

Information systems and telecommunication

by Dr Olga V. Sinenko, Chair, and Joël Nouard, Secretary

— Mission and scope

Mission

- To facilitate and promote the **progress of engineering** on Information & Communication Technology (ICT) for Electric Power Industries
- To publicize and promote **state-of-the-art practices**

Principal areas of interest

- Studying and considering **the evolution of information and telecommunication technologies** to cope with traditional and new requirements driven by the digital transformation in power industry including extension of Distributed Energy Resources
- Assessment of Technologies and architecture to assure **business continuity and disaster recovery**
- **Overcoming security threats** in the deployment of the networks of the future and especially in Smart Grids

Scope

Interoperability and data exchange

between Electricity Network Grid Operators, System Operators, Market Operators, Generation Companies, Industrial Product Manufacturers, Telco Operators, ICT services providers, Energy Regulators, Certification Entities

Telecom network technologies and management:

- Studying and considering telecommunication technologies and architecture evolution
- Assessment of technologies and architecture to ensure business continuity and disaster recovery
- Telecommunication network management when deploying new technologies and architectures

Implementation of the networks of the future:

- Monitoring of on-the-eld experiences and proof of concepts of smart technologies Impact on the existing ICT systems such as telecommunication network and equipment
- SCADA, enterprise business functions (Smart Grid Architecture Model domain)

New digital trends used by EPU and new business services:

- Monitoring on the field experiences on the deployment of digital equipment such as IEDs, PMUs, IoT, Fog and Cloud Computing, Network Function Virtualization, as well as the processing of large quantity of information (big data) in the domains of asset health, system operation, smart metering.

Cyber Security:

- Assessment and promotion of best practices, tools and solutions of cyber security from field equipment (protection) to corporate IT supporting the whole resilience strategy along the system life cycle: design, implementation, testing, operation and maintenance.
- Cyber security challenges related to new devices, technologies and DER interconnection and the additional data exchanges between Transmission System Operators, Distribution System Operators and Significant Grid Users, as required by the flexibility management of future grids

Membership

SC D2 consists of the 24 regular members, 2 additional regular members and 12 observer members representing overall 36 countries.

Advisory Groups

Title	Convenor
Core business information systems and services	Marcelo Costa de Araujo (BR) Il-Hyung Lim (KR)
Cyber Security	Giovanna Dondossola (IT)
Telecommunication networks, services and technology	Victor Tan (AU)

— Publications

Technical Brochures



TB 840 “Electric Power Utilities’
Cybersecurity for Contingency Operations

This Technical Brochure offers an insight into organizational, management, and technical issues of the cyber-physical security during contingency operations. The approach used is well-aligned with the concepts described for the “Grid Architecture of the Future.” Using model-based system engineering processes, multiple solutions were analysed to improve cooperation between all participating electric utilities and supporting organizations (e.g., government agencies, law enforcement, contractors) involved in a wide-spread disaster recovery and reconstitution activity. Most important is the need for well-defined agreements between utilities to establish chain of command needed to recognize legitimate new players with access and use control privileges as the join and leave the disaster response team.

Article in Future Connections Newsletter

D2 published two articles in “[Future Connections Newsletter #5](#)”.

- “Augmented & Virtual reality & XR, Future of Electric power utilities O&M” by Siamak Khalaj WG D2.49 Convener
- “Technology and applications of industrial internet of things in power industry” by Zhengyun Sun (WG D2.53 Convener), Kunlun Gao (WG D2.52 Convener), Haiwang Zhong and Qiaoyin Yang (Leader for SC D2 in JWG B5/D2.67)

— CIGRE Virtual Centennial Session

SC D2 e-session was held from 24th to 25th August 2021. The event included

- **31 contributions** presented for PS1-PS3
- **3 Next Generation Network Showcases** presentations
- **5 Working Groups** Technical overviews
- **4 Keynote speeches** by:
 - Mr K.V.S. Baba (IN), CMD, POSOCO;
 - Mr Yuri G. Rassega (IT), CISO, Enel Group;
 - Mr Iony Patriota de Siqueira (BR), DSc., CIGRE Honorary Member and Former Chair of SC B5;
 - Mr Kenneth C. Budka (US), Sr. Partner, Nokia Bell Labs

— Awards

The following SC D2 members received CIGRE awards in 2021:

- **Olga Sinenko** (RU) was awarded CIGRE Women in Energy Award;
- **Victor Tan** (AU) was awarded CIGRE Technical Council Award;
- **Joel Nouard** (FR), **Gustavo Arroyo-Figueroa** (MX), **Alberto del Rosso** (US), **Giovanna Dondossola** (IT), **Chen Ching Liu** (US), **Victor Tan** (AU), **Karen Mc Geough** (IE) were awarded CIGRE Pioneer 2020 e-Session Achievement Award.

Tutorials

D2 delivered a tutorial during the CIGRE Virtual Centennial Session, on 18th Aug 2021:

- Tutorial “Enhanced Information and Data Exchange to Enable Future Transmission and Distribution Interoperability” presented Gareth Taylor (GB), Eric Lambert (FR), Hugo Morais (PT), Nermin Suljanovic (BA))

In addition, during the pandemic, D2 experts contributed to knowledge dissemination being involved into events organised by National Committees:

4 online Tutorials were delivered for Indian NC:

- International Tutorial on Indian Power System & Relevance of CIGRE SC D2 Activities by Mr Narendra Singh Sodha (IN) on Jan 27
- “ICT and Smart Grid Technologies: An enabler for Transformation in the Distribution sector” by Mr Ganesh Srinivasan (IN), CEO, Tata Power DDL on Feb 12
- “Cybersecurity measures for energy systems” by Mrs Giovanna Dondossola (IT), Mrs Roberta Terruggia (IT), Mr Mauro Giuseppe Todeschini (IT) on Feb 26
- “Core IT technologies – AI and IoT, as a powerful tool for energy supply systems of the future” by Mr Kunlun Gao (CN) on March 19

D2 contributed to Brazil cyber security seminar “Regulatory Frameworks for Cyber Security in the Electricity Sector”. D2 speakers conducted the following presentations on March 24:

- “European experience and the evolution of the regulatory framework for Cybersecurity” by Mrs Giovanna Dondosola (IT)
- “Evolution of the U.S. regulatory framework for cybersecurity in the electricity sector” by Mr Dennis Holstein (US).

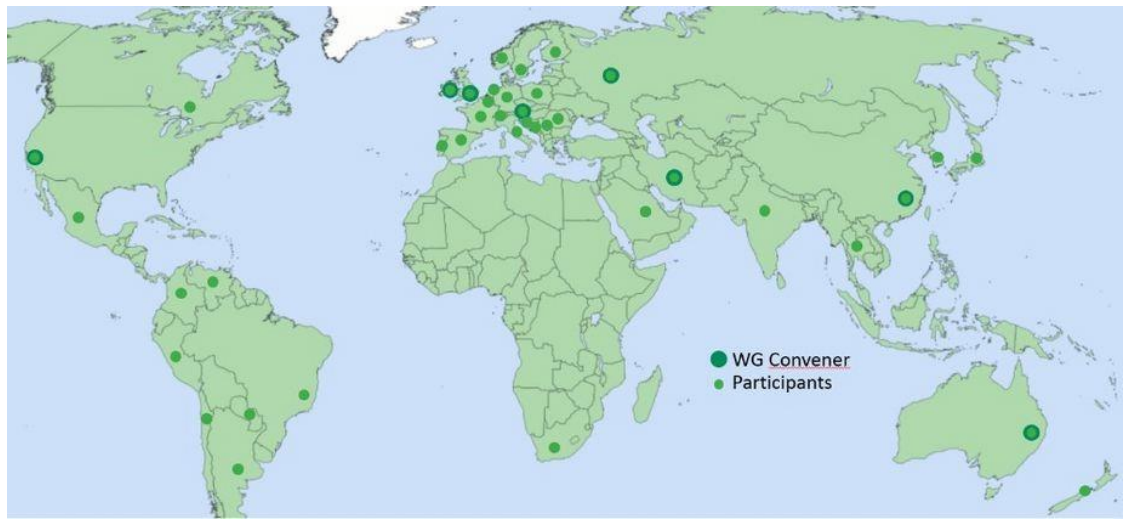
Participation in the webinar organized by the South African Institute of Electrical Engineers (SAIEE):

- Mr Kunlun Gao (CN) on behalf of CIGRE SC D2 presented the topic “5G Standards overview and application in the power industry” on May 2021

— Active Working Groups

The total number of Working Groups at the end of 2021 was 13, gathering more than 200 experts from 40 countries. New working groups, launched in 2021, are:

- **WG D2.54** - Regulatory approaches to enhance EPU’s cybersecurity frameworks
- **WG D2.55** - Application of 5G Technology to Smart Grids



SC D2 members and experts global diversity

Business-related	Cyber Security	Telecommunication infrastructures or services
JWG D2/C6.47 - Advanced Consumer Side Energy Resource Management Systems	WG D2.45 - Impact of governance regulations and constraints on EPU sensitive data distribution and location of data storage	JWG B5/D2.67 - Time in Communication Networks, Protection and Control Applications – Time Sources and Distribution Methods
JWG D2/C2.48 - Enhanced Information and Data Exchange to enable Future Transmission and Distribution Interoperability	WG D2.51 - Implementation of SOC in EPI as Part of Situational Awareness System	WG D2.43 - Enabling Software Defined Networking for EPU telecom applications
JWG B2/D2.72 - Condition Monitoring and Remote Sensing of Overhead Lines	WG D2.54 - Regulatory approaches to enhance EPU's cybersecurity frameworks	WG D2.44 - Usage of public or private wireless communication infrastructures for monitoring and maintenance of grid assets and facilities
WG D2.49 - Augmented reality / Virtual reality to support Operation and Maintenance In Electric Power Utilities	Plus : Active link with IEC TC57 WG15, on IEC 62351	WG D2.55 - Application of 5G Technology to Smart Grids
WG D2.52 - AI Application and Technology on Power Industry		
WG D2.53 - Technology and Applications of Internet of Things in Power Systems		

As a transverse Study Committee, D2 aims at collaborating with other SCs whenever it seems useful.

— Future Activities

- **The 3rd SEERC Conference**, 29 November – 2 December 2021, Vienna. D2 Tutorial “Cyber Security Management – a key player in the EPU resilience strategy” will be delivered by Giovanna Dondossola and Roberta Terruggia (IT).
- **Symposium “Power System transformation including active distribution”**, 3-8 April 2022, Kyoto. Chair: SC C6 and D2. Participating SCs: B3, C1, C2, C4, C5.
- **CIGRE 2022 Session**, 28 August – 2 September 2022, Paris.

— Conclusion

2021 has brought new challenges and new visions on the development of core and emerging IT (IoT, Big Data, AI, Cloud, etc.), cybersecurity and telecommunication technologies from the viewpoint of ensuring sustainable operation of electric power utilities in force majeure clauses like the coronavirus pandemic the world has faced. Now we can hardly exaggerate the role of remote control, additional cybersecurity measures and new methods of telecommunications. In this regard, cooperation with other CIGRE Study Committees remains essential for joint research using the mechanisms of Joint Working Groups as well as joint events: Symposiums, panels, tutorials. We are extremely grateful for the ongoing members and experts’ support and looking forward to our face-to-face discussion of the hottest topics during CIGRE 2022 Session.

— Contact

Contact of the Chair and/or the Secretary of the Study Committee