TRANSFORMING GRID OPERATION AND PLANNING

Future Power Grid Initiative Newsletter

March 2012

This spring, FPGI is expanding its network and making new connections from regional transmission organizations to twitter. The initiative is also presenting its first white paper on the GridOPTICS™ tool suite.

HIGHLIGHTS & ACHIEVEMENTS

New Connections

Focus Area 3 has been very active in developing working relations with grid operators across the nation. Gariann Gelston, Jodi Obradovich and Angela Dalton conducted a one-day site visit at PJM Interconnection in Norristown, Pa. As the result of the project team's previous participation in NERC meetings, the team was able to connect with executives from grid entities such as PJM. This visit served as a valuable exchange platform for the project team to learn about the latest decision support technologies in PJM's state-of-the-art Advanced Control Center program (AC2) and allowed the FPGI project staff to demonstrate its research product and capabilities, while soliciting industry feedback.

Ning Lu's Team has been working with a leading regional transmission organization to test its Multi Resolution Data Driven Advanced Reasoning Tool, or MDART, with SCADA and PMU data sets.

White Paper

The Initiative is finishing its first GridOPTICS™ white paper, which outlines three fundamental fusions to be achieved in the future power grid: grid and data, transmission and distribution, and operation and planning. The paper will be uploaded to our website at http://gridoptics.pnnl.gov/ articles/p/u/b/Publications_e251.html soon.

Twitter

You can now follow news and updates from our initiative via twitter @GridOPTICS. We will tweet about the Initiatve's publications, upcoming conferences and workshops in 140 characters or less.

Upcoming Papers

- Ning Lu, Pengwei Du, Xinxin Guo, Greitzer, FL. "Smart Meter Data Analysis," submitted to the IEEE Transmission and Distribution conference and Exposition 2012, Orlando, FL, USA, 2012. May
- Yan Liu, Wei Jiang, Shuangshuang Jin, Mark Rice, Yousu Chen. "Distributing Power Grid State Estimation on HPC Clusters : a system architecture prototype," Submitted to IPDPS 2012, PNNL-SA-83180. May
- Selim Ciraci, Oreste Villa, "Ser++: An Automatic Framework for Object Serialization Code Generation", submitted to Compsac 2012. July
- Ning Lu, Pengwei Du, Frank Greitzer, Xinxin Guo, Ryan Hohimer, Yekaterina Pomiak, "A Multi-layer, Data-driven Advanced Reasoning Tool for Intelligent Data Mining and Analysis for Smart Grids," submitted to the 2012 IEEE PES General Meeting, San Diego, CA, USA, 2012. July
- Shuangshuang Jin, Yousu Chen, Mark Rice, Yan Liu, Ian Gorton, "A Testbed for Deploying Distributed State Estimation in Power Grid," Submitted to IEEE PES General meeting 2012, PNNL-SA-84535.
- Tom Ferryman, David Haglin, Maria Vlachopoulou, Jian Yin, Chao Shen, Frank Tuffner, Guang Lin, Ning Zhou, and Jianzhong Tong, "Net Interchange Schedule Forecasting of Electric Power Exchange for RTO/ISOs," Submitted to IEEE PES General meeting 2012. PNNL-SA-84231.

FPGI FOCUS AREAS

Focus Area One addresses data networking and management issues, and enables the digital infrastructure for the future grid. This focus area will address the gaps in networking and real-time data management by developing advanced algorithms and software tools and techniques. **Focus Area Leads**: Bora Akyol (bora@pnnl.gov) and Phil Craig (philip.craig@pnnl.gov)

Focus Area Two targets research in the areas of advanced mathematical models, next-generation simulation and analytics capabilities for the power grid. Projects in Focus Area Two will use high-throughput data streams produced by projects in Focus Area One and integrate them with sophisticated mathematical models to conduct large-scale power grid simulation and analysis. Focus Area Two strives to advance the state-of-the-art in modeling and simulation in order to achieve much higher fidelity situational awareness and global comprehension for power grid stability, efficiency and flexibility. **Focus Area Leads**: Daniel Chavarria (daniel.chavarria@pnnl.gov), Tom Ferryman (tom.ferryman@pnnl.gov), and Ning Zhou (ning.zhou@pnnl.gov)

Focus Area Three aims to convert large amounts of model and sensor data into information and knowledge to support decisions in grid operation, planning, and policymaking. This area concentrates on the development of coordinated visualization interfaces and decision support capabilities in a modular, extensible software environment that can be used for both real-time grid operations as well as long-term planning. **Focus Area Leads**: Bill Pike (william.pike@pnnl.gov) and Paul Whitney (paul.whitney@pnnl.gov)

ABOUT FPGI

The Future Power Grid Initiative (FPGI) will deliver next-generation concepts and tools for grid operation and planning and ensure a more secure, efficient and reliable future grid. Building on the Electricity Infrastructure Operations Center (EIOC), the Pacific Northwest National Laboratory's (PNNL) national electric grid research facility, the FPGI will advance the science and develop the technologies necessary for meeting the nation's expectations for a highly reliable and efficient electric grid, reducing carbon emissions and our dependence on foreign oil.

Contact

For more information, please visit the FPGI website gridoptics.pnnl.gov.

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