Study Committee D2 Annual Report 2014

Mr. Maurizio MONTI – SC D2 Secretary

INTRODUCTION

SC D2 is focused on the study of information systems and telecommunication technologies and their application in the power utility environment.

SC D2 mission is:

- To facilitate and promote the progress of engineering and the international exchange of information and knowledge in the field of information systems and telecommunications for power systems;

- To add value to this information and knowledge by means of synthesizing state-of-the-art practices and drawing recommendations.

The evolution of the power utilities in all their activities has been linked to the evolution of the information and telecommunication systems, offering new opportunities, new capabilities, new capacities thereby allowing the utilities to be more efficient in their core business. In fact, ICT play a capital role in the evolution of power systems. The deployment of new advanced functionalities such as the smart grid architecture, distributed generation, power system efficiency optimization, etc. will only be possible with the latest generations of information systems and telecommunication technologies.

As defined by Cigré structure, SC D2 is a horizontal SC which means that its goal is to interact with the rest of SCs in order to gather their specific requirements and disseminate the knowledge and capabilities in the field of information and telecommunication technologies.

The members of the SC D2 come from power utilities, manufacturers, consultants and research institutes. The balance between information technology and telecommunication specialist guarantees a seamless approach to the power utility challenges. There are 24 regular members and 12 observer members; in 2014, some members having reached the term of their mandates, 8 new regular members and 6 new observer members have been appointed.

Currently, there are about 150 experts contributing to the working bodies (3 advisory groups and 5 working groups) of SC D2.

At the SC D2 Paris discussion meeting, Mr. Jens-Tobias Zerbst (SE) received the 2014 TC Awards.

SC D2 has a liaison of type A with IEC TC 57 on "Power System Management and Associated Information Exchange". Other organisations of interest for SC D2 activities are also monitored, i.e. "IEEE Power Engineering Society, "Power System Communication Committee" (PSCC), "Internet Engineering Task Force" (IETF) and "World Wide Web Consortium" (W3C).

STRATEGIC DIRECTION

The SC D2 Strategic Plan (2012-2021) defines the organization of the SC D2 to cope with the following objectives:

- To be more customer oriented;
- To foster the participation in the working bodies;
- To be well balanced between information systems, telecommunications, telecontrol and automation;
- To draw the interest of the customers for the work done in the SC.

The following technical and administrative directions have been defined in the SC D2 strategic plan:

- TD 1: Core telecom network technologies to cope with new requirements.
  - Studying and considering telecommunication technologies and architecture evolution and how these changes may respond to the challenges and requirements of the new generation of ITS.
  - Technologies and architecture to assure business continuity and disaster recovery is an issue that has to be considered when a new architecture or technologies is being assessed.
- TD 2: New operational and maintenance concepts and requirements.
  - Maintenance scope, techniques and tools when deploying new technologies and architectures implementing new services.
- TD 3: Strategies to deploy the network of the future.
  - Detailed analysis of the numerous challenges introduced by the smart grid.
- TD 4: IT Security.
  - Overcoming security threats is a key issue in the deployment of the networks of the future and especially in the future Smart Grids.
- AD 1: Widen study committee influence.
  - Attracting members from non-represented NCs, vendors and Universities.
  - Improving relationship with related organizations.
  - Producing position papers on key issues will position SC D2 in a leading position in our field of influence.
- AD 2: SC D2 member's involvement.
  - Members required
  - Volunteers to collaborate in well-defined tasks, position papers, technology reports, etc.

These directions are aligned with the strategic directions defined by Cigré:

- Networks of the future.
  Core telecom network technologies
  Strategies to deploy new technologies
  New IT operational architecture
- Energy efficiency support
  New applications to improve efficiency
  New telecom architectures and technologies

- Common aspects
   New operational and maintenance concepts and requirements
   Technologies and architecture to assure business continuity and disaster recovery

TECHNICAL ACTIVITIES

The activities carried out by the SC D2 are aligned with the strategic directions and can be classified into the following four technical activities:

TD 1 - Core telecom network technologies to cope with new requirements.

The power system of the future will massively require information sharing between different stakeholders. The implementation of such new approach will require the adoption of new generation of information system and telecommunication networks. The adoption of new network architectures and telecommunication technologies should consider the application of optical multiplexing, the deployment of all optical networks and new networking technologies.

Technologies and architecture to assure business continuity and disaster recovery is an issue that has to be considered when a new architecture or technologies is being assessed.

TD 2 - New operational and maintenance concepts and requirements

Deploying new technologies and architecture and implementing new services will require the revision of maintenance scope, techniques and tools. New operational concepts and technologies will introduce the need for information and telecommunication technologies able to support these new concepts.

TD 3 - Strategies to deploy the network of the future

Building new telecom infrastructure in a sustainable way introduces many challenges that have to be carefully analysed. Sharing infrastructures is a feasible way but requires thoroughly analyse regulations, new operational modes, new management schemes, etc. Service modelling to provide a straightforward integration of new Information technologies and the new operational architecture required by the networks of the future is also a relevant topic to be considered.

TD 4 - IT security

Overcoming security threats is a key issue in the deployment of the networks of the future and especially in the future smart grids. Assessing security risks, defining the proper security framework, architecture and best practices in the scope of legal requirements and other internal practices of the power utilities is a key topic to be developed. Deploying security over all the aspects of power system protection, control and operation is a strategic issue included in this technical direction. The study of international standards and their applicability to power utilities is also an aspect to be considered.

AD 1 and AD 2 - Widen SC influence and member's involvement

As part of its mission, the SC D2 maintains relationship with a number of different international organisations. Thanks to this, power utilities IT and telecom requirements and practices can be

shared in other forums contributing to a better understanding and communications outside Cigré.

MEETING AND EVENTS

SC D2 regular meeting and discussion meeting (Paris - France)

The SC D2 regular meeting was held on the 28th of August 2014 in Paris and the discussion meeting on the 26th of August 2014.

The preferential subjects of the 2014 SC D2 discussion meeting were:

- **PS1: Information and telecommunication technologies for connecting distributed energy resources (DER)**
    - Facilities for control, monitoring, security and safety.
    - Use of existing standards, interoperability and cyber security issues.
    - Operating conditions, EMF, installation and maintenance issues.
- **PS2: Maintaining operational IT reliability in an evolving environment**
    - Virtualization applied to power system operations and disaster recovery.
    - Cloud services availability and security.
    - Impact of operational systems on IT governance, practices and experiences.
- **PS3: Trends in managing utility communication networks**
    - Smart grid communication network and service management.
    - Evolution of operation support systems.
    - Security of communications and of the management system.

Mr. Lars Nordström (SE) acted as special reporter for PS1 and PS2, and Mr. Hermann Spiess (CH) as special reporter for PS3. The event attracted about 100 persons; 34 prepared contributions and 18 spontaneous contributions from 18 different countries were presented.

RECENTLY COMPLETED WORK

SC D2 published in 2014 two technical brochures:

- TB 588, WGD2. 33 – "Operation & maintenance of telecom networks and associated information systems in the electrical power utility".
- TB 603, JWGD2/B5.46 – "Application and management of cybersecurity measures for protection and control systems".

SC D2 issued the following technical reports in Electra:

- 2013 Annual meeting and Colloquium SC D2 – Electra, February 2014
- Strategic priorities for information systems issues – Electra, June 2014

The following WGs have been dismantled as per decision of the SC D2 Chair:

- WGD2.32 "Optical cables links in power utilities – Mounting, commissioning, maintenance and management"

- WGD2.33 "Operation & maintenance of telecom network and associated information systems in the electrical power utility"

- WGD2.37 "Guidelines for outsourcing managed security services using cloud technologies"

- JWGB5/D2.46 "Application and management of cyber security measures for protection & control systems"

FUTURE ACTIVITY

Three new WGs aligned with the above-mentioned strategic direction have been launched in 2014:

- WGD2.38, "A framework for electric power utility (EPU) operators to manage the response to a cyber-initiated threat to their critical infrastructure"

- JWGD2/B2.39, "Design, deployment and maintenance of optical cables associated to overhead HV transmission lines"

  - WGD2.40, "Cyber risks and cyber security for the next generation of digital systems in electric power utilities (EPUs)"

SC D2 can provide tutorials and workshops on information technology and telecommunication. Such events are typically organized by Cigré national Committees. Please contact the SC Chairman Carlos Samitier, or the SC Secretary Maurizio Monti for further information. Contact details can be found on D2 web page d2.cigre.org.