

FUTURE POWER GRID INITIATIVE

GridOPTICS™ Power Networking, Equipment, and Technology (powerNET) Testbed

OBJECTIVE

A lot of interest in research, improvements, and testing surrounds the power grid. However, operational environments that have high availability requirements are not conducive to these activities. Specifically,

- » power system equipment is expensive and has a high knowledge barrier
- » researchers from a broader community than just power system engineers require access to bring their expertise to bear on the challenges of the power grid

Therefore, a community resource is needed to enable needed tasks.

APPROACH

Leveraging the Information Sciences Institute's DETER software, the GridOPTICS™ powerNET testbed has been developed to assist and accelerate research and development for power system technology. The powerNET testbed is

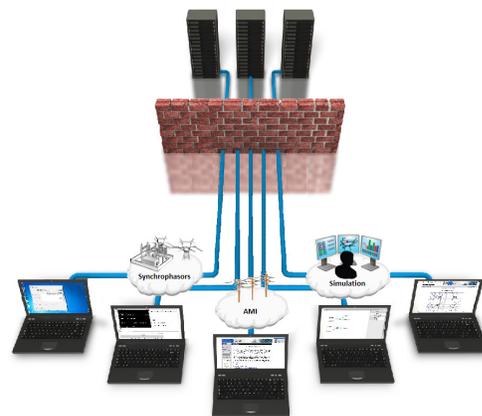
- » multi-user friendly
- » remotely configurable to automatically configure equipment for experimentation
- » designed to be federated with other testbeds to create a larger capability to tackle larger scale problems

IMPACT

powerNET is designed to reduce the resources required to perform research and development. It

- » enables researchers to develop and test new ideas
- » allows industry to evaluate new equipment
- » helps vendors to test interoperability
- » supports academia to educate with real equipment

The testbed provides a shared resource to reduce the up-front cost for equipment. In addition, the testbed reduces the barrier for non-power system engineers to experiment with power system equipment.



The GridOptics powerNET is a multi-user testbed that is remotely configurable and operable to provide a resource to impact a broad research community.

FOCUS AREA

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 Harold Kirkham (harold.kirkham@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.

ABOUT PNNL

Pacific Northwest National Laboratory is a Department of Energy Office of Science national laboratory where interdisciplinary teams advance science and technology and deliver solutions to America's most intractable problems in energy, the environment and national security. PNNL employs 4,900 staff, has an annual budget of nearly \$1.1 billion, and has been managed by Ohio-based Battelle since the lab's inception in 1965.



For more information, please visit the FPGI website or contact:

Thomas Edgar
Pacific Northwest National Laboratory
(509) 372-6195
thomas.edgar@pnnl.gov

David Manz
Pacific Northwest National Laboratory
(509) 372-5995
david.manz@pnnl.gov

gridoptics.pnnl.gov



Pacific Northwest
NATIONAL LABORATORY

Proudly Operated by **Battelle** Since 1965