FUTURE INTERNET SMART UTILITY SERVICES

FINESCE

WP1: FI providing the sustainable smart city energy

FINESCE Innovation Event, Horsens

October 9th , 2013

David Lillienberg

SEVENTH FRAMEWORK PROGRAMME

FUTURE INTERNET PPP

WP1 Introduction

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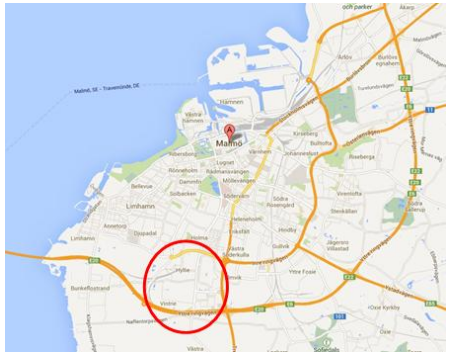
Scope

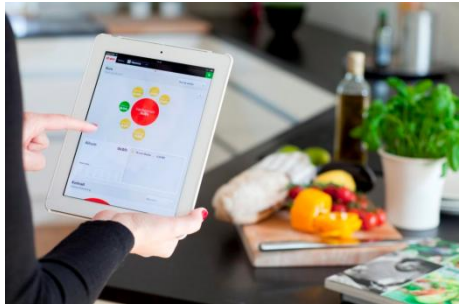
- The scope of the WP1 trial is to execute Demand Side Management and Demand Side Response tests with external buildings in the Hyllie district, Malmö, Sweden, based on an integrated approach of energy carriers



Hyllie, Malmö

Desired outcomes

- How Future Internet technologies can contribute to an efficient and robust Demand Side Management system
- Proof of concept and evaluation on solution which architecture is based on distributed energy management capability and centralized portfolio management
- Evaluate and test different business model(s) according to defined use cases to obtain better view on Demand Side Management and Demand Side Response as well as ideas on customer's potential to act as balancing power
- Evaluate thermal load shifting potential by different heating systems, e.g. under floor heating and radiators, while leveraging the building's thermal inertia
- Scale-up strategy for the trial, e.g. ability for other towns/regions/business sectors to use the results/functionality



E.ON Energy Management System

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Price data

Weather data

Generation data (CO2)

Interface to Distribution management system (possible future scope)

Interface to Meter Data Management (possible future scope)

Platform

Optimization • Forecasting • Load steering • Baselining

GE

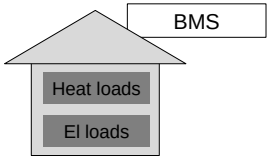
Internet

GE

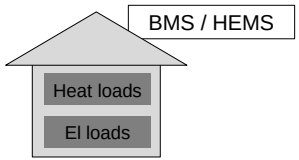
Command signals

Command signals

Command signals



Commercial buildings



Residential buildings

Decentralized generation (possible future scope)

- Large scale PV installation in Hyllie
- Hyllie allocated wind turbines
- Batteries

Use cases, GEs, APIs

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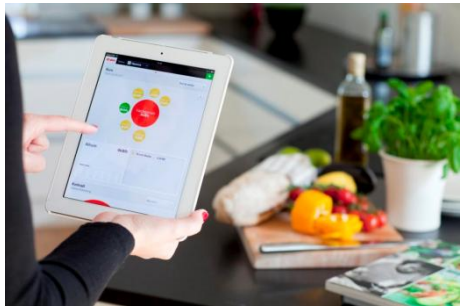
Use cases

- Cost optimization (electricity/heat) by price signals
- Optimization of demand (electricity/heat) by energy mix signals
- Instantaneous variable reduction of energy consumption

GE prime candidates

- BigData
- Complex Event
- Context Broker
- Access Control
- Identity Management



Work package leader	David Lillienberg, E.ON
Location	Malmö, Sweden
Participants	E.ON, RWTH

APIs

- getTemperature: This method provides temperature forecast for the Hyllie district over a time interval
- getPowerPrice: This method provides the Nord Pool power (electricity) price over a time interval
- getDistrictHeatingPrice: This method provides the district heating price over a time interval
- getDemand: This method provides the demand on load linked to the trial/demand response over a time interval

Areas for the Open Call

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Develop app or visualization tool for WP1 (and potentially for other WPs too). The tool should be able to collect raw data from E.ON's servers and visualize that in a user friendly way. Here below follow examples of areas that could be of interest to visualize.

- Savings that are enabled thanks to the optimization, e.g. EUR and CO2
- Actual loads patterns for WP1's loads, e.g. building's thermal consumption
- FINESCE related Information, e.g. text and images
- Link to FINESCE tweets

Support the WP1 on topics related to the below examples.

- Expertise on Building Management System and heat pumps
- Load behavior, e.g. building's thermal consumption, e-vehicle charging
- Optimization methods while considering aspects such as building inertia and weather forecasts
- Supplier of BMS to buildings in the Malmö region for recruitment of additional buildings to WP1 which may be of interest

Contact information

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Appendix

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WP1 architecture

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Part of WP1 architecture going live in November, 2013, with commissioning of first building

- Building Management System (BMS)
- Home Energy Management Systems (HEMS)