



CONSEIL INTERNATIONAL DES GRANDS RESEAUX ELECTRIQUES
INTERNATIONAL COUNCIL ON LARGE ELECTRIC SYSTEMS

STUDY COMMITTEE D2
INFORMATION SYSTEMS AND TELECOMMUNICATION FOR POWER SYSTEMS

Study Committee D2 Annual Report

by Mr. Maurizio MONTI – SCD2 Secretary

STRATEGIC DIRECTION.

SCD2 mission is to facilitate and promote the interchange of technical knowledge, information and experience between all countries in the fields of Power Telecommunication, Information and Telecontrol Systems.

In this scope of work, the Strategic Plan (2003-2012) and the Action Plan (2003-2005) define the following technical areas of activity:

- **T1: Internet and Information Systems:** Studying and considering the impact that new internetworking technologies, like Internet would have on all aspects of power utilities activities from consideration of the functional requirements and typical provision of networks for market operations to specification of data bases, compatible for all internal users inside the utility, taken into consideration the security related aspects.
- **T2: Transmission Media and Techniques:** Monitoring and development of new media, functions, technology and applications for its use as a transmission facility, including the networking.
- **T3: Operation, Economic and Management:** Identification of development and trends in the field of control of telecommunication networks and services, in particular studying Telecommunication Management Networks as a tool to improve the performance of such systems, with special focus in the integration of legacy system. Integrating also the devices which constitute the Information Systems attached to telecommunication networks as a set to the gathering, transmission, treatment and presentation to the application programs of the information flow inside (technical aspects) and outside (technical and commercial aspects) a power utility, making a survey of maintenance policy and practices. Comparing the results and costs and providing Guidelines, taking into account cost-reduction practices.
- **T4: Telecontrol Systems:** Including investigation on common schemes for data modelling, security aspects, backup control centres and emergency dispatch, advanced system for the handling of alarms in Control Centres, and the possibility of using Artificial Intelligence or Expert Systems to facilitate the presentation of information to human operators. New advances, like Web-based systems.
- **T5: Industry Deregulation:** Considering the effect of both electricity and telecommunication deregulation with special focus on the effect of the interchange of information between the new players of the sector and the services aspects to the customers (metering, billing, technical and commercial support, etc.).
- **T6: Overview:** Analysing the devices, media and networks used in power utilities. The technical versus economic reasons, and the trend evolution as a function of time and country.

In addition, two administrative directions are included as follows:

- **A1: Improve Study Committee Practices:** Improving communication between all members, documenting the rules and practices and adapting the organisation to the changing needs, trying to increase our flexibility.
- **A2: Widen Study Committee Influence:** Soliciting support from non-represented National Committees, increasing (and formalising when needed) the relationships with kindred organisations and with the other Study Committees and in particular, improving the Web page as a tool to effectively communicate with customers. Designing communication and marketing plans.

Publications from SCD2 issued in 2003 were as follows:

- One Electra paper on “Management of Information Security in Power Utilities” by WGD2.13, February 2003.
- One Internal Annual Report on “Telecom Technologies and Services” by AGD2.01.
- One Internal Report on “Information Systems and Internet” by AGD2.02.
- Two Technical Brochures are approved by SCD2 and are under publication on “All Optical Backbone Technology” and on “New Optical Access Technology”.

In addition, SCD2 has issued a first Tutorial on “IP” (AGD2.04 and WGD2.07). During the SCD2 2003 Colloquium, half a day was reserved for this first “IP Tutorial”.

The preferential subjects for SCD2 Colloquium held in Rio de Janeiro (Brazil) were:

- ✓ New Architectures for Information Systems.
- ✓ PLC Technologies and Experiences.
- ✓ Outsourcing of Information and Telecommunication Systems.

As well as the technical activity, significant work was carried out in the administrative directions including, development of relations with kindred organisations, and improvement in communications through the SCD2 Web Site. For the first time and following Cigré Status, SCD2 decided to curtail the Terms of Office for two Regular Members and for two Observer Members for their lack of contribution to SCD2 activities (Business Meeting attendance and contribution to Advisory or Working Groups).

TECHNICAL ACTIVITIES.

T1 INTERNET AND INFORMATION SYSTEMS.

Current Practices and Experiences

An Advisory Group, AGD2.02, was created having for scope of work:

- Position Paper on current practices in power utilities.
- Report on the use of Internet as a tool to communicate with the outside world (and inside).
- Security aspects on information systems in an integrated scenario.
- Time-schedule to reach an integrated scenario. Economics versus Technical constraints.
- Report on other options: advantages and disadvantages.
- Definition of data bases and interface with applications programs.

An internal Task Force, AGD2.02_TF.2 is investigating the field of Enterprise Application Integration (EAI) in electricity utility.

An on-line questionnaire on “Information Systems and Internet” was developed and published on the internet. 25 answers were received. A Summary of the results and the details are to be found in the AGD2.02 “Questionnaire Results” on the SCD2 Web site.

Security for Information Systems and Intranet in Electric Power Systems

Following the work initiated both by AGD2.02 and WGD2.13 on IS/IT Security, a JWGD2/B3/C2.01 was created to review “Security for Information Systems and Intranets in Electric Power Systems”.

AGD2.04 is drafting a **Tutorial** on “Information systems security” for July 2004.

T2 TRANSMISSION MEDIA AND TECHNIQUES.

Telecommunication Technologies

An AG, AGD2.01 on “Telecommunication Technologies”, has been created in 2002. Its mission is to monitor these technologies and to foresee its possible use and impact on power utilities. Deliverables of the AG D2.01 are:

- Annual Report on Telecommunication Technologies and Services (status update, state of the art, survey)
- Bi-annual Report on Forecast on Telecommunication Services in a future, encompassing a 5 to 10 years period ahead

Fibre Optics

As more and more electric utilities are looking after benefits from telecommunications investments, SCD2 has finalised studies in the field of Fibre Optics. After issuance of Technical Brochures TB131, TB132 and TB133 on fiber optics by WG35.04, WGD2.15 studied the advances of all-optical backbone network, new optical access network and their applications in the Power System Communication and in the Public Telecommunication Services.

In 2003, WGD2.15 has carried out its main task. The work has been compiled into two Technical Brochures, “All-Optical Backbone Technology” and “New Optical Access Technology”. The two Technical Brochures have been approved during 2003 SCD2 Business Meeting and should be published in February, 2004.

Digital Power Line Carrier and Power Line Carrier

A Working Group and a SC Task Force are dealing with these subjects.

WGD2.14, “Broadband Power Line Communication” is currently drafting the following documents:

- A White Paper on MV PLC, description of the current status of deployment of MV PLC including manufacturers and utilities involved, should be published early 2004.

- A Report, “Requirements for transmission and installation of MV PLC”, providing a set of transmission and installation requirements including electrical safety such that MV PLC should become a mass-market commercial solution.
- A Work plan of the process of standardization of MV PLC reflecting which organizations are to be contacted with which information to achieve standardization of the requirements specified by the WG.

WGD2.14 launched a new action to deal with energy-related services over PLC and the economics of MV PLC (automatic meter reading, load-shedding, etc.).

SCTFD2.08, “Field experience and measuring methods for Digital Power Line Carrier Systems”, is preparing a new Technical Brochure as it was assessed that TB164, “Digital PLC”, and IEC Publication 60663 did not deal with the planning aspect for Digital PLC. SCTFD2.08 distributed a questionnaire dealing with Maintenance, Operation, Applications and Future Plans. Drafting of the Technical Brochure “Digital Power Line Carrier Equipment: Present Use and Future Applications” is underway.

Mobile Radio

SCD2 launched a Task Force, SCTFD2.09, “Strategies for Utility Companies seeking to move towards improved mobility”, to carry out the following scope:

- What are the different strategies?
- Why are they worthy of consideration and what are the risks?
- What are the current expectations?
- When will we see the success stories?

The Technical Brochure should be finalized by June, 2004. The on-going works are the collection of the mobile requirements and risks analysis.

SCADA/EMS Protocols and Applications

There is no work currently in progress on this subject.

IP Networking Issue

Valuable work was carried out on “ATM” and “Internet Protocol Technology”.

Work is carried on a new Technical Brochure on “Integrated Service Networks for Utilities”. This Technical Brochure covers the whole design process from network specifications to design, implementation and performance monitoring. The draft Technical Brochure is under voting process and should be published early 2004.

AGD2.04 drafted a **Tutorial** on “IP Technology” in collaboration with WGD2.07. This Tutorial was presented during SCD2 Colloquium in Rio de Janeiro (Brazil).

T3 OPERATION, ECONOMIC AND MANAGEMENT.

There is no work currently in progress on this subject.

T4 TELECONTROL SYSTEMS.

New Architectures

The main activities are carried out by WGD2.16, “Communication Technology Fundamentals for the Design of Modern Protection and Control Systems”. WGD2.16 scope of work is to study the requirements of the new standard model of Telecontrol Systems and to establish a matrix between communication technologies and Power Electricity needs in communication, both at present time and in a prospective way. The Technical Brochure is being drafted and should be available in 2004.

T5 INDUSTRY DEREGULATION.

WGD2.13 is focusing on the “real-time” market applications and the use of different technologies. The most significant change in the activity of WGD2.13 is the move towards EMS, Metering, Trading and Customer Relation Management. Requirements for the next generation of Control Centres in the environment of Deregulation, Unbundling etc. are not any more the same as in the integrated world. Two tasks are underway:

- Web Technology for a future Telecontrol System environment.
- Control/Communication System Security (paper for Electra).

WGD2.13 is drafting a paper on “Web Technology for Control Centre” for Electra publication early 2004.

T6 OVERVIEW.

Although appointment of a new Task Force Convener to carry out the tasks related to draft the “Issue of most concern” as well as the “2004 Telecommunications Statistics”, no work was reported on this item. SCD2 will review during Paris Session the needs to carry on this activity if there is no interest from our customers.

An AGD2.03 was formed to **Identify the Customers** for SCD2 activities. Its mission is to draft a marketing and publicity plan. AGD2.03 started its work by reviewing the current practices of SCB3.

ADMINISTRATIVE ACTIVITIES.

A1 IMPROVE STUDY COMMITTEE PRACTICES.

To cope with Cigré Mission and especially as regards contributions of SCD2 Members to Cigré activities, the SCD2 Chairman decided to curtail the terms of office of two SCD2 Regular Members and of two SCD2 Observer Members, “**Duty Statements for Officers**”. This decision was taken due to the unattendance to two consecutive SCD2 Business Meetings and to the lack of involvement in SCD2 activities (Working Group or Task Force).

To “**Improve Communications**”, and thus to increase SCD2 efficiency e-mail services and SCD2 Web Site are now used to provide primary communications on on-going works. The SCD2 Web Site eases information exchanges between SCD2 Members, but also for WG and SCTF Members. The site, password protected, enables to view and/or download all the published SC35/SCD2 papers (Colloquium, etc.) as well as for WG and SCTF Members to share information currently related to their activities (draft TB, etc.). The SCD2 Web Site is at URL www.cigre-sc35.org. Dr. J. Luque is in charge of the SCD2 site as Webmaster.

SCD2 is working with Cigré HQ in two areas, improving documentation on Cigré organisation (Practices & Guidelines) and standardisation of SC web sites.

To adapt SCD2 structure to on-going activities and where necessary “**Restructure Working Groups**” and “**Use of Ad-hoc Groups for Special Tasks**”, the following decisions have been implemented:

- A new SCTFD2.09 is created “Strategies for Utility Companies seeking to move towards improved mobility”: Some utility companies are breaking new ground in the provision of their telecommunications services by moving to the outsourced/managed service environment for their mobile systems. What is driving such a strategy? The SCTFD2.09 is charged of investigating this strategy.
- WGD2.15, “Optical Fibre Infrastructure and Optronics”, having achieved its work (publication of two Technical Brochures) is dismantled.
- TFD2.01, “Statistics” is dismantled.
- WGD2.07, “Power System Telecommunication in the High-Speed environment”, and WGD2.13, “Telecontrol Systems”, will be dismantled after achievement of their current works.

The following table provides for each technical area the Working Group in charge of carrying out the task.

Action Plan	Subject	WG and Convener	Task Force
T1 Internet and Information Systems	Current practices and experiences	AGD2.02 Mr. E. Sandström WGD2.07 Mr. C. Samitier	
	The use of Internet as a tool	AGD2.02 Mr. E. Sandström WGD2.07 Mr. C. Samitier	
	Security for Information Systems and Intranets in Electric Power Systems	JWGD2/B3/C2.01 Mr. A. Torkilseng	
	Tutorial	AGD2.04 Dr. J. Luque	
	Definition of data bases and interfaces	AGD2.02 Mr. E. Sandström	
T2 Transmission Media and Techniques	Telecommunication Technologies	AGD2.01 Mr. H. Spiess	
	PLC	WGD2.14 Mr. J. Comabella	
	Digital PLC		

Action Plan	Subject	WG and Convener	Task Force
	Mobile Radio		SCTFD2.09 Mr. P. Moray
	IP Networking Issue, VPN and TMN	WGD2.07 Mr. C.Samitier	
	Tutorial	AGD2.04 Dr. J. Luque	
T4 Telecontrol Systems	Backup Control Centres	WGD2.13 Mr. R. Baumann	
	Protocol testing	WGD2.13 Mr. R. Baumann	
	New architectures	WGD2.16 Mr. F. Planchon	
T5 Industry Deregulation	Web SCADA	WGD2.13 Mr. R. Baumann	
	Market specific telecommunications network and services	WGD2.14 Mr. J. Comabella	
T6 Overview	Identification of Customers	AGD2.03 Mr. P. Cristaudo	

A2 WIDEN STUDY COMMITTEE INFLUENCE.

As concerning, “**Relationship with kindred organisations**”, SCD2 has been highly active:

- UTC Executive Members are active on the SCD2 and related WG.
- SCD2 Members are active on:
 - IEC TC57 WG,
 - IETF,
 - ITU-TC,
 - UTC,
 - IEEE.
- Organisation and participation, together with UTC and several other organisations, in the First European Utility Telecom Conference (EUTC 2003) hold at Madrid in November.
- Invitation to IEC TC57 Chairman to attend SCD2 meetings and vice versa.