. The attribute will be passed to the DynamicServiceGateway Service as parameter in the URI and will not be part of the payload of the message.
payload	xsd:anyType		Payload of service that will be forwarded to the Service Provider. The content depends on the Service Interface of the Service that is called.

#### DynamicServiceGatewayResponse

Attributes	Datatype	Constraints	Description
result	xsd:anyType		Result of the service call to the Service Provider

#### Exceptions

Name	Description
ProviderNotAvailable	The Service Provider identified by the provider attribute of the Request is not available in the Marketplace.
ServiceNotAvailable	The Service identified by the service attribute of the Request is not available in the Marketplace.
NoValidContractExists	No valid contract exists between the Business Partner calling this Service and the Business Partner identified by the provider attribute of the Request for the Service identified by the service attribute of the Request.

## **1491: UC Create Service Transaction**

1965: BC Service Brokerage

This BC was exported [before](#).

1968: SRV DynamicServiceGateway

This Service Interface was exported [link](#).

## **8.3 User Interface Specification**

### **1250: UC Register Service**

Related Functional Decisions 2166: FD Use of existing administrative tools

### **1255: UC Start/Stop Service**

Related Functional Decisions 2166: FD Use of existing administrative tools

### **1373: UC Search and Select Business Partner**

Related Functional Decisions 2147: FD Search of Business Partner

### **1471: UC View Service Transaction Details**

Related Functional Decisions 2159: FD Transaction Details Not Required

### **1239: UC Search and Select Services**

Related Functional Decisions 2143: FD Search for Services

## **1966: BC Business Services**

The "Business Services" component relates to the Business Services Sub Domain of the Marketplace described in the GeM Reference Architecture. The component will implement the following functionality and expose it to users of the marketplace through User Interfaces and - for some functionalities that need to be accessed by other systems, as the Clearing House - also through Service Interfaces:

- **Service Store:** Is used to browse and sell or buy Services. Service Requesters are using this functionality to browse through offered Services. During the purchase process a contractual relationship is established between the Business Partners. Furthermore the Service Store is used to bring in and remove services to/from the Marketplace.
- **Partner Management:** It offers functionality to manage "customer data" of all Marketplace participants. Customers in the Marketplace context are the Service Providers and Service Requesters.
- **Contract Management:** It offers functionality to administrate the relations between Marketplace participants. It maintains the information which service requester has contracted which services. This includes contracts for IT services, which are usually delivered through the marketplace, as well as conventional contracts that do not relate to an IT service (e.g. Roaming contracts).
- **Not in scope:** Payment and Billing, which is also described in the Reference Architecture, is currently not in scope for implementation.

<b>Provided User Interfaces</b>	<p>1977: SKT Registration Contract</p> <p>1978: SKT Service Conditions</p> <p>1979: SKT New Service Offer</p> <p>1980: SKT Service Offers</p> <p>1981: SKT Service Details</p> <p>1982: SKT Register</p> <p>2088: SKT Marketplace - Logout</p> <p>2089: SKT Marketplace - Login</p> <p>2090: SKT Notify Service Requester</p> <p>2096: SKT View Business Partner Details</p> <p>2097: SKT Search and Select Service Type</p> <p>2098: SKT Search and Select Service Contracts</p> <p>2099: SKT View Service Contract Details</p> <p>2100: SKT Send Contract Termination Request</p> <p>2101: SKT Search and Select Service Transactions (Provider)</p> <p>2152: SKT Confirm Contract Termination</p> <p>2158: SKT Search and Select Service Transactions (Requester)</p>
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### 1980: SKT Service Offers

The screenshot shows the 'Services' section of the Green eMotion marketplace. It includes a navigation bar with 'Home', 'Services', and 'My Contracts'. Below the navigation bar, there are filters for 'New service offer', 'Show', 'Target Customer Group' (set to 'All'), 'Technical Platform' (set to 'Customer'), and 'Target Region' (set to 'All').

Category	Service Name	ID	Version	Company	State	Last change of state	Contracts	Valid from	Valid until	
Charging	Charging in Nuremberg		1	Siemens AG	New	2012-04-26		05/2012	12/2099	
Charging	Charging@four-cylinder		1	BMW Group	New	2012-4-25		05/2012	12/2099	
Charging	Charging in Munich		1	Siemens AG	Published	2012-04-08	2	01/2012	12/2099	
Charging	Charging in Israel		2	Siemens AG	Deactivated	2012-03-08	5	01/2012	12/2099	
Charging	Charging in Copenhagen		1	BOSCH AG	Terminated	2012-03-07	3	01/2012	12/2099	
Charging	Charging in Berlin		1	RWE	Published	2012-02-08	12	01/2012	12/2099	
Roaming	Roaming			DAIMLER						
Location Management										
Other										

Annotations on the screenshot:

- Yellow box 1:** For each service an image could be displayed which is uploaded when creating the service.
- Yellow box 2:** No difference between services, that I provide or use and services from other providers.
- Yellow box 3:** Automatic version control > show version in "Edit offer", "New offer", ...
- Yellow box 4:** Links to "My contracts" and filters all contracts by the according service offer
- Yellow box 5:** My own services can be deleted; others not.

Footer: © Marketplace Green eMotion 2012 | Legal | Privacy policy | Contact | Terms & conditions

### Restrictions

There will be no version management in Release 1 for Services.  
 For Release 1 only the states "Submitted" and "Published" are supported.

### 1980: SKT Service Offers

The screenshot shows a web browser window at <https://Green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The interface has a navigation bar with 'Home', 'Services', and 'My Contracts'. Below this is a 'Services' section with a 'New service offer' button and filters for 'Target Customer Group' (All), 'Technical Platform' (Customer), and 'Target Region' (All). A table lists service offers with columns for Category, Service Name, ID, Version, Company, State, Last change of state, Contracts, Valid from, and Valid until. The table is divided into sections: Charging, Roaming, Location Management, and Other. Several yellow callout boxes provide additional information:

- Charging section:**
  - For each service an image could be displayed which is uploaded when creating the service.
  - Automatic version control > show version in "Edit offer", "New offer", ...
  - Links to "My contracts" and filters all contracts by the according service offer
  - My own services can be deleted; others not.
- Other section:**
  - No difference between services, that I provide or use and services from other providers.

At the bottom of the page, there is a footer: © Marketplace Green eMotion 2012 | Legal | Privacy policy | Contact | Terms & conditions

### Restrictions

There will be no version management in Release 1 for Services.  
 For Release 1 only the states "Submitted" and "Published" are supported.

### 1242: UC Search and Select Service Transactions

#### 1966: BC Business Services

This BC was exported [before](#).

## 2101: SKT Search and Select Service Transactions (Provider)

Home | My Service Offers | My Contracts | **Analyse Usage Data** | Manage Account

From: 01/01/2012 to 31/03/2012

Analyse by:  Customer  Service contract

From: default should be first day of this month  
to: default should be today, future dates could not be selected

My customer	My service contracts	No. of transactions	Market transaction fees
Siemens	Sum	34.000	
	<a href="#">Charging in Munich</a>	5.000	flatrate € 500
	<a href="#">Charging in Copenhagen</a>	2.000	€ 2.000
	<a href="#">Charging in Nuremberg</a>	1.000	€ 1.500
	<a href="#">Charging in Berlin</a>	27.000	€ 27.000
ABB	Sum	15.000	
	<a href="#">Charging in Munich</a>	3.000	flatrate € 500

Best would be a proportional calculation to the time slot to show the total price.  
If not possible, only flatrate fees and the respective time slot e.g., monthly should be displayed.  
Sum/total could not be displayed.

Invoice overview should be understood as consumption view.  
Different, so far unknown, pricing models will be taken into account.  
In this screen usage data are displayed.

Rating of services and providers will be part of implementation phase 3

Include individual transactions by export [Export data](#)

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## 2158: SKT Search and Select Service Transactions (Requester)

The screenshot shows the 'Analyse Usage Data' section of the Green eMotion marketplace. The user is logged in as a 'Requester' and is viewing data for the period from 01/01/2012 to 31/03/2012. The data is filtered by 'Provider'.

My provider	My service contracts	No. of transactions
Siemens	Sum	34.000
	<a href="#">Charging in Munich</a>	5.000
	<a href="#">Charging in Copenhagen</a>	2.000
	<a href="#">Charging in Nuremberg</a>	1.000
	<a href="#">Charging in Berlin</a>	27.000
ABB	Sum	15.000
	<a href="#">Charging in Munich</a>	3.000

Additional interface elements include a 'Show results' button, a checkbox for 'Include individual transactions by export', and an 'Export data' link. The footer contains copyright information for Marketplace Green eMotion 2012 and links to legal documents.

Each user can only analyze his own services. For later releases: rating of the services, of different providers. A monthly report should be automatically generated.

Response time and data volume transferred could be logged, but influences performance. If these data are logged or not will be configurable in later phases. Data should be available for developers.

Marketplace Business Operator is allowed to see all information excluding customer data and fees > here he can only see no. of transactions.

## 1245: UC Search and Select Service Contracts

1966: BC Business Services

This BC was exported [before](#).



## 2098: SKT Search and Select Service Contracts

Home Services **My Contracts**

Grouped by  Business Partner  Services  terminated, withdrawn & rejected included

Service	Business Partner	Status	Last change of state	Start	End	Contract ID	Document	
<a href="#">Roaming</a>	<a href="#">Betterplace</a>	active	2012-02-07					<input type="button" value="Send termination request"/>
<a href="#">Charging in Nuremberg</a>	<a href="#">Siemens AG</a>	draft						<input type="button" value="Approval"/>
		pending approval						<a href="#">Show termination requests</a>
		terminated						
		withdrawn by customer						
		rejected by provider						
<a href="#">Park&amp;Charge</a>	<a href="#">RWE</a>	draft						<input type="button" value="Confirm contract termination"/>
	<a href="#">Daimler</a>	active						

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### Restrictions:

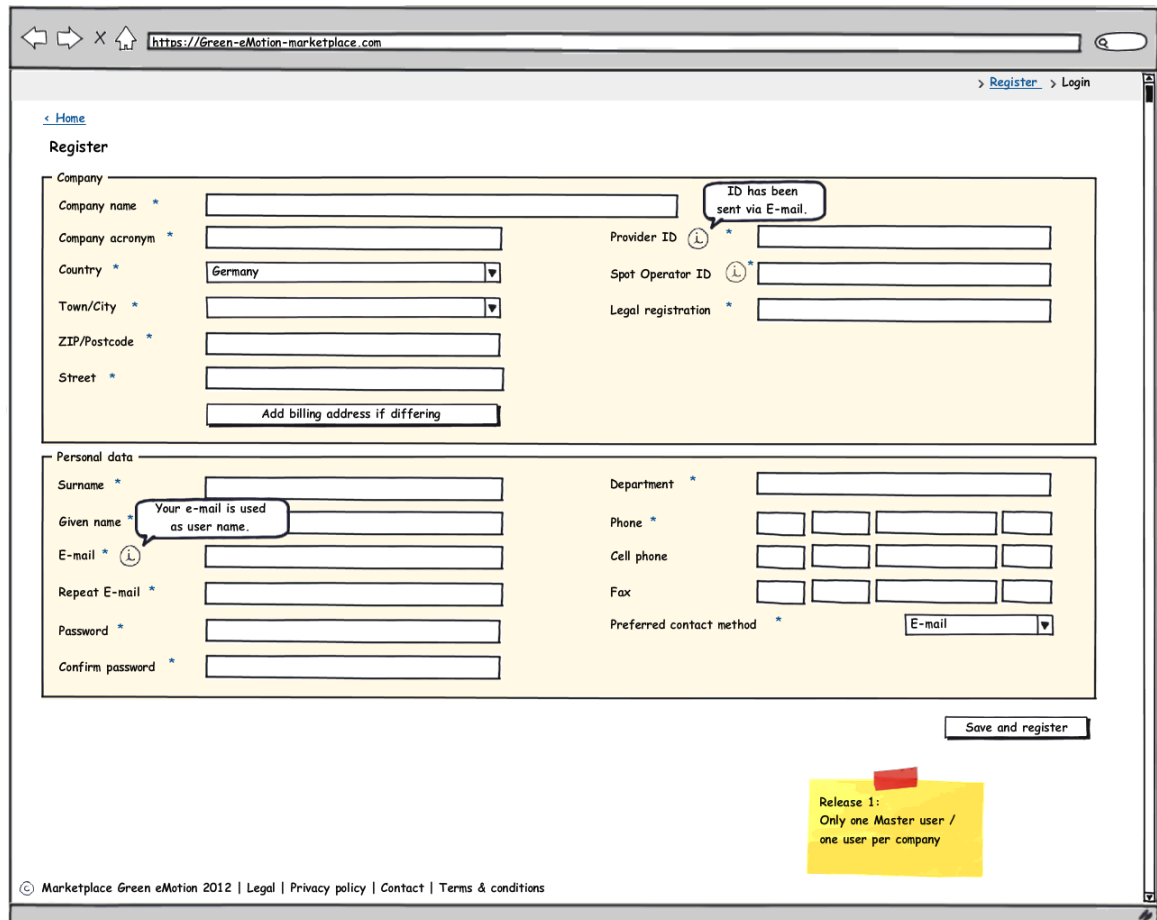
The status "Withdrawn by Requester" will not be available in Release 1.

### 1374: UC Create Business Partner Account

1966: BC Business Services

This BC was exported [before](#).

## 1982: SKT Register



Register

Company

Company name \*

Company acronym \*

Country \*

Town/City \*

ZIP/Postcode \*

Street \*

Provider ID

Spot Operator ID

Legal registration \*

Personal data

Surname \*

Given name \*

E-mail \*

Repeat E-mail \*

Password \*

Confirm password \*

Department \*

Phone \*

Cell phone

Fax

Preferred contact method \*

Release 1:  
Only one Master user /  
one user per company

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### Restrictions

Terms and conditions will be displayed on a separate page after this registration form for approval by the user.

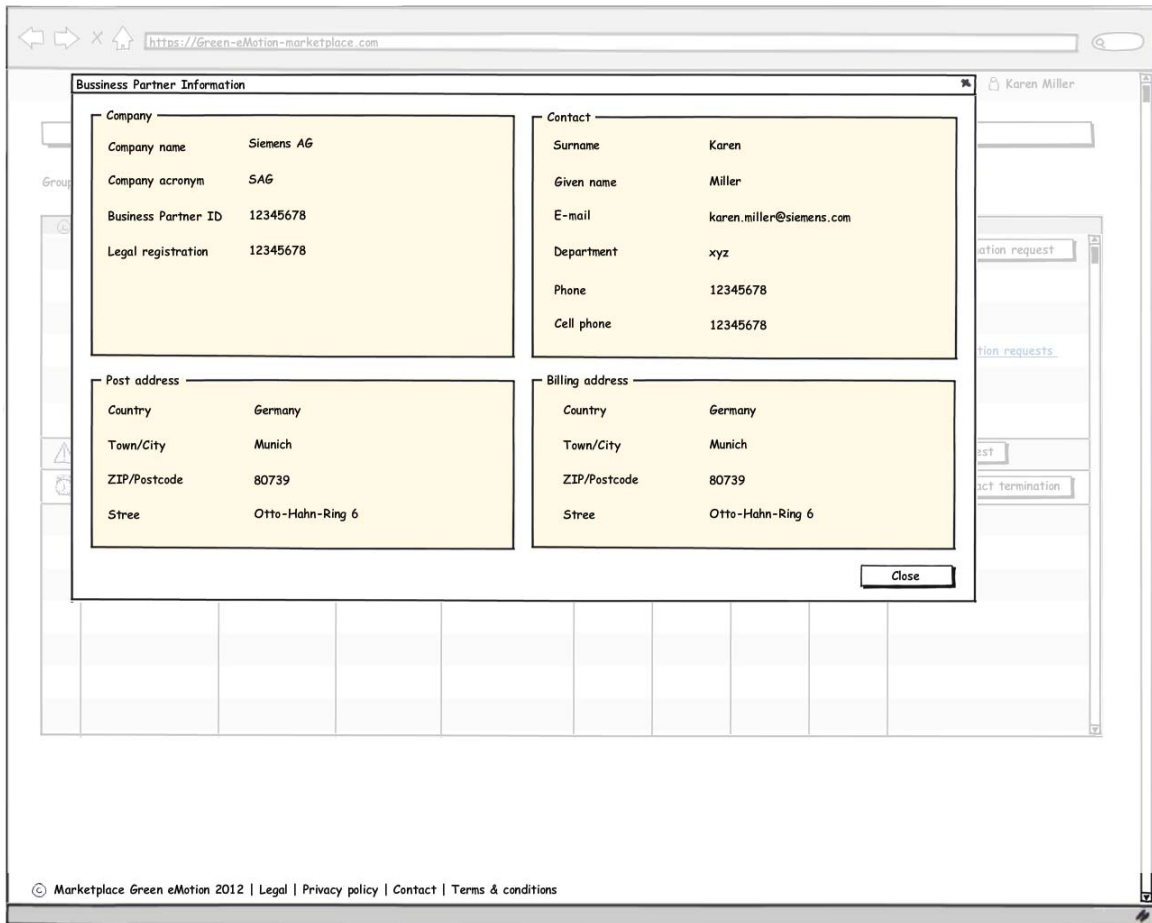
Certificate will not be created and provided by the Marketplace but the public key will be uploaded during the registration process.

### 1377: UC View Business Partner Account Details

### 1966: BC Business Services

This BC was exported [before](#).

## 2096: SKT View Business Partner Details



The screenshot shows a web browser window at <https://Green-eMotion-marketplace.com>. The main content is a 'Business Partner Information' modal window. It is divided into four sections: Company, Contact, Post address, and Billing address. The Company section lists Siemens AG with ID 12345678. The Contact section lists Karen Miller with email karen.miller@siemens.com. Both Post and Billing addresses are for Munich, Germany, at Otto-Hahn-Ring 6, 80739. A 'Close' button is at the bottom right of the modal. The footer of the page reads '© Marketplace Green eMotion 2012 | Legal | Privacy policy | Contact | Terms & conditions'.

Company		Contact	
Company name	Siemens AG	Surname	Karen
Company acronym	SAG	Given name	Müller
Business Partner ID	12345678	E-mail	karen.miller@siemens.com
Legal registration	12345678	Department	xyz
		Phone	12345678
		Cell phone	12345678

Post address		Billing address	
Country	Germany	Country	Germany
Town/City	Munich	Town/City	Munich
ZIP/Postcode	80739	ZIP/Postcode	80739
Stree	Otto-Hahn-Ring 6	Stree	Otto-Hahn-Ring 6

## 1470: UC Create Service Contract Offering

1966: BC Business Services

This BC was exported [before](#).

## 1979: SKT New Service Offer

From a provider's perspective

Home Services My Contracts

< back to Services

### New Service Offer

Service Description Service Conditions Service Registration Contract

Name: Charging in Nuremberg Service ID: Version number: 1

Category: Charging

Description:
 

- Searching service for charging spots in Nuremberg
- Show availability, status, location
- Also available for smart phone

 What do I provide

Target Customer Group:
 

- Energy Provider
- OEM
- ...

 Valid from: 01/01/2012 until: 31/12/2099

Target Platform:
 

- Customer Portal
- SAP System
- Charge management system
- ERP System

Target Region:
 

- Europe
  - Denmark
  - France
  - Germany
    - Berlin
    - Hamburg
    - Munich
  - Italy

Service Parameters:
 

- Input:
  - Geographic location
  - text to be defined
  - maximum distance
  - charge type
  - charge mode (AC, DC)
  - Energy type ("green", ...)
- Expected Outcome:
  - text to be
  - Geographic location of matching charging points
  - Availability

Interface: Standard interface

End point access (URL): http://bmw.com.xxxxx

Execution environment:
 

- Routed via marketplace, own server, link has to be provided
- Hosting via marketplace
  - Own image on the marketplace, virtual server (cloud)
  - Shared image on the marketplace, IBM application server
  - Technical operation outside the marketplace

 Standardization for naming of end point access necessary

Demonstration: http://demo-chargingservice-bmw.com

Document upload: Manual, Document\_2

Next >

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### Restrictions

Execution Environment will be handled as radio group (no checkboxes).

Company information is inherently given by the logged in user.

The price is not part of this screen but is handled as part of the Service Conditions.

Dropdowns for "Target business customer", "Target platform", "Target region" will allow multiple selections.

## **1475: UC Search and Select Standard Interface**

1966: BC Business Services

This BC was exported [before](#).

2097: SKT Search and Select Service Type

In the first release, standard interfaces represent service types and vice versa. The user interface will be identical to "Search Service Offer".

## **1476: UC View Standard Interface Details**

1966: BC Business Services

This BC was exported [before](#).

## 1981: SKT Service Details

The screenshot shows a web browser window at <https://green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The navigation menu includes Home, Services (selected), and My Contracts. A link for '< back to Services' is visible.

**Service Details**

Name: Charging in Nuremberg      Service ID:       Version number: 1

Category: Charging

Description:

- Searching service for charging spots in Nuremberg
- Show availability, status, location
- Also available for smart phone

Supplier: [Siemens AG](#)

Contact: <mailto:charging-service@siemens.com>

Business Partner ID: 45688564

Valid from: 01/01/2012      until: 31/12/2099

Target Customer Group: Energy Provider

Target Platform: Customer

Target Region: Germany

**Billing address**

Company name: Siemens AG  
Country: Germany  
Town/City: Munich  
ZIP/Postcode: 80739  
Street: Otto-Hahn-Ring 6

**Service Parameters**

Input:

- Geographic location
- Maximum distance
- Battery type
- Charge mode (AC, DC)
- Energy type ("green", ...)

Expected Outcome:

- Geographic location of matching charging points
- Availability

**Download Details**

[Interface definition](#)      [Manual](#)  
[Terms & conditions](#)      [Document 2](#)

Demonstration: <http://demo-charging-service-siemens.com>

Interface: Standard

End point access (URL): <http://siemens.com.xxxxx>

**Pricing**

Flatrate       Pay per use

€ per  month      in €  month  
 quarter       quarter  
 year       year

Buttons: Save draft contract

Footer: © Marketplace Green eMotion 2012 | Legal | Privacy policy | Contact | Terms & conditions

Success messages:

- > Success information
- > Saved to My Contract list for further actions

### Restrictions

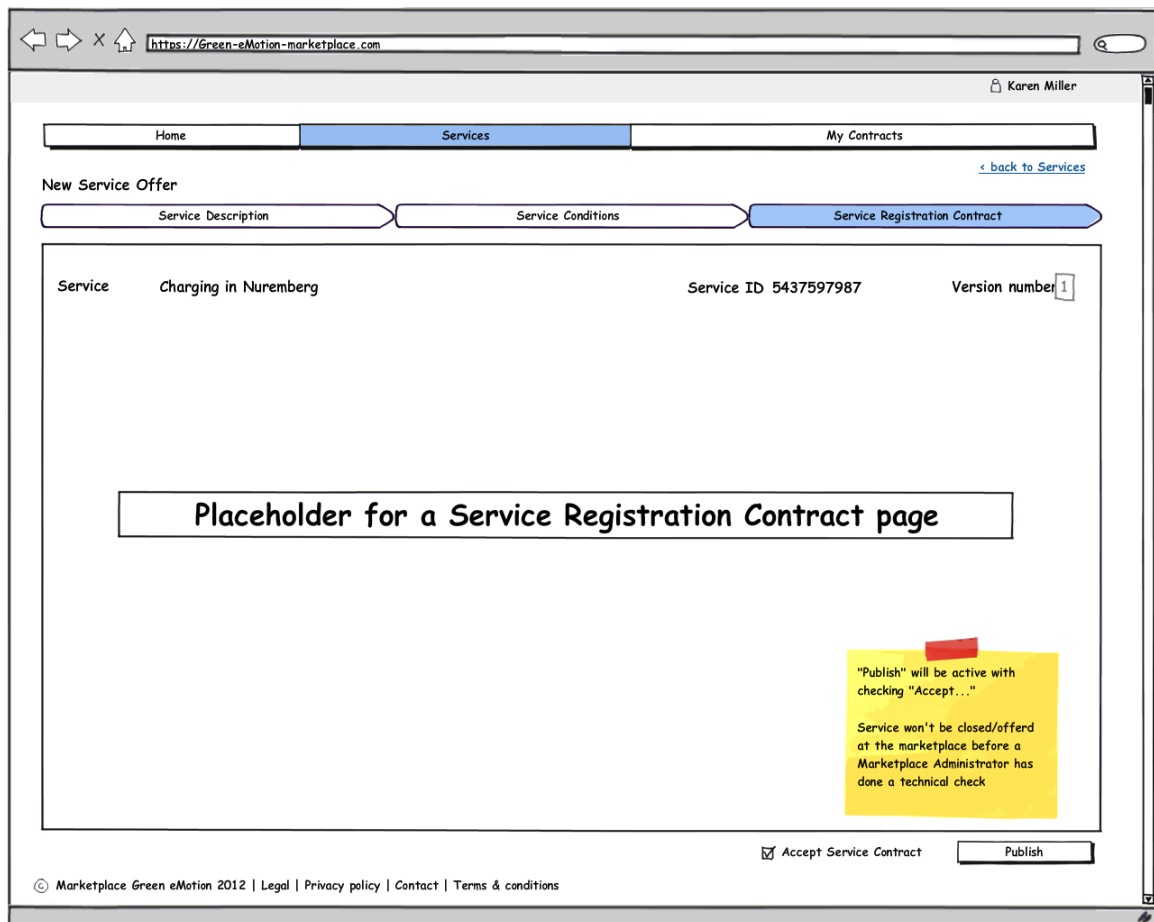
Company link is sufficient to get provider details, no additional company description will be displayed. Terms and Conditions are placed on a separate page only and include the pricing conditions and billing address (not editable, taken from registration information). Only after determining the contract options the contract can be exported to be shown to legal (after saving it to contracts) or subscribed. (no one click buy as in B2C marketplaces).

### 1477: UC Create Service Registration Contract

#### 1966: BC Business Services

This BC was exported [before](#).

## 1977: SKT Registration Contract



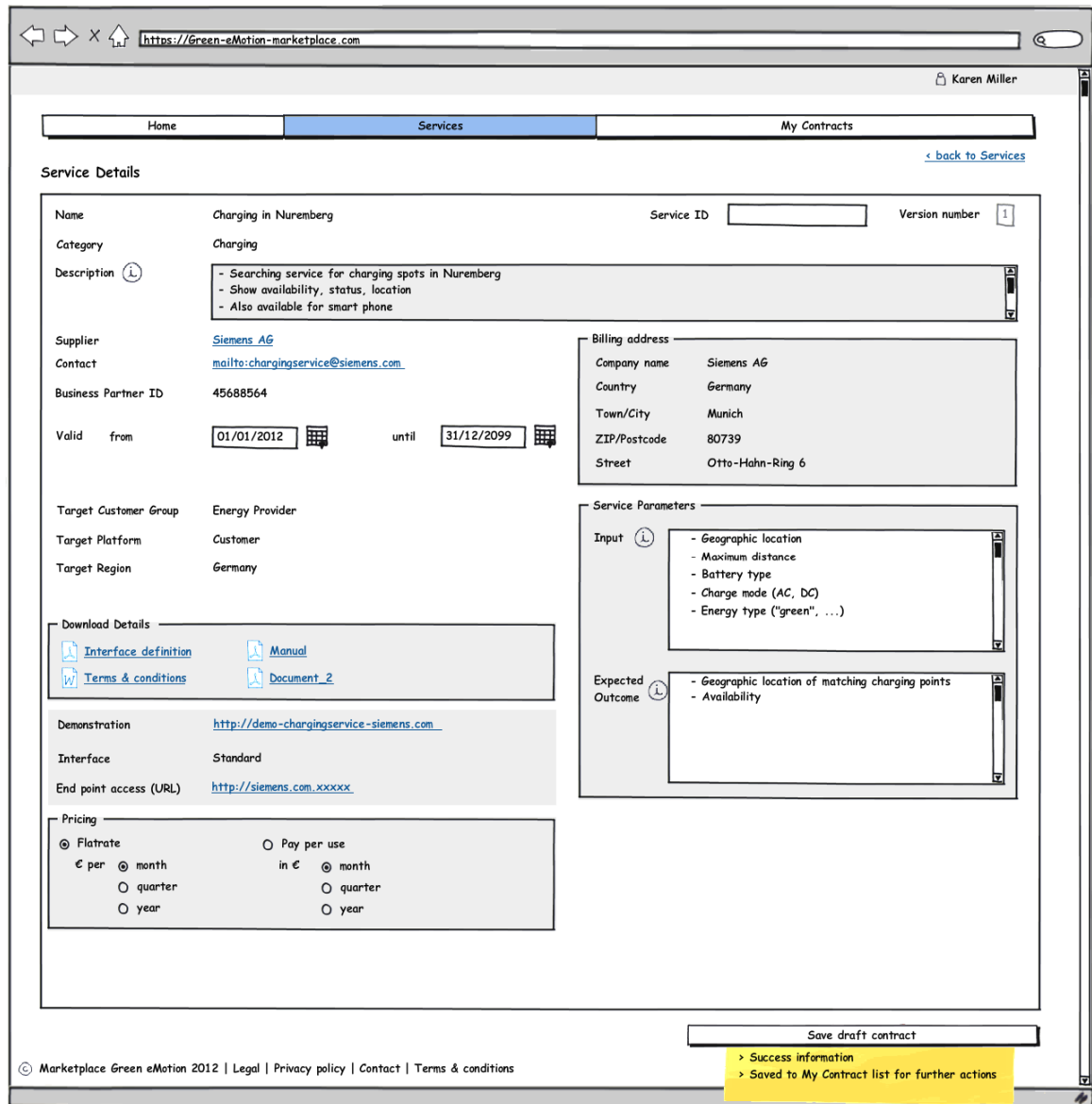
The screenshot shows a web browser window at <https://green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The navigation menu includes Home, Services, and My Contracts. The 'New Service Offer' section has three steps: Service Description, Service Conditions, and Service Registration Contract (the current step). The service details are: Service: Charging in Nuremberg, Service ID: 5437597987, Version number: 1. A large placeholder box in the center reads "Placeholder for a Service Registration Contract page". A yellow sticky note on the right contains the text: "Publish" will be active with checking "Accept...". At the bottom, there is a checkbox for "Accept Service Contract" and a "Publish" button. The footer contains copyright information: © Marketplace Green eMotion 2012 | Legal | Privacy policy | Contact | Terms & conditions.

## 1478: UC Download Service Content

## 1966: BC Business Services

This BC was exported [before](#).

## 1981: SKT Service Details



The screenshot shows a web browser window at <https://green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The navigation menu includes Home, Services, and My Contracts. The main content area is titled 'Service Details' and contains the following information:

- Name:** Charging in Nuremberg
- Category:** Charging
- Description:**
  - Searching service for charging spots in Nuremberg
  - Show availability, status, location
  - Also available for smart phone
- Supplier:** [Siemens AG](#)
- Contact:** <mailto:charging-service@siemens.com>
- Business Partner ID:** 45688564
- Valid from:** 01/01/2012
- Valid until:** 31/12/2099
- Target Customer Group:** Energy Provider
- Target Platform:** Customer
- Target Region:** Germany
- Billing address:**
  - Company name: Siemens AG
  - Country: Germany
  - Town/City: Munich
  - ZIP/Postcode: 80739
  - Street: Otto-Hahn-Ring 6
- Service Parameters:**
  - Input:**
    - Geographic location
    - Maximum distance
    - Battery type
    - Charge mode (AC, DC)
    - Energy type ("green", ...)
  - Expected Outcome:**
    - Geographic location of matching charging points
    - Availability
- Download Details:**
  - [Interface definition](#)
  - [Manual](#)
  - [Terms & conditions](#)
  - [Document 2](#)
- Demonstration:** <http://demo-charging-service-siemens.com>
- Interface:** Standard
- End point access (URL):** <http://siemens.com.xxxxx>
- Pricing:**
  - Flatrate  Pay per use
  - € per  month  in €  month
  - quarter  quarter
  - year  year

At the bottom right, there is a 'Save draft contract' button and a yellow notification box that says: '> Success information' and '> Saved to My Contract list for further actions'.

### Restrictions

Company link is sufficient to get provider details, no additional company description will be displayed. Terms and Conditions are placed on a separate page only and include the pricing conditions and billing address (not editable, taken from registration information). Only after determining the contract options the contract can be exported to be shown to legal (after saving it to contracts) or subscribed. (no one click buy as in B2C marketplaces).

### 1479: UC View Service Contract Details

#### 1966: BC Business Services

This BC was exported [before](#).



### 2099: SKT View Service Contract Details

The user interface shows the same details as the service details page. Additionally, it provides the following information:

- Information on the service requester in the same way as on the service provider.
- Duration of the contract

Via a link or a button the service contract can be viewed or downloaded.

Via a link or a button the a popup user interface for service contract termination requests will be displayed.

### 1480: UC Create Service Contract Termination Request

#### 1966: BC Business Services

This BC was exported [before](#).

#### 2100: SKT Send Contract Termination Request

The screenshot shows a web browser window with the URL <https://green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The interface has a navigation bar with 'Home', 'Services', and 'My Contracts'. Below the navigation bar, there are filters for 'Grouped by' (Business Partner, Services) and a checkbox for 'terminated, withdrawn & rejected included'. A table of service contracts is displayed with columns: Service, Business Partner, Status, Last change of state, Start, End, Contract ID, Document, and a 'Send termination request' button. A popup dialog titled 'Send termination request' is open, showing a text input field and 'Cancel' and 'Send' buttons. The dialog text says 'Text will be sent to the business partner via email'. A 'Confirm contract termination' button is visible at the bottom of the table.

Service	Business Partner	Status	Last change of state	Start	End	Contract ID	Document	Send termination request
<a href="#">Roaming</a>	<a href="#">Betterplace</a>	active	2012-02-07					<a href="#">Send termination request</a>
<a href="#">Charging in Nuremberg</a>	<a href="#">Siemens AG</a>	draft						<a href="#">Send termination request</a>
		pending approval						<a href="#">Send termination request</a>
		terminated						<a href="#">Send termination request</a>
		withdrawn by customer						<a href="#">Send termination request</a>
		rejected by provider						<a href="#">Send termination request</a>
	<a href="#">RWE</a>	active						<a href="#">Send termination request</a>
	<a href="#">Daimler</a>	active						<a href="#">Send termination request</a>

### 1481: UC Confirm Service Contract Termination

#### 1966: BC Business Services

This BC was exported [before](#).

## 2152: SKT Confirm Contract Termination

The screenshot shows a web browser window at <https://green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The navigation menu includes Home, Services, and My Contracts. The 'My Contracts' section is active, and the view is filtered to show 'terminated, withdrawn & rejected included' contracts.

Service	Business Partner	Status	Last change of state	Start	End	Contract ID	Document	
<a href="#">Roaming</a>	<a href="#">Betterplace</a>	active	2012-02-07					<a href="#">Send termination request</a>
<a href="#">Charging in Nuremberg</a>	<a href="#">Siemens AG</a>	draft						<a href="#">Approval</a>
		pending approval						<a href="#">Show termination requests</a>
		terminated						
		withdrawn by customer						
		rejected by provider						
	<a href="#">RWE</a>	active						<a href="#">Handle request</a>
	<a href="#">Daimler</a>	active						<a href="#">Confirm contract termination</a>

A dialog box titled 'Confirm termination request' is open over the 'Daimler' contract. It contains the following text:

Termination request

I would like to terminate my contract because...

My answer

yes, terminate contract

no, it is not possible to terminate contract

Text will be sent to the business partner via email

[Cancel](#) [Send](#)

At the bottom of the page, there is a footer: © Marketplace Green eMotion 2012 | Legal | Privacy policy | Contact | Terms & conditions

## 1482: UC View Service Contract Template

1966: BC Business Services

This BC was exported [before](#).

## 1978: SKT Service Conditions

From a provider's perspective
or < back to My Contracts list

Home
My Contracts

< back to Services

**New Service Offer**

Service Description    **Service Conditions**    Service Registration Contract

**Service Contract Template**

**General Conditions**

§1 Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea

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0. Contracting Parties	
<p><b>Provider</b></p> <p>Company name      Siemens AG</p> <p>Business Partner ID</p> <p>Address</p> <p>Country              Germany</p> <p>Town/City            Munich</p> <p>ZIP/Postcode        80739</p> <p>Stree                  Otto-Hahn-Ring 6</p>	<p><b>Requester</b></p> <p>Company name</p> <p>Business Partner ID</p> <p>Address</p> <p>Country</p> <p>Town/City</p> <p>ZIP/Postcode</p> <p>Stree</p>

1. Preamble

2. Obligations

3.1 Provider

Annex 1: Service Level Agreement

3.2 Requester

3. Pricing

**Options**

Flatrate      (€ per month, quarter, year)

Pay per use    (€ per use; payment: monthly, quarterly, yearly)

Discount      (%)

Free

Example only.  
Support different currencies,  
show concrete prices here.

4. Duration

Duration              1 year

Prolongation clause    TBD

5. Liability Agreement

6. Confidentiality Agreement

7. Litigation Clause

8. Severability Clause

< Previous
Next >

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## 1484: UC View Service Details

1966: BC Business Services

This BC was exported [before](#).

1981: SKT Service Details

The screenshot shows a web browser window at <https://Green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The navigation menu includes Home, Services (selected), and My Contracts. The main content area is titled 'Service Details' and contains the following information:

- Name:** Charging in Nuremberg
- Category:** Charging
- Description:** - Searching service for charging spots in Nuremberg  
- Show availability, status, location  
- Also available for smart phone
- Supplier:** Siemens AG
- Contact:** <mailto:charging-service@siemens.com>
- Business Partner ID:** 45688564
- Valid from:** 01/01/2012
- Valid until:** 31/12/2099
- Target Customer Group:** Energy Provider
- Target Platform:** Customer
- Target Region:** Germany
- Download Details:**
  - [Interface definition](#)
  - [Manual](#)
  - [Terms & conditions](#)
  - [Document 2](#)
- Demonstration:** <http://demo-charging-service-siemens.com>
- Interface:** Standard
- End point access (URL):** <http://siemens.com.xxxxx>
- Pricing:**
  - Flatrate
  - Pay per use
  - € per  month  in €  month
  - quarter  quarter
  - year  year
- Billing address:**
  - Company name: Siemens AG
  - Country: Germany
  - Town/City: Munich
  - ZIP/Postcode: 80739
  - Street: Otto-Hahn-Ring 6
- Service Parameters:**
  - Input:**
    - Geographic location
    - Maximum distance
    - Battery type
    - Charge mode (AC, DC)
    - Energy type ("green", ...)
  - Expected Outcome:**
    - Geographic location of matching charging points
    - Availability

At the bottom of the page, there is a 'Save draft contract' button and a yellow notification box with the following text:

- > Success information
- > Saved to My Contract list for further actions

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### Restrictions

Company link is sufficient to get provider details, no additional company description will be displayed.

Terms and Conditions are placed on a separate page only and include the pricing conditions and billing address (not editable, taken from registration information).

Only after determining the contract options the contract can be exported to be shown to legal (after saving it to contracts) or subscribed.(no one click buy as in B2C marketplaces).

## 1485: UC Create Service Contract

1966: BC Business Services

This BC was exported [before](#).

1981: SKT Service Details

The screenshot shows a web browser window at <https://Green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The navigation menu includes Home, Services (selected), and My Contracts. A link to '< back to Services' is visible.

**Service Details**

Name: Charging in Nuremberg | Service ID: [ ] | Version number: 1

Category: Charging

Description:

- Searching service for charging spots in Nuremberg
- Show availability, status, location
- Also available for smart phone

Supplier: [Siemens AG](#)

Contact: <mailto:charging-service@siemens.com>

Business Partner ID: 45688564

Valid from: 01/01/2012 | until: 31/12/2099

Target Customer Group: Energy Provider

Target Platform: Customer

Target Region: Germany

**Billing address**

Company name: Siemens AG  
Country: Germany  
Town/City: Munich  
ZIP/Postcode: 80739  
Street: Otto-Hahn-Ring 6

**Service Parameters**

Input:

- Geographic location
- Maximum distance
- Battery type
- Charge mode (AC, DC)
- Energy type ("green", ...)

Expected Outcome:

- Geographic location of matching charging points
- Availability

**Download Details**

Interface definition | Manual  
Terms & conditions | Document 2

Demonstration: <http://demo-charging-service-siemens.com>

Interface: Standard

End point access (URL): <http://siemens.com.xxxxx>

**Pricing**

Flatrate |  Pay per use

€ per  month | in €  month  
 quarter |  quarter  
 year |  year

Buttons: Save draft contract, Success information, Saved to My Contract list for further actions

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### Restrictions

Company link is sufficient to get provider details, no additional company description will be displayed.

Terms and Conditions are placed on a separate page only and include the pricing conditions and billing address (not editable, taken from registration information).

Only after determining the contract options the contract can be exported to be shown to legal (after saving it to contracts) or subscribed.(no one click buy as in B2C marketplaces).

## 1487: UC Download Service Specification

1966: BC Business Services

This BC was exported [before](#).

1981: SKT Service Details

The screenshot shows a web browser window at <https://Green-eMotion-marketplace.com>. The user is logged in as Karen Miller. The navigation menu includes Home, Services (selected), and My Contracts. A link to '< back to Services' is visible.

**Service Details**

Name: Charging in Nuremberg | Service ID: [ ] | Version number: 1

Category: Charging

Description:

- Searching service for charging spots in Nuremberg
- Show availability, status, location
- Also available for smart phone

Supplier: [Siemens AG](#)

Contact: <mailto:charging-service@siemens.com>

Business Partner ID: 45688564

Valid from: 01/01/2012 | until: 31/12/2099

Target Customer Group: Energy Provider

Target Platform: Customer

Target Region: Germany

**Download Details**

[Interface definition](#) | [Manual](#)  
[Terms & conditions](#) | [Document 2](#)

Demonstration: <http://demo-charging-service-siemens.com>

Interface: Standard

End point access (URL): <http://siemens.com.xxxxx>

**Billing address**

Company name: Siemens AG  
Country: Germany  
Town/City: Munich  
ZIP/Postcode: 80739  
Street: Otto-Hahn-Ring 6

**Service Parameters**

Input:

- Geographic location
- Maximum distance
- Battery type
- Charge mode (AC, DC)
- Energy type ("green", ...)

Expected Outcome:

- Geographic location of matching charging points
- Availability

**Pricing**

Flatrate |  Pay per use  
€ per  month | in €  month  
 quarter |  quarter  
 year |  year

Buttons: Save draft contract, Success information, Saved to My Contract list for further actions

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### Restrictions

Company link is sufficient to get provider details, no additional company description will be displayed.

Terms and Conditions are placed on a separate page only and include the pricing conditions and billing address (not editable, taken from registration information).

Only after determining the contract options the contract can be exported to be shown to legal (after saving it to contracts) or subscribed.(no one click buy as in B2C marketplaces).

## 1488: UC Upload Service Content

1966: BC Business Services

This BC was exported [before](#).

1979: SKT New Service Offer

### Restrictions

Execution Environment will be handled as radio group (no checkboxes).

Company information is inherently given by the logged in user.

The price is not part of this screen but is handled as part of the Service Conditions.

Dropdowns for "Target business customer", "Target platform", "Target region" will allow multiple selections.

## 1489: UC Upload Service Specification

1966: BC Business Services

This BC was exported [before](#).

1979: SKT New Service Offer

### Restrictions

Execution Environment will be handled as radio group (no checkboxes).



Company information is inherently given by the logged in user.  
 The price is not part of this screen but is handled as part of the Service Conditions.  
 Dropdowns for "Target business customer", "Target platform", "Target region" will allow multiple selections.

### 1494: UC Publish Service

1966: BC Business Services

This BC was exported [before](#).

1980: SKT Service Offers

The screenshot shows the 'Services' section of the Green eMotion marketplace. It includes a navigation bar with 'Home', 'Services', and 'My Contracts'. Below the navigation bar, there are filters for 'New service offer', 'Show', 'Target Customer Group' (set to 'All'), 'Technical Platform' (set to 'Customer'), and 'Target Region' (set to 'All').

Category	Service Name	ID	Version	Company	State	Last change of state	Contracts	Valid from	Valid until	
Charging	Charging in Nuremberg		1	Siemens AG	New	2012-04-26		05/2012	12/2099	
Charging	Charging@four-cylinder		1	BMW Group	New	2012-4-25		05/2012	12/2099	
Charging	Charging in Munich		1	Siemens AG	Published	2012-04-08	<a href="#">2</a>	01/2012	12/2099	
Charging	Charging in Israel		2	Siemens AG	Deactivated	2012-03-08	<a href="#">5</a>	01/2012	12/2099	
Charging	Charging in Copenhagen		1	BOSCH AG	Terminated	2012-03-07	<a href="#">3</a>	01/2012	12/2099	
Charging	Charging in Berlin		1	RWE	Published	2012-02-08	<a href="#">12</a>	01/2012	12/2099	
Roaming	Roaming			DAIMLER						
Location Management										
Other										

Annotations on the screenshot:

- Yellow box 1:** No difference between services, that I provide or use and services from other providers.
- Yellow box 2:** For each service an image could be displayed which is uploaded when creating the service.
- Yellow box 3:** Automatic version control > show version in "Edit offer", "New offer", ...
- Yellow box 4:** Links to "My contracts" and filters all contracts by the according service offer
- Yellow box 5:** My own services can be deleted; others not.

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### Restrictions

There will be no version management in Release 1 for Services.  
 For Release 1 only the states "Submitted" and "Published" are supported.

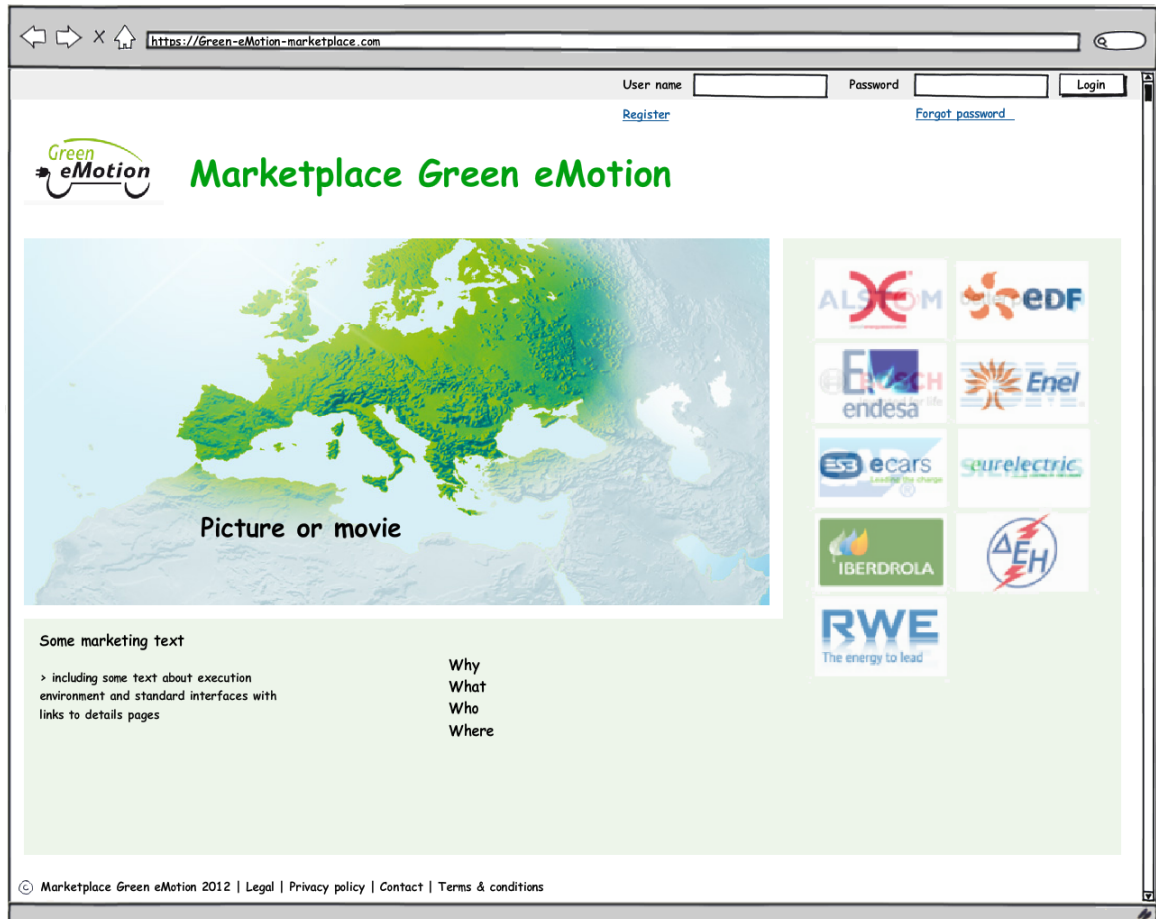
### 1618: UC Marketplace - Login

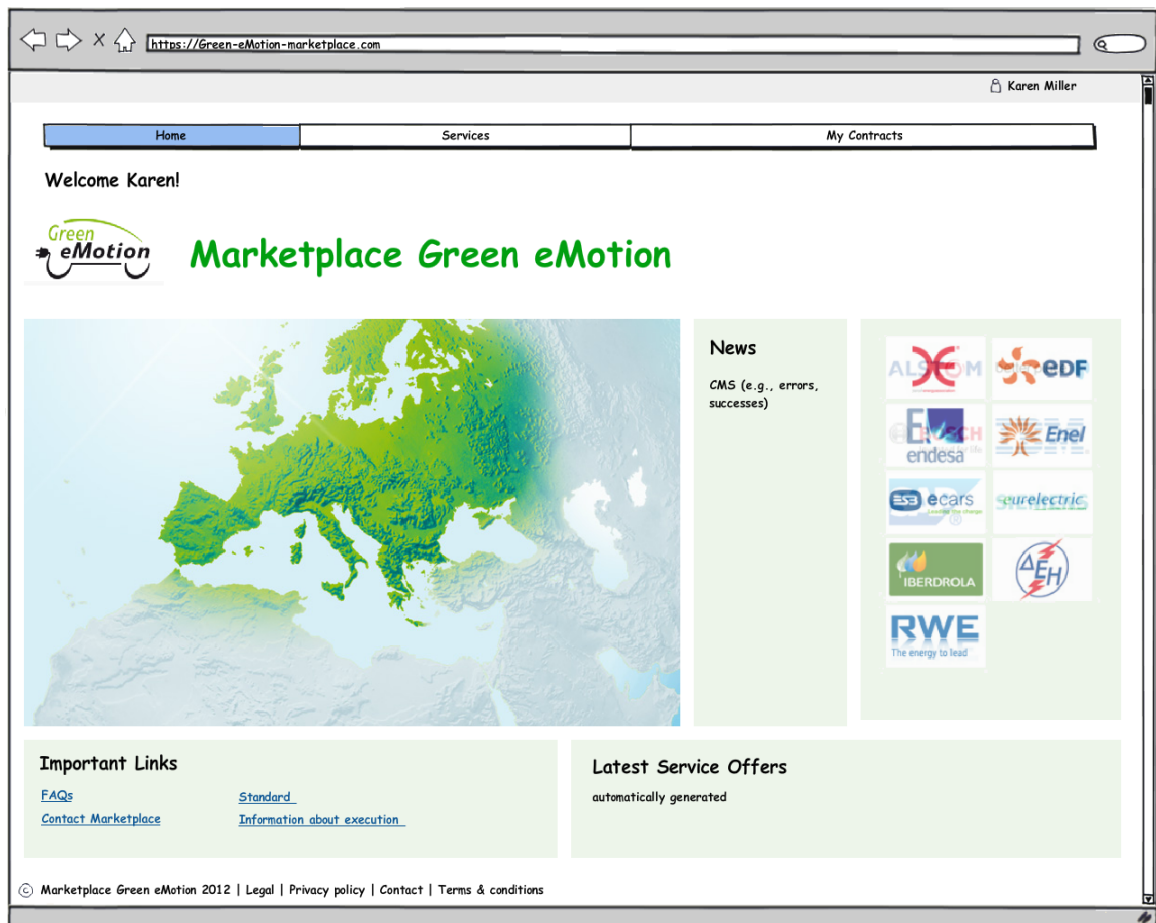
1966: BC Business Services

This BC was exported [before](#).

## 2089: SKT Marketplace - Login

The login functionality will be realized by a form providing input fields for the user credentials (i.e. user-name and password) on the start page.





## 1619: UC Marketplace - Logout

1966: BC Business Services

This BC was exported [before](#).

2088: SKT Marketplace - Logout

The logout functionality provides no own user interface, but is realized by a link or a button in the right upper corner on each individual screen.

## 1687: UC Notify Service Requesters of own Service

1966: BC Business Services

This BC was exported [before](#).

2090: SKT Notify Service Requester

The functionality will be shown in a popup screen providing a form with the following elements:

- Textfield: Subject
- Textarea: Message
- Button: Send Message

- Button: Cancel