

NIST Smart Grid and Cyber-Physical Systems Newsletter

January 2015

New Year's Greetings from Chris Greer

As the NIST team steps forward into 2015, we are excited and energized about the many opportunities we will have this year to work with you, our colleagues in the smart grid and cyber-physical systems communities.

We believe that the two communities—smart grid and cyber-physical systems—are closely related, intersect in significant ways, and have much to offer each other. We'll be including news about both areas in this and future newsletters.

As you will see from the list of upcoming workshops and meetings for the next four months (see below), it's going to be a busy time for all of us. Here's a very brief introduction to our strategy and plans for the coming year.

In the smart grid area, we are moving forward along three fronts:

- **Working with the Smart Grid Interoperability Panel (SGIP)**—We continue to provide leadership in many of the SGIP's working groups, and we look to SGIP as a key forum for interacting with the diverse stakeholders that make up the smart grid sector.
- **Working with a partnership of government and industry organizations on the "Grid 3.0" technology roadmap**—We've launched a planning process that aims to help shape the grid's future. Our goal is to consider strategic issues that will be important as the electricity sector transitions from the legacy grid of the 20th century ("Grid 1.0") to today's emerging smart grid ("Grid 2.0") to tomorrow's "Grid 3.0."
- **Developing a smart grid testbed at NIST's laboratories in Gaithersburg, MD**—A key goal for 2015 is to build and begin using an advanced multi-mode interacting measurement testbed to facilitate implementation, validation, and full characterization of smart grid interoperability standards and smart grid performance, with a particular emphasis on microgrids.

In the cyber-physical systems (CPS) area, we are also using a three-pronged approach:

- **Working with the CPS Public Working Group (CPS PWG) to develop a CPS Framework**—This group, formed by NIST in 2014, brings together experts to help define and shape key aspects of CPS in order to accelerate its development and implementation within multiple sectors of our economy. The initial work of the group is being carried out in five subgroups: 1) Reference Architecture; 2) Use Cases; 3) Timing and Synchronization; 4) Cybersecurity and Privacy; and 5) Data Interoperability. The "Framework Elements" documents prepared by the subgroups are being combined and integrated into a CPS Framework and will be improved over the coming months.
- **Working with Global City Teams Challenge**—This nine-month initiative, which is led by NIST in partnership with U.S. Ignite, the National Science Foundation, the Department of Transportation, and a dozen other federal agencies and technology companies, is designed to advance the deployment of Internet of Things (IoT) technologies within a smart city / smart community environment. More than 30 teams are pursuing projects related to sectors including energy, transportation, and public safety. Participants in the Global City Teams Challenge are working to deploy an emerging technology within a cyber-physical system by June 2015.

- **Developing a CPS testbed at NIST's laboratories in Gaithersburg, MD**—A key goal for 2015 is to design and begin development of a CPS testbed to characterize CPS equipment, systems, performance, and standards. During our planning process, we expect to use perspectives, experiences, and needs that emerge during the upcoming CPS Testbed Workshop hosted at NIST (see below for details).

It's a challenging agenda, and we'll only be successful with your participation. We are very grateful for your support and engagement in 2014, and we're looking forward to working with you to make 2015 a great year for smart grid and cyber-physical systems.

Best wishes,
Chris Greer, Ph.D.
Director, NIST Smart Grid and Cyber-Physical Systems Program Office

Upcoming Meetings and Workshops (January – April, 2015)

January 15, 2 p.m. - 3 p.m. EST, Webinar by CPS Public Working Group

This webinar will provide an update on the status of the integrated CPS Framework document, as well as provide details about the upcoming April 7-8 Face-to-Face Meeting (see below). Each of the five subgroups will give a short description of their sections of the CPS Framework. Interested community members who have not yet joined the CPS PWG effort are encouraged to attend the webinar. To register for the webinar, [click here](#).

February 6, 9 a.m. - 1 p.m. PST, Event to Celebrate "The Birth of the Green Button Ecosystem," at San Diego Gas and Electric's Energy Innovation Center in San Diego, CA

Green Button creators, developers, industry vendors, utilities, and stakeholders will convene in southern California to celebrate "The Birth of the Green Button Ecosystem" and to discuss how Green Button will evolve going forward. This free event recognizes a number of key milestones achieved in 2014, including the following:

- Electric utilities and other stakeholders agreed on implementation profiles and guidance, industry vendors have initial implementations, third-party developers have unveiled applications using the standard, the Federal Government has supported Green Button applications in federal facilities, and customers have begun to take advantage of Green Button.
- UCAIug and Underwriters Laboratories LLC, with development supported by NIST, have established a full testing and certification program.
- About 60 million Americans (and 2.5 million Canadians) now have access to their own Green Button data in a standardized format.

The Green Button ecosystem has now been created, and will improve with community contributions in the coming months and years. According to the event organizers, "It's time to turn promise into performance, and performance into profit."

To register for the Green Button celebration, [click here](#).

February 12-13, Tech Jam for Global City Teams (GCTC) Challenge, at NIST-Gaithersburg

The Tech Jam will provide opportunities for:

- Existing GCTC participants to present their project plans and identify additional project partners.
- Entities not yet participating in the Challenge to explore a new project idea and/or identify partners and develop new Action Clusters.
- Attendees to hear from government agencies about funding programs relevant to GCTC participants and IoT/CPS/Smart Cities more generally.

- Attendees to hear from global leaders and experts of IoT/CPS/Smart Cities and to begin discussion of the NIST Smart City Framework.

The Tech Jam, which is free, begins at 9 a.m. on February 12 and will conclude by 1 p.m. on February 13. To register for the Tech Jam, [click here](#). To learn more about the Global City Teams Challenge and current Action Clusters, visit the [GCTC website](#).

February 24-25, Workshop on CPS Testbeds, at NIST-Gaithersburg

NIST will host a workshop to identify key characteristics and conceptual design elements of CPS testbeds. This workshop will enable the CPS community to share perspectives, best practices, and challenges in support of this goal. Participants will engage in efforts designed to:

- Highlight the present state of CPS research facilities.
- Gain insights into the key conceptual design elements contributing to successful testbeds.
- Pinpoint specific elements to effectively address opportunities.

Participants will actively contribute to workshop outcomes and help guide the community's efforts to develop a successful CPS testbed architecture. To register for the free workshop, [click here](#).

March 24-25, Transactive Energy Challenge Preparatory Workshop, at NIST-Gaithersburg

Transactive Energy (TE) is a subject of great current interest in the energy sector. It refers to techniques for managing the generation, consumption, or flow of electric power within an electric power system through the use of economic or market-based constructs while considering grid reliability constraints. To understand TE's potential and to support technology developers and policy makers, the smart grid community will require simulation tools and platforms that can be used to explore the impact of alternative ways to create and operate TE systems.

The purpose of this workshop is to design a future Transactive Energy Challenge that will bring together stakeholders, tools, and technologies to create and demonstrate the viability of TE simulation platforms and problem solutions. Attendees will include leaders and experts from academia, utilities, ISOs / RTOs, companies, and government. The workshop, which is being organized in collaboration with the Department of Energy and the GridWise Architectural Council (GWAC), will be free and open to the public for in-person attendance.

Save the date. More details will be available soon.

March 26-27, Grid 3.0 Open Workshop, at NIST-Gaithersburg

Building on the success of the [Electricity Sector Issues Roundtable: Grid 3.0 and Beyond](#) (November 13, 2014), NIST and its partner organizations (DOE, EPRI, GWAC, NEMA, and SGIP) are organizing a follow-on Grid 3.0 Workshop. We're bringing together subject matter experts to develop action plans for the interoperability issues identified at the Roundtable. The Grid 3.0 Workshop will be held on March 26 and 27 at the NIST campus in Gaithersburg, MD. The workshop will be organized around five pillars that reflect critical issues facing the electricity sector:

- Resiliency
- Reliability
- Emerging / evolving markets
- New actors in the grid ecosystem
- Pace of technology innovation

Save the date. More information on the Grid 3.0 Workshop, including registration details, will be provided in the near future.

April 7-8, CPS Public Working Group (CPS PWG) Face-to-Face Meeting, at NIST-Gaithersburg

A face-to-face meeting of the NIST CPS PWG is scheduled for April 7-8, 2015 at NIST in Gaithersburg, MD. This workshop will review the integrated CPS Framework (see update webinar information, above) being developed in phase two of the CPS PWG. The workshop will also serve as the launchpad for phase three of the CPS PWG, which will focus on development of CPS Roadmap(s) to extend and refine the initial CPS Framework and support CPS research, development, and deployment.

Save the date. More information will be provided in the near future.

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