Smart Grid Advisory Committee

September 9 2014

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

engineering laboratory

Overview: Smart Grid and Cyber-Physical Systems

- Smart Grid
  - Grid 3.0 Planning
  - SGIP
  - International Coordination
  - Transactive Energy
- Cyber-Physical Systems
  - Public Working Group
  - Testbed
  - Global City Teams Challenge

Grid 3.0 Planning: Interoperability Roundtable/Workshops

- NIST has been working with industry partners to develop a three-phase strategic planning activity over the next six months that will focus on developing priority areas for smart grid interoperability
  - Phase 1 – a roundtable with industry leaders to develop initial ideas (November 2014)
  - Phase 2 – a workshop that will be hosted by a number of stakeholders to further flush out the ideas from roundtable (timing TBD)
  - Phase 3 – a workshop hosted by SGIP to take the ideas and develop them into a roadmap (timing TBD)

SGIP Leadership Changes

- John McDonald – Acting Executive Director and President (replacing Patrick Gannon)
- Stuart McCafferty – Interim Director of Technical Operations (replacing Susan Hoyler)

SGIP 2nd Annual Conference & Fall Members Meeting

- Sheraton Music City Hotel, Nashville, Tennessee
- Members Meeting: September 15–16
  - Includes Board of Directors, Standing Committees, Working Groups, and PAPs meetings
- Annual Conference: September 16–18
  - Three meeting tracks including keynotes and parallel sessions
    - Track 1: Storm Resiliency and Restoration
    - Track 2: Distributed Generation and Renewable Integration
    - Track 3: Data Transmission and Grid Protection

International Coordination

- Second SGIP and Korea Smart Grid Standardization Forum Joint Workshop on October 16
  - Recorded presentation on NIST Smart Grid Framework and Roadmap
  - Virtual Q&A session with NIST staff
- European Union Smart Grid Coordination Group (SG-CG) Meeting
  - Chris Greer and Paul Boynton to attend
- Smart Grid Workshop with Inmetro Brazil
  - Planned for November 13-14, 2014 in Rio de Janeiro
  - Includes NIST, SGIP, ITA, and industry participants

Over view: Cyber-Physical Systems

- Cyber-Physical Systems
  - Public Working Group
  - CPS Testbed
  - Global City Teams Challenge

CPS Public Working Group

What are Cyber-Physical Systems or CPS?

- Is a CPS any engineered system with a microprocessor?
- Do all CPS need to be connected to the Internet?
- Are there a set of basic functions and architectural elements common to all CPS?

Five Sub-working Groups:

- Reference Architecture
- Technical Use Cases
- Timing and Synchronization
- Cybersecurity and Privacy
- Data interoperability

Co-Chairs	Reference Architecture	Use Cases	Cyber Security	Timing	Data Interop-erability
NIST	Abdella Battou	Eric Simmon	Vicky Pillitteri	Marc Weiss	Marty Burns
Academia	Janos Sztipanovits	John Baras	William Saunders	Hugh Melvin	Larry Lannom
Industry	Stephen Mellor	Stephen Mellor	Claire Vishik	Sundeep Chandhoke	Peggy Irelan

www.nist.gov/cps/cpspwg.cfm

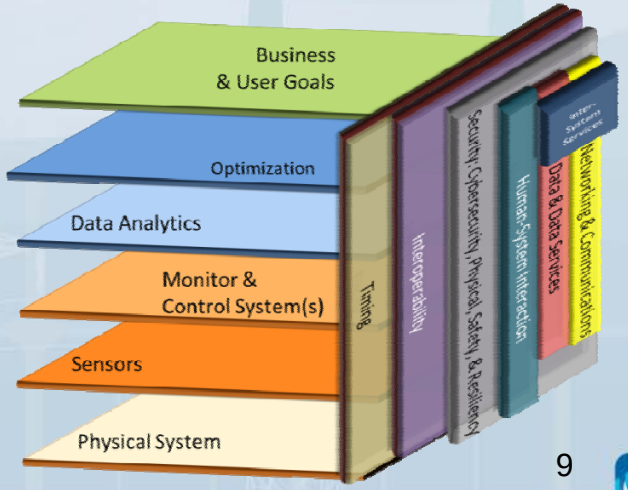
CPS Testbed

NIST is developing an advanced experimental facility for cyber-physical systems

The testbed will probe basic functions underpinning the Internet of Things, with applications ranging from a smart grid to intelligent transportation, advanced manufacturing, patient-centric health care, disaster resilience, and smart cities.

Critical Characteristics of the Testbed:

- CPS reference architecture is the design driver
- Modular and composable
- Hybrid of physical and virtual modules
- Reconfigurable
- Remotely operable
- Applicable within and across CPS domains



SmartAmerica/Global Cities

Teams of cities and technology innovators worldwide working together for IT solutions that promote growth, increase safety, enhance the quality of life, improve efficiency and reduce costs.

Federal Partners:

- National Science Foundation
- Dept. Health and Human Services
- Dept. Transportation
- International Trade Administration

Industry Partners:

- US Ignite
- ARM
- Cisco
- Extreme Networks
- Intel
- IBM
- Juniper Networks
- Qualcomm

Global Cities

www.nist.gov/cps/sagc.cfm

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NIST Smart Grid Program

TE Update for SG Advisory Committee (NIST FAC)

D. Holmberg

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Transactive Energy Update

- Following on productive discussion at last FAC meeting at NIST
- NIST, SGIP and others continue to lay the foundation for TE
  - New SGIP TE Coordination Group (TECG)
  - Working on key protocols for TE: OpenADR, FSGIM and Green Button
  - Developing research capabilities in the NZERTF (NIST Net Zero house) and SG Testbed.
  - NIST contractor looking at performance of NZ house in a TE environment, and also supporting simulation capabilities in the SG Testbed
  - Exploring EL Economics Office support for NIST TE efforts
- TE Challenge
  - We want to enable full-scale research implementations to understand and test TE components and ideas
  - Bring vendors and others together for technology integration to advance TE
  - Goal is regional–scale TE demonstration in simulation
  - Our hypothesis is that there are sufficient building blocks existing that can be put together to implement a small number of TE demonstrations and learn from that. Do you agree?