

Smart Energy Networks in FP7

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- **SET Plan European Electricity Grids Initiative**
 - **Launch 03/06/2010, EEGI team, setup of activities**
- **Communications:**
 - **Energy 2020: A strategy for competitive, sustainable and secure energy (10/11/2010)**
 - **Energy infrastructure priorities for 2020 and beyond - A Blueprint for an integrated European energy network (17/10/2010)**
 - **A Roadmap for moving to a competitive low carbon economy in 2050 (08/03/2011)**
 - **Smart Grids: from innovation to deployment (12/04/2011)**
- **Transposition of "3rd package" by March 2011**
 - **Smart meters/smart grids, ACER, etc..**

Smart Grids Communication

- **Standards:**
 - **Mandate for Smart Grids to CEN, CENELEC, ETSI**
- **Data privacy and security**
- **Incentives for Smart Grids deployment**
 - **Methodology for smart meter implementation, cost-benefit**
 - **Action plans with targets for deployment of smart grids**
- **Competitive retail markets**
- **Support for innovation and its application**
 - **SET Plan EEGI as a basis**
 - **Large scale demonstration initiatives to be proposed 2011**
 - **Smart Cities initiative to be launched 2011.**

European Electricity Grids Initiative: SET Plan EEGI

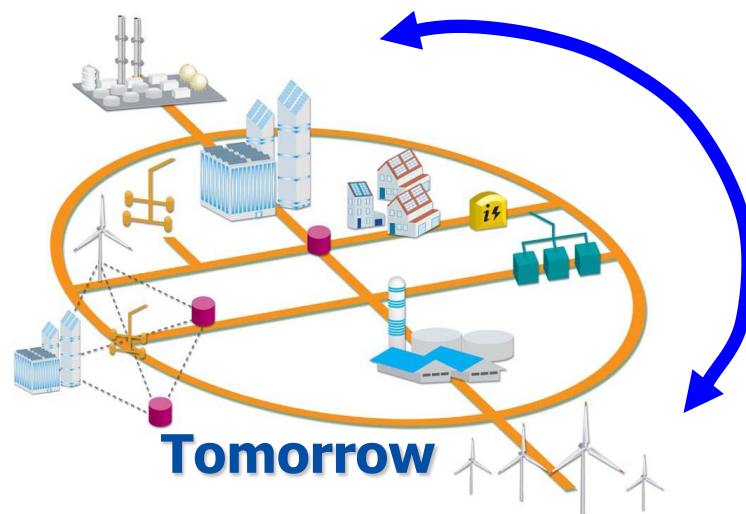
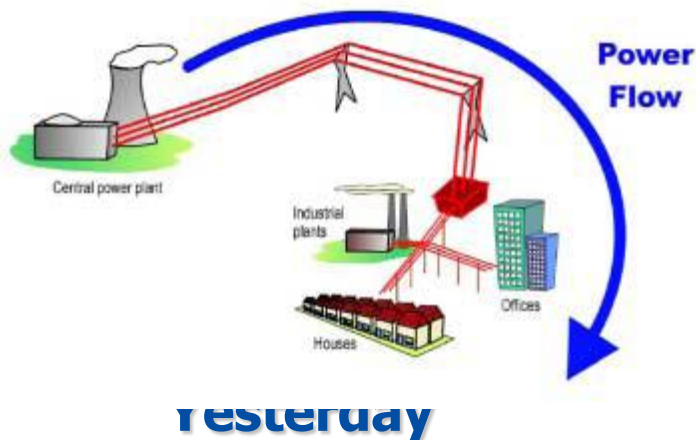
- **EEGI Team nominated**
 - 20 country representatives (AT, BE, CH, CZ, DE, DK, ES, FI, FR, GR, IT, LT, NO, PL, PT, RO, SI, SE, TR, UK)
PL: Krzysztof Madajewski, IEN Gdansk
 - 4 TSO, 4 DSO, 4 Industry representatives
- **Launch at Madrid SET Plan conference 3 June 2010**
 - Implementation plan approved by Team, by Steering Group
- **EEGI Team meetings: 3 complete, next 18 May**
 - Developing approaches for joint support of projects (EC + MS)
 - Knowledge sharing guidelines
 - "Labeling process" developed
 - Key performance indicators (KPI)
- **EERA joint programme Smart Grids started 3 June**
 - Research Centres joint contribution to SET Plan

European Electricity Grids Initiative EEGI

- **Objectives in 2020 perspective:
demonstrate and validate the technologies to:**
 - **Integrate 30-35% of variable renewable electricity**
 - **Co-ordinate planning and operation of the pan-European network**
 - **Guarantee a high-level of reliability**
 - **Engage customers in energy efficiency**
 - **Mitigate costs of necessary grid upgrades**

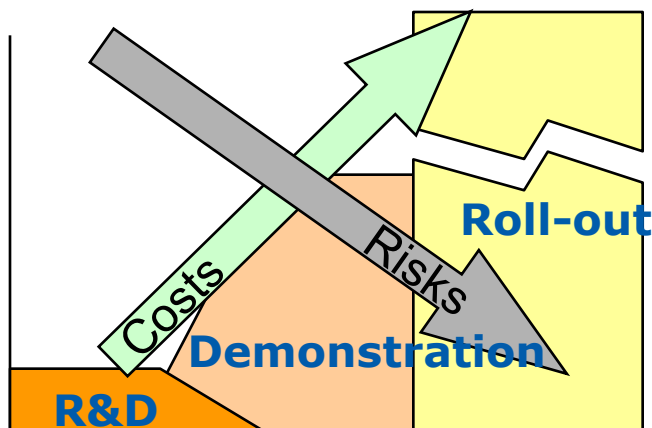
Smart Grids: the vision

- **Agreed vision of smart grids**
 - **2-way flow of energy and information**
 - **Connect all types of generation and use**
 - **Better efficiency and lower costs of the electricity system**



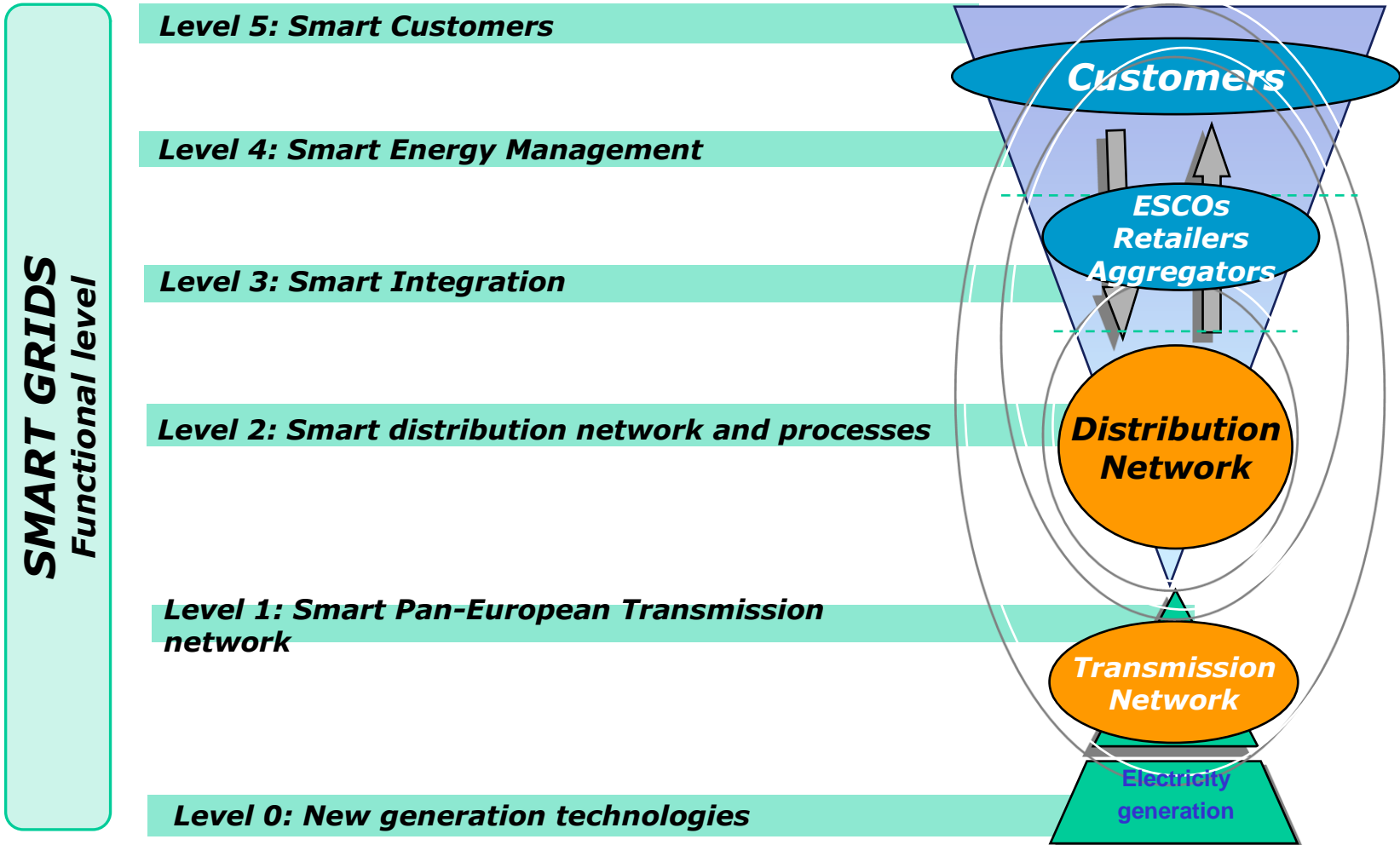
SET Plan EEGI: unlocking Smart Grids deployment

- **Many technology blocks are available, demonstrated in pilots**
- **Need for large-scale demonstrations to validate the integration**
- **Reduce risks of new technology deployment**



- **Analyse results of demonstrations and business cases**
- **Prepare replication and scaling up**

EEGI Smart Grids model: actors and roles



RD&D Roadmap- distribution networks

Smart Grids Functionalities	Project	YEAR											Costs (M€)
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Active Demand Response and integration with Smart Homes	D1	ADDRESS			Active Demand Response								190
	D2	BEWARE Smart Homes/Smart Grids			Integration with Smart Homes								120
Smart Metering Infrastructure & Data Processing	D3	OPEN METER Existing Deployment		Smart Metering Infrastructure								150	
	D4	Existing Deployment	Smart Metering Data Processing									20	
Integration of RES, storage and EV	D5	Active Distribution Network		Integration of small DER								90	
	D6	Active Distribution Network	Integration of medium DER								150		
	D7	STORAGE TECHNOLOGY			Integration of storage technologies							60	
	D8	ELECTRIC VEHICLES		Integration of Electric Vehicles								100	
Planning, monitoring and control	D9	Active Distribution Network		Monitoring and control of LV networks								100	
	D10	Active Distribution Network	Automation and Control of MV networks								90		
	D11		New methods and systems support								80		
Integrated communication Infrastructure	D12	Active Distribution Network		Integrated Communications Solution								50	
Total											1.200		

RD&D Roadmap – transmission networks

Smart Grids Functionalities	Project	YEAR											Costs (M€)
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Pan-European Grid Architectures(R&D)	T1		A tool box for new network architecture assessment										19
	T2	REALISEGRID	Tools to analyze the pan European network expansion options										21
Power Technologies (Demonstration)	T3		Demonstrations of Power technologies for more network flexibility										25
	T4		Demonstrations of Power technologies for new architectures										25
	T5	SAFEWIND, WINGRID IS-POWERS TWENTIES⇒		Demonstration of renewable integration (ct'd)									120
Network management and control (R&D)	T6	PEGASE		Tools for a Pan European network observability								12	
	T7		Tools for coordinated operations with stability margin evaluation									24	
	T8			Improved training tools for improved coordination								25	
	T9		Tools for Pan European network reliability assessment									14	
New market design options (R&D)	T10				Tools for Pan European balancing markets							16	
	T11				Advanced tools for congestion management							17	
	T12	OPTIMATE		Tools for renewable market integration								10	
	T13				Tools to study market integration of active demand							11	
Pan-European Grid Architectures(R&D)	T14		Innovative approaches to improve the public acceptance of overhead lines									30	
Total											560		

RD&D Roadmap – T&D coordination

Functional Project	YEAR											Costs (M€)	
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
TD 1		Increased observability of the electric system for network management and control											45
TD 2			The integration of demand side management in TSO operations										70
TD 3		Ancillary services provided by DSOs											50
TD 4		Improved defense and restoration plans											45
TD 5		Joint Task force on IT system protocols and standards											20
											Total	230	

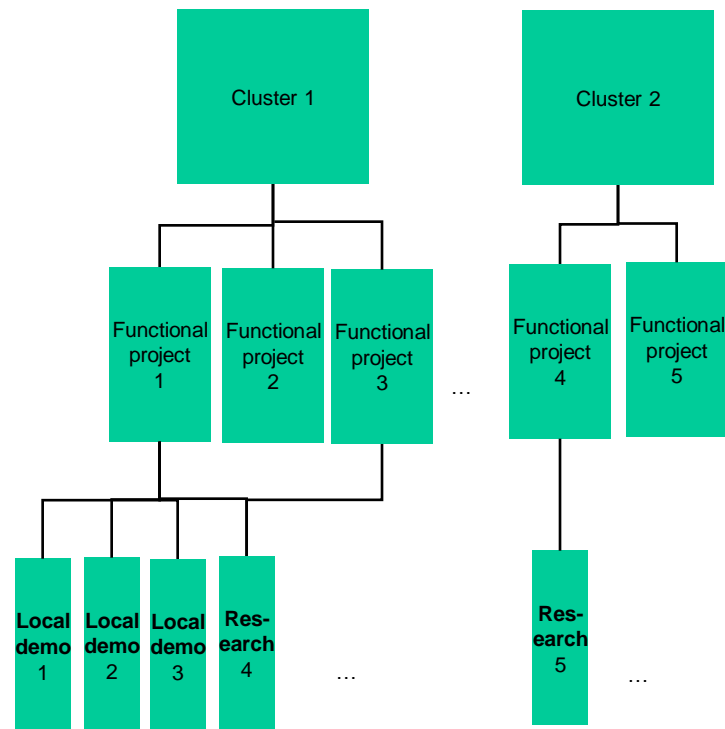
- Demonstrations to cover different conditions

- Different portfolio of (renewable) generation
- Urban, rural conditions
- North – South
- Different network conditions
- Etc.

CLUSTERS

FUNCTIONAL PROJECTS

LOCAL DEMOS/
RESEARCH
PROJECTS



Support of EEGI; Joint Programming

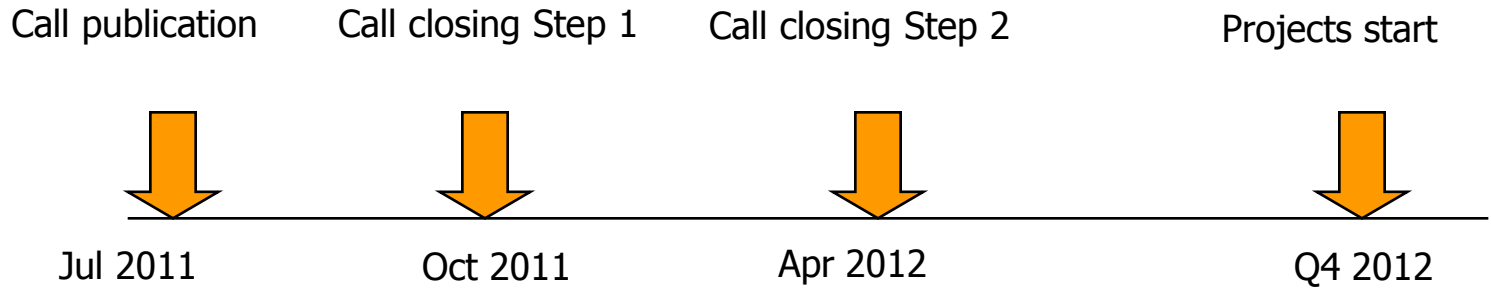
- **EEGI overall costs: 2,000 M €**
 - **Need to pool resources: EC, Member States, Industry**
- **Coordination of ongoing national projects**
 - **Families of running projects**
 - **Initiative from AIT – Smart Grids ERA-NET**
- **Coordination/synchronisation of EC and MS calls for proposals**
 - **Families of new projects**
 - **Activities promoted in FP7 WP2012, planning for WP2013**

Coordination of ongoing national projects

- **14/03/2011 meeting, Austrian Institute of Technology**
 - **Representatives of member states**
PL: Marcin Jamiołkowski, National Fund for Environmental Protection & Water Management
- **Map of ongoing projects**
- **Clustering in 4 families of projects**
 - **Integration of smart customers**
 - **Integration of smart metering**
 - **Integration of DER and new uses**
 - **Smart distribution network**
- **Coordination to be developed**

- **Support so far: +- 160 M€ for grids projects (2007-2010) – ENERGY, ICT, Security**
- **WP2010 call: 35 M€+ for DSO demonstration**
- **WP2011-1 call: 20M€ for transmission R&D and for network of demonstration projects**
- **WP2011-2 call: 30M€+ for storage demonstration**
- **WP2012 ENERGY preparation well advanced**
- **WP2012 ICT: 30 M€ for Smart Grids**
Proposers day Budapest 19-20 May 2011
- **WP2013: discussions to start at next EEGI meeting**

WP 2012 Time scale (indicative!!)



Topics for joint actions “WP2012”: tentative topics

- **National demonstrations/pilots supported by R&D at EC level:**
 - **Integration of medium-size variable distributed resources in distribution networks**
 - **Enhancing electricity networks through the use of distributed intelligence**
 - **Empowering smart customers to participate in active demand and energy efficiency**
- **Coordination of national activities:**
 - **Smart metering infrastructure and data processing**
- **R&D at European level:**
 - **Planning of European electricity highways**
 - **Facilitating the safe deployment of stationary batteries**

RD&D Roadmap- distribution networks

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WP2012

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- **EEGI Implementation plan:**
<http://www.smartgrids.eu/?q=node/170>
- **Energy Research and innovation:**
http://ec.europa.eu/research/energy/eu/index_en.cfm
- **Energy policy:**
http://ec.europa.eu/energy/index_en.htm
- **SET Plan information system:**
<http://setis.ec.europa.eu/>