A European Perspective on Smart Grids

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SMART GRID LAYERS

PHYSICAL CYBER MARKET SOCIAL POLITICAL

INTEGRATED ASSESSMENT


Dr Patricia Arsene - IEEE SmartGridComm, 3-6 November 2014, Venice, Italy
"Current geopolitical events have forcefully reminded us that Europe relies too heavily on fuel and gas imports. I therefore want to reform and reorganise Europe’s energy policy into a new European Energy Union. We need to pool our resources, combine our infrastructures and unite our negotiating power vis-à-vis third countries. We need to diversify our energy sources, and reduce the high energy dependency of several of our Member State." Jean-Claude JUNCKER-EC President
"I believe that we must make much better use of the great opportunities offered by digital technologies, which know no borders. To do so, we will need to have the courage to break down national silos in telecoms regulation, in copyright and data protection legislation, in the management of radio waves and in the application of competition law."

Jean-Claude JUNCKER-EC President

http://ec.europa.eu/about/juncker-commission/priorities/index_en.htm
The work on smart grids….a joint effort, which is more relevant than ever!

Source: JRC ((2014))
Smart Grids Task Force

European Commission

High Level Steering Committee

Regulators - TSOs - DSOs - Consumers - Technology Supply

Expert Groups

Florence Forum
London Forum

Dr Patricia Arsene - IEEE SmartGridComm, 3-6 November 2014, Venice, Italy
# SG Task Force - Plan of Work for 2010-2014


| Standards and interoperability | • Validation the M/490 Work Plan  
|                              | • Monitoring work and deliverables  
|                              | • Ensure coordination within and other Mandates |
| Privacy, Data Protection and Cyber-security | • Privacy and Data Protection Impact Assessment Template  
|                                             | • Develop a Best Available Techniques  
|                                             | • Develop a cyber-security assessment framework |
| Regulation                     | • Define reference data processing models  
|                                     | • Examine regulatory challenges for flexibility, commercial arrangements and incentives |
| Infrastructure and technology | • Establish a process for identifying projects of common interest  
|                                | • Develop an industrial policy for Smart Grids |

*Dr Patricia Arsene - IEEE SmartGridComm, 3-6 November 2014, Venice, Italy*
Smart Grids - our Priorities and Visions

- **Our priority**: accelerating development and deployment of ICT solutions that enable an EU-wide shift to clean sources of energy, and improved efficiency in generation, transmission and distribution;

- **Our vision**: to create the conditions for the penetration of ICT solutions in the energy retail market;
  - saving costs for consumers;
  - increasing competition
  - improving service quality and choice;
  - enabling more sustainable use of infrastructure.
Synergies Utilities - Telecoms

- **Smart electricity Grid.** Investment in ICT: €56 billion in the EU by 2020 for Smart Grids only (Pike Research, 2011)

- A finance need of €400 billion up to 2020 (EDSO, October 2014)

- **High-speed broadband.** By 2020 all Europeans will have broadband access at least at 30Mbps and 50% or more will have it at 100Mbps.

More than €200 billion investment needed in the EU by 2020
Measures to reduce the cost of deploying high-speed electronic communications networks

- Increased use of passive infrastructures suitable for high speed internet network rollout
- Increased cooperation in civil engineering works
- Streamlined permit granting procedures
- Increased number of buildings ready for high speed internet access

Investment costs are expected to be reduced by 20% to 30%

+ Social and environmental benefits
  - Better broadband coverage = social and territorial cohesion
  - Synergies with smart grids and intelligent transport systems
  - Less duplication of civil works, less digging and nuisance
Shared Use of Spectrum Policy in the EU

“Promoting the shared use of radio spectrum resources in the internal market” [COM(2012) 478final]

- Objective: Launching a debate at EU-level:
  - Defining a **common regulatory principle** to foster different modes of spectrum sharing
  - Setting out a **strategy to promote shared access to spectrum** in the internal market
  - Sending a **clear signal to innovators** that Europe supports advanced wireless technologies

Creating market-based incentives for spectrum sharing in Europe!

Dr Patricia Arsene - IEEE SmartGridComm, 3-6 November 2014, Venice, Italy
Key question – Trust between Utilities and Telcos: Sharing of infrastructure

• **Advantages:**
  • No last-mile connection – DAE to provide every European with at least 30 Mbit/s by 2015 - there is no need to build a network from scratch or to create last connection to the premise
  • Proven technology – todays communication technologies are mature
  • New revenues for DSOs – pro-competitive cooperation

• **Concerns:**
  • Pricing – **BUT** different price models are offered by the Telcos
  • Long-term stability – **BUT** communication networks are constantly evolving and supporting at the same time devices operating in different networks (e.g. 2G, 3G)
  • Loss of control - **BUT** utilities prefer to have the only say on how the communications network will be used who takes the responsibility in case of emergency. If building its own network why not to open it to Third Parties?
• The current edition of the survey includes a total of 459 smart grid projects, launched from 2002 up until today, which amount to €3.15 billion in investments.

• This study goes hand in hand with brand new interactive visualisation tools - available on the JRC’s website: ses.jrc.ec.europa.eu - allowing the user to generate customisable maps, graphs and charts to track progress on smart grid projects realised in the 28 EU Member States (EU-28), plus Switzerland and Norway.

- 22% from the European Commission;
- The main beneficiary of the EC funds is Italy which draws more than €100 million, representing 40% of its total budget.
- As far as smart grids demonstration and deployment are concerned, key obstacles and challenges still appear to be at the social and regulatory levels (rather than technical constraints).

Distribution of budget per funding source and country – source JRC 2014
- FP7 funding for smart grids projects under the ICT Theme = approx 100 Million EUR;

- 1 January 2014: H2020;

- Accent put on innovation!

- An integrated programme coupling research to innovation
- Challenge based
- Major simplification
Horizon 2020: overall budget
€ 79 billion from 2014 to 2020 (in current prices)

- Industrial Leadership
  EUR 17.0 billion

- Excellent Science
  EUR 24.4 billion

- Euratom (2014–2018)
  EUR 1.6 billion

- European Institute of Innovation and Technology
  EUR 2.7 billion

- Other
  EUR 3.2 billion

- Societal Challenges
  EUR 29.7 billion
New in H2020:

• work programmes are biannual under Horizon 2020, to allow better preparation of applicants.

• Horizon 2020 takes a challenge-based approach.

• Cross-cutting actions have also been introduced under Horizon 2020.

• Technology Readiness Level (TRL) should be applied under this Programme in order to better specify the scope of activities.
Secure, Clean and Efficient Energy

The Energy Challenge is designed to support the transition to a reliable, sustainable and competitive energy system.

The Energy Challenge is structured around seven specific objectives and research areas:

- Reducing energy consumption and carbon footprint
- Low-cost, low-carbon electricity supply
- Alternative fuels and mobile energy sources
- **A single, smart European electricity grid**
- New knowledge and technologies
- Robust decision making and public engagement
- Market uptake of energy and ICT innovation.
Smart grids funding in H2020

- LCE 7 – 2014: Distribution grid and retail market
- LCE 6 – 2015: Transmission grid and wholesale market


http://www.youtube.com/watch?v=jbMkmGMqbJk
Thank you for your attention!

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