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ENCOURAGE architecture: support for heterogeneous smart grids

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Abstract

Our society relies on energy for most of its activities. One application domain inciding heavily on the energy budget regards the energy consumption in residential and non-residential buildings.

The ever increasing needs for energy, resulting from the industrialization of developing countries and from the limited scalability of the traditional technologies for energy production, raises both problems and opportunities. The problems are related to the devastating effects of the greenhouse gases produced by the burning of oil and gas for energy production, and from the dependence of whole countries on companies providing gas and oil. The opportunities are mostly technological, since novel markets are opening for both energy production via renewable sources, and for innovations that can rationalize energy usage. An enticing research effort can be the mixing of these two aspects, by leveraging on ICT technologies to rationalize energy production, acquisition, and consumption.

The ENCOURAGE project aims to develop embedded intelligence and integration technologies that will directly optimize energy use in buildings and enable active participation in the future smart grid environment.The primary application domains targeted by the ENCOURAGE project are non-residential buildings (e.g.: campuses) and residential buildings (e.g.: neighborhoods). The goal of the project is to achieve 20% of energy savings through the improved interoperability between various types of energy generation, consumption and storage devices; inter-building energy exchange; and systematic performance monitoring.