Smart/Intelligent Grid Development and Deployment in Thailand (Smart Thai)

Smart Thai Corporate Exchange: Smart Grid in the EU

Mr. Juergen Bender
Global Head Utility Solutions, Orga Systems

4th December 2012
At Office of the Energy Regulatory Commission of Thailand
Thailand – EC Cooperation Smart Thai

Smart Grid in the EU

ERC Session
The world’s electricity systems face a number of challenges, including ageing infrastructure, continued growth in demand, the integration of increasing numbers of variable renewable energy sources and electric vehicles, the need to improve the security of supply and the need to lower carbon emissions. Smart grid technologies offer ways not just to meet these challenges but also to develop a cleaner energy supply that is more energy efficient, more affordable and more sustainable.
Level of Smart Grid Implementation

2020 AMI Total Market Forecast (millions)
- 0 - 1
- 1 - 10
- 10 - 35

REGULATORY DRIVE

First Movers
- Sweden
- Italy
- Finland

Lagging
- Poland
- Hungary
- Bulgaria
- Latvia

Dynamic Utilities

REACTIVE
Utility Activity
PROACTIVE

© 2012 Orga Systems GmbH | All rights reserved | orga-systems.com
BARRIERS

POLICY AND REGULATION
Variation in regulations exist among various EU member states, as does uncertainty over the new market model.

MARKET UNCERTAINTY AND DISTORTION CONTINUED
• Investment in renewable power still largely dependent on government incentives.

MARKET UNCERTAINTY AND DISTORTION
• Many technologies have only been tested on a pilot scale and savings estimates are uncertain.
• Regulatory uncertainty about who invests and who reaps the benefits. Will the Smart Grid accelerate the birth of a new service-based business model?

TECHNOLOGY BARRIERS
Challenges with respect to interoperability, data security and technological skills.

LACK OF CONSUMER INVOLVEMENT
Identified by utility executives as the biggest barrier to smart grid value creation.
DRIVERS

ENVIRONMENTAL TARGETS
EU’s 20-20-20 target

EU MANDATES AND POLICIES
• Unbundling of electricity generation, transmission and distribution.
• Rollout of smart meters to 80% of EU households by 2020.

EFFICIENT AND RELIABLE ELECTRICITY SUPPLY
• Growth and integration of power supply from renewable resources.
• Interconnected pan-European electricity market.
• Increase the resilience of the grid and avoid losses and outages.

INCREASE RETURN-ON-ASSETS FOR UTILITIES
• Reduction in operational.
• Avoidance of peak power capacity.

SOCIOECONOMIC BENEFITS
• Reduction of the economic cost of power interruptions.
• Reduction in customer’s electricity bill.
• Reduction in CO2 emissions.

TECHNOLOGY DEVELOPMENT
Electric vehicles (EVs), energy storage, domestic Micro Combined Heat and Power (MicroCHP), residential photovoltaic (PV) systems and advanced metering infrastructure (AMI) are all pushing the evolution of the Smart Grid forward.

ECONOMIC DRIVERS
• Expectation of increasing electricity wholesale cost.
• New energy technologies and the convergence of the power, and ITC industries create new jobs and business opportunities.
Current regulatory and market systems, both at the retail and wholesale levels, can present obstacles to demonstration and deployment of smart grids. It is vital that regulatory and market models – such as those addressing system investment, prices and customer participation – evolve as technologies offer new options.

**KEY POINT:** The unbundling of electricity markets has introduced benefits and complexity to the electricity sector.
Smart Grids can link Electricity System Stakeholders Objectives

The Smart Grid Roadmap should aim to:

- Increase understanding among a range of stakeholders of the nature, function, costs and benefits of smart grids.
- Identify the most important actions required to develop smart grid technologies and policies that help to attain global energy and climate goals.
- Develop pathways to follow and milestones to target based on regional conditions.

KEY POINT: Smart grids provide an opportunity to link societal, financial, technology and regulatory and policy objectives.
The many smart grid technology areas – each consisting of sets of individual technologies – span the entire grid, from generation through transmission and distribution to various types of electricity consumers. Some of the technologies are actively being deployed and are considered mature in both their development and application, while others require further development and demonstration.
Compared with customers in other industries, such as telecommunications, travel and retail, electricity consumers are typically not provided with either the service options or pricing information needed to manage their consumption.

Providing these options and information can help customers become smarter while delivering significant benefits to grid operators, including reduced costs.

Smart grid customer policies fall into three groups: consumer feedback, pricing and customer protection.
The bulk of the investments that are expected to go into the European Smart Grid over the coming years will go into the following areas:

• Advanced Metering Infrastructure
• Distribution Automation
• Integration of Electric Vehicles
• IT Systems and Integration
“E-Energy: ICT-based Energy System of the Future” is a new support and funding priority undertaken by the German Federal Ministry of Economics and Technology (BMWi) as part of the technology policy of the Federal Government.

With E-Energy, an “Internet of Energy” is developed that intelligently monitors, controls and regulates the electricity system.
1. Creation of an E-Energy marketplace that facilitates electronic legal transactions and business dealings between all market participants.

2. Digital interconnection and computerization of the technical systems and components, and the process control and maintenance activities based on these systems and components, such that the largely independent monitoring, analysis, control and regulation of the overall technical system is ensured.

3. Online linking of the electronic energy marketplace and overall technical system so that real-time digital interaction of business and technology operations is guaranteed.
Intelligent networking of energy generation, distribution and consumption.
Why E-Energy?

E-Energy is central to the efficient integration of Renewable energy sources.

Electric vehicles for short and long distances.
The six award-winning projects are now to be implemented and will be supported by ancillary research. This will take place as part of an inter-ministerial partnership with the BMU. Under the umbrella of the E-Energy beacon project, the BMWi will provide some €40 million in funding and the BMU will make approximately €20 million available. The participating companies will raise another €80 million so that a total of approx. €140 million in research funds can be mobilized to give the new E-Energy area of innovation the impetus it needs.

The six prizewinners are:

- E-DeMa, Ruhr area model region
- eTelligence, Cuxhaven model region
- MEREGIO, Baden model region
- Mannheim model city, Rhine-Neckar model region
- RegModHarz, Harz model region
- SmartW@TTS, Aachen model region
The E-Energy marketplace is the centre of interest of different stakeholders.

*) Prosumer: Customer from the private and commercial customer segment who can actively participate in the E-Energy marketplace and both produce energy (producer) and consume energy (consumer).
Copyright © 2012 Orga Systems GmbH. All rights reserved. Specifications and data may change without notice.
We offer no guarantee that the information contained in this presentation is correct and/or complete.

The information contained in this document is confidential and proprietary to Orga Systems GmbH and to be used solely for the purpose provided. Any unauthorized use, reproduction, or distribution of this document or any information contained herein as well as any use of the original document format and/or layout is strictly prohibited.

The software and its capacity described in this document can be extended through the purchase of further licenses. This also means that as the system grows there it may be required to implement new or additional hardware in order to ensure adequate system performance.

OPSC® Gold, OPSC® Prepaid, InCore®, MCP™ - Media Control Point, HybridBilling™, CRE™ - Convergent Rating Engine, SIMelligence™ Center, SmartRevenue Suite™, SmartMoney Suite™ and SmartUtility Suite™ are trademarks of Orga Systems GmbH.

Other company, product and service names may be trademarks or service marks of others.
Thank you!