



July 10, 2007

## Grid Interop Call for Papers

The GridWise Architecture Council issues this Call for Papers and invites you to contribute to the first *Grid Interop Forum*, to be held in Albuquerque, NM, November 7 – November 9, 2007. Please submit a 250 to 300 word abstract proposing either a meeting paper or panel presentation by 30 July 2007 to [gridwiseac.coordinator@pnl.gov](mailto:gridwiseac.coordinator@pnl.gov). Please include the author's name, contact information, and a short biography. Once the abstracts are reviewed you will be contacted by August 17, 2007 to complete your paper or presentation. More details on the Call for Papers, including templates, due dates, and meeting preparations will be updated at the GWAC website, [www.gridwiseac.org](http://www.gridwiseac.org) or call (509) 372-6410.

### Background

GridWise envisions the nation's electric system - from central generation to customer appliances and equipment to the enterprise systems that help manage the various businesses - as a collaborative network of intelligent devices filled with information and abundant market-based opportunities. Through GridWise, we can weave together the most productive elements of our traditional infrastructure with new technologies that integrate easily and safely into the system. Using advanced telecommunications, information, and control methods, we can create a "society" of devices that functions as an integrated, transactive system.

In order to achieve this vision, coordination in the form of implementation independent methods is needed, methods that are applicable in the heterogeneous infrastructure that is the basis of the current electric system solution. In other words, an interoperability framework is needed that addresses the issues of transforming from the status quo to GridWise enabling solutions of the future without limiting competition and innovation.

On April 11 and 12, 2007, the GridWise Architecture Council (GWAC) held a workshop with 45 experts in complex software system integration and interoperability. The participants represented various aspects of the electric system including reliability coordination, electric power company automation, buildings automation, and industrial systems automation, as well as the information technology and communications that enable this automation. The results of this *GridWise Interoperability Workshop* are summarized in proceedings<sup>1</sup> as well as in an update that is being made to a draft document that organizes interoperability concepts and issues: the GridWise Interoperability Framework<sup>2</sup>. The recommendations of these experts include the following: to establish a forum to develop actions on how to make the vision reality, and to determine how future architectures, designs, and solutions can co-exist as we move towards the integrated, transactive system.

### The Call for Papers

In this first forum, we will target business developers, decision-makers, and policy-makers as well as technologists in system integration and interoperation. We want to address organizational, informational, and technical challenges. The yardstick is the Interoperability Framework and how we can close the "distance to integrate" as we migrate existing systems and integrate new solutions. Topics for the call for papers include, but are not limited to the following:

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<sup>1</sup> [http://www.gridwiseac.org/pdfs/gwac\\_interwkshpproceedings.pdf](http://www.gridwiseac.org/pdfs/gwac_interwkshpproceedings.pdf)

<sup>2</sup> [http://www.gridwiseac.org/pdfs/interopframework\\_v05%20070129.pdf](http://www.gridwiseac.org/pdfs/interopframework_v05%20070129.pdf)

- **Business Track:**  
 What business opportunities can be facilitated by interoperability or are being hindered by the lack of it? What new challenges and opportunities must be addressed by managers and regulators?
  - Describe the business services vision of the future electric system and the role for interoperability.
  - Discuss various business scenarios, constraints, and barriers. Present examples of progress being made on interoperability in the electric community. Are there applications of interoperability in other economic sectors from which the electric community can learn and build?
  - Articulate the benefits of interoperability: Make the financial, reliability, environmental case to move toward interoperable solutions.
  - Discuss how existing enterprise architectures need to change to support interactions with other systems at their boundaries.
  - Discuss regulatory policy directions and market structures that support interoperability and/or impediments to successful business models.
  - Present the critical infrastructure requirements on interoperability: What demands will be placed on an information-rich electricity infrastructure and its alignment with other critical infrastructures? How can interoperability help? How might critical infrastructure protection impede such connectivity?
  
- **Technical Track:**  
 What are the challenges to enabling interoperability? How will addressing cross-cutting issues identified in the GridWise Interoperability Framework influence possible solutions? How can current solutions, designs, and architectures work with and migrate to new approaches?
  - Describe important interoperability issues and what can be or has been done to address or improve the situation. The framework's cross-cutting issue topics include,
    - Shared meaning of content: ontologies for automation systems
    - Resource identification
    - Time synchronization and sequencing
    - Security and privacy: building it in up front and the tensions with ease of integration
    - Logging and auditing
    - Transaction and state management
    - System preservation
    - Quality of service (reliability and performance)
    - Discovery and configuration
    - System evolution
  - Present case studies of interoperability across multiple domains: examples of enterprise and B2B implementations that integrate heterogeneous systems.
  - Use the Interoperability Framework to describe interoperable interfaces for application scenarios such as demand response, renewable resource integration, micro-grids, and substation automation.
  - Discuss electric infrastructure as a complex system of systems: understanding and coping with the risks associated with "smart grid" – non-determinism and unintended consequences.
  - Propose measures for interoperability progress. Should there be compliance tests against established criteria someday?
  - Describe tools and methods to facilitate and advance interoperation: specification and documentation, checklists, understanding and leveraging the standards community.