

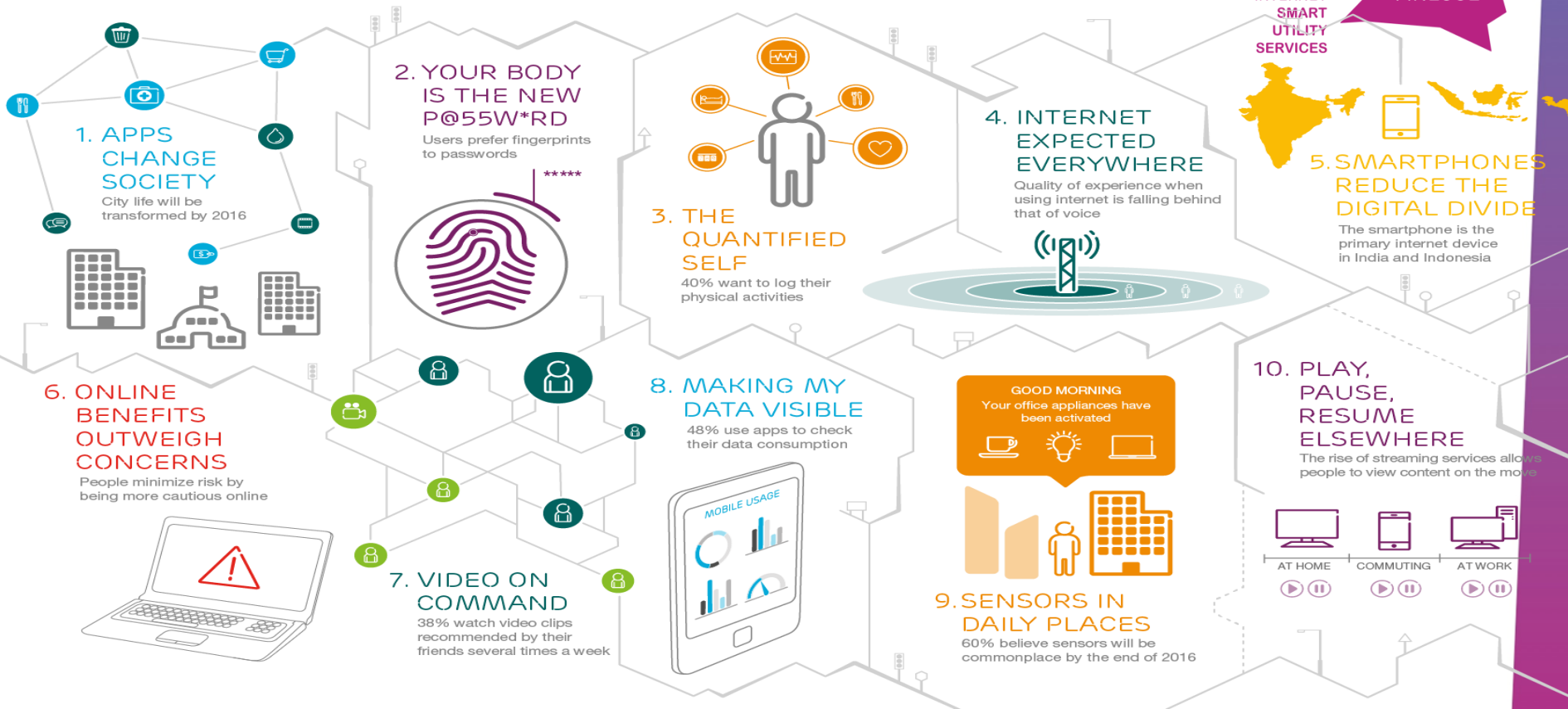
## Smart Energy: a use case pilot of FI-WARE

Dr. Fiona Williams,  
FINESCE Project Coordinator  
Research Director, Ericsson



Everything gets connected & smart, not just  
phones

# 10 Hot Consumer Trends



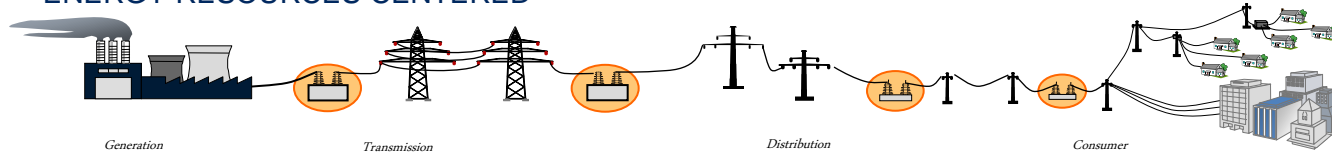
# GRID transformation

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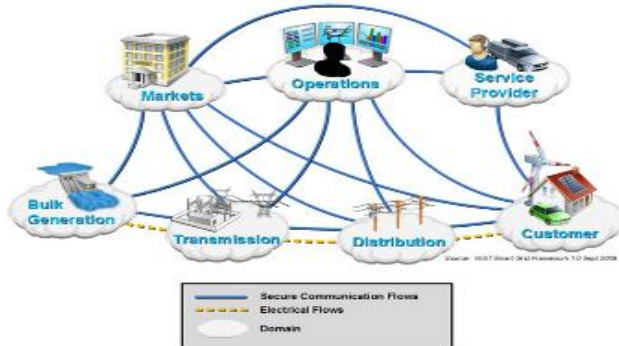
TODAY

ENERGY RESOURCES CENTERED



ONE ENERGY FLOW, ONE INFORMATION FLOW

EXPECTED DISTRIBUTED AND PARTICIPATIVE MARKET



Source: NIST Smart Grid Framework 1.0 Sept 2009

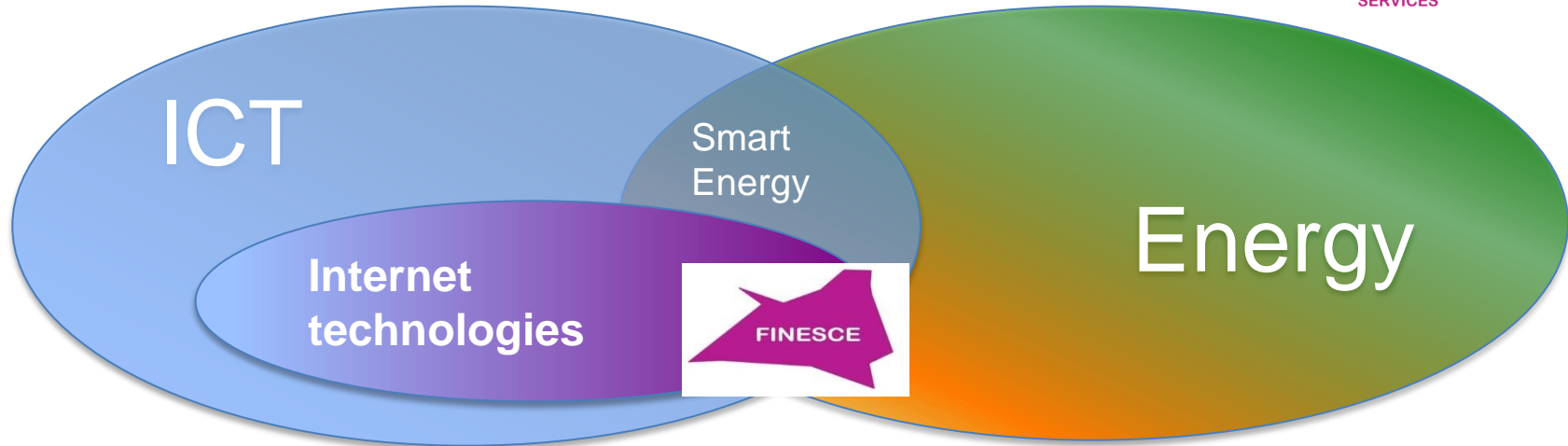
- Distributed generation and consumption
- More focus on customer concerns; quality, security of supply
- New market participants, pro-sumers, aggregators, mobility service operators, etc
- New management models; transparency and non discriminatory access.
- New products and services.

BI-DIRECTIONAL ENERGY FLOW, "N" INFORMATION FLOWS

# The Future Internet for Smart Energy

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**Future Internet of Energy: organizing..**

▪ **Enabling innovation based on internet interfaces in the energy sector**

- (volatile) distributed energy production
- (flexible) consumers and prosumers
- electric vehicles (as consumers and storage)

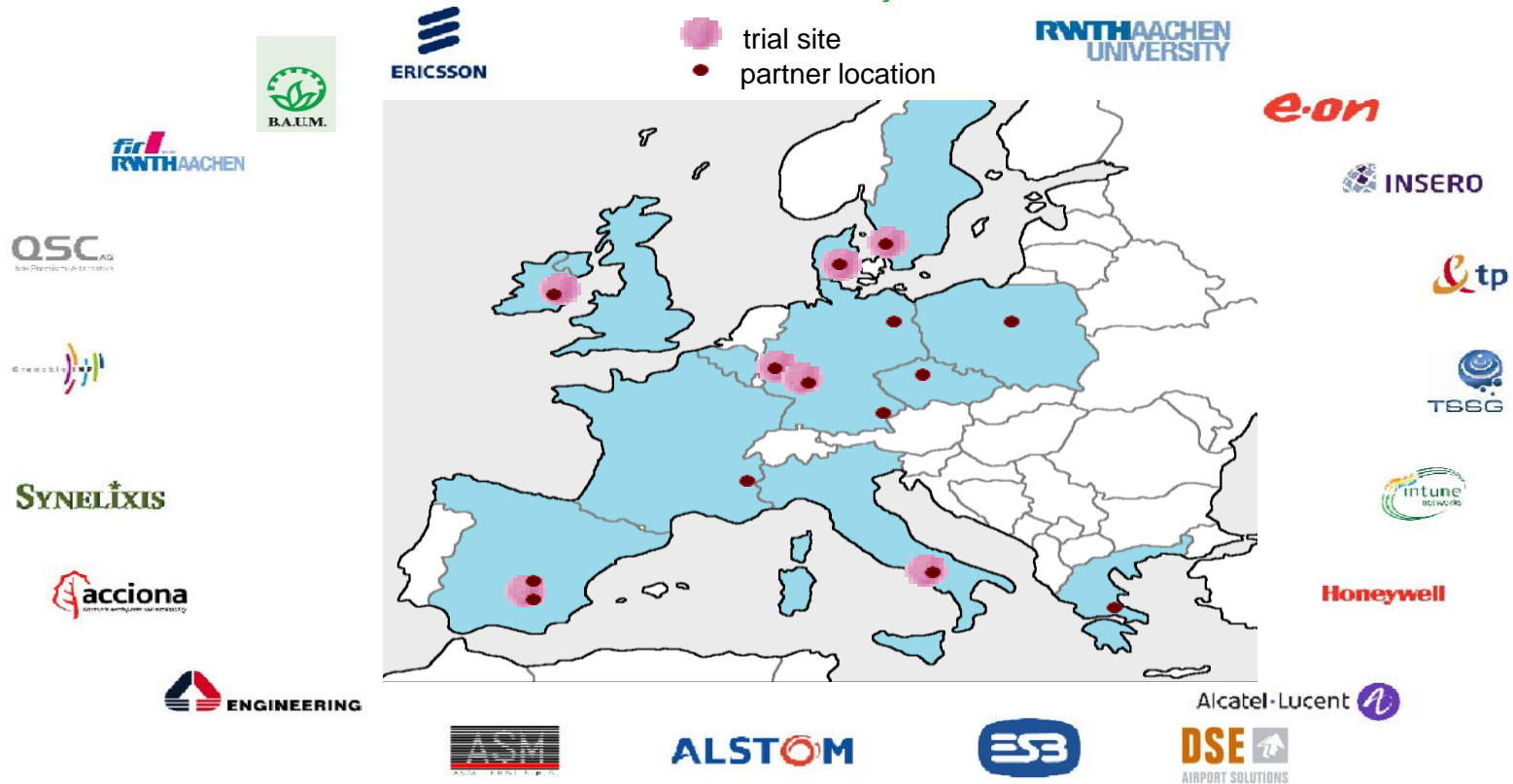
**Benefits of using the future internet and GE approach:**

- **Shorter time to market!**
- Easy access for new partners
- scalability of applications
- lower costs for application development

# FINESCE Partners and Trial Sites

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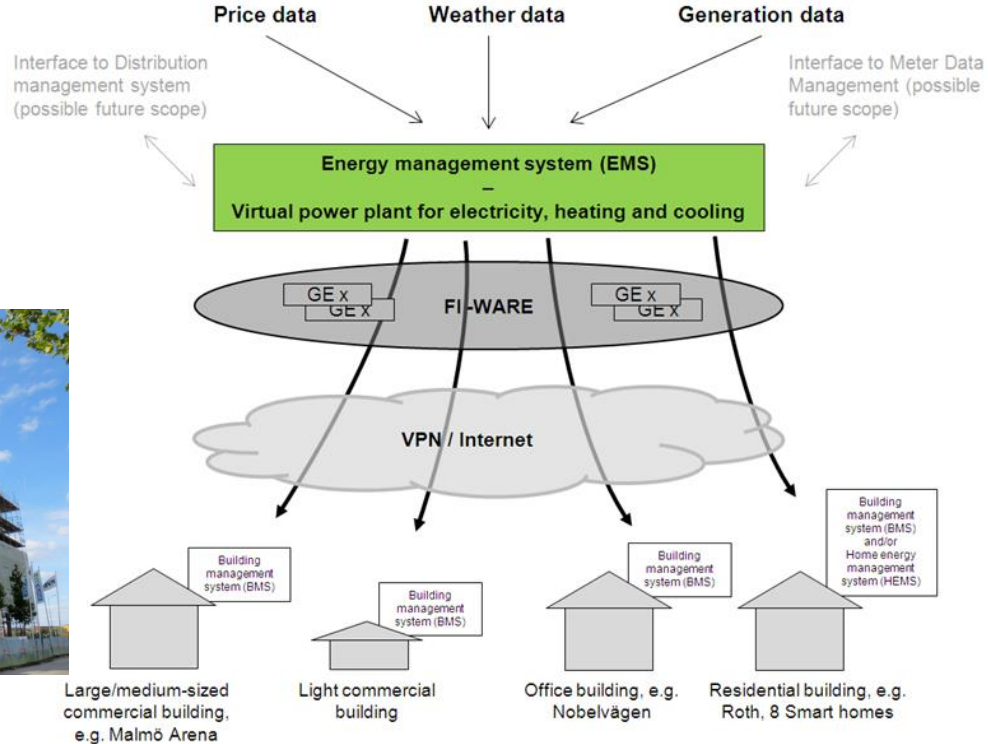


# Trial 1: FI Providing Sustainable Smart City Energy (Malmö, Sweden)

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- Using Future Internet as an enabler for innovation and opening of closed systems
- Demonstrate optimization of supply and demand across different energy carriers, such as electricity, heat and cooling



# Trial 2 – Smart Region Horsens, Denmark & Madrid

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## Two trial sites/streams of activities

1. Trial site Horsens: Energy management in a community of 20 single family houses in a village
2. Trial site Madrid: Energy management in a commercial office building



## WP 2 objectives

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



# Trial 3 - cross-border Virtual Utility

## Motivations

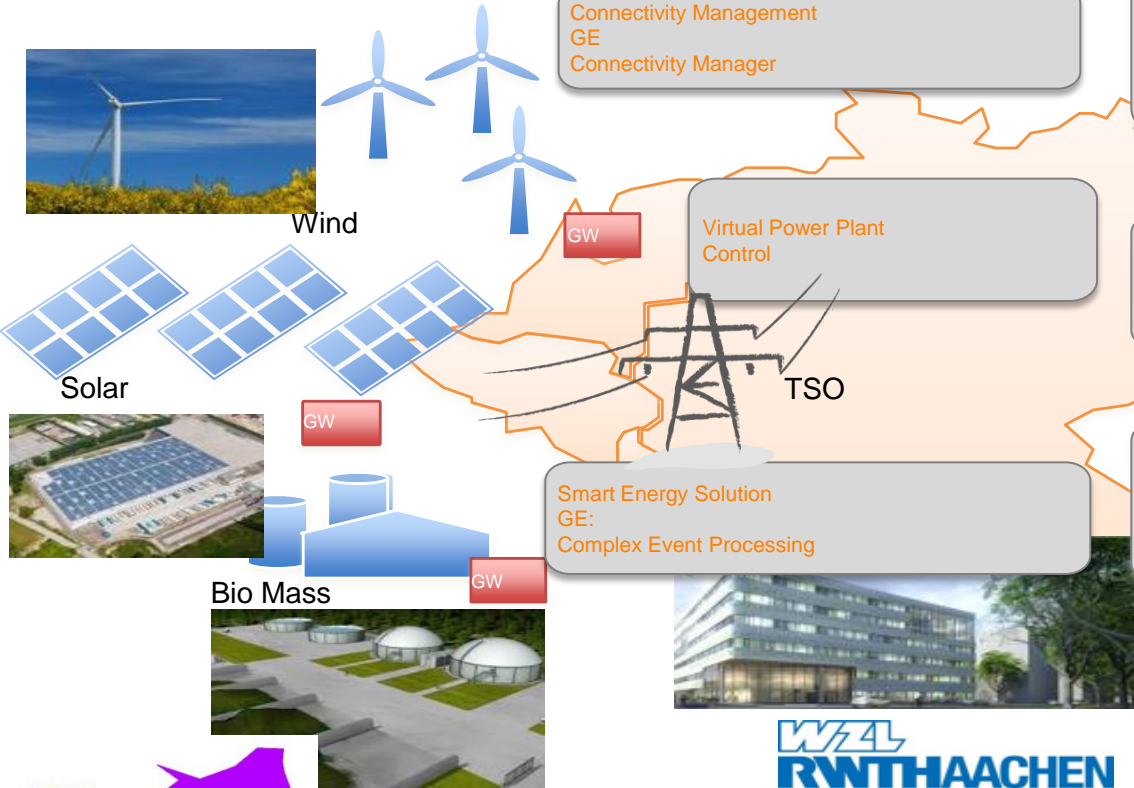
- Combine renewable Energy production with Demand Site Management to a Virtual Utility
- Combine different volatile energy production to guaranteed CO2 free certified energy

## Objective

- Increase the part of renewable Energy of the consumption of electrical Energy

## Scope

- Trial installation in Belgium and Germany
- ~10 Renewable energy sources
- ~1 Demand Site

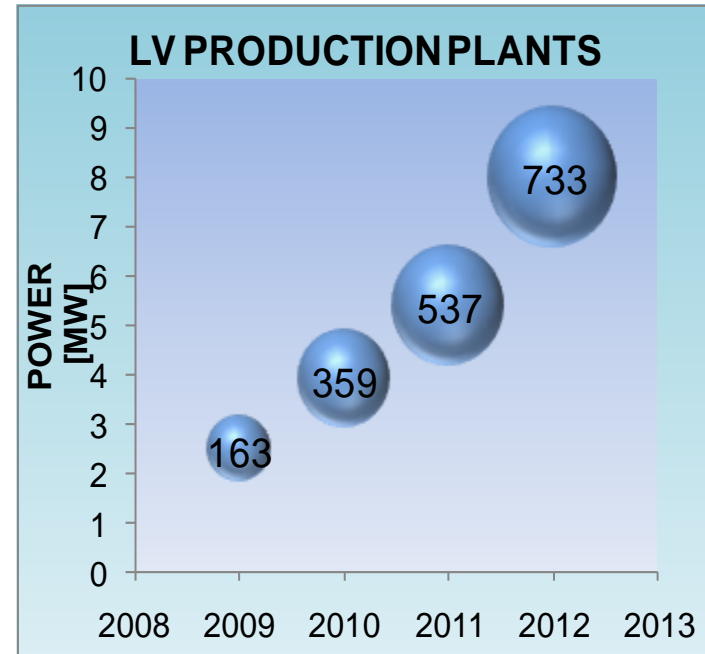


## Trial 4 – FI Building the Energy Marketplace in Terni, Italy

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- Trial site: Terni (Italy)

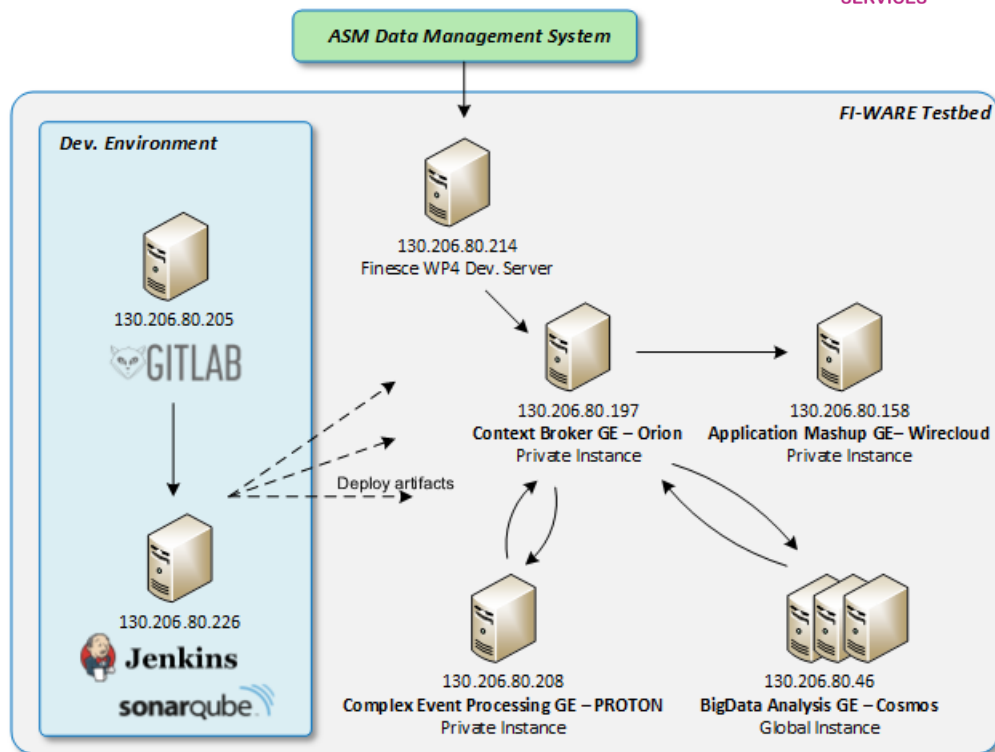


# GE and DSE integration

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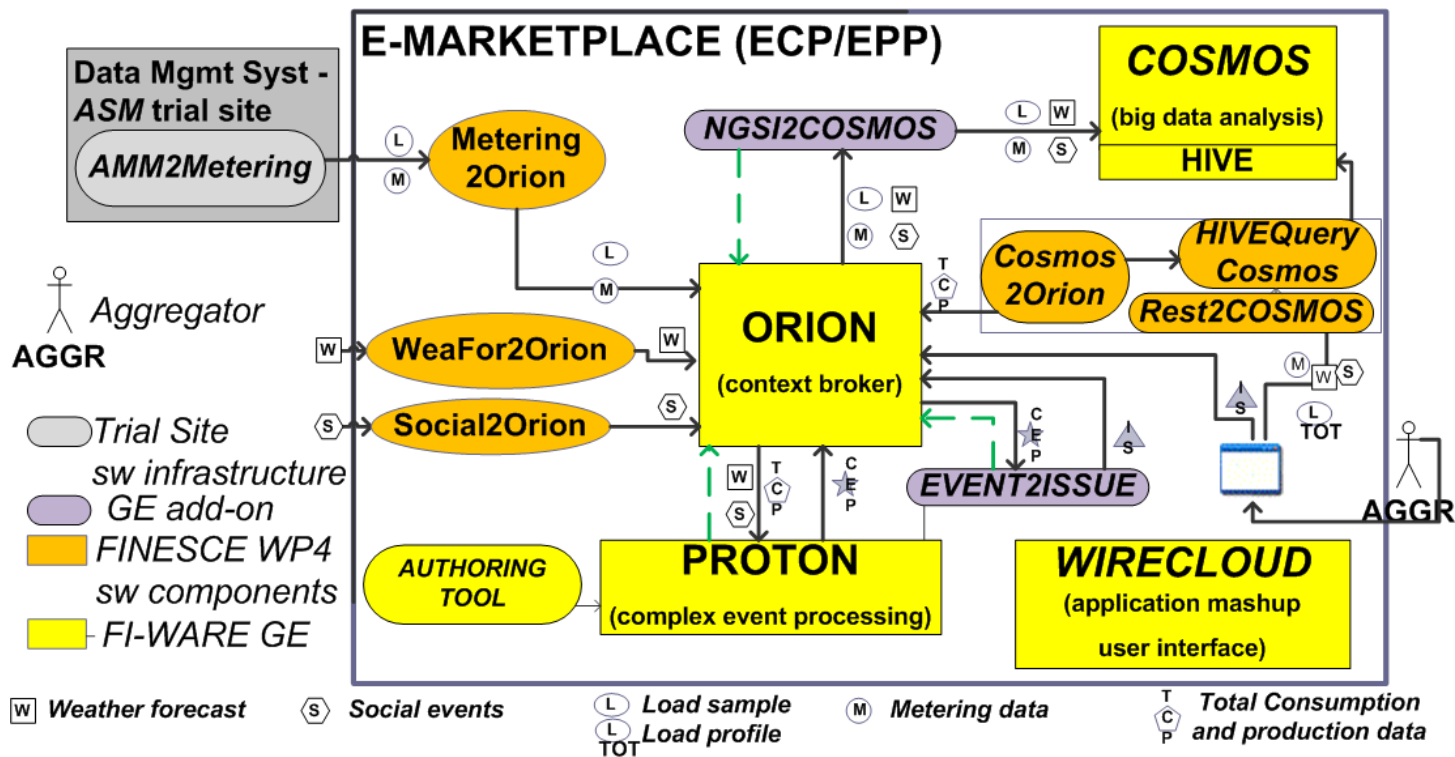
- WP4 trial is actively using the cloud facilities offered by the FI-WARE Testbed
- FI-WARE Generic Enablers used “as-a-service”



# GE and DSE integration

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Trial site Ireland

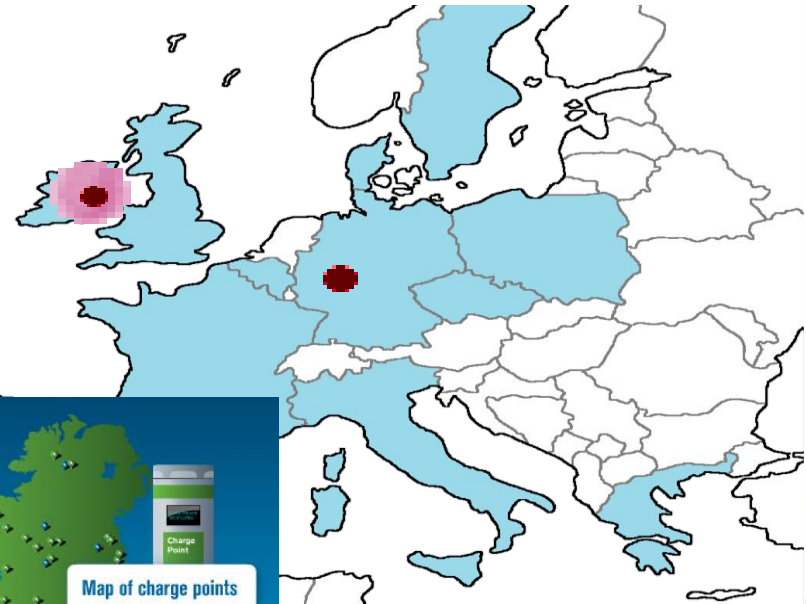
## Future Internet : Electricity in Action

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### Objectives:

- eCar batteries as interruptible loads to balance the power grid
- Substation communication for power management
- Simulation at RWTH to scale up results



trial site  
partner location



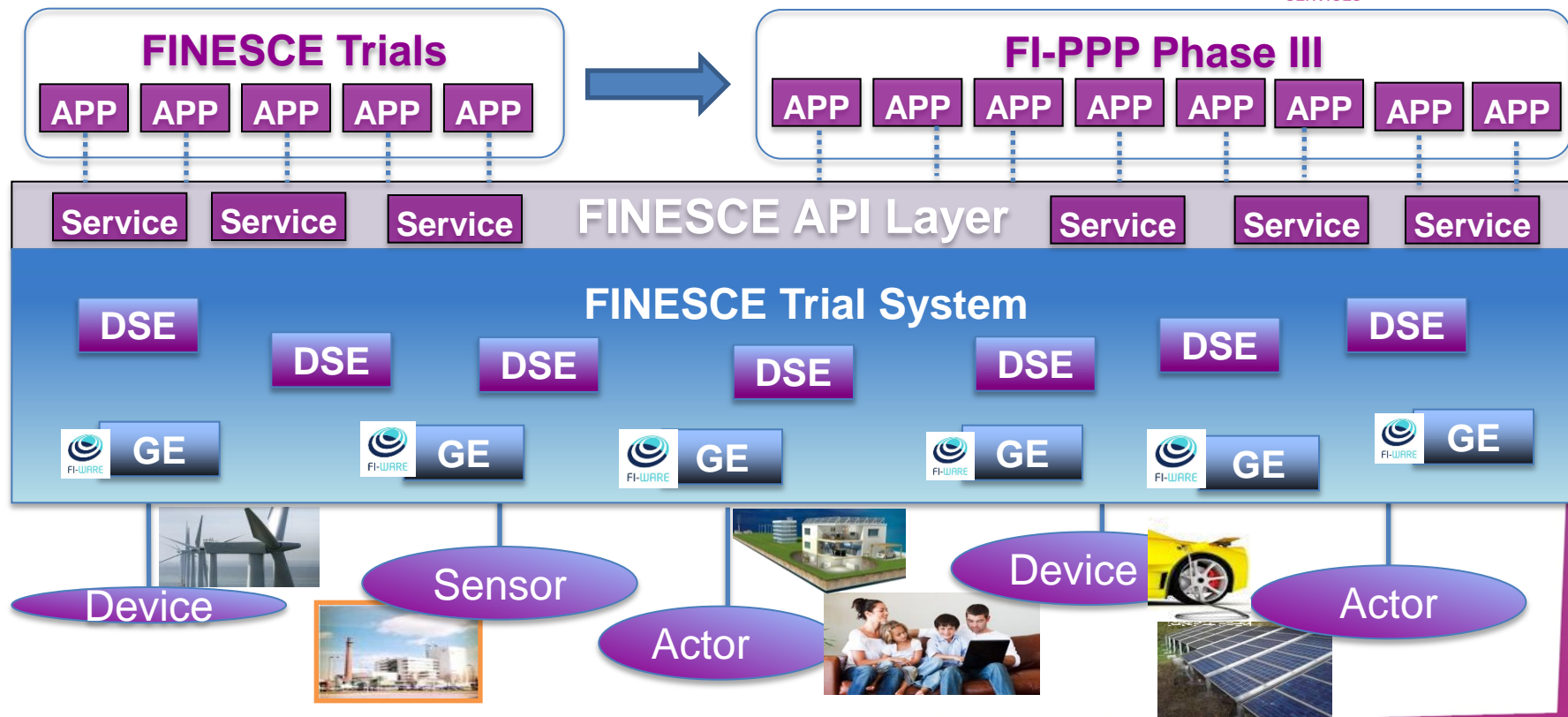
E.ON Energy Research Center



## FINESCE API Layer Offers Services to Apps

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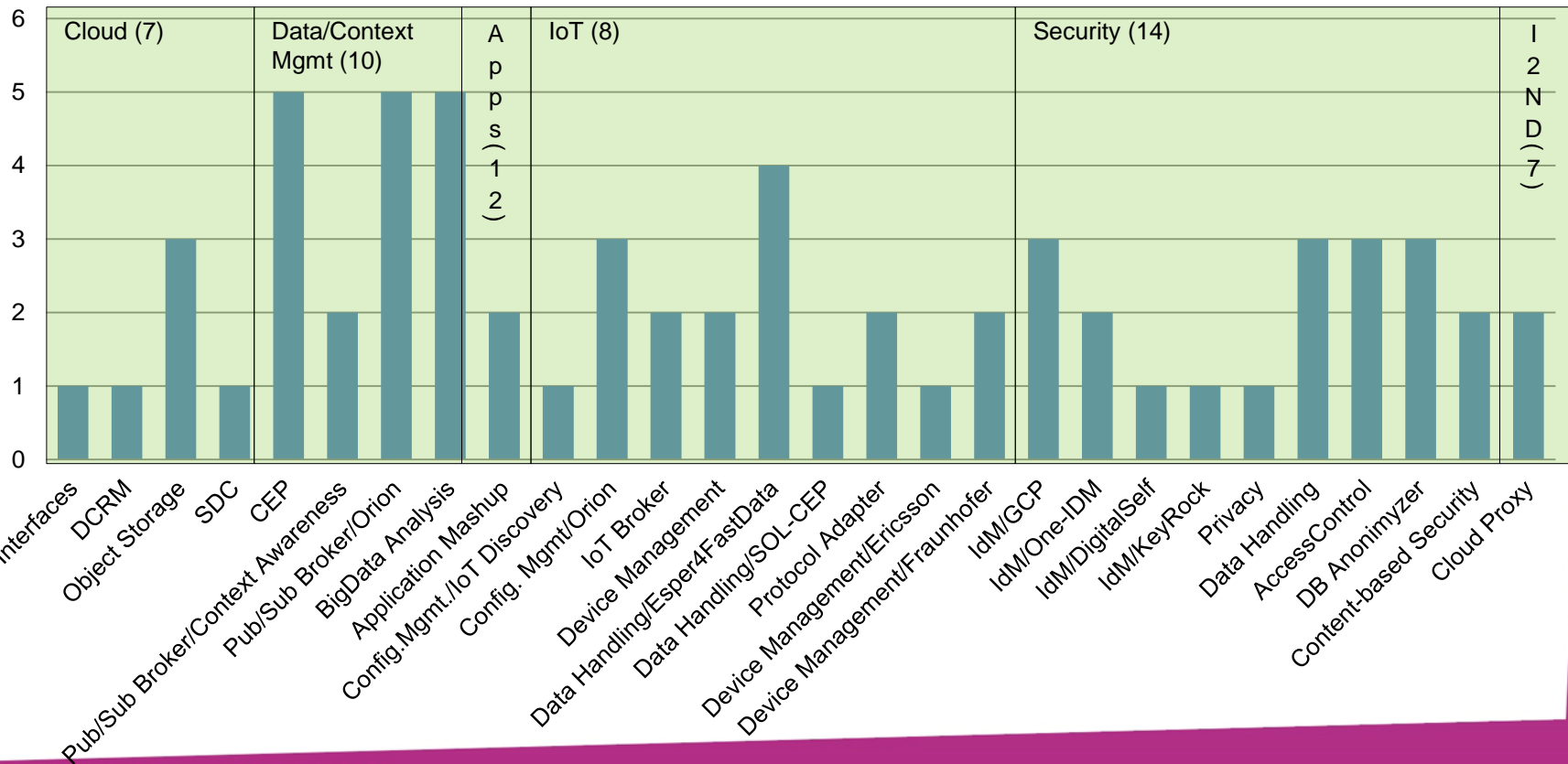




# Instances of GEIs under evaluation, in design or integrated, total for all Trial Sites

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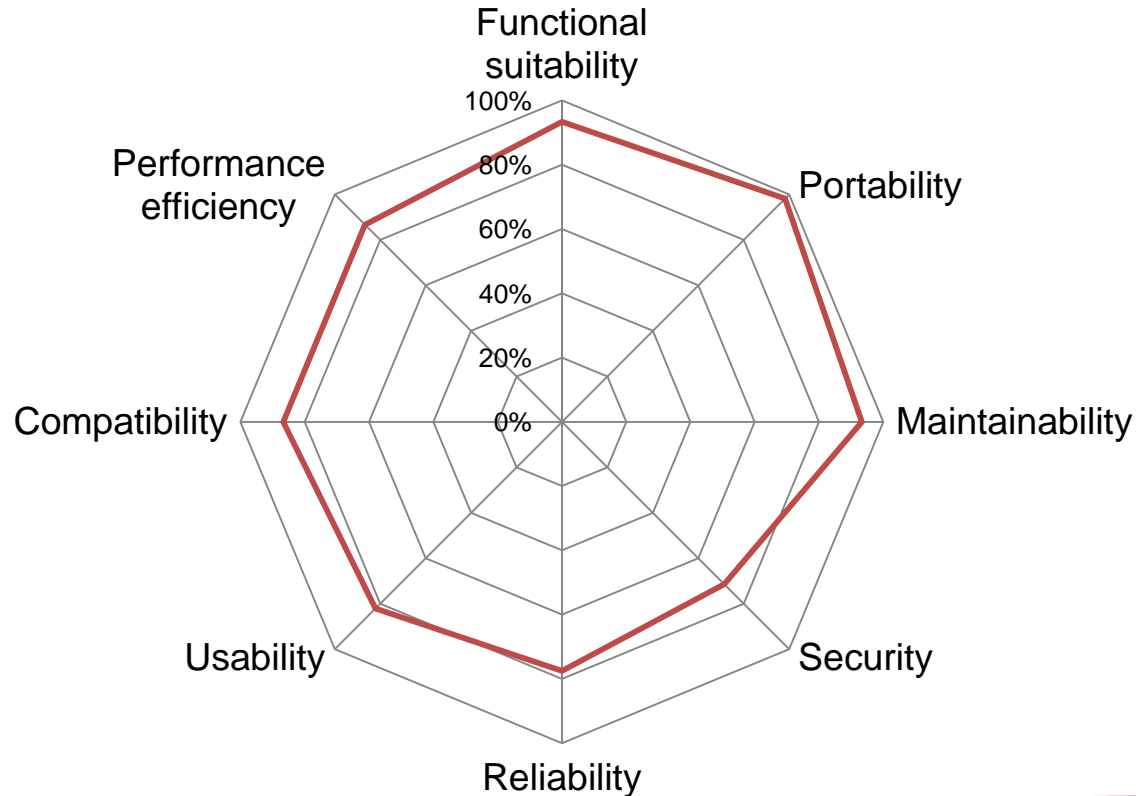
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# GE Evaluation Example: Gateway Data Handling

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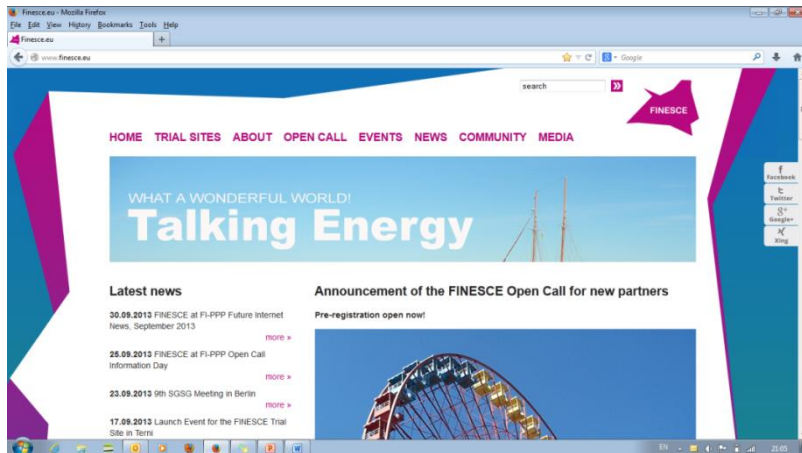
The GE Gateway Data Handling showed a very good overall result (83,85%) and greatly supports a fast and scalable integration of energy management in an industrial environment!

- Smart Grids mean new communications networks for utilities
- Existing systems can be developed into solutions addressing many of the requirements for Smart Grids
- GEs shorten development times and offer an excellent platform for experimentation
- Many utilities have little awareness of the opportunities of scale and scope which an IP based network offers them – it opens up a world of innovation to them

# FINESCE – Team up with us!

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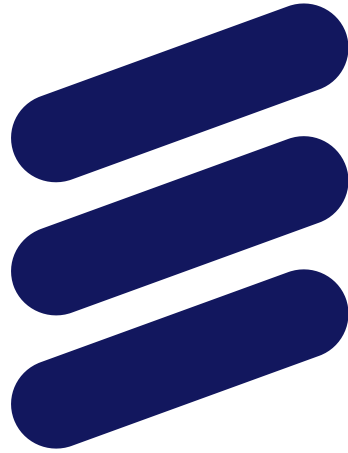
## › FINESCE Trial Open Days – experience our trials 1st hand!

- December 2, 2014
- February 2015
- June 2015

Horsens, Denmark  
(Smart Region & homes)  
Terni, Italy (E-  
marketplace for energy)  
Malmö, Sweden (Smart  
City area)

## › FINESCE Innovation Community ([www.finesce.eu](http://www.finesce.eu))

- for all interested to follow what we are doing
- membership is free of charge – just enter your email address on our web site or give us a business card



**ERICSSON**