

FINESCE Demand Side Management

Trial Sites in Malmö (S), Horsens (DK) Madrid (ESP)
and Terni (I)

September, 2013

WP1 Introduction

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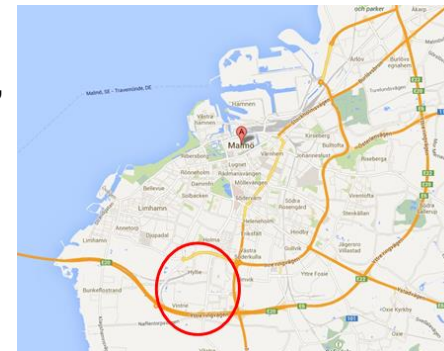
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Scope

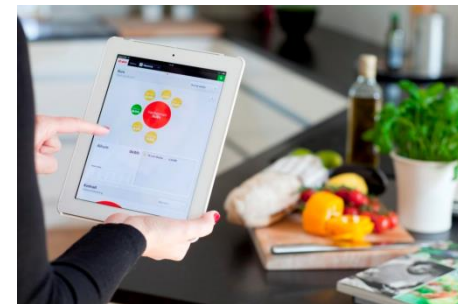
- The scope of the WP1 trial is to execute Demand Side Management and Demand Side Response tests with external buildings in the Hyllie district, Malmö, Sweden, based on an integrated approach of energy carriers

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



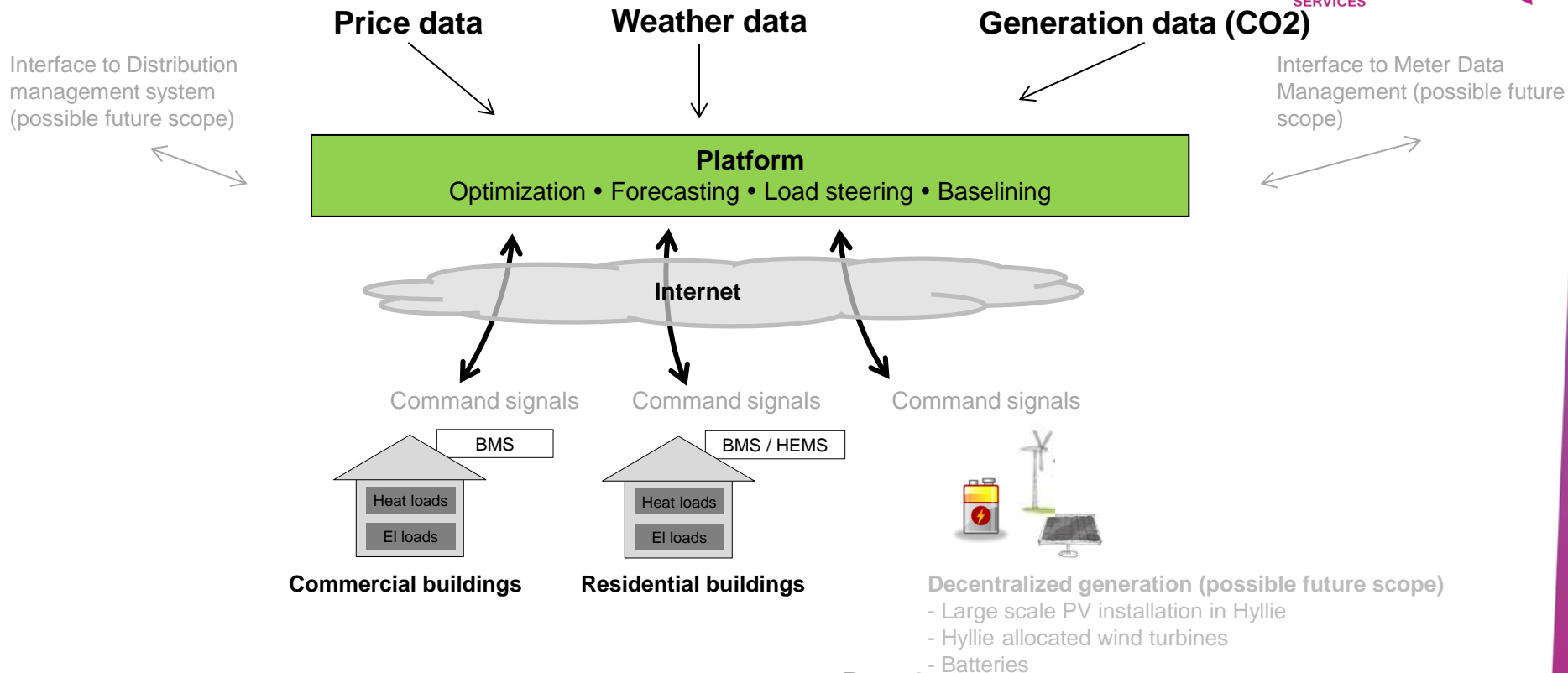
Hyllie, Malmö



Malmö: E.ON Energy Management System

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Malmö: Use cases, GEs, APIs

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

Malmö: Areas for the Open Call

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Develop app or visualization tool. 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

Support the FINESCE 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

WP2 introduction

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Motivation:

- Support the change of end user behaviour towards a more optimal usage of renewable energy when available.
- Create an opportunity for entrepreneurs and SMEs to implement, test and improve new prosumer services, thus fostering innovation.

Scope:

The WP will follow two streams of activities:

- Energy management in a community of 25 single family houses in the Horsens area
- Energy management in a commercial office building in Madrid



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Objectives:

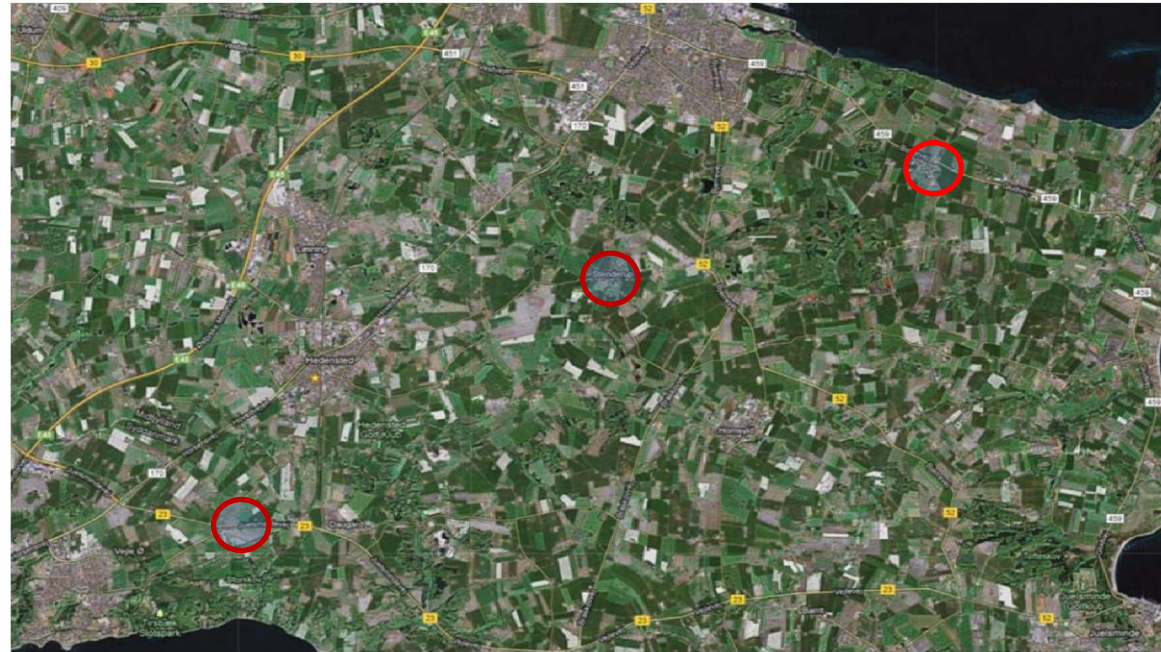
Evaluate the value provided by enabling innovative services to prosumers using FI Generic Enablers in the two trial sites. Jointly, the two streams of activities will address the following objectives:

1. Enable value added services through an open FI based platform with FINESCE APIs, offering rich data on energy needs and consumption patterns.
2. Promote energy efficiency via incentives from the energy market place and dynamic tariffs.

WP2 trial sites: Horsens

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WP2 trial sites: Madrid

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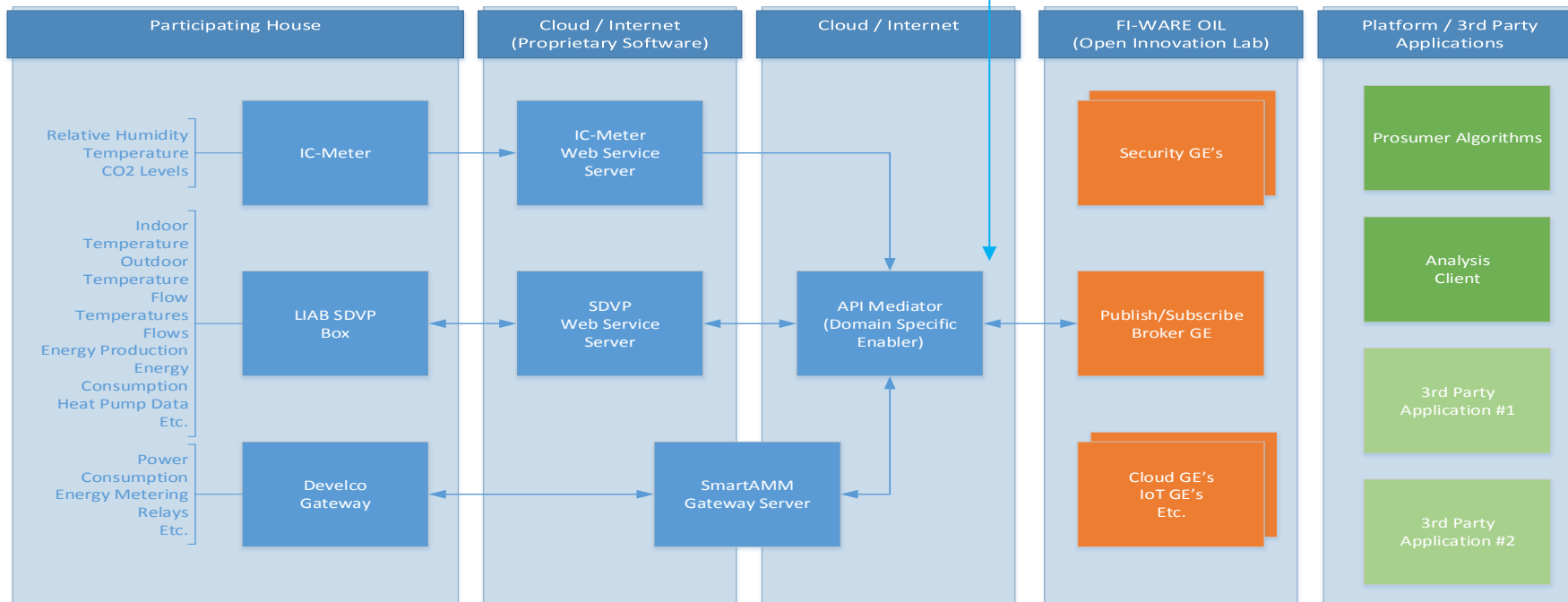


System overview - Horsens

3rd Party information:
Weather, production,
consumption, market

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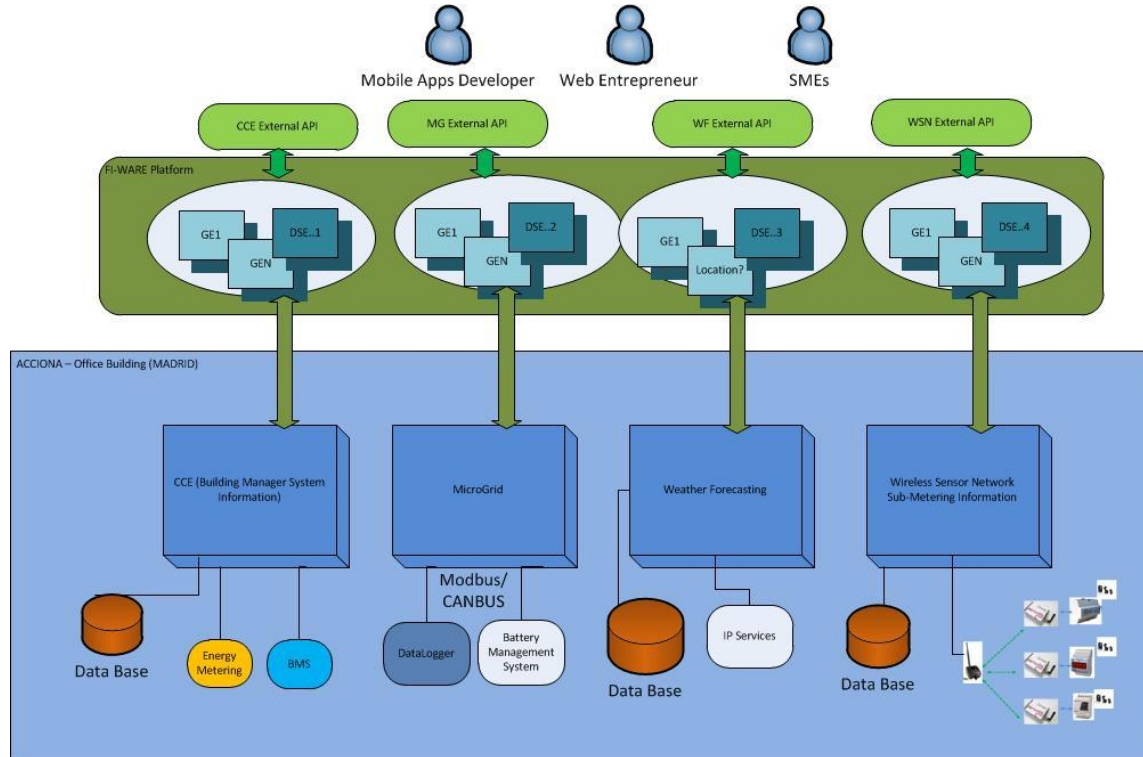
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System overview - Madrid

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Horsens/Madrid: Use cases, GEs and APIs

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Use cases

- Demand side management (by price or renewable energy)
- Automated Load Shifting

GE prime candidates

- Context Broker
- Gateway Device Management
- Gateway Protocol Adapter
- Gateway Data Handling
- Access Control
- Identity Management



APIs

- `getLiveData`: Provides stream of live data from houses
- `getHistoricData`: Provides historic data from the houses covering the specified time interval
- `getExternalData`: Provides the external data such as weather forecast and price data
- `setOperationalMode`: Sets the mode for the demand side management (optimization) for either price, renewable energy, or mixture.

Horsens/Madrid: Open Call issues

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To expand the scope of the field trial locations in FINESCE by adding new topics and trial sites, developing synergies with the FINESCE and FI-PPP goals. Towards Smart Cities and Smart Regions (community building)

- Toolbox for the community of e.g. visualization and analytics tools as well as application development tools and documentation
- Community support in terms of helping create business models, technical support, competitions and possibly VC (towards 3rd phase)
- Showcasing 3rd party entrepreneurial development projects.

Contact information WP1

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