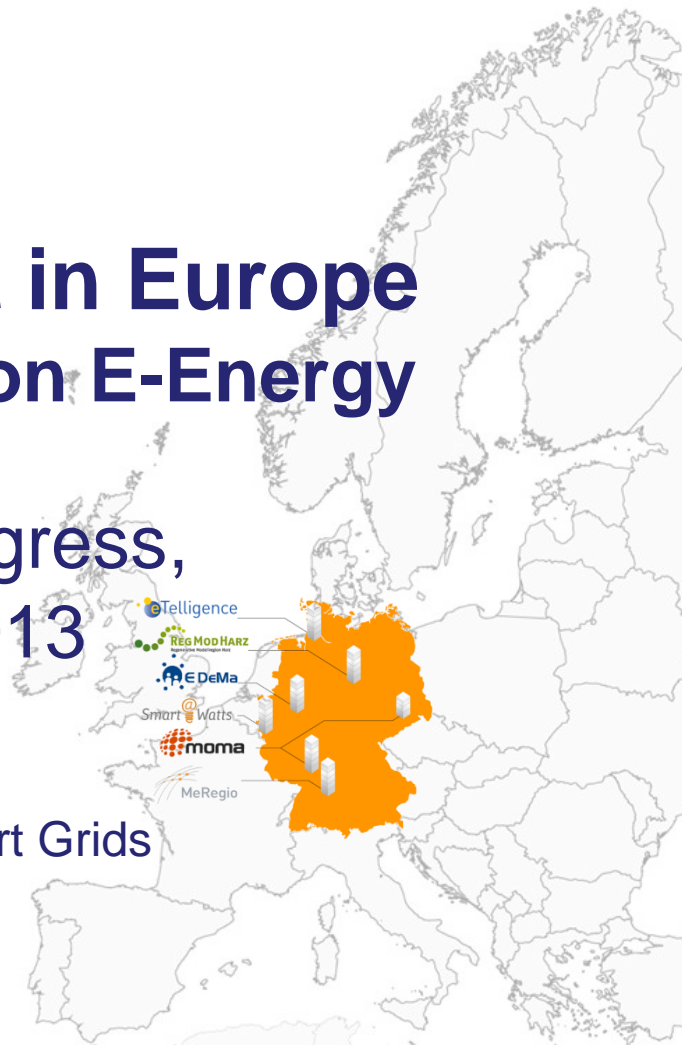


Smart Grids development in Europe – international perspectives on E-Energy

E-Energy Abschlusskongress,
Berlin, 18 January 2013

Per-Olof Granström, EDSO for Smart Grids



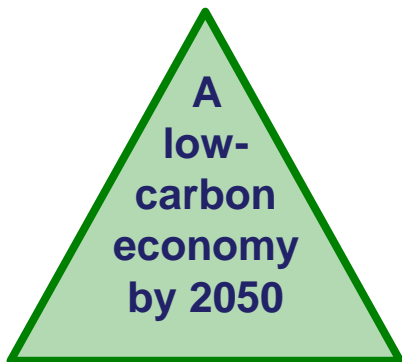
- Representing the European Distribution System Operators for Electricity
- 31 members – leading players representing 70 percent of the EU customers
- Leading the cooperation for the Electricity networks of the future

**Bringing Smart Grids
from vision to reality**



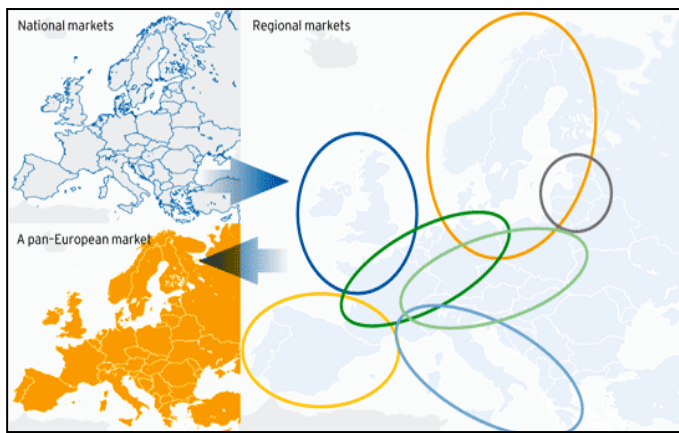
EU energy drivers and investment needs

Competitiveness



Security
of supply

Climate/
Environment



**Total investment needs in the
electricity and gas sector
2010-20: over 1 trillion EUR**

Power generation ~
500 bn

Transmission and
distribution ~ 600 bn

**RES
~ 310 – 370 bn**

**Distribution
~ 400 bn**

Transmission
~ 200 bn

Source: EC communication on Energy Infrastructure priorities for 2020 and beyond, 17.11.2011 based on PRIMES calculations

Energy Europe is changing – decarbonisation and market integration ...

Very strong impact at local level ...

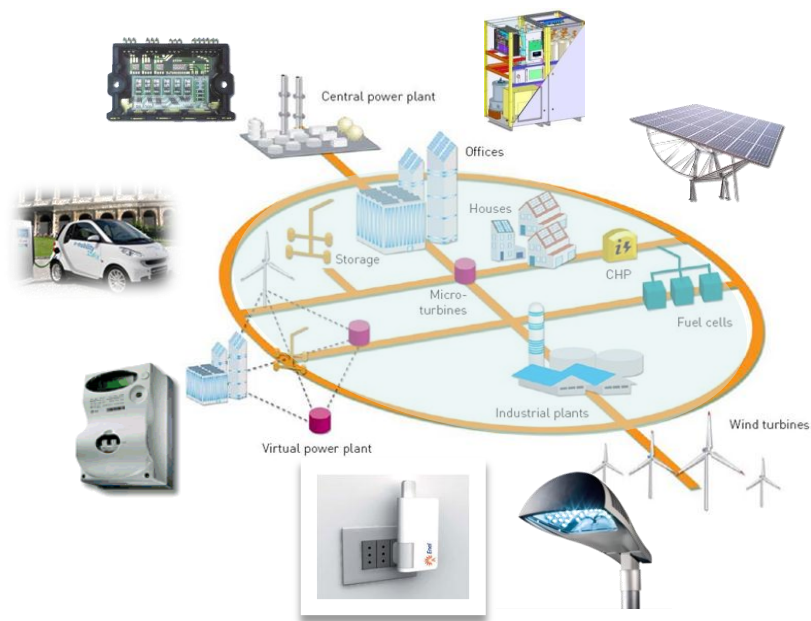
- Vast amounts of distributed renewable energy
- Empowering consumers, active demand, smart metering and communication
- Electric Vehicle charging infrastructure

A paradigm shift for distribution networks ...

- From radial to complex
- Reverse energy flows
- ...

Highlights the need for

- Local balancing and energy storage
- Communication, open data interfaces
- Market facilitation
- ...



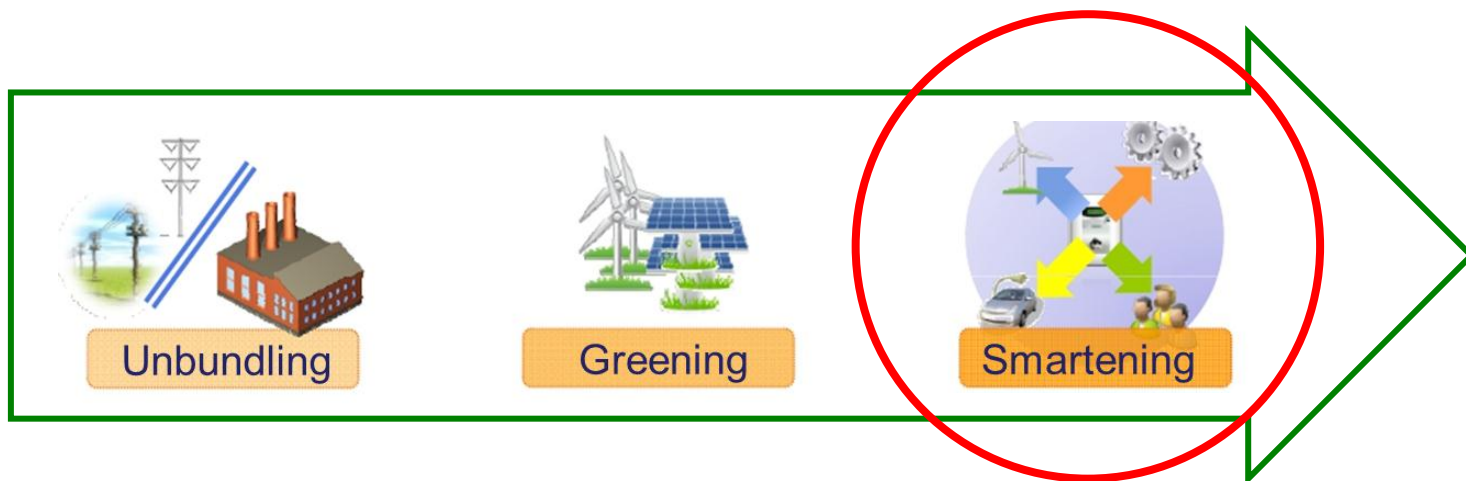
EU related Smart Grids activities

Technology

- **European Electricity Grids Initiative**
- Strategic Research Agenda 2035
- Smart Cities Platform
- Standardisation mandate
- (International Smart Grid Action Network – ISGAN)

Policy and regulation

- 3rd Energy package
- Smart Grids Communication
- Smart Grids Task Force: standards, data, regulation, infrastructure
- Connecting Europe Facility
- Energy Efficiency directive
- Network codes

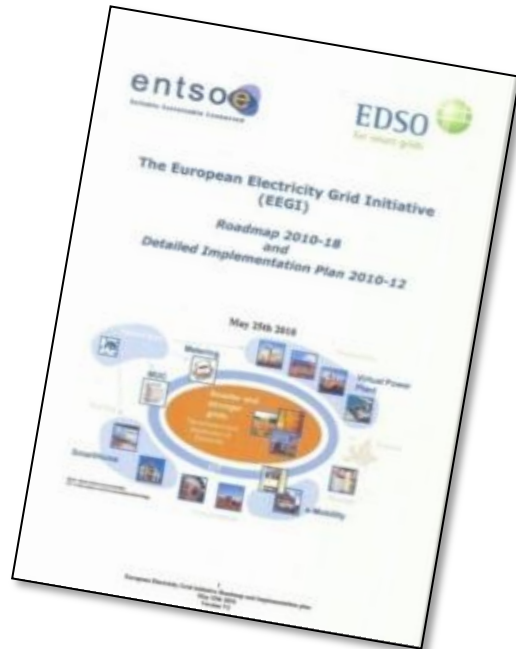


- **Electricity Grid Initiative**
- CCS
- Smart Cities
- Sustainable Nuclear
- Solar
- Fuel Cells and Hydrogen
- Wind
- Bioenergy



- Nine years two bn EUR RD&D programme
- Accelerate Smart Grids innovation and development, overcome barriers
- DSO-TSO

New DSO Roadmap



Smart customers

- D1. Active Demand Response
- D2. Energy Efficiency/Smart Homes

Integration of DER and new uses

- D3. DSO integration of small DER
- D4. System integration of medium DER
- D5. Integration of storage in network mgt
- D6. Infrastructure to host EV/PHEV

Network operations

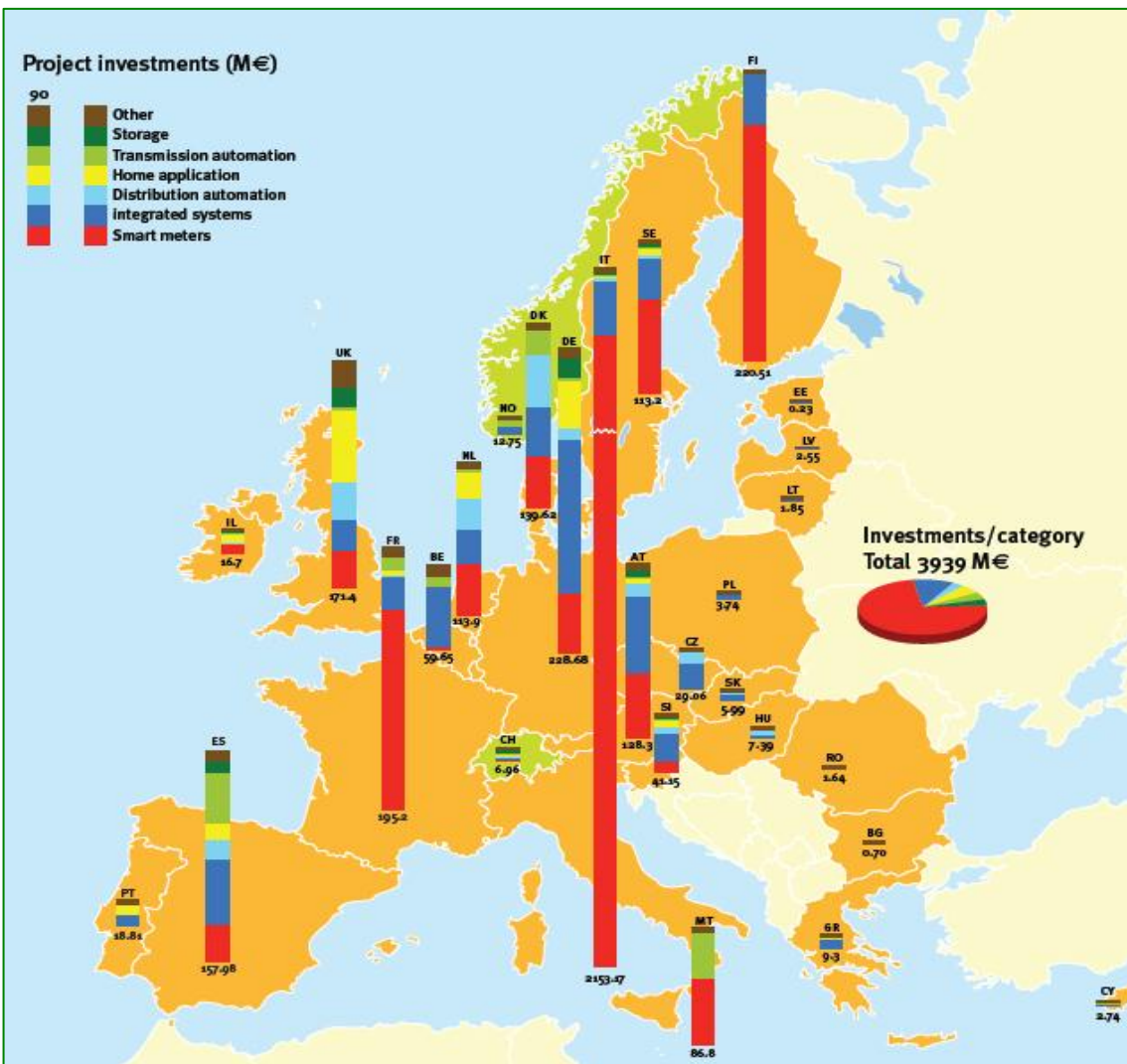
- D7. Monitoring and control of LV network
- D8. Automation and control of MV network
- D9. **Network management tools**
- D10. Smart metering data processing

Network planning, asset management

- D11. **New planning approaches**
- D12. **Asset management**

Market design

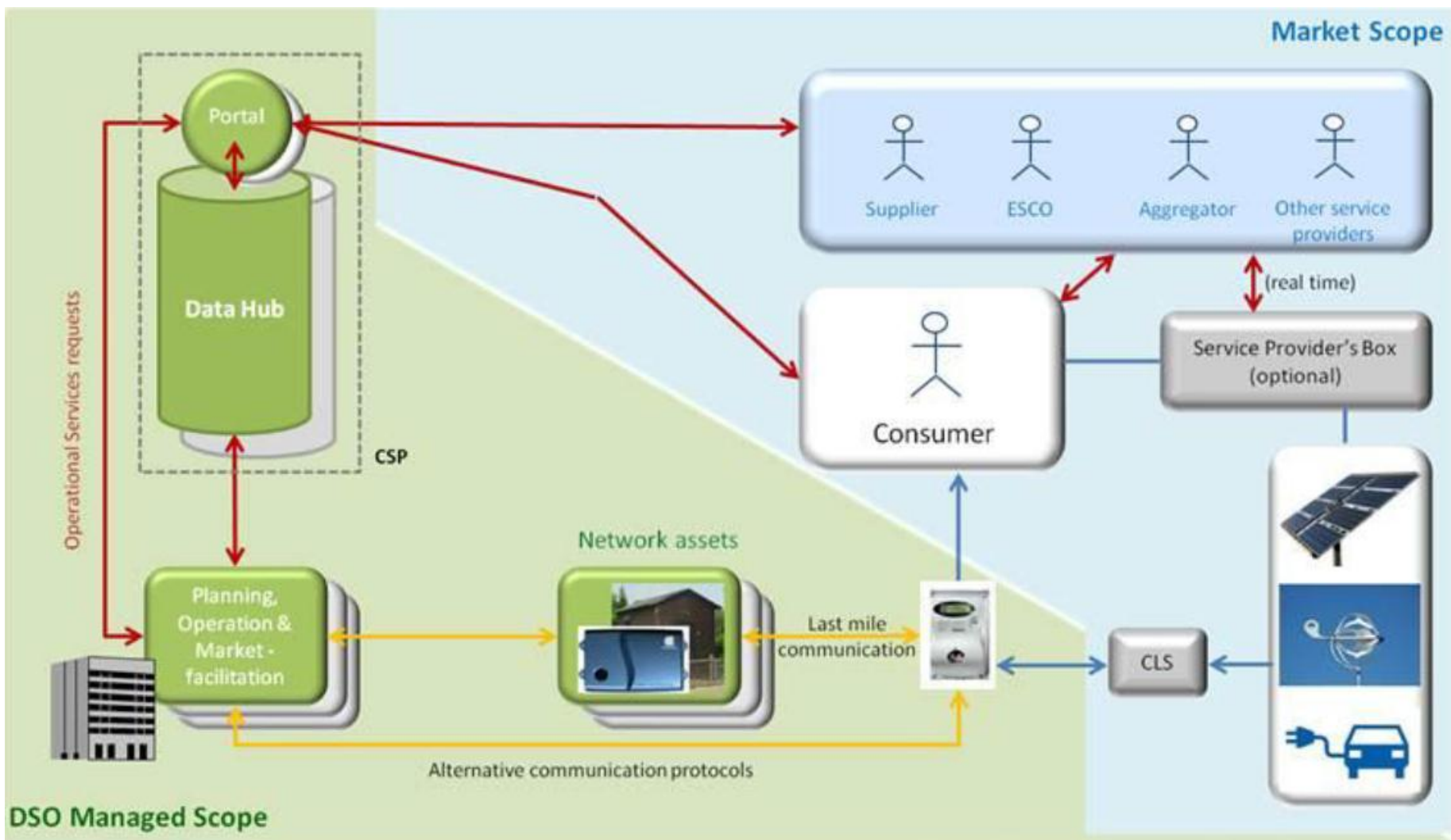
- D13. **New approaches for market design**



MAIN FINDINGS

- Smart Grids bring **benefits**
- **DSOs** play the leading role
- Difficult to accelerate Smart Grids deployment without **revising the regulatory frameworks**
- Bring the **customer on-board**
- **Technology integration** not technology innovation
- **Knowledge sharing**

A market model for Smart Grids



Demonstration projects

– necessary know-how
for future roll-outs

- The European Electricity Grid Initiative
- Shared knowledge, coherence and priorities
- Large scale demonstrators

Standards and interoperability

- On European/international level

Public funding

– test solutions at their
earliest stage of
development

- Long term perspective on RD&D funding
- Coordination European – National level
- Horizon 2020

Regulatory framework

– national incentives to
foster full deployment

- Long-term perspective – including RD&D/innovation
- Clear definition of roles and responsibilities

Huge challenges – Smart Grids development a prerequisite

Very strong impact at local level – the distribution grids!

Making it possible

- Market liberalisation and market based price signals
- Clear roles and responsibilities
- Regulatory incentives promoting change
- Standards and interoperability
- Communication and data management
– open standardised interfaces, data security
- Coordinated public funding, Large scale demonstrations, Knowledge sharing
- Bringing the customer on-board

E-Energy – a successful first step

- Make results widely available
- Take the next step



Vielen Dank
für ihre Aufmerksamkeit!

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