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Grid Transformation

Liang Min
EPRI

Abstract

Almost all of the SCADA, EMS and P&C systems deployed to date are based on fundamental technology developed in the 1960 – 70s well before the development of modern computational capability, high speed wide area communications and high speed digital signal processing. At the time the engineers fully used the technology at the time. While some incremental improvements have been made, there has not been an integrated review of the three systems within the context on today's technologies. In the last few years parallel computing techniques, new matrix mathematic methods, inexpensive high speed wide area communications and other related technologies have become readily available and hold the promise for faster simulation methods, simpler protection approaches and scalability necessary for modern power grids.

This presentation introduces a new EPRI strategic program - Grid Transformation. Four core research areas are being proposed for this program:

- Seamless geospatial three phase power system model requirements concept
- Seamless power system analytics requirements development
- Integrated energy management system coupled with the above analytics and grid measurements
- Setting-less protection method

This will lead to the discussion on what the next generation EMS would look like and what kind of analytics and modeling requirement need to me met in order to support this next generation EMS.