NIST Smart Grid and Cyber-Physical Systems Newsletter

March 2015

NIST Hosts Global City Teams Challenge Tech Jam

Over 250 in-person attendees and hundreds of webcast viewers participated in the Global City Teams Challenge (GCTC) Tech Jam, held at NIST-Gaithersburg on February 12-13, 2015. The Challenge, launched in September 2014, is a nine-month initiative designed to advance the deployment of Internet of Things (IoT) technologies—also called "cyber-physical systems"—within a smart city environment.

Cyber-physical systems (CPS) involve connecting smart devices and systems—in diverse sectors such as energy, healthcare, manufacturing, and transportation—in fundamentally new ways. These innovations will enable cities and communities to improve services, promote economic growth, and enhance the quality of life for their citizens.

The Challenge has been embraced by more than 40 "action clusters," partnerships between cities/communities and innovators/providers. The goal of each action cluster is to accelerate development of an emerging CPS technology and deploy it by June 2015. The Tech Jam served as a midpoint check-in for the hundreds of scientists, engineers, and community leaders now actively engaged in the GCTC initiative.

In his welcoming remarks at the Tech Jam, Dr. Richard Cavanaugh, Acting Associate Director of Laboratory Programs at NIST, discussed how the Challenge is related to the NIST mission of advancing measurement science, standards, and technology. He said, "We want to take your particular experiences, find commonalities, and make them useful for others. That's where standards come in. It's critical to develop smart city solutions and models that are interoperable, replicable, and scalable. We want your successes to be reproduced by many cities."

The Tech Jam program featured a dozen keynote presenters and panelists, as well as two breakout and working sessions that allowed GCTC newcomers to introduce themselves and find partners in existing and new action clusters.

The energy in the auditorium—as high as it was during the keynote speeches and panels—grew even more palpable during the "lightning rounds." Representatives from more than 35 action clusters (including several new clusters formed at the Tech Jam) gave five-minute presentations on their projects. The firm five-minute limit in which to discuss partners, project plans, and timetables challenged even the most-succinct presenters and inspired participants for their upcoming, four-month sprint to the finish line—the "Global City Teams Challenge Festival," to be held in Washington, DC (and perhaps in other cities) in June 2015.

Further information, including action cluster project abstracts and a recording of the webcast, is available on the Tech Jam website (http://nist.gov/cps/global-city-teams-challenge-tech-jam.cfm)

For more information on all aspects of the Challenge, please contact:

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NIST Engineering Laboratory Team Celebrates Launch of Green Button Ecosystem

Leaders from government and industry gathered in southern California at San Diego Gas & Electric's (SDG&E) Energy Innovation Center on February 6, 2015, to celebrate the success to date and to envision the path forward for Green Button, including the launch of the industry-led Green Button Alliance. Green Button refers to an energy usage data standard that is being used by utilities, app developers, and consumers to unleash a wave of innovation in the energy sector. The standard has already been embraced by over 60 utilities serving more than 100 million customers in the United States and Canada.

The NIST Green Button team worked with colleagues at the Department of Energy and others, including the local host SDG&E, to organize and lead the event, called "The Birth of the Green Button Ecosystem."

Speaking to the 120 attendees by video, U.S. Chief Technology Officer (CTO) Megan Smith (OSTP) said, "Green Button is an amazing initiative. The industry has really collaborated brilliantly together with the support of the Department of Commerce NIST team to get this standard moving. And you guys are starting to scale on this incredibly important topic."

U.S. CTO Megan Smith's welcome was amplified by Nick Sinai (former OSTP deputy CTO), Chris Irwin (DOE), and David Wollman (NIST), who working together in former U.S. CTO Aneesh Chopra's team had engaged industry and enabled the first Green Button implementations by California investor-owned utilities in 2012, with key technical support from Marty Burns.

For more information about Green Button, here are some useful links:

- The Green Button Initiative website [http://www.greenbuttondata.org]
- The Green Button Alliance website [http://www.greenbuttonalliance.org/]
- "Building an Interoperable Ecosystem," an article in the current issue of EnergyBiz magazine, written by the NIST Green Button team [http://energycentral.fileburstcdn.com/EnergyBizMagazine/2015/EBWinter2015.pdf]
- "The 'Green Button' Energy Data Movement Grows Up," an article by Nick Sinai, a Fellow at Harvard's Kennedy School of Government and former U.S. Deputy Chief Technology Officer at the White House [https://medium.com/@ShorensteinCtr/the-green-button-energy-data-movement-grows-up-ea6dd1f5494b]
- "Energy Innovation: Green Button Initiative Empowering Americans to Save Energy and Money," an article on the Department of Energy's Office of Energy Efficiency and Renewable Energy Blog [http://energy.gov/eere/articles/energy-innovation-green-button-initiative-empowering-americans-save-energy-and-money]

NIST Hosts Workshop on Cyber-Physical System Testbeds

At a workshop on February 23-24, 2015, in Gaithersburg, Maryland, NIST convened a group of leading researchers in cyber-physical systems (CPS). Coming from industry, academia, and government, these scientists and engineers brought with them a wealth of experience and lessons learned regarding implementation of CPS testbeds.

The goal of the workshop was to develop a high-level testbed architecture, identify a list of desired attributes for CPS testbed functions and components, and outline a set of design principles that would support development of such a testbed.

After opening keynote presentations by Chris Greer and Paul Boynton of NIST and Scott Tousley of the Department of Homeland Security, the participants met in two smaller working groups to carry out the workshop assignments. A webcast of the keynote talks, along with summary presentations from the two working groups, is available online. A written report will be published later this year.

NIST had conducted a related workshop, “Measurement Challenges and Opportunities in Developing Smart Grid Testbeds,” in March 2014. The summary report from the earlier workshop is now available online.

CPS at NIST — Upcoming Meeting

April 7-8, 2015, 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, Maryland. This workshop will review the integrated CPS Framework 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) of opportunities and time schedules for coordinated work to address key technical challenges.

The event will be free and open to the public for in-person attendance. Registration information about the meeting is available online, and additional details about the agenda will be available soon.

The CPS PWG collaboration website, which includes information about the PWG’s five subgroups, can be found online.

Smart Grid at NIST — Upcoming Meetings

March 24-25, 2015, Transactive Energy Challenge Preparatory Workshop, at NIST-Gaithersburg

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 Transactive Energy simulation platforms and problem solutions. Attendees will include leaders and experts from academia, utilities, ISOs / RTOs, companies, and government.

Organized in collaboration with the Department of Energy (DOE) and the GridWise Architectural Council (GWAC), the event will be free and open to the public for in-person attendance. Registration and agenda information is available online at:

http://nist.gov/el/building_environment/mechsys/te-challenge-preparatory-workshop.cfm

March 26-27, 2015, Grid 3.0 Open Workshop, at NIST-Gaithersburg

The objective of this workshop is to collaboratively develop action plans to address the critical interoperability issues facing the electricity sector, such as:

- Enabling New Entrants and Innovation
- Impact of Technology and Flexible Resources
- Enhancing Reliability and Resiliency
- Enabling New and Evolving Markets
- Architecting the Change
- Evolving Industry Structure

NIST and its partner organizations—the Department of Energy (DOE), Smart Grid Interoperability Panel (SGIP), Electric Power Research Institute (EPRI), GridWise Architectural Council (GWAC), and National Electrical Manufacturers Association (NEMA)—are organizing the Grid 3.0 Workshop. The event is free and open to the public for in-person attendance.

For more information about the Grid 3.0 Workshop, including the agenda and descriptions of each session, please visit the Grid 3.0 website at: https://www.pointview.com/e/983

You can register for the workshop at: http://www.nist.gov/cps/grid-3-workshop.cfm