ITU-T Smart Grid Focus Group activity

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Introduction of FG ‘Smart’

Date of Establishment
ITU-T TSAG agreement at its meeting in Geneva, 8-11 February 2010 to establish ITU-T Focus Group on Smart Grid (FG Smart)

Meetings
7 meetings from June 2010 until June 2011:
3 in Geneva, 1 in Chicago (US), 1 in Yokohama (Japan),
6th meeting: in Sophia-Antipolis (4-8Apr2011),
7th meeting: in Jeju Island (Korea)

FG ‘Smart’ objective
“to collect and document information and concepts that would be helpful for developing Recommendations to support smart grid from a telecommunication/ICT perspective...”
Organization of FG Smart

**Plenary**

- **Chair:** Les Brown (Lantiq)
- **Vice-chairs:** Li Haihua (MIIT), Hyungsoo Kim (KT), Yoshito Sakurai (Hitachi), David Su (NIST)
- **TSB secretariat:** Hiroshi Ota, Emmanuelle Labar

**Ad hoc**

- **Deliverable:** Smart Grid Overview
- **Editor:** Gyu Myoung Lee (ETRI, Korea)

**WG1 Use cases**

- **Chair:** Hyung-Soo Kim (KT, Korea)
- **Deliverable:** use cases for smart grid
- **Editor:** Gyu Myoung Lee (ETRI, Korea)

**WG2 Requirements**

- **Chair:** Yoshito Sakurai (Hitachi, Japan)
- **Vice-chair:** Haihua Li (CATR, China)
- **Deliverable:** Requirements of communication for smart grid
- **Editor:** Tetsuya Yokotani (Mitsubishi, Japan)

**WG3 Architecture**

- **Chair:** David Su (NIST)
- **Deliverable:** Smart Grid Architecture
- **Editor:** Tsuyoshi Masuo (NTT, Japan)

**3 Working Groups, 5 deliverables**

International Telecommunication Union – April 2011
"Smart Grid Overview" deliverable

The “3 functional layers” approach

**Application/Service “layer”**
systems including computers, programs, data bases, people, and operational supports to manage the applications for the Smart Grid

**Control/Connectivity “layer”**

- **Information access** (data syntax & semantic)
- **Communication network** (Home/Neighbour Area/WAN; QoS; Security)

**Energy “layer”**
devices, sensors, and controllers for Home/building automation, advanced metering, and Intelligent grid control and management; provide information to the Application/Service layer, and receive command to effect control of devices in the Energy layer

International Telecommunication Union – April 2011
“Smart Grid Overview” (Cont.)

Key areas for Smart Grid standards:

- Technologies for automated energy management and decentralized power generation in customer premises, including home, building, and factories
- Intelligent grid management at the power transport and distribution level
- Smart meters and AMI
- Information and communication infrastructure to provide energy intelligence, control, and security
- Applications and services for the coordination of the energy system on the business level
- Security control and management with the different level of requirements for Smart Grid

Figure 4. Key areas for standardization in the ICT perspective

International Telecommunication Union – April 2011
“Smart Grid Overview” (Cont.)

5 domains + 4 reference points

**RP 1** -- enables exchange of information and control signals between devices in the Grid Domain and the Service Providers domains.

**RP 2** -- enables exchange of metering information and interactions with customers in the Customer domain.

**RP 3** -- enables interactions between operators and service providers in the Service Provider domain.

**RP 4** -- enables communications between services and applications in the Service provider domain to all actors in others domains.

**RP 5** -- optional, Between Smart metering and Customer domain, through energy service gateway.

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Figure 6. Simplified Smart Grid domain model in ICT perspective

International Telecommunication Union – April 2011
3-layer architecture model of Smart Grid

- **Service/Application**
- **Communication/Control**
- **EnergyGeneration/Consumption**

Editor's note:
- Input documents from ETSI needs to be studied carefully.
Relationship with other SDOs on Smart Grid

- **IEC** (International Electrical Committee), **ISO/IEC JTC 1**, **ITU-R** (Radiocommunications sector)

Established Regional SDOs
- **ETSI TC M2M**: impact of the various applications and use cases upon the M2M service layer platform, as well as initial security issues arising from the data created by the Smart Grid.
- **TIA & ANSI**
- **CCSA**

e.g. References mentioned in the ITU-T FG Smart ‘Smart Grid Architecture’ Deliverable:
- [2] IEC Smart Grid Standardization Roadmap, June 2010; Edition 1.0
ETSI M2M – Draft TS 102 690 Functional Architecture - M2M high level system overview

M2M Application Domain

Application

mLa

ETSI M2M Service Capabilities (SCs)

mId

M2M Network Domain
Based on existing standards and technologies, e.g.: 3GPP, TISPAN, IETF, ...

M2M Core

Network

1GPP, Fixed, IP...

M2M Device Domain
Based on existing standards and technologies, e.g. DLMS, CEN, CENELEC, PLT, Zigbee, M-BUS, KNX, etc.

M2M Gateway

M2M SCs
dLa

M2M Server

M2M Gateway

M2M SCs
dLa

M2M Device(s)

User interface to application e.g. Web portal interface (usage monitoring, user preferences, ...)

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“Impacts of Smart Grids on the M2M architecture”

Figure: Example of possible mapping of the Smart grids planes concepts to the M2M architecture
Next Steps/Actions

- FG Smart will continue until December 2011; then the future of FG Smart will be discussed at the next TSAG meeting in January 2012.

- By the end of June, FG Smart will
  - complete its first 5 deliverables (Overview, Use Cases, Requirements, Architecture and Terminology)
  - and then deliver them to all study groups for their review and refine the deliverables as necessary.

- ITU-T will
  - strengthen the partnership with other SDOs such as IEC, ISO and IEEE (e.g. by organizing a joint workshop)
  - further coordinate with ETSI M2M in particular / ETSI M2M will be able to present its matured deliverables, in particular on architecture and on interfaces/reference points
Thank you for your attention