



CONSEIL INTERNATIONAL DES GRANDS RÉSEAUX ÉLECTRIQUES
INTERNATIONAL COUNCIL ON LARGE ELECTRIC SYSTEMS

STUDY COMMITTEE D2
INFORMATION SYSTEMS AND TELECOMMUNICATION

Study Committee D2 Annual Report 2013

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 member 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.

Currently, there are about 195 experts contributing to the Working Bodies (advisory group and working group) of SC D2.

Mr. L. Lhassani (NL) and Mr. J. Piotrowski (PL) received the 2013 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 colloquium – Mysore, Karnataka (India)***

Following an invitation from the India National Committee of Cigré, SC D2 held its annual event in Mysore, Karnataka (IN) from November 12th to 16th, 2013. The SC D2 event included:

- the SC D2 regular meeting;
- the SC D2 colloquium;
- a tutorial on “Cyber security”, “Computing and software for smart grid”, “Communication challenges for smart grid” and “Integration of renewable”;
- and the visit of the control centre of the Mysore distribution system operator.

The preferential subjects of the 2013 SC D2 colloquium were:

- **PS1 - Role of ICT in power system.** Smart grid development and introduction of DER require huge investments in ICT. Efficiency of power system operation is a business driver, regulations or incentives for energy markets are another business driver; sharing the experience is of utmost importance.
- **PS2 - Standards, security and leading-edge technologies in the context of power systems.** To face the new requirements for a more efficient power system operation, development of ICT in electric power sector is a must. What standards are to be used? What technologies? How to ensure an appropriate level of security?
- **PS3 - Renewable generation plant communications.** Renewable generation plants are often outside the reach of the power grid’s communication system yet these generation facilities require dependable and secure communication. Different communication solutions are employed for connecting renewable plants.

Out of the 72 received synopses, 43 papers were accepted and reviewed in the special report prepared by Mr. K. Wadhawa, Mrs. B. Srivastava and Mr. L. Lhassani. The SC D2 colloquium attracted about 150 persons.

RECENTLY COMPLETED WORK

SC D2 published in 2013 one technical brochure:

- TB 521, JWGD2/B5/30, “Line and system protection using digital circuit and packet communications”.

In 2013, the Portuguese National Committee has organized with Study Committees C1 (System Operation and Economics), C2 (System Operation and Control), C3 (System Environmental Performance), C4 (System Technical Performance), C5 (Electricity Markets and Regulation), C6 (Distribution Systems and Dispersed Generation), D2 (Information Systems and Telecommunication) and CIRED an international symposium on “smart grids: new generation grids for new energy trends”.

SC D2 contributed to the Lisbon Symposium and issued 4 special reports on following ICT subjects:

- Cyber security in the smart grid;
- Information technologies for the smart grid;

- Smart grid telecom, new application, architecture and technologies;
- Smart grid telecom, applications deployment and experience.

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

- WGD2.27, “Power line carrier channel modelling, planning and usage”
- WGD2.32 “Optical cables links in power utilities – Mounting, commissioning, maintenance and management”

FUTURE ACTIVITY

A new WG aligned with the above-mentioned strategic direction has been launched in 2013:

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

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.