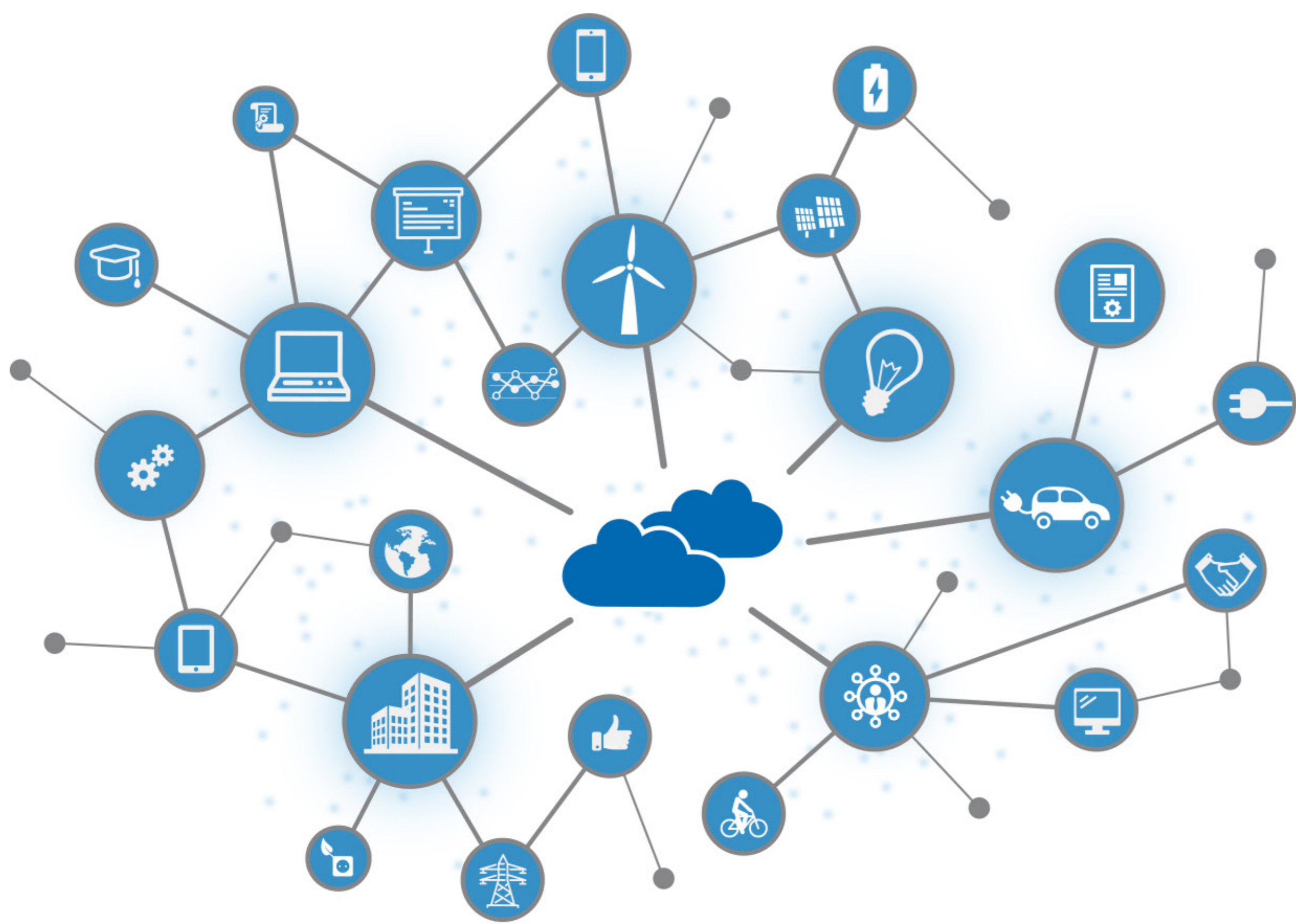


FISMEP

FIWARE for Smart Energy Platform

Objective

Within the project “FISMEP” (FIWARE for Smart Energy Platform), FEN Research Campus, in close collaboration with the Institute for Automation of Complex Power Systems (ACS) at RWTH Aachen University, focuses on the development and implementation of a medium-voltage DC (MVDC) research grid on Campus Melaten.



Project Description

FISMEP explores the creation of a service-oriented open source cloud platform for smart energy systems to facilitate an efficient, automated and sustainable energy supply for single buildings as well as municipalities.

A total of seven research and industrial partners from Germany, Sweden and Romania are jointly working on a smart energy solution that will provide new capabilities in the area of distribution grid management: In addition to a modern energy system, which is oriented towards the vision of a “smart city”, the open source principle is also supposed to facilitate a connection with external actors such as producers, distributors or consumers. That way, innovative energy services and business ideas can quickly be integrated into the platform for deployment.

Research conducted in FISMEP follows an interdisciplinary approach that comprises the areas energy, information and communication technology (ICT) as well as social science. To show and exploit the platform’s impact on the energy system, three field tests will be carried out on locations in Sweden, Romania and Germany. Here, innovative use cases will be demonstrated with a particular focus on energy efficiency (advanced grid monitoring), performance (DC grid automation and its transfer to the cloud platform) as well as user-centered adaptation (end user experience and behavior, smart buildings).

Field Test Sweden

- Connection of a number of households to the “CESO” (Customer Energy and System Optimization) smart grid platform developed by E.ON (test site A)
- Connection of a number of households in the HSB Living Lab to the “ERO” (Energy Organizer) under development by Chalmers (test site B)
- Monitoring, mapping and analysis of user consumption behavior and habits at test sites A and B
- Monitoring and analysis of comfort requirements and equipment in the connected households at test sites A and B
- Adaptation of specific feedback strategies, intervention and planning tools as well as services to different user groups and stakeholders
- Building operation optimization services provided
- Evaluation of potentials for coupling electric and thermal grids
- Evaluation of platform usability and service-oriented adaptation

Field Test Romania

- Advancement of monitoring solutions for distribution grids
- Installation of mobile phasor measurement units (PMUs) as configurable monitoring nodes
- Tracking and evaluation of energy distribution and voltage quality
- Six months monitoring campaign with data fusion within FISMEP

Field Test Germany

- Continued development and implementation of a multi-terminal MVDC grid based on FEN project results
- Development of hybrid automation for MV DC and AC grid
- Feasibility and requirement analysis for transferring the MVDC grid automation to the FISMEP cloud platform (virtualization)
- Virtualization concept, design and implementation
- Test mode of the virtualized MVDC grid automation via the FISMEP cloud platform

Project Partners

- Institute for Automation of Complex Power Systems (ACS) at E.ON Energy Research Center (ERC), RWTH Aachen University
- Institute for Energy Efficient Buildings and Indoor Climate (EBC) at E.ON Energy Research Center (ERC), RWTH Aachen University
- Flexible Electrical Networks (FEN) Research Campus
- Chalmers University of Technology, Sweden
- E.ON Sverige AB, Sweden
- City of Malmö, Sweden
- MicroDERLab at University Politehnica of Bucharest, Romania
- EnergoBit, Romania