



USE CASE 7:

A unified way for changing the energy service provider in EU member states





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Use case 7: A unified way for changing the energy service provider in EU member states

Use case identification

Table 1. Identification of use case 7.

ID	Name of Use Case	Geographical scope	Cross-sector domains			Interoperability layers
			Electric	Mobility	Data	
BEG.07	A unified way for changing the energy service provider in EU member states	<input checked="" type="checkbox"/> Local <input checked="" type="checkbox"/> Regional <input checked="" type="checkbox"/> National <input checked="" type="checkbox"/> Cross-border <input type="checkbox"/> Outermost	<input checked="" type="checkbox"/> Customer <input type="checkbox"/> DER <input checked="" type="checkbox"/> Distribution <input type="checkbox"/> Transmission <input type="checkbox"/> Generation	<input checked="" type="checkbox"/> Customer information <input type="checkbox"/> Vehicle <input type="checkbox"/> Energy station <input checked="" type="checkbox"/> Infrastructure <input type="checkbox"/> Traffic and logistic	<input type="checkbox"/> Edge <input type="checkbox"/> Fog <input checked="" type="checkbox"/> Cloud	<input type="checkbox"/> Component <input checked="" type="checkbox"/> Communication <input checked="" type="checkbox"/> Information <input type="checkbox"/> Function <input type="checkbox"/> Business

The scope and objectives of the use case

Table 2. Scope and objectives of use case 7.

Scope and Objectives of the Use Case	
Scope	<p>In most countries around the EU, the change of providers is a multi-stage process that requires time and human involvement at some of the stages making the process slow and expensive. The goal of this use case is to develop a cross-border ODP for automated switching of energy providers that allows an energy consumer to change an energy supplier within 24 hours with guaranteed safety of their data. The focus of this ODP is to ensure all involved parties securely exchange data by sending minimum required sensitive information while limiting the human intervention to the customer choosing the new energy supplier via ODP microservice. The compliance with communication standards, accuracy, and safety of data exchange between the responsible parties are the primary challenges that the platform addresses and reconciles between different member states. For example, the ODP through the use of microservices addresses the difference in the structure of the energy market in Denmark where the responsibility structure is slightly different and has potentially shorter communication channels than in Germany. In the latter, the communication would primarily include the consumer, their DSO responsible for the physical infrastructure, the electricity supplier (ES) responsible for service delivery, and the Metering point operator (MPO) responsible. There is a potential for this ODP to be useful for ES and energy data managing parties when working with the end-customer data.</p>
Objective	<p>The objectives of the use case are as follows:</p> <ul style="list-style-type: none"> • Introduce a set of fast and safe processing of consumer and utility data. • Enable an interface for all parties involved in the change of providers where they can see and change the status of existing subscriptions based on customer input. • Introduce a role-based decentralized communication service between the consumer, utility, and intermediate parties involved in the process of changing the provider with minimal information exchange. • Enable a secure and fast customer verification process that can be used in the target countries.



	<ul style="list-style-type: none"> • Create an app for service providers to coordinate the subscription processes. • Keep the platform in agreement with regulations from target countries.
Reference country(ies)	Germany, Denmark
Related Business Case	MakoMaker Space
Possible stakeholders	Retailers and energy suppliers, end-user customers, TSOs, DSOs

Narrative of the use case

The mechanics of utility subscription change in the EU member states may be quite different in the energy market structure and data-handling regulations. In most countries around the EU, the change of providers is a multi-stage process that requires time and human involvement at some of the stages making the process slow and expensive [16]. The attempted automation of the supplier change process brings additional challenges that include synchronization and algorithmizing of contract creation and termination processes that involve manual intervention and often iterative documentation transfer between TSOs/DSOs, metering point operators (MPOs), and Energy Suppliers. This calls for a solution that reconciles different traditions accepted in target member states to enable an automated, secure, and regulation-compliant process for changing the energy service provider within 24 hours that will benefit both energy delivery parties, energy consumers, and authorities while going one step further in unification of the energy infrastructure through EU. The use case aims to develop the ODP platform that satisfies these requirements while processing and communicating consumer data between the stakeholders in a sovereign, fast, and secure way.

The development of the platform will start by resolving the following design questions primarily related to the physical infrastructure and responsibilities of parties to be answered in collaboration with the stakeholders:

- Would the supplier that is chosen by a consumer across the border be allowed to participate in the foreign energy market? Which regulations should the associated DSOs follow about such consumers changing their subscriptions: domestic or foreign?
- How would the capacities and added electricity consumptions be reported across the border?
- Concerning supplier participation in the foreign market, how is the data transferred to them from the consumers? Are the same privacy regulations applying in both countries or should be reconciled?
- What scenarios can be used to define the interaction between TSOs, ES, and end users?

After these questions are resolved, the ODP will enable automated documentation updates in response to the ES changing request with physical infrastructure and market participation details fixed by the prior agreements between the TSOs in both countries.



At the same time, the platform will have the functionality for manual conflict resolution in certain situations.

As illustrated in Figure 1, after the provider change request is sent to the platform from the user (e.g. red electricity consumer in Germany), the contract creation request is initiated and sent to the new supplier (e.g. green ES in Denmark). If the request complies with the requirements of the new supplier, the contract termination notification is sent to the old (red) provider, and the new energy contract is created and sent back to the (red) consumer. At the same time, the information is sent to the TSO, DSO, and MPO subsystems to set up the service records for the new consumer. If any remaining regulation, electricity market participation, or data management conflicts are detected by the TSO service, they are resolved semi-manually with all relevant stakeholders. After all conflicts are resolved, the document base for the consumer is updated for all relevant stakeholders.

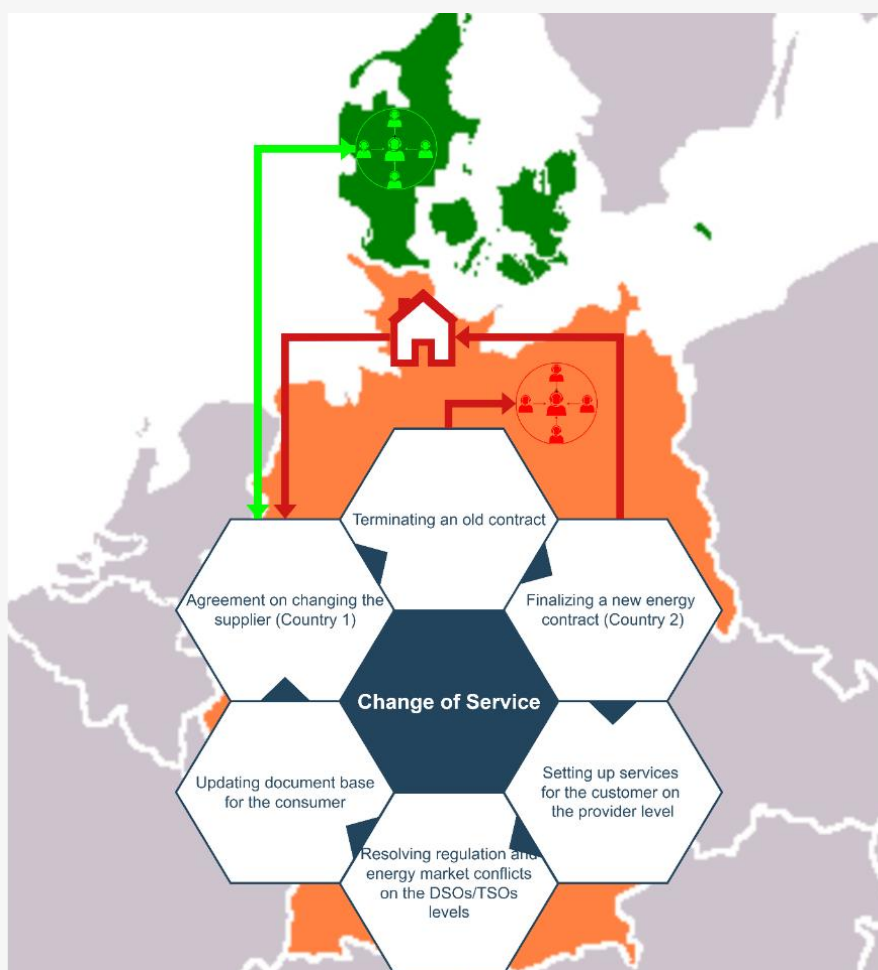


Figure 1. Illustration of the energy supplier change process.

Diagram of the use case

The diagram of the use case 7 is presented in Figure 2. Actors' actions and scenarios' descriptions are presented in Table 3 and Table 4, respectively.

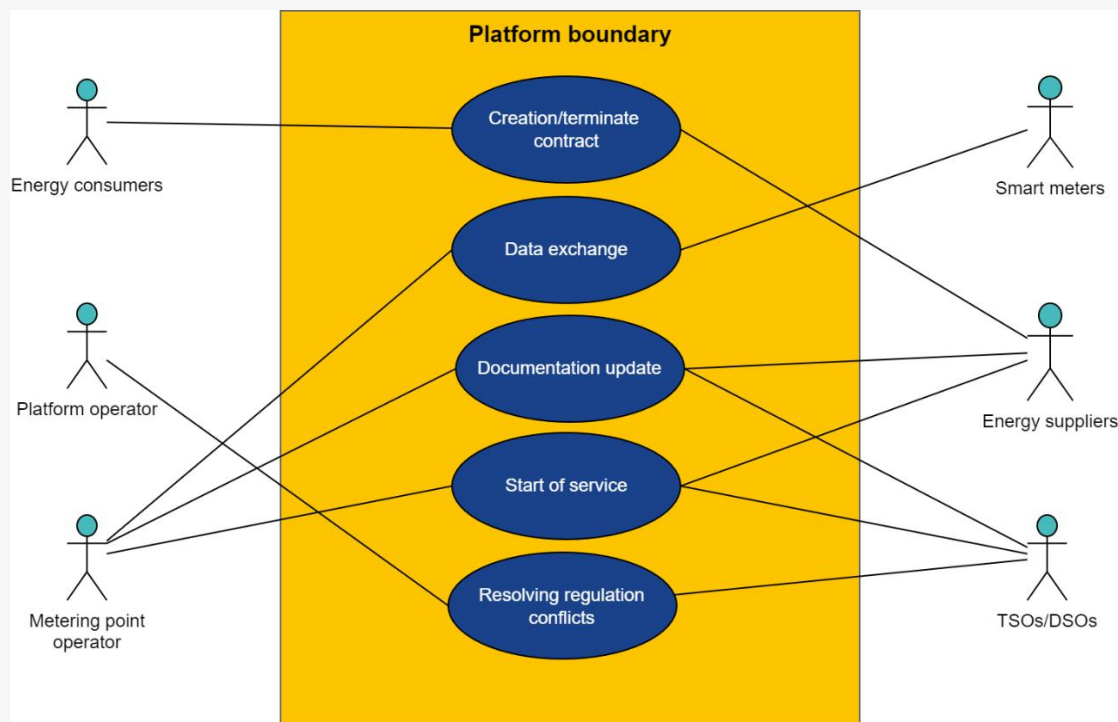


Figure 2. Diagram of use case 7.

Actors of the use case

Table 3. Description of the actions of use case 7 actors.

Actor Name	Actor Type	Actor description	Actions	Standards
Smart meter	System	A smart meter is a digital device that measures and records energy consumption in real-time.	Measures the electricity consumption of energy customers.	No
Platform operator	Role	A platform operator is a person or organization that is responsible for operating a platform and resolving the users' issues.	Ensures communication and automation of tasks for TSOs, DSOs, MPOs, and other parties responsible for changing the contracts safely and lawfully. It also provides a possibility for semi-automated conflict resolution as a decision-support tool.	No
DSO	Role	An entity responsible for operating, ensuring the maintenance of and, if necessary, developing the distribution system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the distribution of electricity.	In states where the agreement with DSO is needed to change the ES, DSO ensures that the new cross-border consumer has the necessary infrastructure to get the service from the cross-border service provider within its area of responsibility.	No
TSOs	Role	An entity responsible for operating, ensuring the	TSOs decide on how to resolve the task and possible conflicts related	No



		maintenance of and, if necessary, developing the transmission system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the transmission of electricity.	to the provision of power to the new cross-border consumers by using the proposed platform.	
Metering point operators	Role	MPO is responsible for operating and maintaining the metering equipment that measures the consumption and generation of electricity at a specific location, known as the metering point.	Ensures that the installed meters meet regulations necessary to enable service according to agreement between the TSOs and member states' regulations. This includes accuracy and safety for meter data reading and aspects related to transmitting this information to other actors: energy suppliers, grid operators, and consumers.	No
Energy supplier	Role	A person or company that is consuming a certain amount of energy within one of the member states that would like to change the request for the change of power supplier within the platform and for operating different tools and services in the platform.	ESs Receive the request for changing ESs from the customers, check the regulations for the possibility of supplying new customers, finalize the contract, and participate in the electricity market to supply the new customers.	No
Energy consumer	Role	A person or company that is a power consumer in one member state that would like to switch their supplier to that located in the neighboring state.	Sends the request through the platform for changing the ES from domestic to foreign or back. Agrees to conditions of GDPR practices accepted in the two member states and agrees on the provision of their metering data necessary for different parties to process the provider change request and conflict resolution between different TSOs.	No

Scenarios

Table 4. Description of use case 7 scenarios.

S.No	Scenario Name	Triggering Event	Scenario Description	Primary Actor
BEG.07.S1	Creation and termination of contracts	The consumer sends the new ES the contract creation request.	The ES contract request from the consumer is processed automatically by the platform and if there are no conflicts, the approval is sent back to the consumer and the termination notification is sent to the old ES. After this, the new contract is sent to the consumer.	EC, Platform operator



BEG.07.S2	Data exchange	Continuously	The energy consumption data should be recorded by smart meters and transferred to the related supplier database to calculate the electricity bill.	MPO, Smart meter
BEG.07.S3	Conflict resolution	Termination request is sent to the old ES	Cloud Platform (re)registers the new consumers in the cross-border TSO database including the way of delivering the service and energy market participation mechanism agreed between the TSOs and Energy Supplier. In case of uncertainty, the system notifies the actors and waits for conflict to be resolved by them. After the scenario is completed, the notification (and possibly new information) is sent to the DSO/MPO system.	Platform operator, TSO
BEG.07.S4	Updating documentation storage with new consumer data	TSOs send the decision after resolving conflicts	MPO and DSO documentation is updated, and the platform ensures that all parties have the most recent information and documentation related to the consumer's subscription to the service.	MPO
BEG.07.S5	Set up/Start of service for the consumer at the new provider's level	All documentation for consumers is updated.	The actors start serving the consumer and the consumer starts participating in the energy market under the rules defined by the TSO/ES, e.g. the new data communication channel is launched that supplies information from consumer meters (managed by MPO) to the cross-border ES.	DSO, MPO, EC.

Policy and digitalisation needs

Table 5. Description of use case 7 policy and digitalisation needs.

Policy needs	<ul style="list-style-type: none"> • The TSOs need to agree on which market the new consumer would participate in. • Find ways to reconcile the national traditions/regulations concerning consumer data treatment policies and GDPR. • Regulations are needed to create options for solving technical and financial issues for supplying the end user (used in market interaction scenarios between TSOs, ES, and users).
Digitalisation needs	<ul style="list-style-type: none"> • Define a common interface for member states that includes documents and algorithms for formal communication. • Automate the process of iterative documentation flow and conflict reconciliation between stakeholders.