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EMS-WAMS integration: The next step towards the EMS 2.0

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Abstract

Traditional SCADA technology arose in the late 1960s and are built on non-synchronized RTU measurements collected at rates of 1 to 5 seconds. Using these measurements, operators can take decisions and perform actions based on its monitoring/control functions. When combined with the grid model, network applications were created in the 1970s, giving birth to the EMS. These applications were then capable of providing operator assistance and guidance during grid operation and helped them to assess the grid and respond questions like “what will happen if I switch this breaker?”. WAMS technology appeared in late 1990s and are based on fast GPS synchronized PMU measurements, capable of generating 50/60 measurements per second. Initially targeted at oscillation detection and monitoring which are invisible to SCADA/EMS, different WAMS applications have been created addressing different dynamic issues coming from the grid, but after 20 years, WAMS has only be adopted by a few companies as part of the daily operation tools inside the control room. In this panel, we address in more details the challenges and benefits coming from SCADA/EMS and WAMS and we present the next step of control room applications: The Hybrid WAMS-EMS Applications. The main focus of these applications is to ally the full coverage and topology knowledge coming from SCADA/EMS with the accuracy and dynamics insight from WAMS, in order to augment the system operator awareness and provide assistance to tackle the grid during dynamic conditions, overcoming the traditional gaps of EMS and WAMS applications.

References:

[1] XI SIMPASE – CIGRE BRAZIL, “Aumento da Eficiencia e Seguranca Operacional Proporcionada pela Integracao ao EMS de Solucoes Baseadas na Medicao Fasorial Sincronizada (WAMS)”, R. LIRA, M. PARASHAR AND R. GIOVANINI, Campinas – Brazil, 16 - 19 August – 2015

[2] CIGRE US National Committee 2016 Grid of the Future Symposium, “Transforming Synchrophasor Measurements into Situational Intelligence, M. PARASHAR, V. MADANI, A. JAMPALA, J. GIRI. Philadelphia, PA, USA, 30 October – 1st November 2016

[3] 2016 IFAC CIGRE/CIRED Workshop on Control of Transmission and Distribution Smart Grids, “Practical Experiences in Operationalizing WAMS in the Control Room”, M. PARASHAR, A. JAMPALA, J. GIRI, Prague, Czech Republic, 11 - 14 October 2016