

Standards & Protocols for an Interoperable Smart Grid



Jerry FitzPatrick

National Institute of Standards and Technology

California Public Utilities Commission

Smart Grid Symposium

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NIST

**National Institute of
Standards and Technology**

U.S. Department of Commerce

Outline of Talk

NIST Role in EISA 2007

National Coordinator for Smart Grid Interoperability

Interim Smart Grid Standards Roadmap

Smart Grid Standards Panel

Smart Grid testing and certification

The 2007 EISA Mandate

Energy Independence and Security Act (EISA) of 2007

Title XIII, Section 1305.

Smart Grid Interoperability Framework

NIST has “*primary responsibility to coordinate the development of*” a Smart Grid interoperability framework, in cooperation with DoE and other stakeholders.

The Framework:

“The framework...shall align policy, business, and technology approaches [to] enable... an efficient, reliable electricity network.”

“a framework that includes protocols and... standards for information management to achieve interoperability of smart grid devices and systems.”

Why NIST?

Smart Grid standards require integration of many NIST skills:

- Electric utility industry measurement research
- Advanced network technology
- Industrial controls and interfaces
- Buildings and electrical infrastructure
- Computer and network security
- Documentary standards expertise
- Testing and certification experience
- Reputation as a neutral “honest broker”, facilitator, and convener

Progress to Date

2007

- EISA Assigned Standards Coordination Responsibility to NIST in December 2007

2008

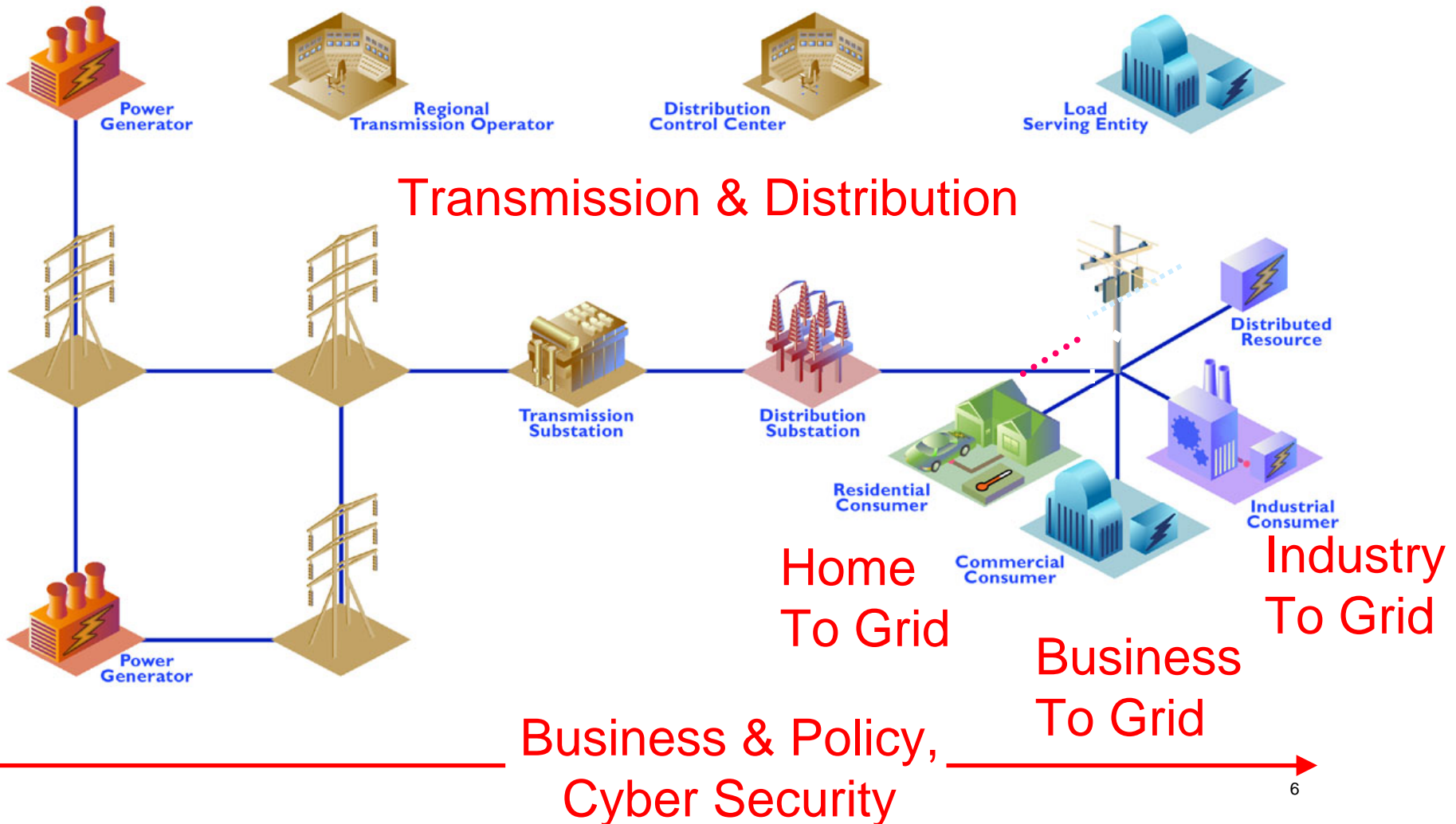
- NIST Engaged Key Stakeholders, Including DOE and FERC, Other Agencies, and Industry
- NIST Formed Domain Expert Working Groups With Over 100 Companies Participating
- Launched Twiki Collaboration Website to Enhance Public Participation
- Initiated Development of Interoperability Knowledge Base
- Convened 3-day Workshop at Grid Interop Conference in November 2008

2009

- Key priority of new Administration
- \$4.5 billion DOE ARRA funding for Smart Grid, including \$10 million for NIST
- Urgency to establish standards becomes paramount
- NIST develops plan to accelerate progress

Domains Where Standards Are Needed

Interfaces, Protocols, Information Models, Security



NIST's Plan to Accelerate Progress

New National Coordinator for Smart Grid Interoperability:

**Dr. George Arnold,
National Institute of Standards and Technology (NIST)**

Three-Part Plan:

**Phase 1 - Roadmap and “Release 1”
standards**

**Phase 2 - Public-Private Partnership for
Longer-Term Evolution**

**Phase 3 - Testing and Certification
Framework**

NIST Plan to Accelerate Progress

Phase 1 Roadmap and Smart Grid Release 1

- Develop an Interim Roadmap that describes the high-level Smart Grid architecture, principles, and interface design
- Describe the current status, issues, and priorities for smart grid interoperability standards
 - identify, as best as possible, a specific set of existing, or nearly-completed standards on which there is consensus
 - create an action plan for development of missing or incomplete standards, and harmonization among existing ones
- Rapidly build consensus for the Interim Roadmap among the various Smart Grid stakeholders.

NIST Plan to Accelerate Progress

Phase 1 Roadmap and Smart Grid Release 1

- EPRI Contract Awarded April 2, 2009
- Two Roadmap Workshops: April 29-30, 2009
May 19-20, 2009
- Standards Meeting July 2009
- Publication September 2009 Reflecting Consensus on
 - Architecture
 - Standardization Priorities
 - Selection of Release 1 Standards
 - Assignment of Responsibilities to Standards Development Organizations for Further Development
 - Timetable

Workshop registration:

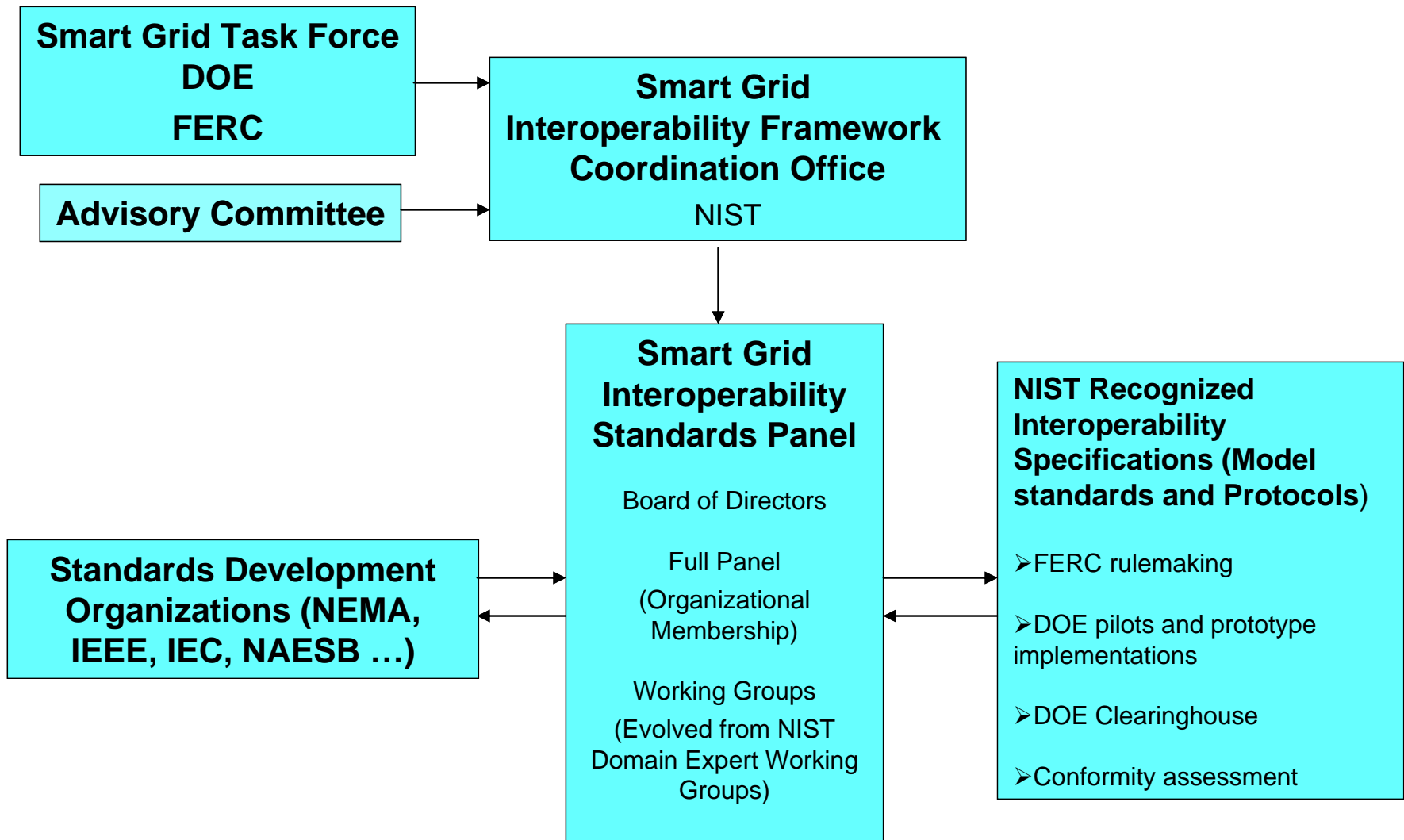
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NIST Plan to Accelerate Progress

Phase 2 Public-Private Partnership for Longer-Term Evolution

- RFP in May 2009
- Smart Grid Interoperability Standards Panel Launch by End of 2009
 - Evolve Roadmap
 - Provide Governance
 - Ongoing Coordination
 - Ensure Implementation

Draft Structure: “Coordination Framework”



NIST Plan to Accelerate Progress

Phase 3 Testing and Certification Framework

- Develop Plan by End of 2009
- Begin Implementation 2010
- Address both Interoperability and Security

Summary

- NIST has named Dr. George Arnold serving as National Coordinator for Smart Grid Interoperability.
- NIST is creating an interim consensus-based Smart Grid interoperability standards roadmap with the support of EPRI, the NIST technical domain expert working groups, and other stakeholders. The first release, scheduled for September, will identify Smart Grid standards and will address the need for further development and harmonization.
- NIST will establish by the end of 2009 a Smart Grid Standards Panel, a public/private partnership administered by a private sector group to further develop and implement the standards roadmap and provide governance for the smart grid interoperability framework.
- NIST will define a smart grid testing and certification programs to be administered by the private sector with establishment of a framework for compliance testing targeted for the end of 2009.

Questions???

Jerry FitzPatrick
NIST
fitzpa@nist.gov