FUTURE INTERNET SMART UTILITY SERVICES

FINESCE

WP4-WP5

Prof. Antonello Monti

SEVENTH FRAMEWORK PROGRAMME

FUTURE INTERNET PPP

Wp4 – FI Building the Energy Market

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Motivations

- *High density of Renewable Energy Sources*
- *Generation is more and more distributed*
- *Demand is more controllable than production*

Objective

…to increase the grid stability and efficiency by using energy market mechanisms…

Scope

Experimentation in Terni's area (Italy)

- *~15 Customers*
- *~2 Renewable Energy Sources*

Marketplace for Demand Side Management

ASM Terni S.p.A.

ENGINEERING

Grenoble INP

SYNELIXIS

Wp4 – Architectural diagram

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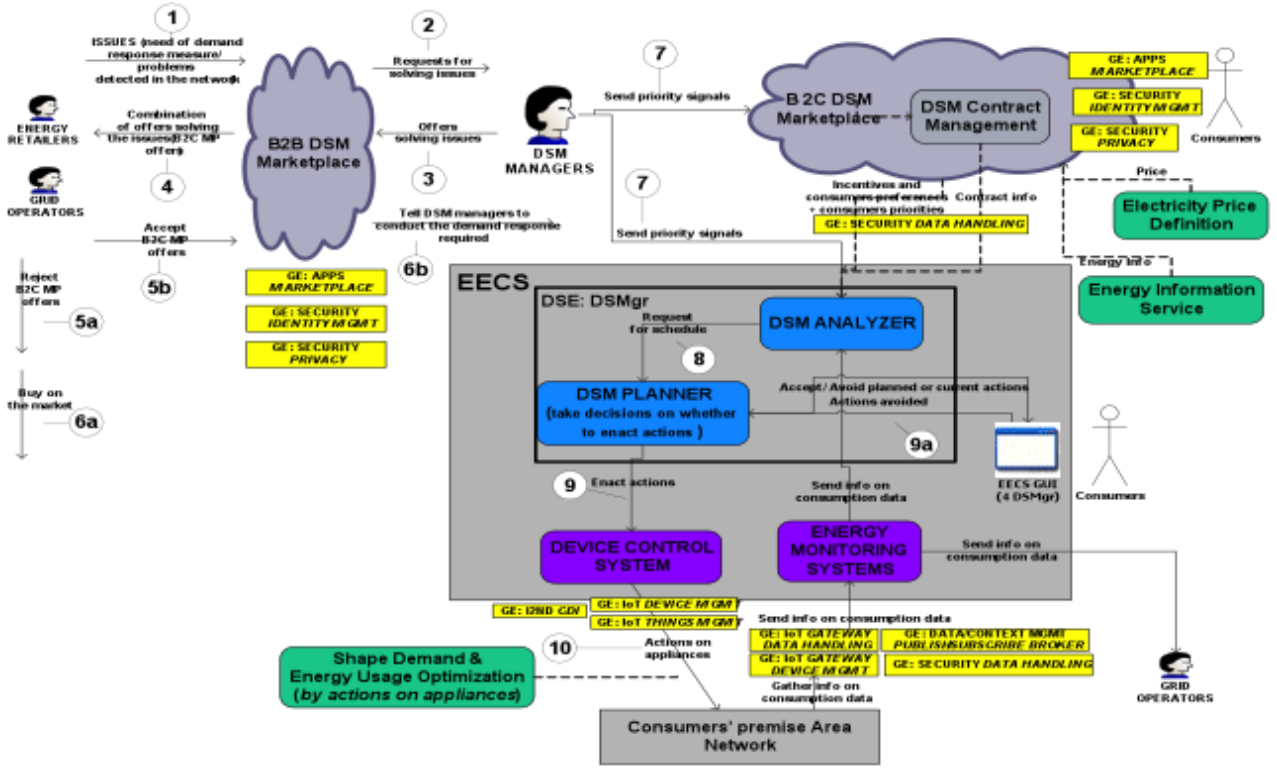

Proposed Solution: System & API

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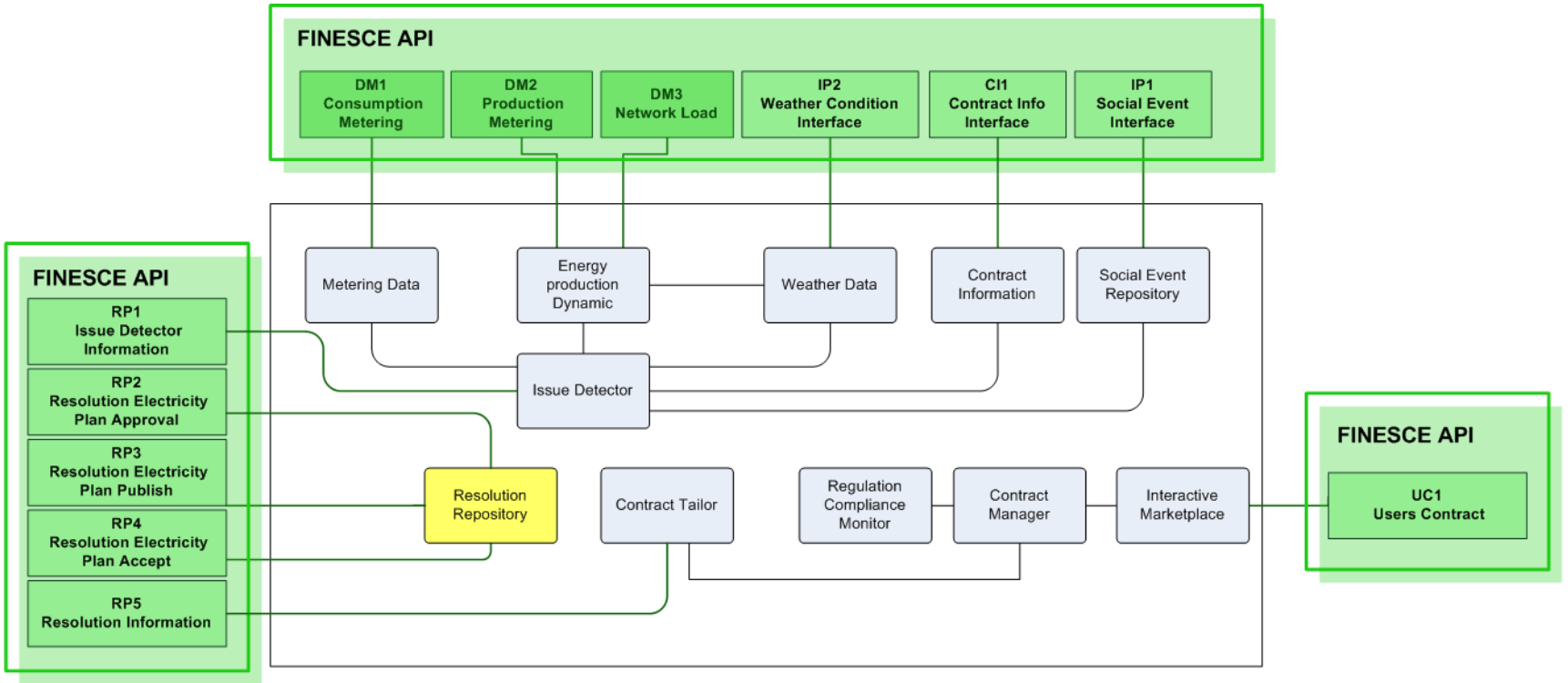

Open Call: Proposed Topics

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- A new Automatic Meter Reading (**AMR**) by deploying sensors based on **DLMS/COSEM protocol** (Device Language Message Specification), compliant to **IEC 62056** for data readout, service functions and parameterisation;
- This will allow the usage of a **common language** for data exchange in energy measurements (interoperability);
- DLMS-based AMR will be **integrated** in the Terni trial site, by using a set of FI-WARE Generic Enablers (e.g. IoT chapter).

Conclusion

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- Proposed a **market-mechanism** approach for addressing **instability** in a grid characterised by high density of **DERs**;
- Identified actors, system and API, as well as enhancements for the AMR based on open protocol sensors (topic for Open Call);
- If you are interested to our activity, please, don't hesitate to:
  - Contact **finesce@baumgroup.de**
  - Ask for further details during Table Session
  - Participate to next Innovation Events
  - **Save this date**: **5th Innovation Event, Terni**

Oct 17 2013

Trial site Ireland

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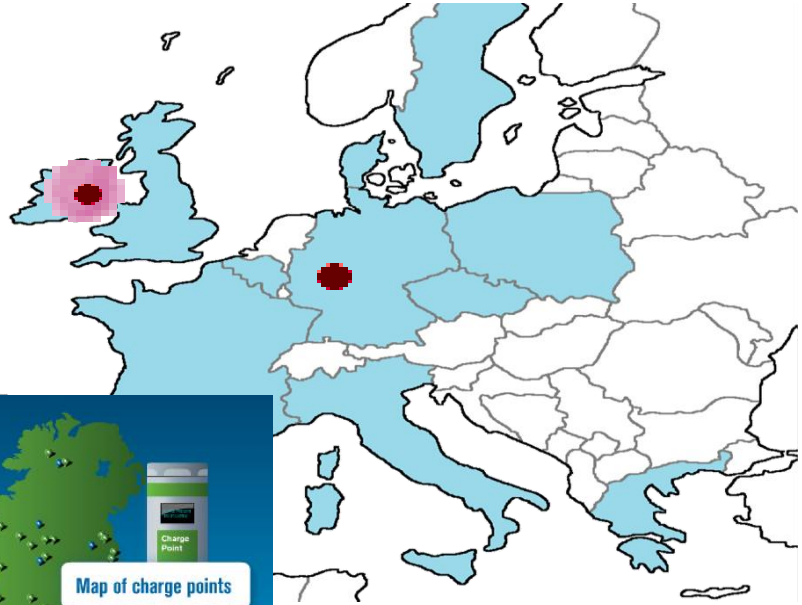
Future Internet : Electricity in Action

Objectives:

- eCar batteries as interruptible loads to balance the power grid
- Substation communication for power management

E.ON Energy Research Center



WP5: Trial I – Electric Vehicle Integration

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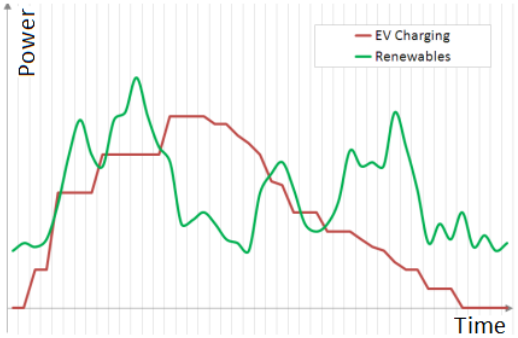
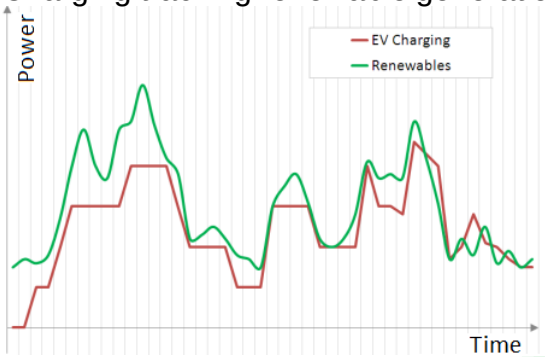
Objectives

- Integrate Electric Vehicles (EVs) into electrical grid with the aim of tracking renewable energy generation
- Develop and test EV charging management systems using
  - WiMAX and LTE solutions
  - Future Internet (FI) technologies
- Measure system response time
- Determine best communications technology to use and the economic impact

EV charging independent of renewable generation



EV Charging tracking renewable generation



Trial site Ireland - Demand Control

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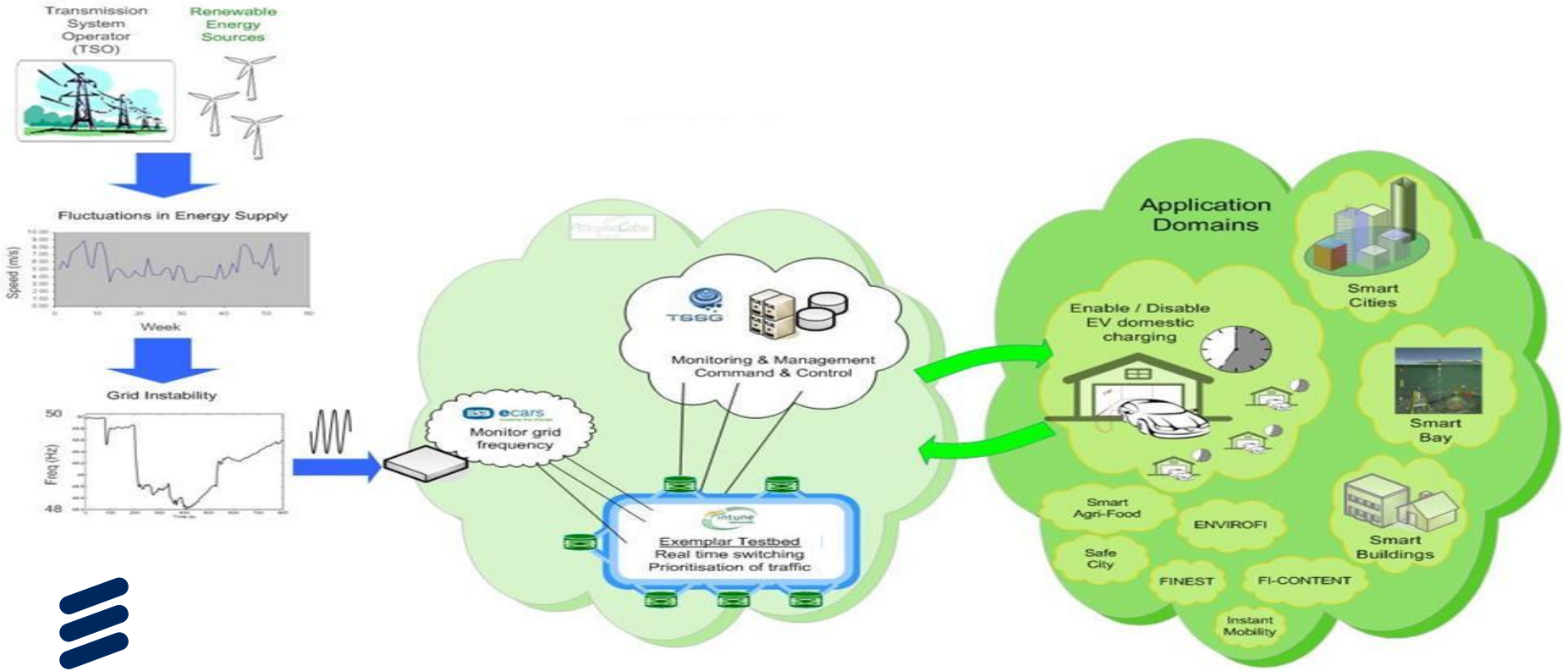

ERICSSON

WP5: Trial II – Smart Grid Communication

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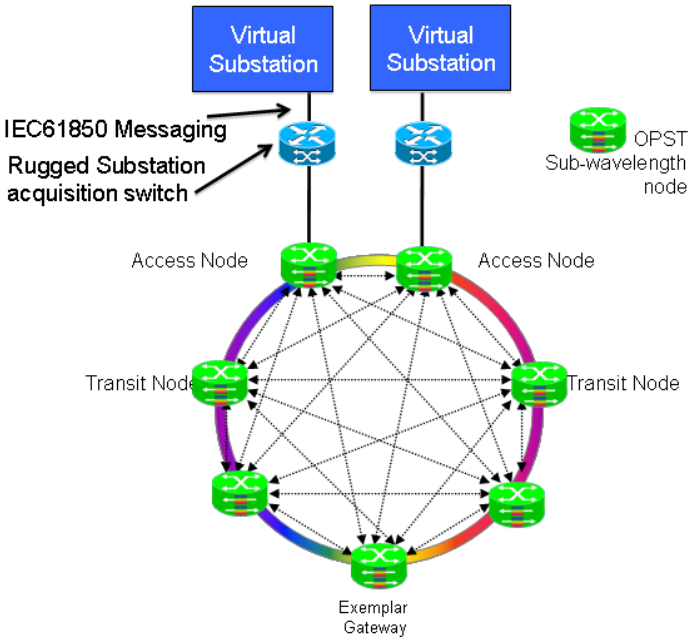
- Objectives
  - Develop a highly advanced IP-based smart grid communication network based on Optical Packet Switch and Transport (OPST) architecture
  - Implement and gain knowledge of FI-Ware Security Generic Enabler
  - Enhance knowledge of utilities' smart grid communication requirements as well as gap analysis in this area



Smart Grid Communications using OPST

Simulation Support at RWTH

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- The Institute for Automation of Complex Power Systems at RWTH is equipped with a unique infrastructure for simulation of power systems and interaction with communication infrastructure
- The simulation facility will be used both as proof of concept and as as test for scalability

Real-Time Digital Simulator
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