# Study Committee D2 Annual Report 2019
## Information Systems and Telecommunication



### Dr Olga V. Sinenko (RU)
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## SCD2 Mission and scope

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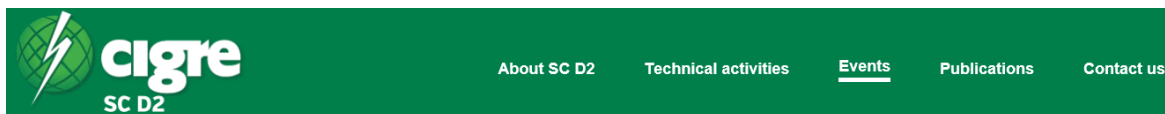- To publicize and promote **state-of-the-art practices**

### Scope
- ICT applied to digital networks from Ultra High Voltage to distribution (smart meter, IoT, big data, EMS, etc...)
- Communication solutions for **information** exchange in the smart delivery of electrical energy
- Interoperability and data exchange (file format, frequency, etc.) between network operators, market players, off-grid premises
- **Cyber security** issues from field equipment to corporate IT (Governance constraints, system design, implementation, testing, operation and maintenance...)
- Technologies and architecture to ensure **business continuity and disaster recovery**
- IT systems to support the **decision-making** process in Asset Management

### Advisory Groups

| Title | Convener | |
|---|---|---|
| Core business information systems and services | **Marcelo Costa de Araujo** (BR) marcelo.araujo@eletronorte.gov.br |  |
| Cybersecurity | **Giovanna Dondossola** (IT) giovanna.dondossola@rse-web.it | |
| Telecommunication networks, services and technology | **Karen Mc Geough** (IE) karen.mcgeough@esb.ie |  |

# Visit our new website at http://d2.cigre.org



## Cigre Events

On the odd numbered years, different events are organized by CIGRE, either directly or through its different Bodies: Colloquiums, Symposiums, Regional Meetings and Tutorials. On those years, SC D2 traditionally holds a Colloquium jointly with its annual Meeting. Tutorials are also given under the request of the hosting NC. The participation of SC D2 in the different scheduled events depends on the chosen subjects for discussion. You will find on this section relevant information about SC D2 activities.

**Chengdu Symposium**
**20 to 26 September 2019**
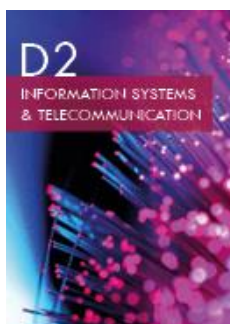
### 2019 - Chengdu Symposium

Symposium
20-26th September 2019
Chengdu (CN)

A CIGRE symposium involving Study Committees B3, C6, C1, C3, B5, D2 will take place in China in September 2019.

Visit the official website of the event.

## Two Technical Brochures published in 2019

- TB 762 "Remote Service **Security Requirement** Objectives"
- TB 782 "Utilization of data from **smart meter** system"

## Article in CIGRE Science and Engineering

- "Benefit and resolution of operational issues for information and communication systems using virtualization techniques in the electric power industry" by **H. DOI (JP) - CRIEPI**

## Two events were hold

- **Helsinki D2 Colloquium** : more than 40 papers available at e-cigre.org
  https://e-cigre.org/publication/COLL_HEL_2019-sc-d2-colloquium-helsinki-2019

- **Chengdu Symposium** (B3, B5, C1, C6 and D2): **"**Towards active, sustainable **digital networks** that are resilient and integrated from UHV to distribution". 60 papers available at:
  http://www.cigre2019-chengdu.org

CIGRE Chengdu Symposium September 2019

## Tutorials

During SC D2 Colloquium in Helsinki the following tutorials have been presented:

- "Advanced Utility Data Management and Analytics for Improved Operation Situational Awareness of EPU Operations" by **Alberto Del Rosso (US)** TB 732
- "Design, deployment and maintenance of optical cables associated to overhead HV transmission lines" by **Sacha Kwik (ES)** TB 746
- "Cyber Security Management – a key player in the EPU resilience strategy" by **Giovanna Dondossola (IT)** and **Roberta Terruggia (IT)**

The tutorials based on technical brochures have also been presented on CIGRE webinar platform. You can consult the 2020 webinars' program at: https://www.cigre.org/GB/events/cigre-academy-webinars

# Eleven active Working Groups by the end of the year

The total number of Working Groups at the end of 2019 was 11, gathering more than 200 experts from 40 countries. New working groups, launched in 2019, include:

- **D2.49** – Augmented reality / Virtual reality to support Operation and Maintenance In Electric Power Utilities
- **B2/D2.72** – Condition Monitoring and Remote Sensing of Overhead Lines
- **D2.50 –** Electric power utilities` cybersecurity for contingency operations
- **D2.51** – Implementation of Security Operation Center in Electric Power Industry as Part of Situational Awareness System

## Business-related

**JWG D2/C6.47** "Advanced Consumer Side **Energy Resource Management** Systems "

**JWG D2/C2.48** "Enhanced Information and Data Exchange to enable Future **Transmission and Distribution Interoperability"**

**JWG B2/D2.72** "**Condition Monitoring** and Remote Sensing of Overhead Lines"

**JWG D2.49** "**Augmented reality** / Virtual Reality to Support Operation and

## Cyber Security

**WG D2.45** "Impact of governance **regulations** and constraints on EPU sensitive data distribution and location of data storage"

**WG D2.46** "Cybersecurity **future threats** and impact on EPU **organizations** and operations"

**WG D2.50** "Electric power utilities` cybersecurity for contingency operations"

**WG D2.51** "Implementation of SOC in EPI as Part of Situational Awareness System"

**Plus** : Active link with **IEC TC57 WG15**, on IEC 62351

## Telecommunication infrastructure or services

**WG B5/D2.67 "Time** in Communication Networks, Protection and Control Applications – Time Sources and Distribution Methods"

**WG D2.43** "Enabling **S**oftware **D**efined **N**etworking for EPU telecom applications"

**WG D2.44** "Usage of public or private wireless communication infrastructures for monitoring and **maintenance of grid assets** and facilities"

At the moment, almost half of our Working Groups are joint. This is a nice illustration of the collaboration strategy of SC D2 with other Study Committees.
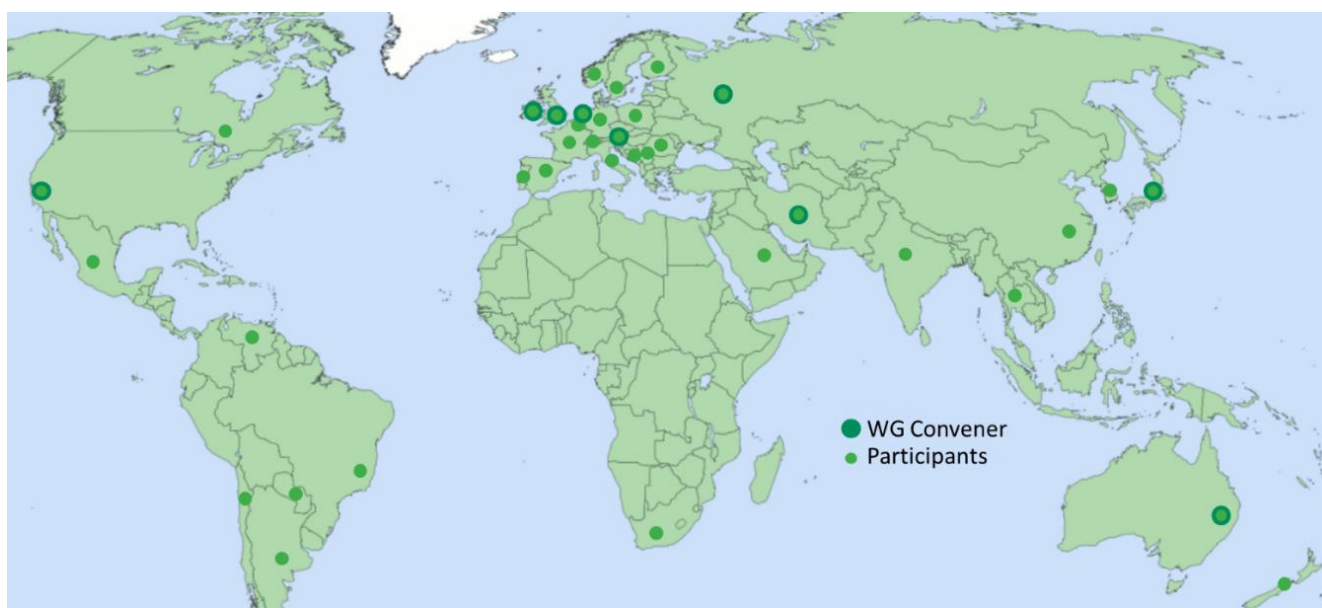


*Figure 1 – SC D2 members and experts global diversity*

# Dissemination of CIGRE knowledge in Africa

Following the signature by **CIGRE** and the **World Bank**, last August, of a MoU to improve dissemination of CIGRE work results and support African electricity system developments, SCD2 has set up a Task Force focused on dissemination of D2 CIGRE knowledge. The leader of this TF is Mr Zwelandile Mbebe (ZA), and the scope is:

- Systematic effort to improve dissemination of information and resources for Africa in cooperation between CIGRE and the World Bank (WB)
- Focusing on assisting African countries to develop internal expertise by providing access to unbiased, up to-date technical experience
- Conduct a survey to assess the readiness of African utilities and ICT Infrastructure to implement microgrids and rural electrification.
- Understand each African country's legislation, regulatory requirements and Code of Practice (CoD) and standards adhered by EPI's.
- Universities – including centres of excellence – are additional very promising target partners for know-how transfer to pursue all-important "self-empowerment".

## Zwelandile Mbebe
Convener of the Task Force Africa of D2
MbebeZ@eskom.co.za

As part of realising the above objectives, the D2 Task Force launched its first tutorial in November 2018. This was followed in 2019 by 9th CIGRE Southern Africa Regional Conference & B4 International Colloquium, and the **tutorial at University of KwaZulu Natal** (UKZN), South Africa on 31st October 2019.

D2 Africa Task Force targets African Electric power utilities and universities. Universities can enable the task force's objectives. Their participation will help in **aligning the research studies with the real issues** we face.

The **attendance** for the tutorial **surpassed our expectations**, at the venue we had about 120 attendees and also we had attendees connected to the Webinar. The support of the locals namely Eskom, eThekwini Electricity, UKZN staff, post graduate students, the **National Cigre Chairperson of Southern Africa Prince Moyo** and the **President of Cigre Dr Rob Stephen** were the highlights of the day. The attendance and content presented was world class.

The topics for the tutorial were selected in accordance to the current state of ICT in utilities around the world and Africa. African utilities are required to be customer centric while working with constrained budgets resulting in current infrastructure still dominated by legacy systems. The technologies presented looked at providing cost effective solutions while also improving customer satisfaction. Other presentations focused on **grid resiliency** and **mitigating cyber threats**. Some African Utilities were impacted by Cyber-attacks recently, it is therefore important to consider cyber-security from project inception. Finally, some presentations focused on teaching utilities about **Artificial intelligence** (AI) and evolution of transport technologies and also provided realistic timelines in relation to **migrating from legacy to new transport technologies**. With most African Utilities still using legacy ICT, this session was extremely valuable to Africa.

As the Africa D2 Task force team, we would like to thank the speakers Clint Struth (CA), Gérard Philippe Mbouyap (CA), Giovanna Dondossola (IT), Kgomotso Setlhapelo (ZA), Marcelo Araújo (BR) and Nduduzo Biyela (ZA). We would also like to thank, eThekwini Municipality, Eskom, the South African Institute of Electrical Engineers (SAIEE) for assisting in marketing the event, organisers and everyone that attended.

# Conclusion

This year, Study Committee D2 continues its work in addressing the needs of Electric Power Utilities around the globe. SC D2 realizes the strong need for cooperation with other SCs as well as cooperation with other international organizations. SC D2 actively supports CIGRE Africa dissemination initiative by the first achievements of its own Africa Task Force. We are extremely grateful for the on-going support of members and experts as we continue towards the development of our part in the network of the future.