

## ACTIVITY REPORT D2

### **SC D2 focuses on Information Systems and Telecommunications for the electric power industry**

The information systems and telecommunications have enabled the latest evolutions in the electric sector. None of the latest evolutions of the electric sector, the deregulation of the electric sector being the major one, would have been possible without the information systems and telecommunications capacities: power exchanges; metering and billing; security of supply...

SC D2 activities, balanced between information systems and telecommunications, address 4 types of customers: users, specialists, vendors and R&D, Universities and standardization bodies

### **The ongoing work on Information Systems**

- **Energy Management Systems (EMS)** have been traditionally based on closed, proprietary platforms and architectures. As deregulation introduced the need for new market applications, tightly coupled with EMS applications, the industry evolved towards multi-vendor customized solutions, expensive to develop and maintain. The objective of SC D2 is to develop common vision and requirements for the next generation of EMS and Market Management Systems (**MMS**) architectures, resulting in reusable and interoperable solutions. This action will leverage existing standardization efforts (e.g. IEC TC-57) to define a complete and consistent reference architecture, to become the basis for future procurements.

For 2010-2011 the work program is as follows:

- reflect the impact of the Smart Grid model on the requirements and architectures guidelines,
- expand the business processes decomposition,
- specify the interface data services.

- **Metering and billing** are key functions in the electric sector industry. They provide the market players with the data used to invoice the end-customers and the users of the networks, for the market settlement, for the assessment of the losses etc...

A Technical Brochure **describing the state of the art in the field will be issued in 2010.**

- **Information security** - Cyber attacks, risk assessment, confidentiality of information, security for real time control networks, etc.- is a topic at stake in the electricity sector.

Two Technical Brochures on risk assessment and security technologies guidelines have been published in 2008, and two are scheduled for 2010.

- **IT and Communication** are essential in making **deregulation of the electric sector** happen. New business functions require flexible systems, real time capabilities, data security and confidentiality, through new IT and communication solutions, implying better integration of IT services within the companies.

In 2010 an international benchmark on the **impact of deregulation on the information and telecommunication systems** will be published.

### **The ongoing work in Telecommunications**

- The advances in broadband technologies together with the need for simplification of access interfaces are introducing the **Ethernet interface as the standard access interface** for any type of data device. Ethernet technology can be used in Wide Area Network (WAN) applications and Ethernet interface can accommodate virtually any type of protocol, thus becoming a straightforward solution for legacy and new protocol integration.

A Technical Brochure is planned for 2010.

- A Working Group is studying a number of key issues for Utilities - **Fusion or separation of corporate and operational telecommunication organization; in house or outsourced maintenance; Fusion of IT and telecommunication; Provision of commercial services through the operational infrastructures** - and will report in 2010.

- **Power line carrier (PLC)** is one of the only telecommunication technologies where all the expertise must come from the Power industry. It still remains a widely used technology but the expertise is being lost very fast because of ageing of experts. Various technical subjects deserve attention - PLC coupling and propagation, channel characteristics and HV line noise,.. - and it is appropriate today to explore directions for innovative systems, using the techniques and technologies developed in particular in the fields of radio systems and packet data.

A publication is planned for 2010

- With the multiplicity and the variety IP-based applications in the High Voltage substation there is today a need to investigate the performance requirements of these services, and to organize them into a single coordinated communication architecture covering existing applications evolving into IP communications, as Substation Automation Systems, and the new applications necessitating IP connectivity to the HV substation communications.

Moreover, many of the modern applications require access from different remote control and monitoring platforms to the data collected and stored locally in the HV substation using Web-servers, often with no global architecture. A Brochure on “**Internet protocols for substation automation and connection of the substation to the external world**” is planned for 2010.

- **Protection and telecommunications must be regarded as a common world.** Correct performance of modern digital data communication has increasingly vital for different protection schemes, as for example a current differential protection. Several utilities have faced severe problems with non-adequate operation when installing modern communication and tele-protection systems due to inadequate Protection - Communication coordination.

SC D2 works presently with SC B5 (Protection and Automation) to identify and recommend solutions to these problems, with a two stage program, until 2011:

- first, develop guidelines on the practical interpretation of related standards, and communication requirements for protection signaling over telecom networks,
- second, issue a publication covering communication aspects related to all different protection applications and schemes which can be encountered in the electrical substation.

### **Future axis of activity**

CIGRE will launch in a few months, working groups dealing with all the aspects of the networks of the future, which will include super grids and smart grids. Information systems and telecommunication systems will be key elements in the operation and control of these networks. Study Committee D2 will contribute very actively to this work, in the field of telecommunication architectures, smart meters, protocols and standards, data exchanges between all players...

The terms of reference of the new working groups will be discussed and approved in 2010.

*For more details (existing WGs and their Terms of Reference, Strategic Plan of D2, etc..) refer to [www.cigre-d2.org](http://www.cigre-d2.org),*