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WP4 FI building the Energy Marketplace

FINESCE Innovation Event

Horsens, October 9th 2013



Luigi Briguglio, ENG

Page 1



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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*

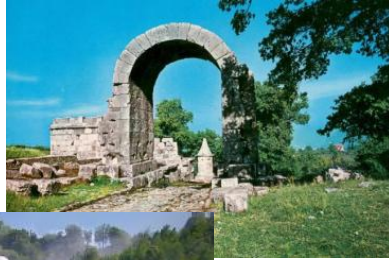
Marketplace for Demand Side Management



Context...

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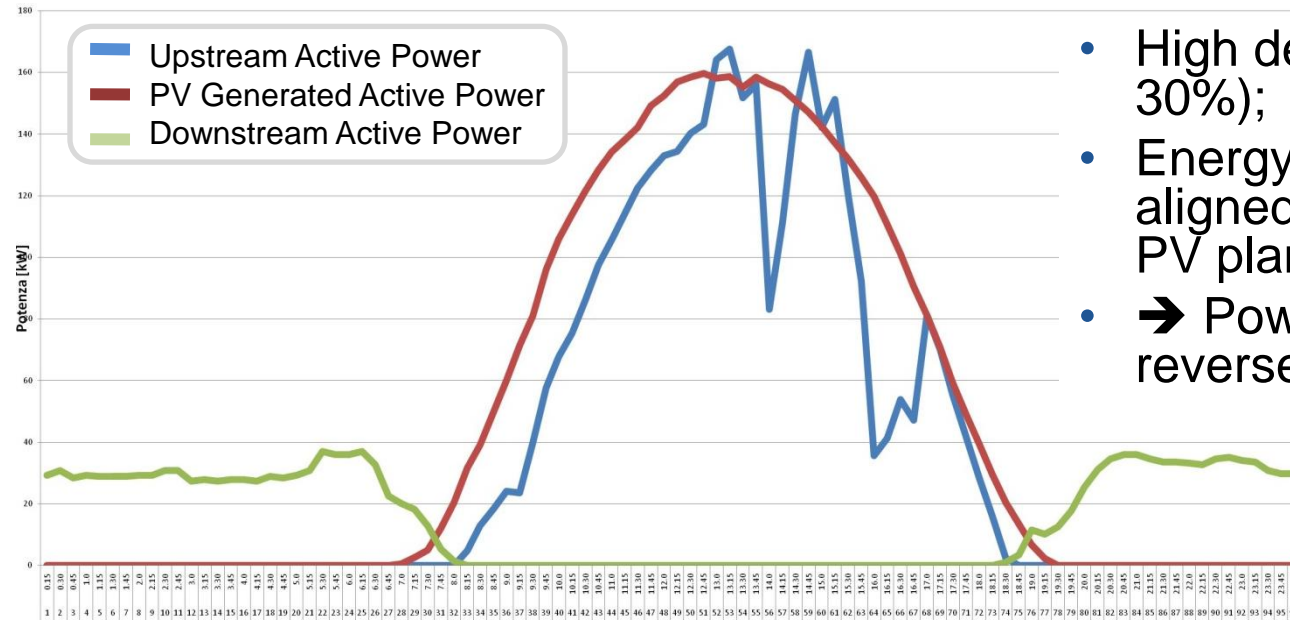
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Trial site: Terni (Italy)

- **Terni** is in Umbria region, ~100km from Rome;
- It's an industrial town with one of the oldest **steelworks** and one of the **first hydropower** generator in Italy

...& Problem



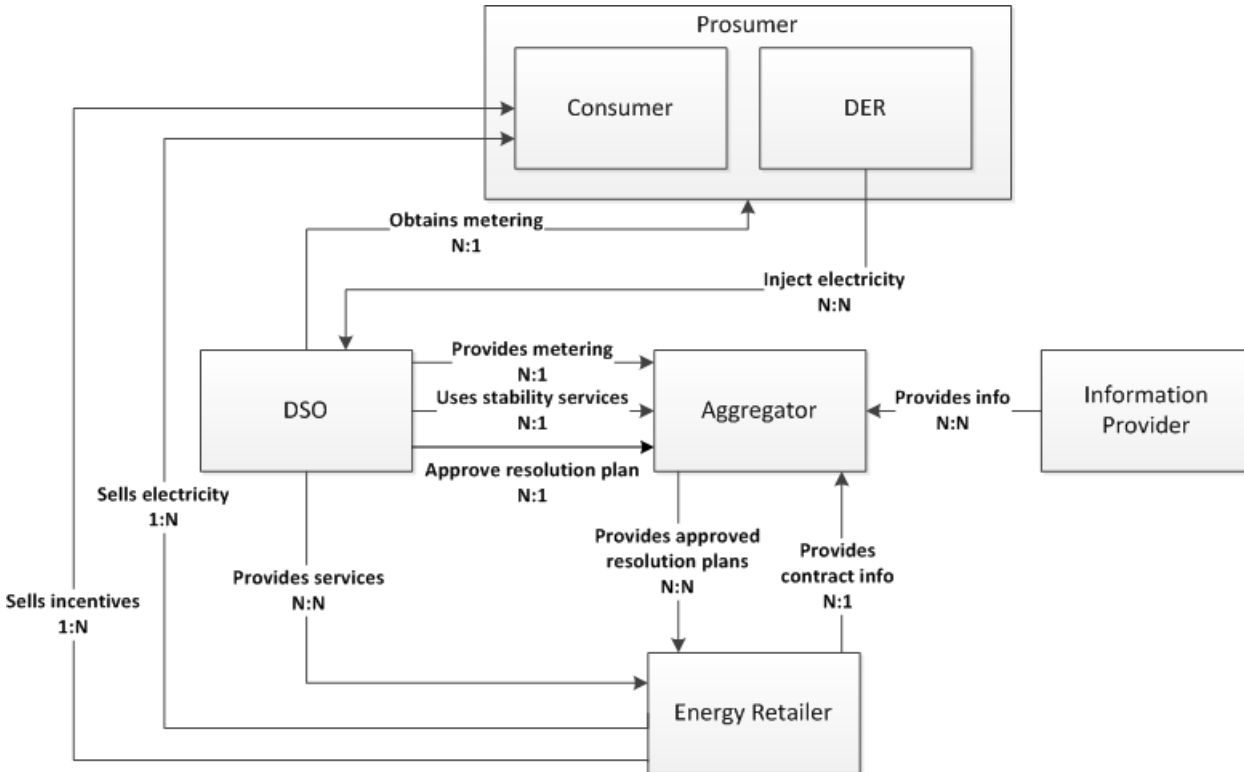
24-hours Load Profile

- High density of DERs (15-30%);
- Energy consumption not aligned w.r.t. production from PV plant
- → Power losses due to reverse **power flows**

Energy Consumption needs to be shifted in order to **maximise** usage from local PV plants and **minimise** power flows

Proposed Solution: Actors

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- **Aggregator**
 - identifies **imbalances** in power demand and supply
 - proposes a **resolution plan** to address them
- **DSO**
 - has the control of **distribution grid**
 - **approves** resolution plans
- **Energy Retailer**
 - transforms the resolution plans to specific **incentives** tailored to the consumer

Proposed Solution

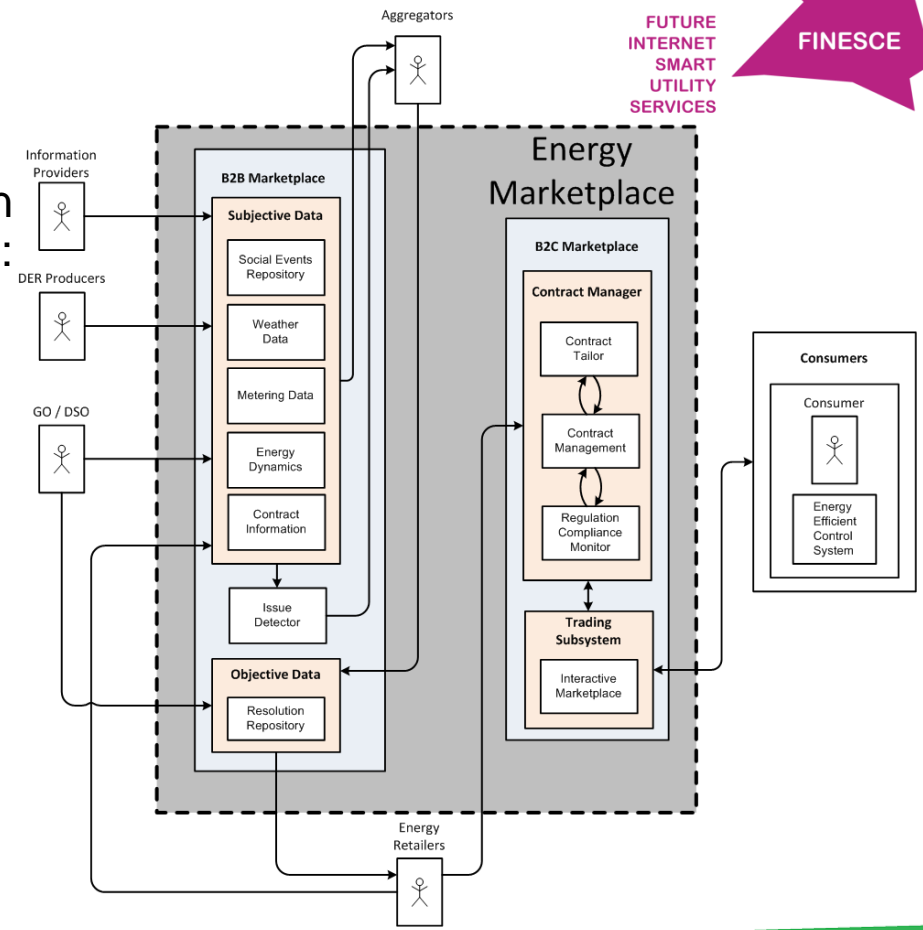
- Introduction of «**resolution plans**» in the energy market for «**optimisation**»:
 - **DSOs** to achieve grid stability and minimise power flows/losses;
 - **Energy Retailers** to maximise incomes from energy selling.

Input Information

Energy Dynamics

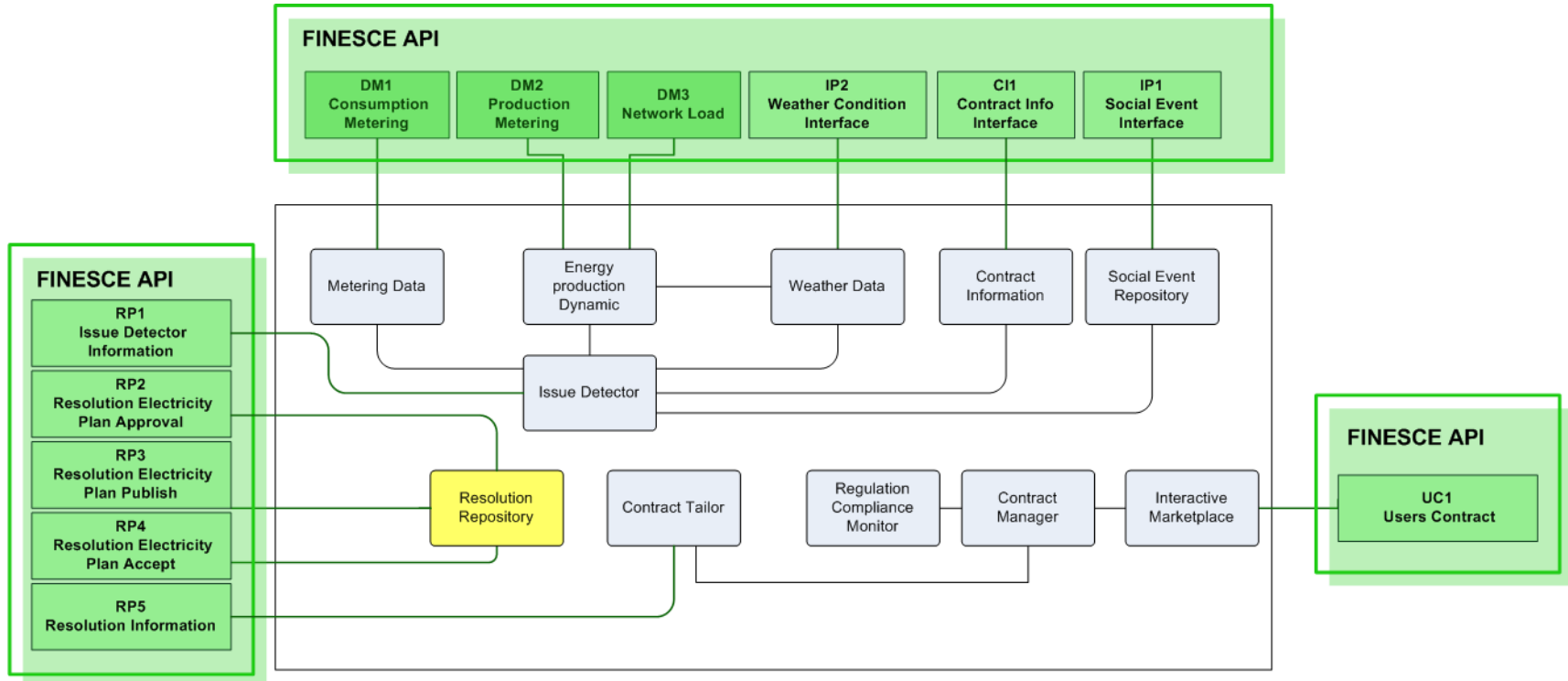
Regulation
Social Events
 Contract
 Weather
 Metering Data

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Proposed Solution: System & API



Open Call: Proposed Topics

- 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

- 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**



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THANKS FOR YOUR KIND ATTENTION



SYNELIXIS

