

Overview of NIST Smart Grid Activities

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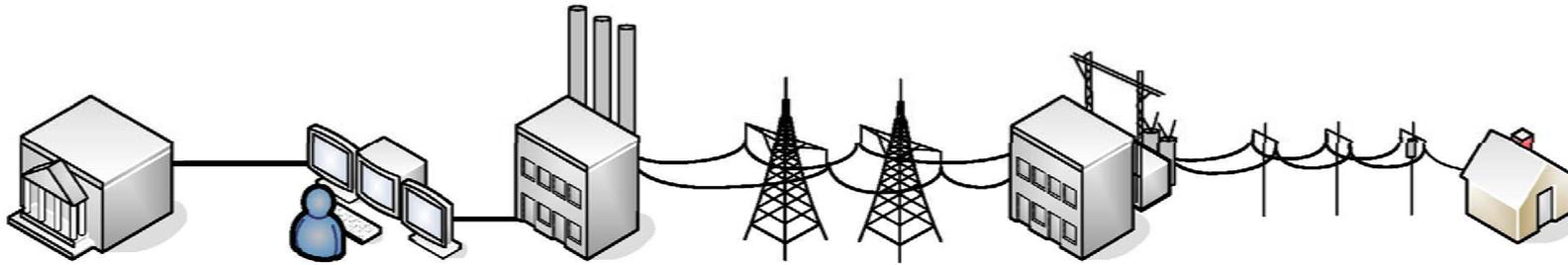
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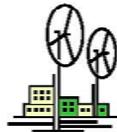
NIST
National Institute of
Standards and Technology
U.S. Department of Commerce



The “Smart Grid” Combines Electrical and Intelligence Infrastructures...



Electrical Infrastructure



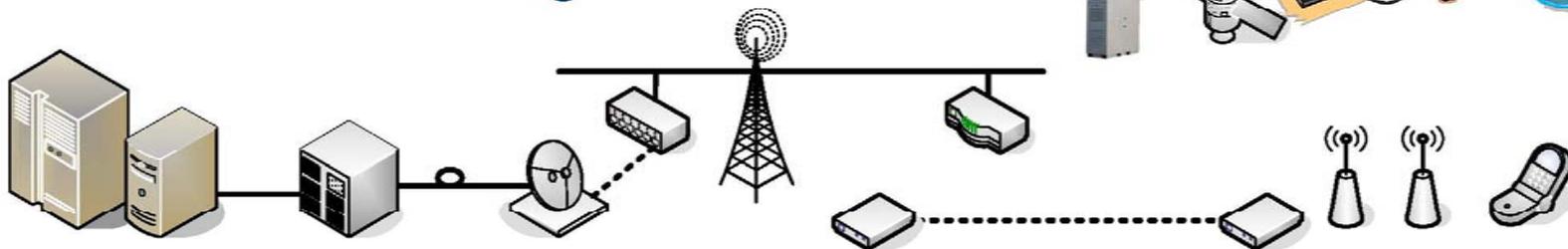
Fusing electrical and information infrastructure requires interoperability...



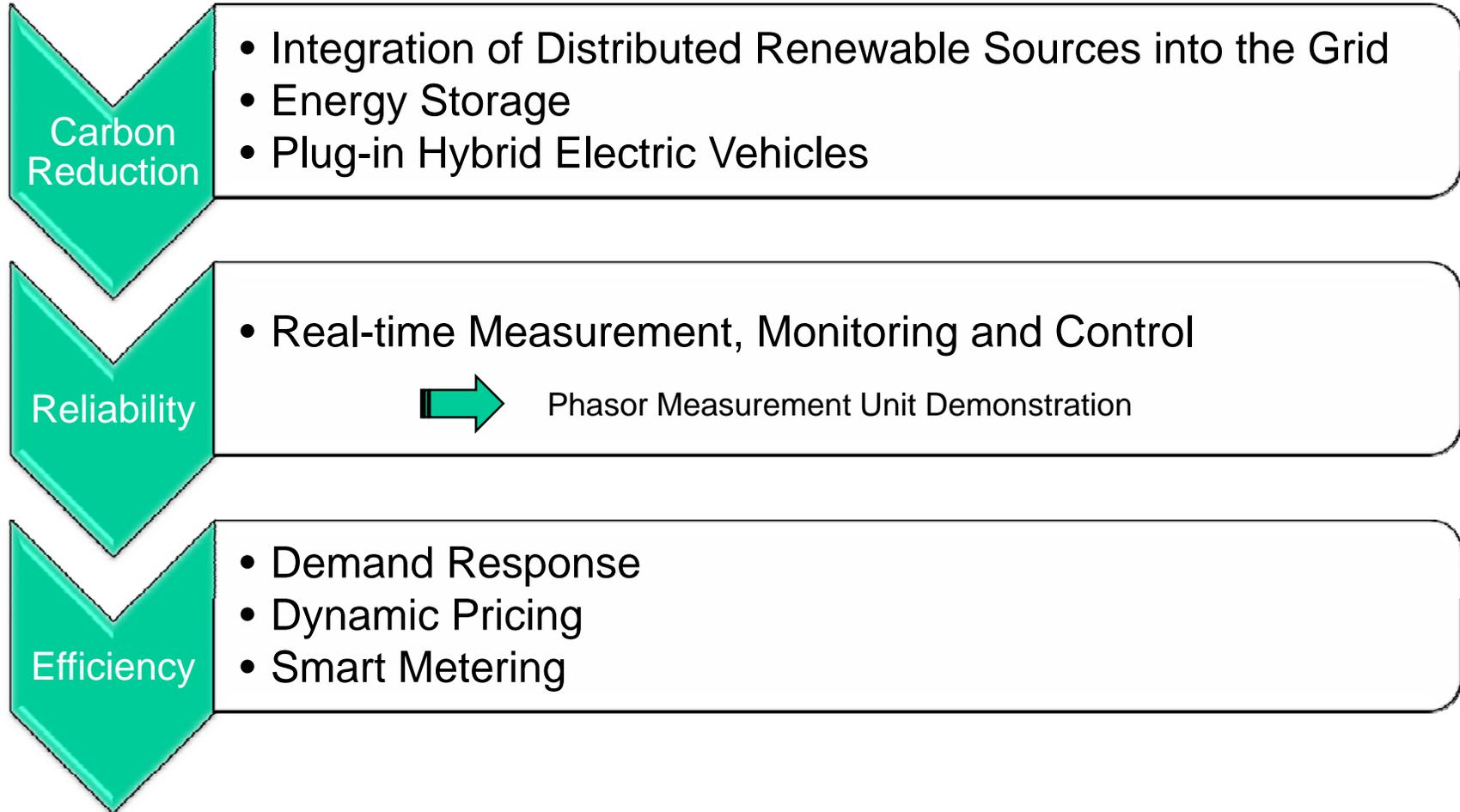
Interoperability requires standards and validated performance – a clear role for NIST



“Intelligence” Infrastructure



...To Achieve Key Benefits



...While Preserving Grid Security

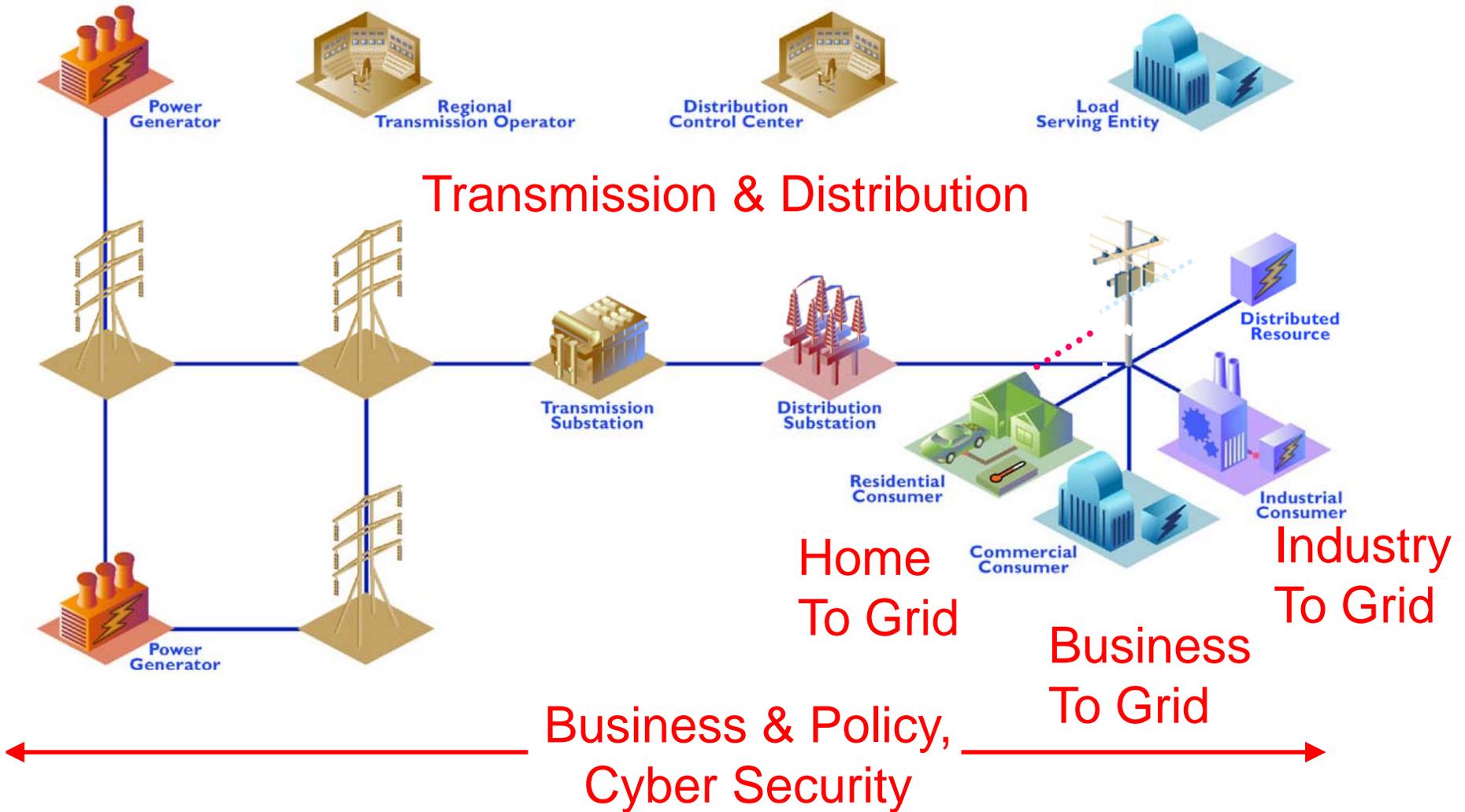
The NIST Role

***Energy Independence and Security Act (EISA) of 2007
Title XIII, Section 1305.
Smart Grid Interoperability Framework***

In cooperation with the DoE, NEMA, IEEE, GWAC, and other stakeholders, NIST has “primary responsibility to coordinate development of a framework that includes protocols and model standards for information management to achieve interoperability of smart grid devices and systems...”

Domains Where Standards Are Needed

Interfaces, Protocols, Information Models, Security



How Many Standards are Needed? How Long?

By Analogy – Next Generation Network for Telecom

(Verizon FiOS is one example – integrates voice, video, data)

- Initial field trials in 2004
- Nationwide full deployment will take 10-15 years
- Standards work started in 2003
- Three principal standards bodies involved
- Release 1 standards finalized year-end 2005
- Release 2 finalized early 2008
- About 600 standards documents
- Mostly “mix & match” and extensions of existing standards
- Standards continue to evolve with new technology

Smart Grid is about the same magnitude

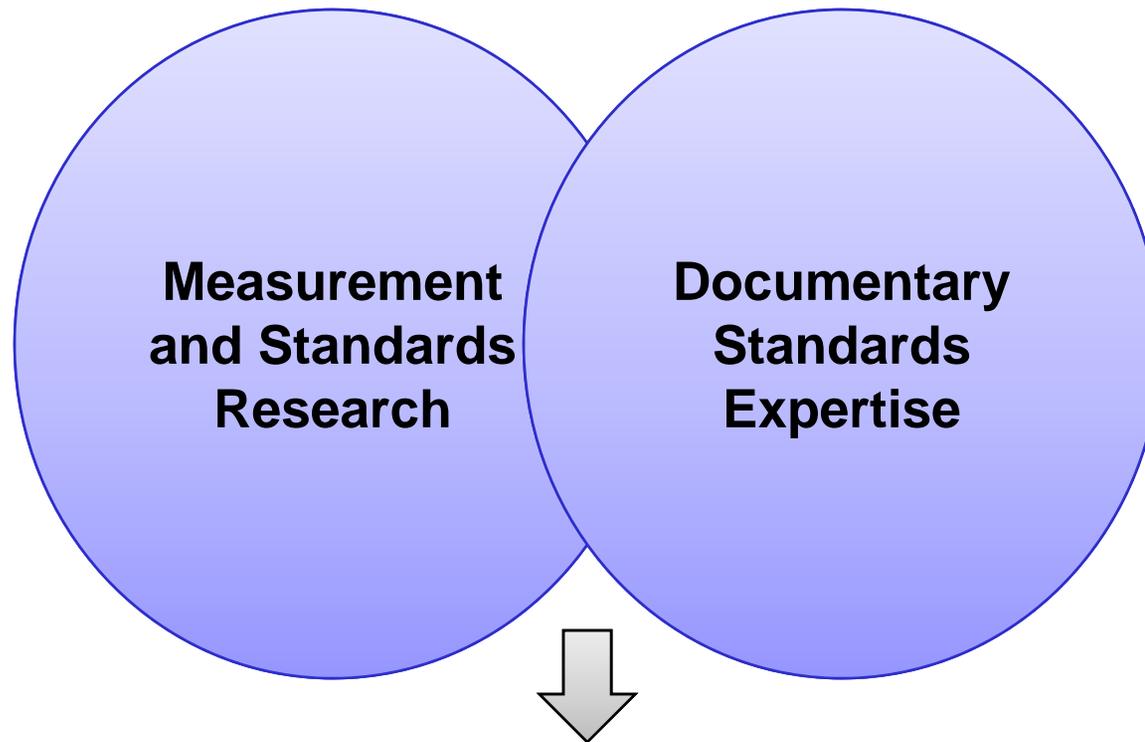
- Key difference: many more standards bodies involved
- Strong coordination role needed

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

NIST Has Dual Roles



**Strong leadership in coordinating
documentary standards development**

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

NIST Plan to Accelerate Progress

Phase 1 Roadmap and Smart Grid Release 1

- EPRI Contract Awarded April 1, 2009
- Roadmap Summit May 19-20, 2009
- Standards Summit 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

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
 - Ongoing Coordination
 - Ensure Implementation

Phase 3 Testing and Certification Framework

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