

Demand response tools and new business models for energy cooperatives

H2020 - FLEXCoop Project

FLEXCoop - Democratizing energy markets through the introduction of innovative flexibility-based demand response tools and novel business and market models for energy cooperatives

- Funded within the H2020-LCE-2017-SGS call
- 2017 Call: Next generation innovative technologies enabling smart grids, storage and energy system integration with increasing share of renewables: distribution network
- Objectives: provide advanced **hardware and software solutions, ICT services** and innovative **business models** for certain stakeholders involved in electricity markets that deal with explicit **demand response**.



Six Scientific and Technological Objectives



1. Grid
Reliability &
Fossil Free
Energy Future



2. Integrate
Smart Home
and DR-
Optimization



3. Democratize
– Introduce
Prosumer
Concept



4. Open
Standards-
based
Modular
Solution



5. Business
Models for
Energy
Cooperatives



6. Demand
Response
Optimization
Framework

Further Facts: FLEXCoop

- Type of Action: **Research and Innovation Action** (RIA): activities designed to: establish new knowledge and / or explore the feasibility of technologies, products, processes, services or new or improved solutions
- Duration: 3 years, Start: 1 October 2017
- Project Coordinator: Fraunhofer FOKUS
- Consortium: 13 partners from Belgium, Croatia, Denmark, Germany, Greece, Cyprus, Netherlands, Spain, United Kingdom (Research, Industry, SME, Energy cooperatives)
- WEBSITE: <http://www.flexcoop.eu>



FLEXCoop Project Concept/Objectives

- Follows a **human centric approach** - flexibility based on low-level metering / ambience sensing respecting occupant's comfort, preferences and schedules
- Empowers **stakeholder value chain** by increasing awareness of demand/storage flexibility; providing new revenue streams
- Realizes **interoperability** between energy networks, management systems, devices, and within smart homes. Enables information flow between DSOs, aggregators, consumers
- Develops **new business models** for the energy market enabling cooperatives to valorize resources of energy consumers to complement their own resources, or provide services to the grid



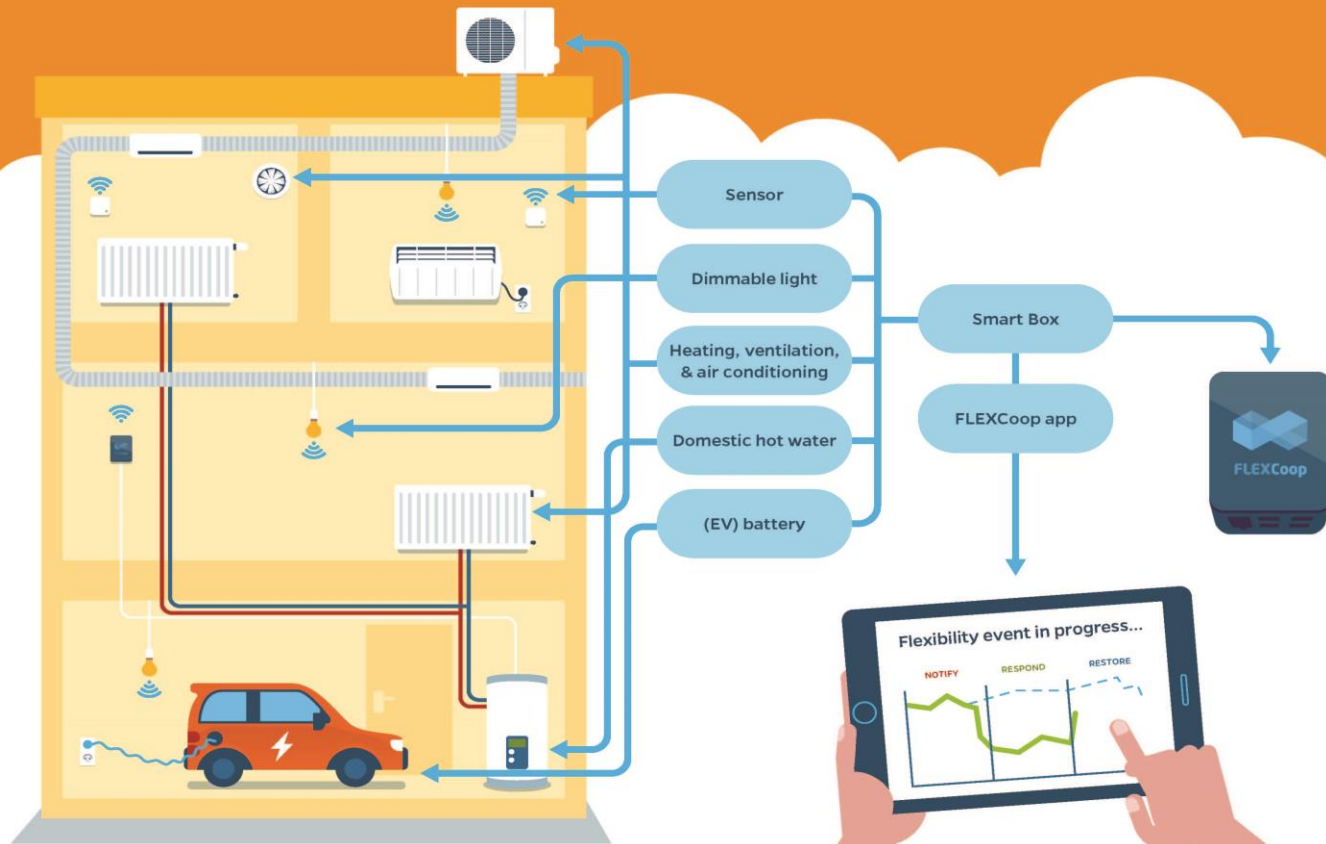
Solution 1: Empowerment of Prosumers to actively participate in energy markets

- Design, develop and demonstrate tools enabling the management of consumers loads to support the grid and generate profits to all stakeholders in a fair, transparent and efficient way.
- Promote the introduction of consumers as active energy market players introducing the demand side.
- Joining consumers to flexibility clusters through aggregation.
- Aggregators are equipped with tools segmenting individual flexibilities and clustering aggregated volumes for offering balancing and ancillary services



FLEXCoop Solution 2: Interoperability

End-to-end Interoperable Automated Demand Response Optimization Framework



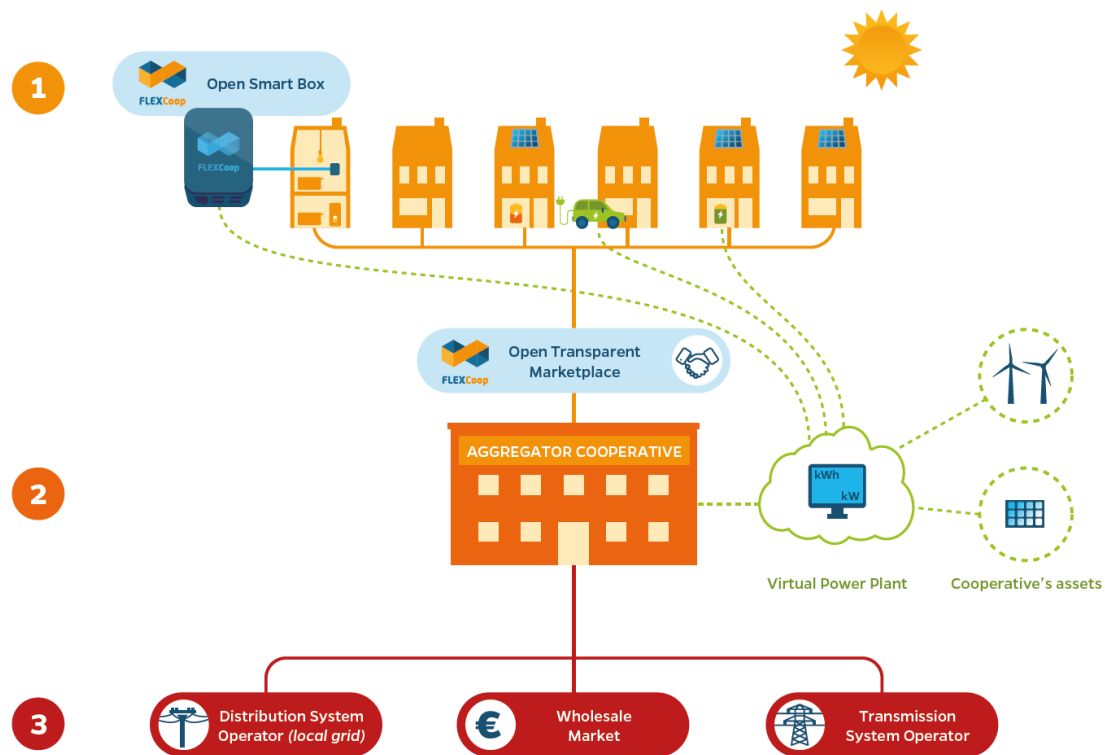
Based on Open Standards

- Smart Home interop.
- Interop. communication (DER assets – energy actors systems)

Main Standards:

- **USEF** (energy market level)
- **OpenADR** (end-to-end DR value chain communication)
- **OneM2M** (smart home devices communication)

FLEXCoop Solution 3: Value Chain Empowerment

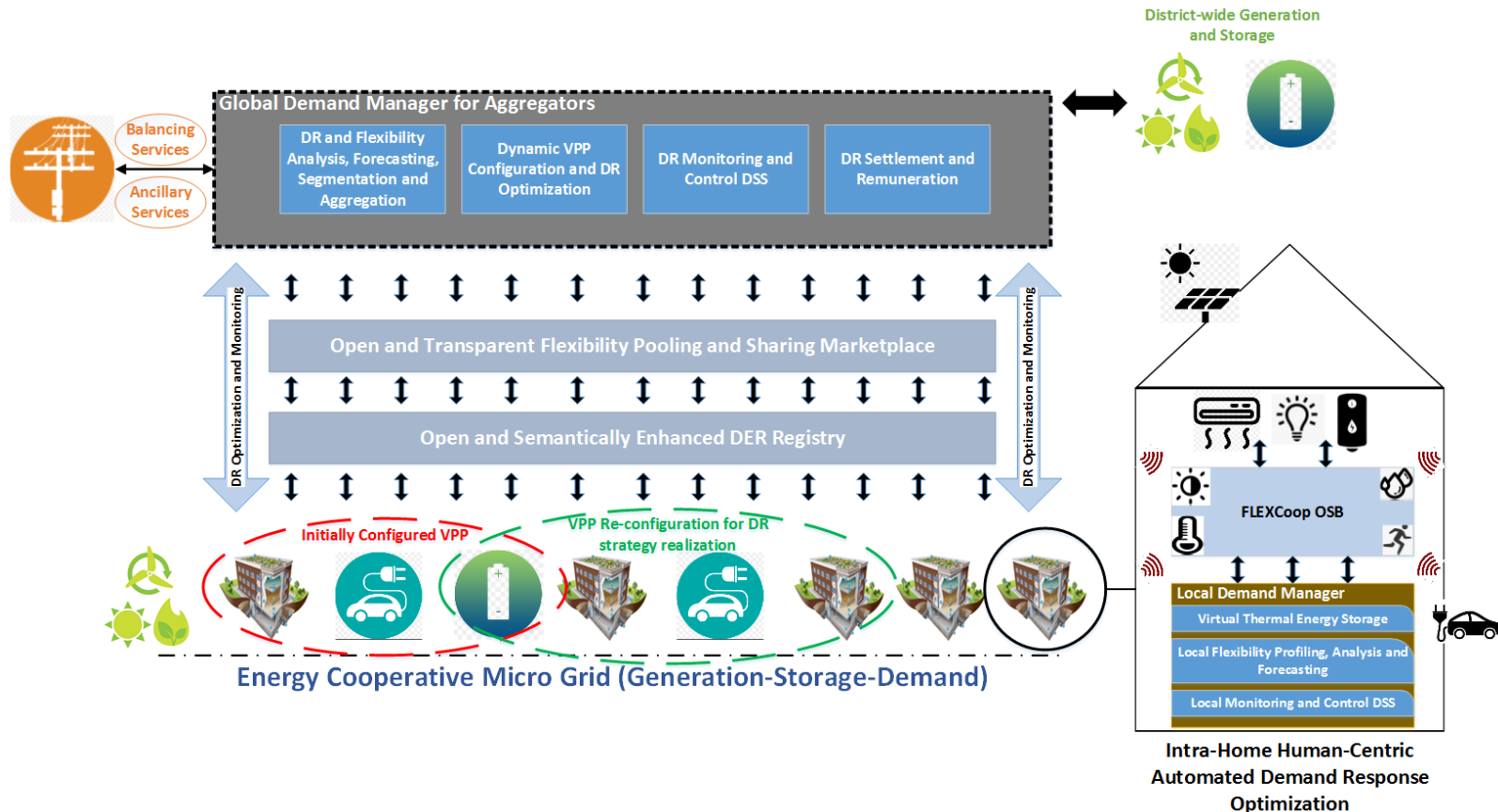


Fully automated solution which segments, classifies and clusters demand and storage assets as aggregates

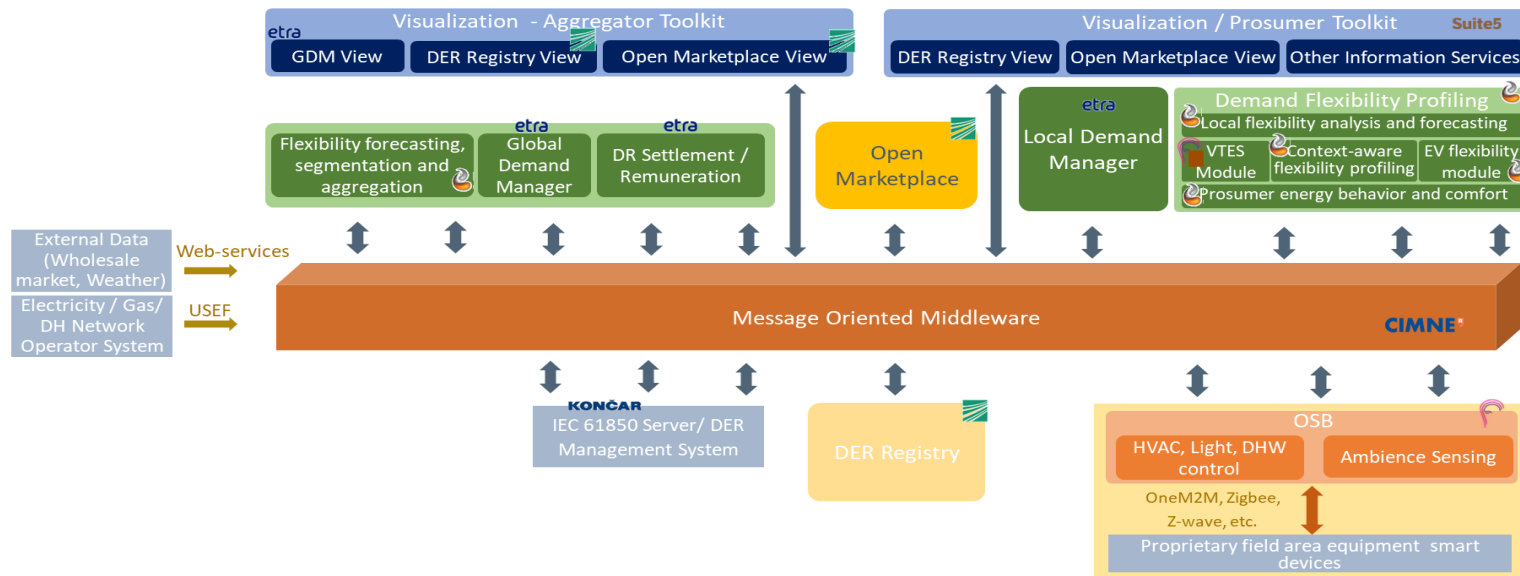
- to balance the cooperative own resources or for grid management.

The application respects prosumers' privacy and is conform to EU General Data Protection Regulation.

The Overall Technical Solution



FLEXCoop Architectural Concept



CIMNE®

We assume secure communication between the different components of the FLEXCoop solution

Demand Response tools for energy cooperatives

- **Digital technologies** have become essential to achieve the transition to a decentralized network based on renewable energy sources.
- FLEXCoop tools enable cooperatives to valorise **prosumers flexibility** and to facilitate the integration of renewable energy in the electricity system.
- FLEXCoop brings together a range of standards and baseline technologies in a **complete Demand Response tools**.
- FLEXCoop enables energy **cooperatives** to fulfil the **role of aggregators** and their members to become prosumers active in the energy transition.



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Work Planning

