

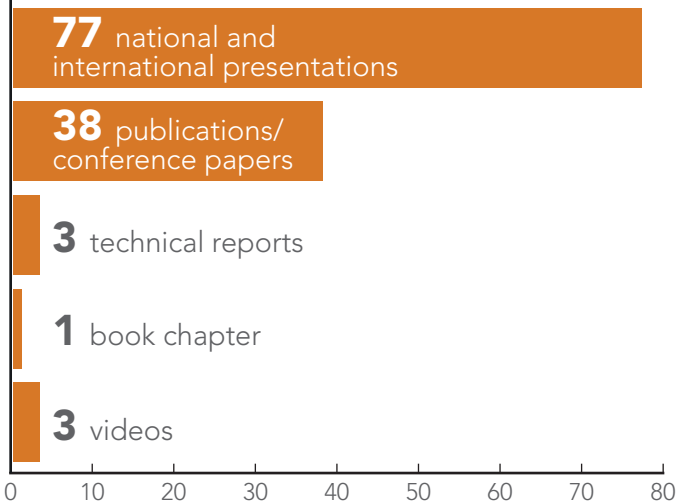


Future Power Grid Initiative At A Glance

OVERVIEW

PNNL's Future Power Grid Initiative (FPGI) is developing data-driven solutions to manage the nation's increasingly complex power grid. Since 2011, FPGI research in data management, simulation and visualization has advanced new tools that help power system operators, planners and policy makers effectively comprehend and utilize the future grid. The initiative's family of tools is collectively known as GridOPTICS™ (Grid Operation and Planning Technology Integrated Capabilities Suite). GridOPTICS™ provides capabilities to address three "fusions" occurring today between grid and data networks; transmission and distribution networks; and operations and planning systems with markets.

HOW FPGI SHARES ITS RESEARCH



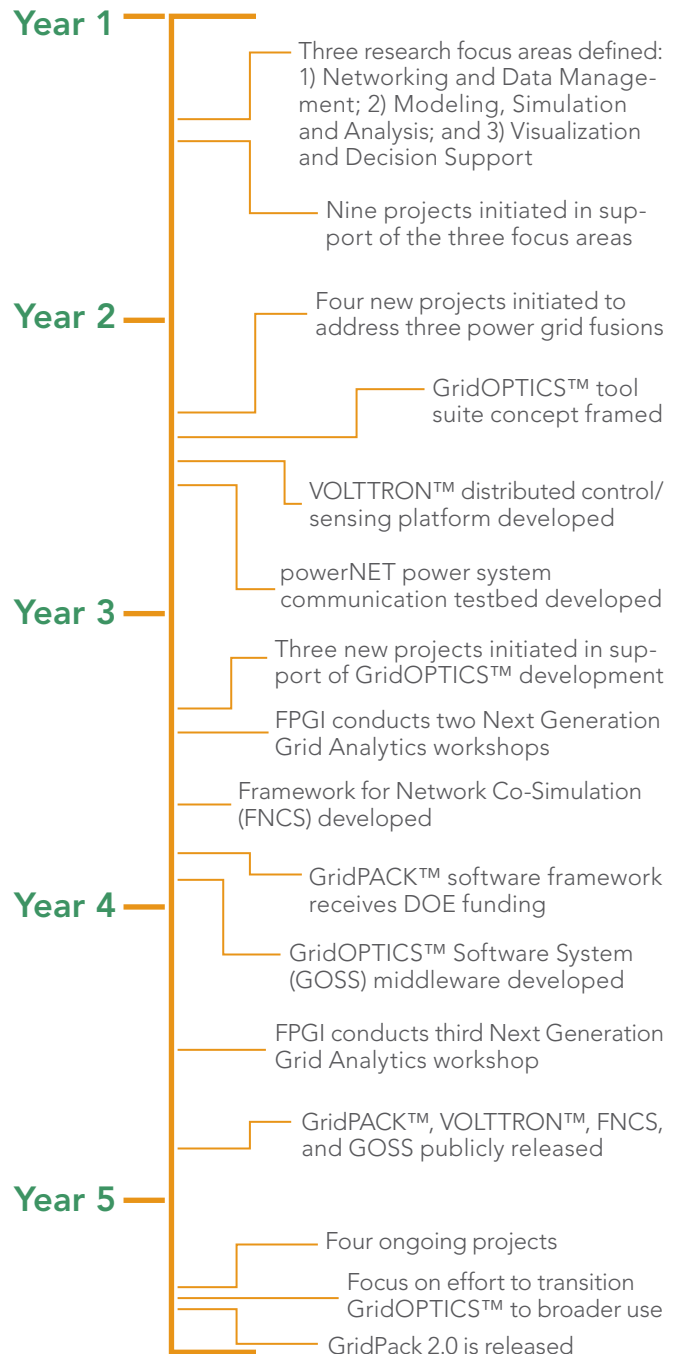
Workshops

Attended by research, industry, and academia.

- 3 Next-Generation Analytics Workshops
- 3 High-Performance Computing Workshops
- 2 Software Engineering Challenges Workshops

Net Interchange Scheduling tool
reduction of error in energy forecasts

65%



OPEN SOURCE SOFTWARE

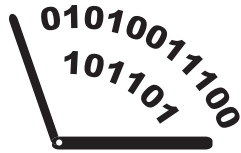
VOLTTRON™

VOLTTRON™ is an innovative distributed control and sensing software platform that creates an environment in which appliances and other devices are represented by “agents,” communicating amongst each other to prioritize power needs and deliver electricity accordingly. <https://github.com/volttron/volttron>



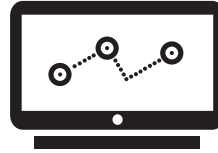
GRIDPACK™

GridPACK™ is a software framework that harnesses high-performance computing to facilitate the development of programs that model the future grid. <https://www.gridpack.org>



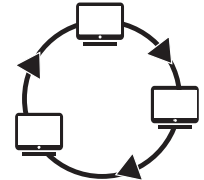
GRIDOPTICS™ SOFTWARE SYSTEM (GOSS)

GOSS facilitates data exchange and enables interoperability for development and deployment of new applications for the future grid. <https://github.com/GridOPTICS/GOSS>



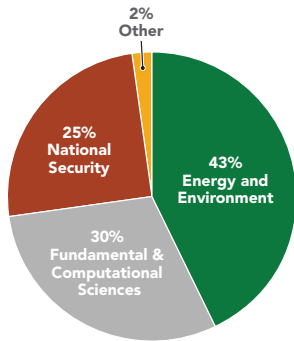
FNCS

The Framework for Network Co-Simulation (FNCS) is a federated co-simulation platform that merges communication simulators with distribution and transmission simulators. <https://github.com/GridOPTICS/FNCS>



FPGI STAFF REPRESENT A WIDE RANGE OF EXPERTISE

The initiative draws staff from the following PNNL mission areas:

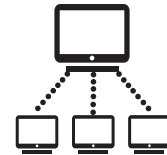


INTELLECTUAL PROPERTY SNAPSHOT

17 disclosures
4 copyrights
6 patent applications

SHARED PERSPECTIVES:

When combined and demonstrated with other FPGI-developed tools, Shared Perspectives allows simultaneous and selective sharing of information between two different entities. This is expected to provide a key resource for effective communication, collaboration, and coordination among electric utilities.



EXTERNAL RELATIONSHIPS

Agencies (all provided funding):

Department of Homeland Security
DOE Office of Advanced Scientific Computing Research
DOE Office of Electricity Delivery and Energy Reliability
DOE Office of Energy Efficiency and Renewable Energy
Small Business Innovation Research

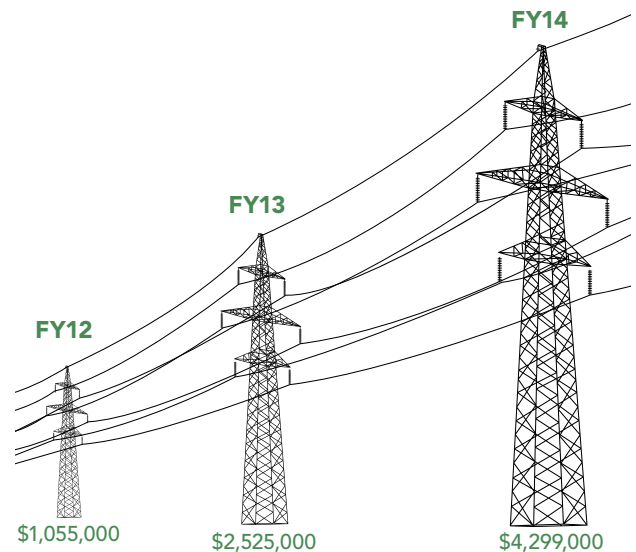
Key Partners:

IncSys
Lawrence Berkeley National Laboratory
NERC Reliability Coordinator Working Group
Northrop Grumman
Oak Ridge National Laboratory
PJM Interconnection
South East European Research Centre
The Ohio State University
Transformative Wave
University of Illinois at Urbana-Champaign
Virginia Tech
Washington State University
Yale University



EXTERNAL SUPPORT FOR GRIDOPTICS™ TOOLS

Non-FPGI funding, obtained from government and other clients, for use or development of GridOPTICS™ tools



\$3,150,000 FY15 funding as of Sept. 2014

For more information, please visit the GridOPTICS™ website or contact:
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gridoptics.pnnl.gov

December 2014
PNNL-SA-107099