CIGRE Study Committee B5

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP (1)

WG* N° B5.62	**Name of Convenor:** Mladen Kezunovic (US) **E-mail address**: kezunov@ece.tamu.edu
Technical Issues # (2):6	**Strategic Directions # (3): 1, 2**
The WG applies to distribution networks (4): Yes	
Title of the Group: Life Cycle Testing of Synchrophasor Based Systems used for Protection, Monitoring and Control	

Scope, deliverables and proposed time schedule of the Group:

Background:

Throughout the world, the deployment of Phasor Measurement Units (PMU) and Synchrophasor Systems is gaining huge momentum. The report of WG B5.14 has discussed the reasons, uses and benefits. This WG will discuss how the performance of PMUs and Synchrophasor Systems may be assessed through testing and certification to assure the infrastructure and related application are reliable and robust. The cybersecurity testing is excluded from this report.

Scope:

The scope of the document should include a thorough discussion of all issues related to certification of PMUs and life cycle testing (acceptance, commissioning, periodic field, and troubleshooting) of Synchrophasor Systems of interest to protection and control engineers, with an emphasis on guidelines and recommendations in response to the following commonly asked questions:

- What are the existing PMU and Synchrophasor system standards, and what is their impact on testing and certification?
- What is the importance of the concept of interoperability and why it matters?
- Why the certification may be needed and who is authorized to do it?
- How certification may be accomplished and what are associated costs?
- What are acceptance, commissioning, periodic maintenance and troubleshooting test procedures and how do they relate to the life-cycle management of synchrophasor systems?
- Why such life cycle test procedures matter and how are they implemented today?
- How to plan for the PMU certification and the lifecycle testing of PMUs and Synchrophasor Systems?

The final document will be of interest to utilities, vendors, consultants and others in the T&D industry, as well as educational establishments providing:

- Discussion of the standards and interoperability requirements to be observed when implementing the testing and certification process.
- The role of components and end-to-end testing of Synchrophasor Systems in the field and assessment of impact of errors on the synchrophasor applications
- The role of testing, field evaluation and troubleshooting for PMUs and Synchrophasor Systems, as well as related support tools for the infrastructure lifecycle management
- Guidelines for proposed testing requirements/specification

Deliverables:

- Technical Brochure
- Summary in Electra
- Abstract for Electra
- Tutorial Proposal Forms and Power Point slides

Time Schedule: start: 2017 **Final report**: December 2020

Approval by Technical Committee Chairman:

Date: 17/01/2017

(1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2
(4) Delete as appropriate

Table 1: Technical Issues of the TC project "Network of the Future" (cf. Electra 256 June 2011)

1	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
2	The application of advanced metering and resulting massive need for exchange of information.
3	The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation.
4	The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation.
5	New concepts for system operation and control to take account of active customer interactions and different generation types.
6	New concepts for protection to respond to the developing grid and different characteristics of generation.
7	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
8	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
9	Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network.
10	An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future.

Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)

1	The electrical power system of the future
2	Making the best use of the existing system
3	Focus on the environment and sustainability
4	Preparation of material readable for non-technical audience