Over the last month, the FPGI team submitted and presented papers across the globe, expanded its network and started preparations for the Initiative's mid-year review in January.

HIGHLIGHTS & ACHIEVEMENTS

» Jian Yin from Focus Area One travelled to the Middleware 2011 conference in Lisbon, Portugal to present a paper. Middleware is one of the leading conferences in the computer middleware area, attended by leading researchers, graduate students, and commercial companies. Jian was able to publicize research results, get feedback from middleware experts, and raise awareness of the initiative and the Laboratory.

» Satish Chikkagoudar from Focus Area 2 presented a paper called "Towards a Real-Time Cluster Computing Infrastructure" at the 2011 Real-Time Systems Symposium in Vienna, Austria.

» Focus Area 2 also presented a paper at the IEEE Conference on Decision and Control in Orlando, Florida, on "Aggregated Modeling of Thermostatic Loads in Demand Response: A Systems and Control Perspective."

UPCOMING EVENTS

FPGI Mid-Year Review January 25-26, 2012

FPGI will have its second Mid-Year Review on January 25-26. During these two days, the FPGI Leadership Team will present recent highlights of the ongoing research to the Initiative's advisory committee. The advisory committee consists of four external and two internal reviewers from universities and utilities across the nation.

Ning Lu at IEEE T&D

Ning Lu from Focus Area 3 will attend the IEEE T&D conference in May 7-10, 2012, Orlando, Fl., USA May. She looks forward to attending panels, presenting papers, and hosting committee meetings.

Workshop at ICSE 2012

Ian Gorton and Jenny Liu are co-organizing the International Workshop on Software Engineering Challenges for the Smart Grid at ICSE 2012 in Zurich, Switzerland on June 3, 2012. The workshop will focus on understanding and identifying the unique challenges and opportunities for Software Engineering to contribute to and enhance the design and development of the smart grid.

Upcoming Papers

- K. Kalsi, M. Elizondo, J. Fuller, S. Lu and D. Chassin, "Aggregated Thermostatically Controlled Load Models for Demand Response", submitted to HICSS, Jan. 2012, accepted.

- 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.

- Yousu Chen, Zhenyu Huang, Yan Liu, Shuangshuang Jin, Mark Rice, Computational Challenges for Power System Operation, HICSS 2012, PNNL-SA-80664, accepted

- 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.

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

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Future Power Grid Initiative
Enabling a **Resilient** and **Efficient** future power grid

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