

## Facilitating adoption of energy flexibility services in buildings and industry

*The EU project INDEPENDENT is developing an integrated software platform for seamless deployment of standard-compliant Customer and Aggregator Energy Management Systems in buildings and industrial facilities. The platform will be tested by four European pilots, involving energy service companies, aggregators, smart appliance manufacturers as well as their customers.*

Unpredictable renewable energy resources, difficulties in integrating with legacy systems in a cost-efficient manner, and reduced benefits due to market silos that confine flexibility to a single market. These are current barriers to large-scale adoption of demand-side flexibility. To address these issues, INDEPENDENT is developing an Integrated Development and Operations Platform which leverages advanced hybrid-modelling and neural network technologies to deliver automated, precise and reliable predictions of resource loads and flexibility, as well as optimal control strategies. The platform offers automated integration with legacy systems and enables multi-market participation using probabilistic forecasting and bidding.

“Our goal is to make the platform interoperable with more than 40 energy management systems and 60 smart appliance vendors and cover 90 % of the available flexibility. Through our pilots, we aim to demonstrate how this flexibility can be applied for energy optimisation in various scenarios and in multiple markets, enabling the energy actors and their customers to benefit from flexible energy use”, explains Project Manager, Markus Taumberger from VTT Technical Research Centre of Finland.

### Tools for development, secure management and investment

The INDEPENDENT platform consists of two main packages dedicated to the development of Customer and Aggregator Energy Management Systems (CEMS and AEMS), and a package to support efficient deployment and secure operations of the systems, with data spaces for sharing data between stakeholders and with tools for planning investments. Each module in the CEMS and AEMS packages is designed to provide an open interface and be deployed as a microservice, making it easy to integrate and deploy.

Interoperability and replication are backed up by full compliance with 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-compatible data spaces are provided to govern building and site data. Designed for seamless integration with existing smart appliances, energy management systems and aggregation platforms, the platform thus ensures straightforward adoption by technology providers and operators.

### Testing the platform in practice

Four pilots in Finland, Sweden, Slovenia and Germany will test the platform in real settings and operational markets. They will harness an estimated total of 1,4 MWh flexibility capacity from industrial, commercial and residential buildings and sites, and connect to several energy wholesale, TSO, and DSO flexibility markets to demonstrate the platform-based CEMS and AEMS as complete and qualified systems.

“All in all, INDEPENDENT will aim to significantly reduce the development, deployment, and operational expenses preventing the broader uptake of demand-side flexibility services, demonstrating that demand-side flexibility management is indeed a sustainable business”, concludes Markus Taumberger.

### About the project

The INDEPENDENT project, *Integrated Development Platform for Customer and Aggregator Energy Management Systems*, is co-funded by the European Union’s Horizon Europe Framework Programme for Research and Innovation, Project ID: 101172675. Duration: 01.11.2024 to 31.10.2027. Budget: EUR 6,5 million. The project brings together 14 partners from five European countries, including aggregators, energy management service companies, and two major home appliance manufacturers.

For further information, contact Project Manager Markus Taumberger from VTT Technical Research Centre of Finland: [Markus.Taumberger@vtt.fi](mailto:Markus.Taumberger@vtt.fi). Or visit the project at <https://www.independent-energyproject.eu>.