CIGRE Study Committee D2

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP

WG [1]N° D2.58	**Name of Convenor:** Bongani Shezi (South Africa) **E-mail address**: shezispeare@gmail.com
Strategic Directions #[2]: 1	**Sustainable Development Goal #[3]: 9**
The WG applies to distribution networks: ☒ Yes / ☐ No (Transmission and Distribution)	
Potential Benefit of WG work #[4] : 4&5	
Title of the Group: Monitoring, Maintenance and Control of Packet Networks & Services – From Situational Awareness to Network Control	

Scope, deliverables and proposed time schedule of the WG:

Background:

Telecommunications networks within the utility sector are experiencing rapid growth and increased complexity.

This expansion is driven by evolving demands of power system automation, power asset monitoring, changing generator and load paradigms, and advancements in telecommunications technology.

Ensuring seamless communication within this context demands heightened awareness of information flow, along with a proactive approach to adapt the network to changes in traffic volume or network anomalies.

It is crucial to maintain rigorous control over the quality of mission-critical communication services by continuously monitoring quality metrics such as delay, which have become variable due to store-and-forward mechanisms in packet-switched networks.

This Working Group's objective is to revisit, review, and update the previous work conducted by the Working Group "Operation & Maintenance of Telecom Networks" (D2.33, July 2014), which has largely become obsolete.

Purpose/Objective/Benefit of this work:

The objective of this Working Group is to deliver technical guidance on the monitoring, maintenance, and control of Packet Networks & Services, with a specific focus on Electric Power Utilities (EPUs).

Our guidance will cover the entire spectrum of Operation, Administration & Maintenance (OAM).

The Working Group will critically analyse the work previously conducted under D2.33, introducing new perspectives and updates specific to packet networks.

This initiative is expected to be of particular benefit to the majority of utilities, many of which are currently transitioning from legacy “Time Division Multiplexing networks to Packet networks."

Scope:

The working group will investigate the following areas:

1. Methods for fault and performance monitoring in packet-switched networks.
2. Implementing end-to-end Operation, Administration & Maintenance (OAM) in packet networks.
3. Network, Service, and User Inventory – Data capture, storage, retrieval, comparison of As-Planned versus As-Built inventory, Database comparison/reconciliation/synchronization.
4. Data Analytics - Correlation for root cause and service impact analysis.
5. Automated and Policy-based Network Control, with a focus on Software Defined Networks (SDN).
6. Service Provisioning – Comparison between network operator and end-user provisioned services, an exploration of Virtualization, and SLA-driven provisioning.
7. The desired level of automation – Balancing complex automation effort and time-consuming manual processes, finding the optimal compromise for service routing.
8. Network optimization, fault diagnostic, and recovery tools – Strategies for recurrent problem-solving, development of a fault database, machine learning and intelligence, operator assistance, automation, and pre-implementation simulation of network changes.
9. Approaches, tools and methodologies to support and ensure SLAs for critical services used in power utilities, including Teleprotection.
10. Performance reporting – Understanding the impact of detailed performance monitoring on network resources, integrating a centralized management system with existing Operations Support Systems (OSS) and Business Support Systems (BSS), and enabling automated SLA reporting.
11. Testing and training – Identifying the necessary tools for equipment testing, training of staff operating the network, and end-users who need to reconfigure their devices for packet network integration.
12. Equipment lifecycle management: Managing patches and firmware, defining triggers for equipment replacement, establishing backup strategies, and implementing automated auditing.
13. Cybersecurity and Security Management – Securing a centralized telecom network control platform, managing access to the network management system, identifying maintenance activities for platform security, strategizing network firmware and patch management to maintain optimal Cyber Security Posture.
14. Advanced automation, analytics and emerging AI capabilities in OAM systems.
15. Other aspects that could be evaluated include resilience, supporting infrastructure considerations such as disaster recovery, backups, out-of-band network management data flows, and physical layer considerations such as fiber-optical link degradation monitoring.

Deliverables:

☒ Annual Progress and Activity Report to Study Committee
☒ Technical Brochure and Executive Summary in Electra
☒ Electra Report
☐ Future Connections
☐ CIGRE Science & Engineering (CSE) Journal
☒ Tutorial
☒ Webinar

Time Schedule:

• Recruit members (National Committees)	Q4 2023
• Develop final work plan	Q1 2024
• Draft TB for Study Committee Review	Q3 2026
• Final TB	Q4 2026
• Tutorial	Q1 2027
• Webinar	Q3 2027

Approval by Technical Council Chairman:

Date: July 11th, 2023

Notes:
[1] Working Group (WG) or Joint WG (JWG),
[2] See attached Table 1,
[3]See attached Table 2 and CIGRE reference Paper: Sustainability – at the heart of CIGRE's work.
[4] See attached Table 3

WG Membership: refer Comments at end of document

Table 1: Strategic directions of the Technical Council

1	The electrical power system of the future reinforcing the End-to-End nature of CIGRE: respond to speed of changes in the industry by preparing and disseminating state-of-the-art technological advances
2	Making the best use of the existing systems
3	Focus on the environment and sustainability (in case the WG shows a direct contribution to at least one SDG)
4	Preparation of material readable for non-technical audience

Table 2: Environmental requirements and sustainable development goals

	CIGRE selected the 7 SDGs that are the most relevant to CIGRE. In case the WG work refers to other SDGs or do not address any specific SDG, it will be quoted 0.
0	Other SDGs or not applied
7	**SDG 7: Affordable and clean energy** Increase share of renewable energy; e.g. expand infrastructure for supplying sustainable energy services; ensure universal access to affordable, reliable, and modern energy services; energy efficiency; facilitate access to clean energy research and technology
9	**SDG 9: Industry, innovation and infrastructure** Facilitate sustainable infrastructure development; facilitate technological and technical support
11	**SDG 11: Sustainable cities and communities** Increase attention on sustainable and resilient buildings utilizing local (raw) materials, power for electric vehicles, strengthening long-line transmission and distribution systems to import necessary power to cities, developing micro-grids to reinforce the sustainable nature of cities; protect and safeguard the world's cultural and natural heritage; reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and waste management
12	**SDG 12: Responsible consumption and production** E.g. Promote public procurement practices that are sustainable; address reducing use of SF6 and promote alternatives, encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle, address inefficient fossil-fuel subsidies that encourage wasteful consumption
13	**SDG 13: Climate action** E.g. Increase share of renewable or other CO_2-free energy; energy efficiency; expand infrastructure for supplying sustainable energy; strengthen resilience and adaptive capacity to climate-related hazards and natural disasters; integrate climate change measures into national policies, strategies and planning; improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
14	**SDG 14: Life below water** E.g. Effects of offshore windfarms; effects of submarine cables on sea-life
15	**SDG 15: Life on land** E.g. Attention for vegetation management; bird collisions; integration of substations and lines into the landscape

Table 3: Potential benefit of work

1	Commercial, business, social and economic benefits for industry or the community can be identified as a direct result of this work
2	Existing or future high interest in the work from a wide range of stakeholders
3	Work is likely to contribute to new or revised industry standards or with other long term interest for the Electric Power Industry
4	State-of-the-art or innovative solutions or new technical directions
5	Guide or survey related to existing techniques; or an update on past work or previous Technical Brochures
6	Work likely to contribute to improved safety.

Comments:

1) CIGRE Official Study Committee Rules: WG Membership

https://www.cigre.org/GB/about/official-documents

a. Only one member per country (by exception of SC Chair)

b. WG nominees must first be supported by their National Committee (or local SC Member) as an appropriate representative of their country.

c. Acceptance of the nomination is granted by the SC Chair and advised to the WG Convener

2) Collaboration Space

https://www.cigre.org/article/GB/collaborative-tools-2

CIGRE will provision the WG with a dedicated Knowledge Management System Space.

The WG will use the KMS for drafting collaboration, capture and retention of discussion and meeting records.

Official country WG Members will be sent registration instructions by the Convener.

Official country WG Members may request the WG Convener to allow additional access for an extra national subject matter specialist to aid in the work at the national level, including NGN members.