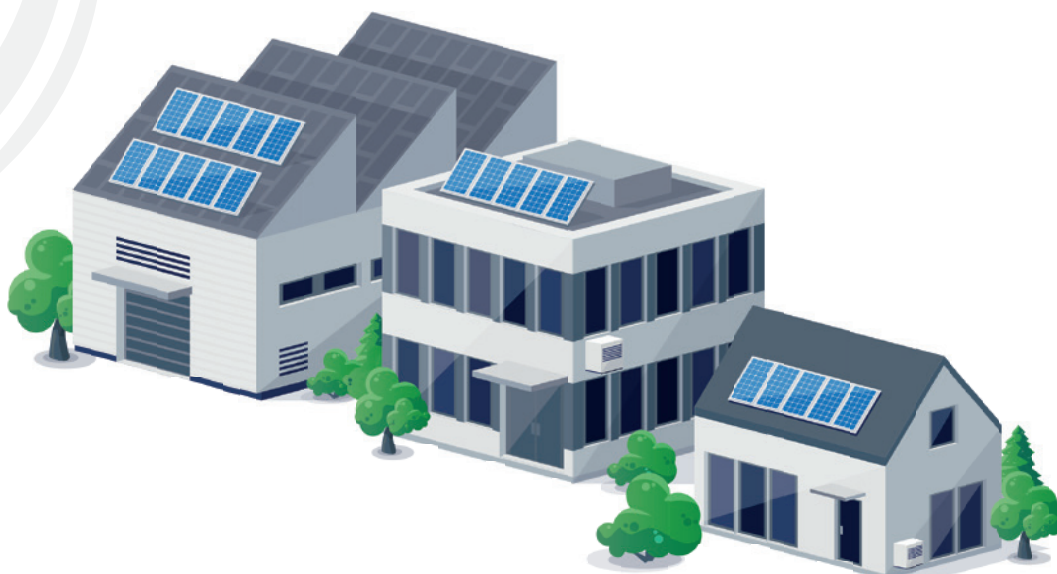




Integrated Development Platform for Customer & Aggregator Energy Management Systems



CHALLENGE

To achieve sustainable market adoption of demand-side flexibility services targeted buildings and industrial sites, certain technical needs must be fulfilled. They include accurate, robust, automated modelling of energy assets, optimal flexibility management and aggregation of Customer Energy Management Systems (CEMS) in multi-market settings, and seamless integration of CEMS on legacy infrastructures with plug-and-play deployment.

AIM

The INDEPENDENT project addresses the challenges by providing an Integrated Development and Operations Platform. The platform leverages advanced hybrid-modelling and neural network technologies to deliver accurate and reliable forecasts of resource loads and available flexibility, together with optimal control solutions.

The standard-compliant platform integrates with legacy automation and metering infrastructures, external data as well as energy and flexibility markets to perform automated bidding.

IMPACT

To demonstrate the usability of the platform and its usefulness in terms of cost-efficiency, business gain and energy optimisation, platform-based systems are developed, tested and approved by pilot sites in Finland, Slovenia, Germany and Sweden. These pilot sites involve energy service companies, aggregators, smart appliance manufacturers and their customers.

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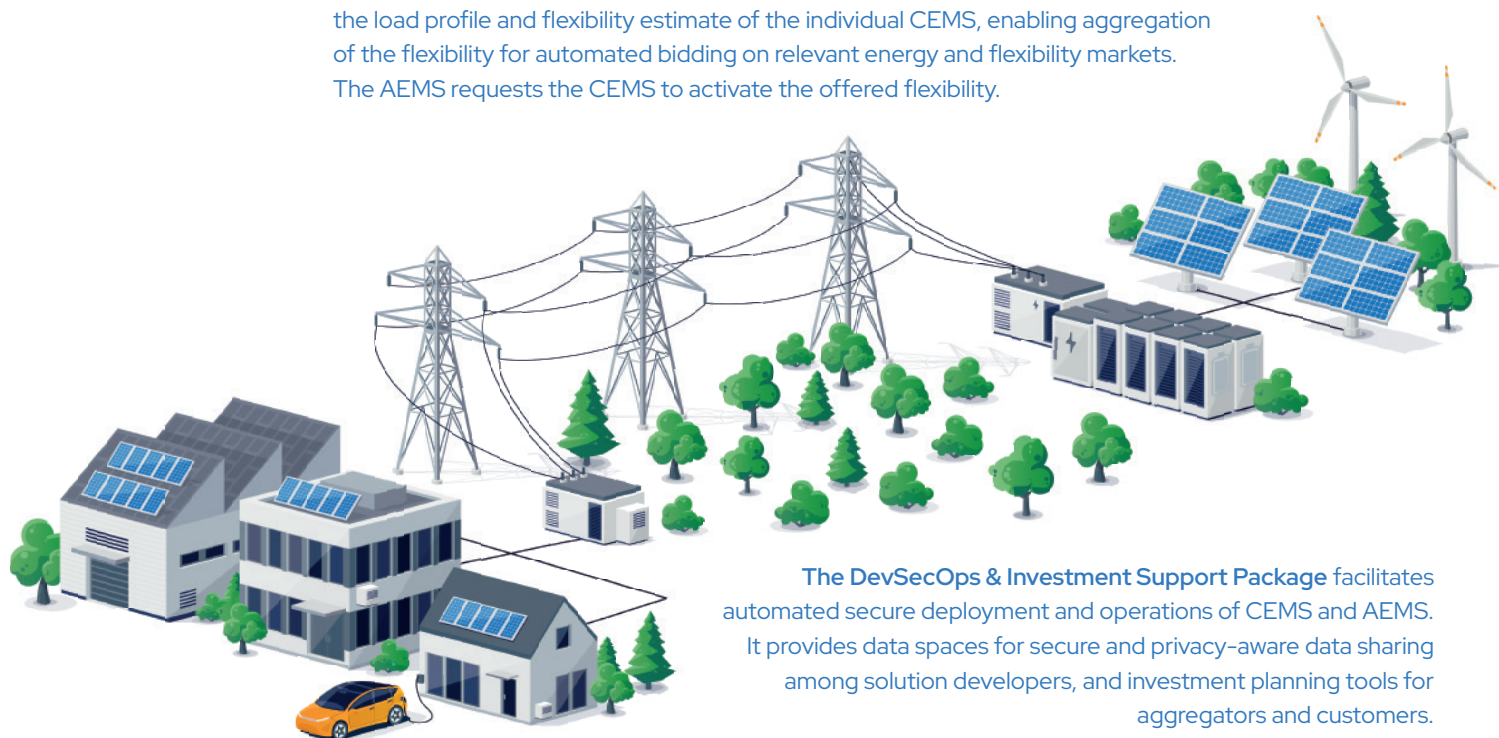




The INDEPENDENT platform

Seamless deployment of Customer and Aggregator Energy Management Systems

The Aggregator Energy Management Systems (AEMS) package provides the load profile and flexibility estimate of the individual CEMS, enabling aggregation of the flexibility for automated bidding on relevant energy and flexibility markets. The AEMS requests the CEMS to activate the offered flexibility.



The DevSecOps & Investment Support Package facilitates automated secure deployment and operations of CEMS and AEMS. It provides data spaces for secure and privacy-aware data sharing among solution developers, and investment planning tools for aggregators and customers.

The Customer Energy Management Systems (CEMS) package collects measurement data from a building and controls its energy and flexibility resources according to optimisation schedules, taking into account user preferences, limits, goals, prices, local production and energy efficiency.

The platform packages consist of individual modules, designed to provide an open interface and be deployed as a microservice for easy integration and deployment. Interoperability and replication are backed up by implementation of demand-side flexibility management standards, including the EN 50491-12

and IEC 62746 standard families and the Smart Applications REFERENCE ontology (SAREF). Additionally, Gaia-X and European Data Exchange Reference Architecture (DERA) 3.0 compatible data spaces are provided to govern building and site data.

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