H2020 InterConnect Project

A Common European Reference Framework for energy saving applications for consumers

- Technical Overview -

May 2023

Context and Scope

The development of a Common European Reference Framework for energy saving applications for consumers represents an opportunity to promote actions based on recommendations and tips that allow them to make voluntary reductions in their energy consumption and help them in reducing their energy costs. It is also an opportunity to enhance energy efficiency, make use of the flexibility from the demand side and combine multiple sources of data (publicly available and voluntarily provided by consumers) to define the suitable time of the day in which electrical energy consumption should be avoided whenever limitations from the grid supply side may exist.

In this context, the InterConnect project defined a blueprint for a Common European Reference Framework for energy saving applications for consumers within the scope of a new use-case - supporting the grid resiliency and the implementation of services and solutions via energy applications for consumers. The blueprint includes: the definition of the data sources, the target end-users, the recommendations for action, the intervention strategy, the implementation strategy, and the approach to field piloting.

It should be seen as being part of an evolving process, as depicted in Figure 1.

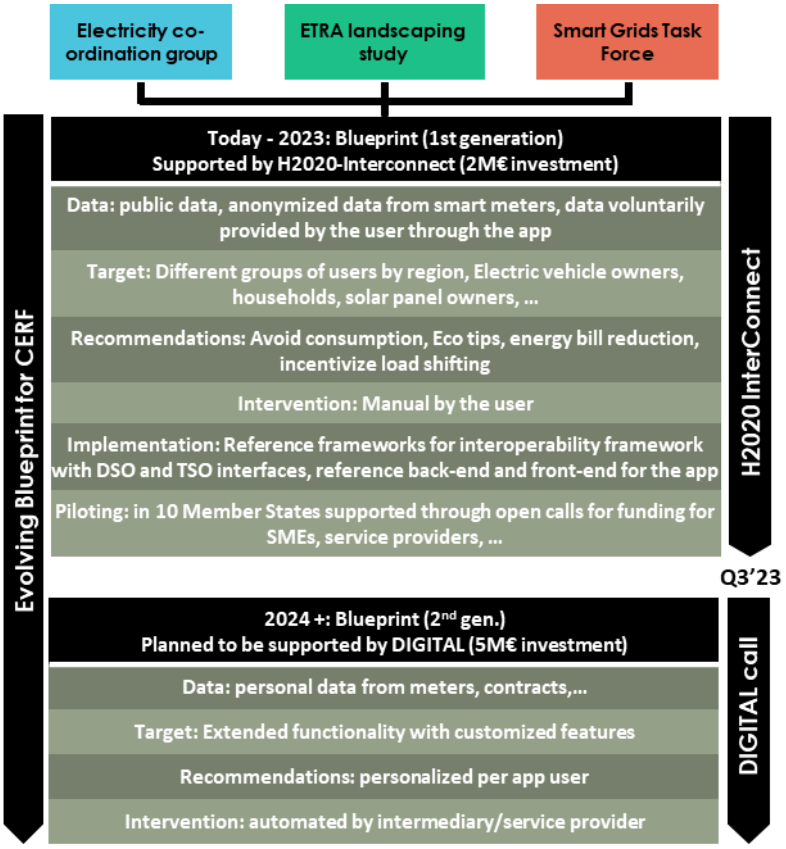

Figure 1: Blueprint Evolution for the CERF for energy saving applications

At first stage, the project will deliver by November 2023 a Minimum Viable Product (MVP) which will contain a working reference framework for interoperability using data sources from the public domain, namely grid stakeholder information and energy end-users' information, and an open-source reference design for energy savings applications. The envisioned targets are mostly end-users with the

ability to control relevant loads (e.g., owners of Electric Vehicles) as well as grid operators (starting from TSOs) who will exchange data to allow consumers to establish the best time for load consumption, based on recommendations and tips. These recommendations will also include relevant information concerning the adoption of efficient behaviour and actions towards the reduction of expenditures and energy costs. The intervention from the consumers is assumed to be mostly manual and most of all on a voluntary basis.

At second stage, by March 2024 large-scale demonstrations of energy savings applications will run in up to 10 EU member states.

The InterConnect project has a Semantic Interoperability Framework (SIF) and a Distribution System Operator Interface (DSOi) that allow the creation of interoperable services, including those being defined by the project to support energy applications. Components such as semantic adapters, knowledge engine, and a service store are publicly available and will be used to support the necessary services that will compose the first generation of the blueprint that will be proofed in real cases and prepare the next generation with a modular integration of additional services. This is part of the roadmap that the project will support by March 2024.

Roadmap

The roadmap for the deployment of the CERF for energy saving applications [Figure 2] and the scale up of the piloting activities from 3 to 10 Member States consists of several logical steps that sustain the CERF for energy saving applications as means to onboard new stakeholders, integrate new publicly available data sources and creating or reusing new interoperable recommender services. Developed interoperable recommender services can be explored in new Member States and serve as a canvas for new Member State specific developments. Finally, the roadmap is completed by departing from the established Application backend system and commissioning the development of a Member State specific frontend, that can easily communicate with consumers in the Member State's native language.

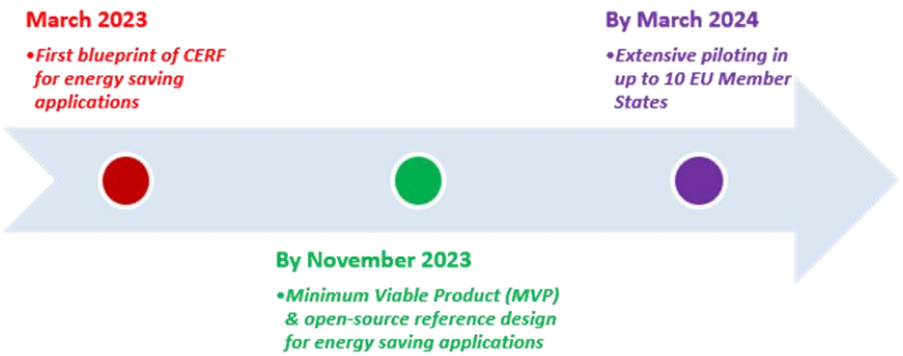

Figure 2: Timeline - CERF for energy saving applications major milestones

The interactions and integration of the supporting services for the Energy Applications need to follow the InterConnect interoperability framework, as a fundamental building block to ensure that all developments made, independently of the stage, are prone to respect modularity, extensibility, and interoperability.

Figure 3 depicts the supporting architecture that will allow current and future developments for the Energy Applications with InterConnect and the CERF for energy saving applications initiative to progress over the next years.

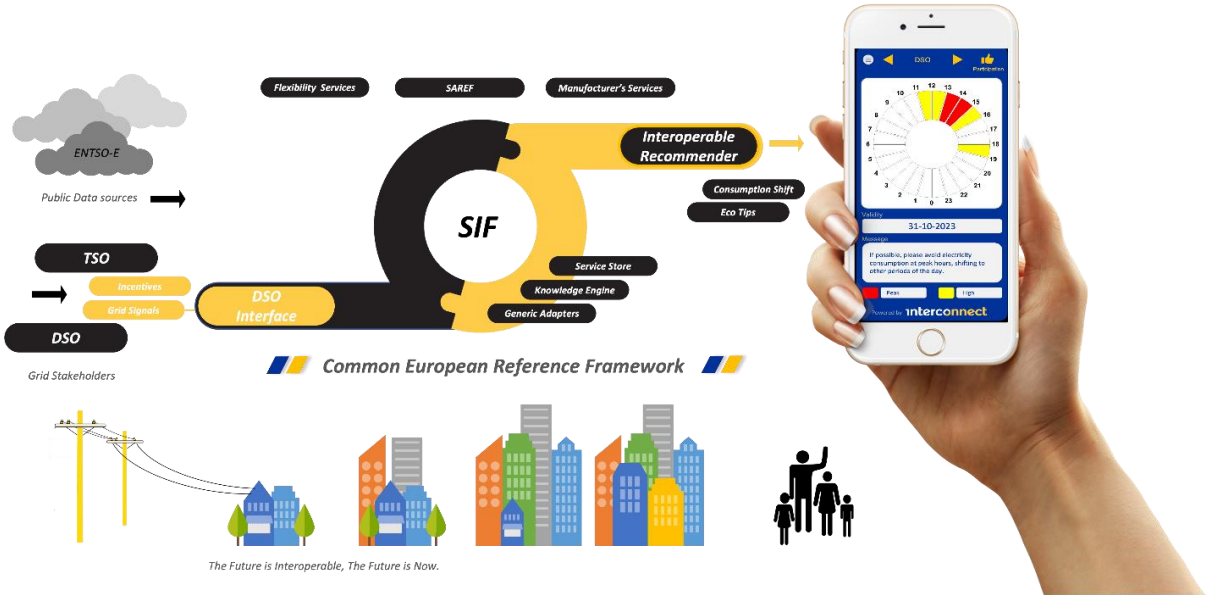

***Figure 3: Supporting architecture** - CERF for energy saving applications*