IES | Integrating the Energy System

The project aims at establishing a commonly agreed method to assess the interoperability of smart energy devices on the communication layer. As reference approach the IHE *Gazelle* "eHealth test framework for interoperability" is analyzed. Based thereon, the standards of the SGCG, and EIF recommendations, a modular process chain fitting the energy sector shall be defined and tested against exemplary use cases.

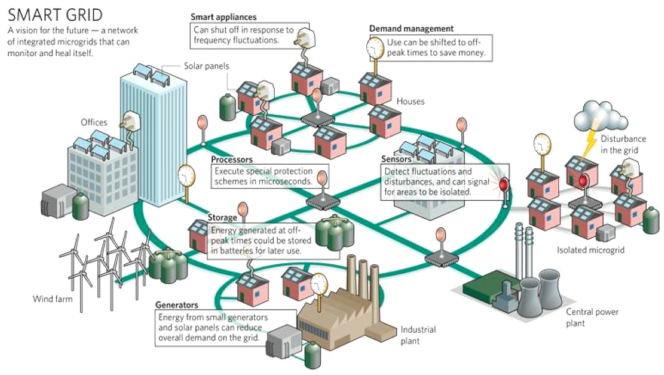
Project objective:
- *Establish processes to ensure interoperability in the energy sector*

Schedule: *2016-03-01 to 2019-02-28*

Planned results:
- Adoption of the IHE-method to the energy sector
- Proof of concept for first use cases
- Development of an interoperability test platform
- Implementation of the process in Austria
- Networking on EU-level

The project is part of the e!MISSON program, 2nd call, funded by the Austrian Climate and Energy Fund (KLIEN) managed by the Austrian Research Promotion Agency (FFG), under contract number 853693. The consortium manager is Angela Berger from the Technology Platform Smart Grids Austria.

Motivation



The electrical power grid has evolved over centuries into a hierarchic infrastructure from rather centralized energy production and exchange down to the distribution via different voltage levels towards customers. A liberal energy market and distributed regenerative energy production challenge the established grid management. Smart Grids shall provide the means to smoothly integrate decentralized energy production and effectively improve flexibility, distribution efficiency and grid reliability. All this requires vivid communication among subsystems. Interoperability is thus essential for the transition to Smart Grids and also contributes to the investment protection for operators and manufacturers. A normalized use of technical standards for interfaces and communication protocols is a central requirement for cost-effective systems integration. However, a seamless integration in legacy systems is equally important because the transition occurs gradually as new components and services are deployed step-by-step.

Contact

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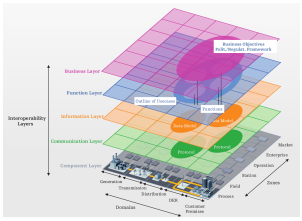
Approach

The description and implementation of processes shall be vendor-neutral to ensure long-term interoperability and acceptance. The transparency of the method and the open database on technical specifications and test profiles shall motivate technology providers to design interoperable products and services. Product certification will increase the competition, foster better products, and implement a binding cyber-security level.



As a basis serve the CEN-CENELEC-ETSI Smart Grid Coordination Group (SGCG/M490) standards and the IHE (Integrating the Healthcare Enterprise) approach. Also the EIF (European Interoperability Framework) recommendation to formalize cooperation arrangements in interoperability agreements, addressing legal, organizational, semantic and technical interoperability is addressed. A modular process chain fitting the energy sector shall be defined and tested against selected key use cases, starting with the selection of use cases and the necessary standards for the realization, specification of a normalized use of these standards in interoperability profiles at different levels, the implementation thereof, and finally a demonstration test setup.

Exemplary Use Cases

Three use cases addressing in total most stakeholders have been chosen to exemplify the interoperability assessment process and showcase the developed interoperability evaluation environment.

Supplier change (SC): Involving energy vendors, operators, customers, and market liberalization this use case defines critical event chains assuring seamless supply.

Smart metering (SM): Besides the capability to handle a multitude of devices also local obligations concerning customer data privacy need to be assured.

Virtual Power Plant (VPP): Joining distributed production of renewable energy and selling the energy jointly on the energy market may involve the integration of distributed, still time critical control mechanisms.

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