Abstract Format

SEAS – an open-source IT Platform to manage energy

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Abstract :

From static to dynamic
Current energy, automation and ICT systems provide only rather static and rough means to control, monitor and estimate on-site energy consumption, which leads to energy wastage and hinders the deployment of highly fluctuating renewable energy generation. The ITEA 2 SEAS (**S**mart **E**nergy **A**ware **S**ystems) project aims to address the problem of inefficient and unsustainable energy consumption that is caused by insufficient means to control, monitor, estimate and adapt the consumption of energy from systems by enabling the interaction of energy, ICT and automation systems at consumption sites along with dynamic and intricate ICT -based solutions to control, monitor and estimate energy consumption.
The exploration of business models and solutions will enable energy market participants to incorporate micro-grid environments and active customers.

In summary, the goals of smart and energy efficient systems are to:
- reduce costs and improve energy security,
- reduce dependency on the imported foreign oil and the impact of "peak oil",
- reduce environmental impact by lowering CO_2 and carbon-related emissions through switching to less carbon-intensive or non-carbon fuels, reducing the demand for energy services and adopting more energy-efficient equipment.

Self-adaptive
The project results will enable a considerable increase in the energy efficiency of buildings and facilitate the deployment of renewable energy micro-grids, thereby contributing the environmental, economic and sustainability targets for energy consumption. By taking existing energy information related standards and information models from different industrial sectors (e.g. CIM and BIM) as a starting point, a new cross-industry SEAS Knowledge Model, and a cloud-based SEAS Information Exchange Platform will be developed so that advanced ICT-based solutions can be created for smart energy-aware systems in building and micro-grid environments. Such smart energy-aware systems will be self-adaptive, able to exercise semi-automated or autonomous control of the energy consumption or energy source on the basis of semantic understanding of the system and its context.
This innovative semantic energy information modelling and exchange enable application in the large-scale design, development, deployment and use of energy and automation systems in building and micro-grid environments. To ensure that the project results have sufficient impact, fast exploitation potential and availability, the SEAS knowledge model will be published as reference model for open use and the SEAS information exchange platform as an open cloud service.