The Smart Grid: Power for the 21st Century

by: George W. Arnold

Tuesday June 28, 2011

It is often said that the structure of the nation (and the world’s) electrical system has not changed much since the era of Thomas Edison: currently it is characterized by the one-way flow of electricity from carbon-producing centralized power generation plants to users who have little awareness of how much energy they consume and how they can be more efficient. The Smart Grid will eventually enable the dynamic, two-way flow of electricity and information needed to support growing use of distributed green generation sources (such as wind and solar), widespread use of electric vehicles, and ubiquitous intelligent appliances and buildings that can dynamically adjust power consumption in response to conditions on the grid. The nation’s electric grid is owned and operated by over 3200 utilities, using equipment and systems provided by thousands of suppliers, delivering power to hundreds of millions of users and billions of end devices. The transformation of this infrastructure into an “energy internet” is a huge undertaking requiring an unprecedented level of cooperation and coordination across the private and public sectors. A robust, interoperable framework of technical standards is the key to making this possible. Recognizing the complexity of the task, Congress assigned the National Institute of Standards and Technology the responsibility to coordinate the development of standards for the U.S. Smart Grid. In this talk we will explain how this work is being done, explore the conceptual reference model of the Smart Grid and related standards that are emerging, and discuss some the challenges that need to be addressed.

George Arnold was appointed National Coordinator for Smart Grid Interoperability at the National Institute of Standards and Technology (NIST) in April 2009. He is responsible for leading the development of standards underpinning the nation’s Smart Grid and also co-chairs the White House National Science and Technology Council’s Smart Grid policy subcommittee. Dr. Arnold joined NIST in September 2006 as Deputy Director, Technology Services, after a 33-year career in the telecommunications and information technology industry. Dr. Arnold served as Chairman of the Board of the American National Standards Institute (ANSI) from 2003 to 2005. He served as President of the IEEE Standards Association in 2007-2008 and Vice President-Policy for the International Organization for Standardization (ISO) in 2006-2009. Dr. Arnold previously served as a Vice-President at Lucent Technologies Bell Laboratories where he directed the company’s global standards efforts. Dr. Arnold received a Doctor of Engineering Science degree in Electrical Engineering and Computer Science from Columbia University in 1978. He is a Senior Member of the IEEE and has delivered or authored over 100 talks and publications.
Tuesday June 28, 2011

6:30 PM – Networking and Pizza(*)
7:00 - 8:00 PM – Program

(*) There is no cost to attend at McLean and Silver Spring.

Locations:

The presentation will originate at the FDA facility, with video tele-conferencing (VTC) between:

MITRE, room 1N100
7515 Colshire Drive
McLean, VA 22102
host: Scott Ankrum
cell: 240-731-7581

FDA, Bld 66, room G512
10903 New Hampshire Ave
Silver Spring, MD 20993
host: James Simpson
cell: 301-996-4976

MITRE, room 2503
260 Industrial Way West
Eatontown, NJ 07724
host: Richard Eng
cell: 703-201-9112

MITRE, room 1M306
202 Burlington Rd (Rt. 62)
Bedford, MA 01730
host: Tim Rice
cell: 978-758-2704

If you can host another location via VTC, please contact Scott Ankrum (below)

TO ATTEND THE MeetingPlace Collaboration CONFERENCE:

1. Go to: http://audioconference.mitre.org/
2. Click on Attend Meeting. If MeetingPlace Collaboration Window does not automatically open, press connect. 3. Dial your telephone to connect to the audio of the meeting.

- Dial 703-983-6338 (x36338) from the Washington DC region.
- Dial 781-271-6338 (x16338) from the Bedford, MA region.

Meeting ID: 509509, when prompted. Meeting Password: 05090509, when prompted.

Visit http://audioconference.mitre.org to test your web browser for compatibility with the web conference. Follow this link to the browser test link on the page.

Registration:

Registration Website: http://www.asq509.org/ht/d/DoSurvey/i/26913

You must register by noon on Monday, June 27. If you cannot attend at any location, select telephone dial-in when you register. To RSVP for FDA (Silver Spring), please indicate citizenship. If not a US citizen, please provide your title, employer, and address. Allow two business days for registration before the meeting.

For registration problems or further information contact Scott Ankrum at: ankrums@mitre.org or 703-983-6127

Software SIG Chairman: T. Scott Ankrum (ASQ & IEEE)
Software SIG Committee: Richard Eng (ASQ); Chris Jones (ASQ & SSQ); Alfred Kromholz (SSQ);
Tim Rice; James M. Simpson (ASQ); Tom Starai (IEEE), Tom Neff (IEEE),
Lance Kelson (SSQ & IEEE), Aaron Dagen (IEEE)

Sponsored Jointly By: The American Society for Quality (ASQ), Washington DC & Maryland Metro Section (509), Software Special Interest Group (SSIG); IEEE Computer Society, Washington, DC & Northern Virginia Chapters; and Society for Software Quality (SSQ), Washington, DC Area Chapter. Members of the ASQ SSIG include software quality professionals, software engineers, and others interested in applying quality principles to the field of software development. See our web page: http://www.asq509.org/ht/d/sp/i/2499/pid/2499. We meet every month, usually at the MITRE facility in Tyson’s Corner, Virginia, with VTC to other locations.

Next Month: ‘Overview of United States Software Industry Results Circa 2011; The Economics of Software Quality’ by Capers Jones, on Tuesday, July 26, 2011
Directions to the MITRE-2 Facility in McLean, Virginia:
Take the Beltway, I-495 to Virginia. Take Exit 46B (McLean, Route 123). Take Route 123 North, (also called Dolley Madison Blvd.) and go to the second traffic light at Colshire Drive. Turn right on Colshire Drive and continue through circle on Colshire. **Park in front of or to the right of the buildings, before passing the gate. (The gates are closed at 7:00).** Additional directions can be found at: [http://www.mitre.org/about/locations/va_mclean_mitre2.html](http://www.mitre.org/about/locations/va_mclean_mitre2.html)
Directions to the FDA facility in Silver Spring, MD:

From the Capital Beltway, I-495, take New Hampshire Ave, Rt 650 north to Michelson Rd.

From Columbia Pike, Rt 29, take New Hampshire Ave, Rt 650 south to Michelson Rd

White Oak Building 66 (circled), room G512. This is a large conference room just beyond the Security desk on the right side of the grand atrium.

After 6 PM, visitors may use the surface parking closest to the building 66 entrance which are reserved for commuters with car pools. The north east parking garage is also an option.
Directions to the MITRE Facility in Eatontown, New Jersey:

From the New Jersey Turnpike: If traveling from the SOUTH, get off the Turnpike at Exit 7A (195 toward Shore Points). Take 195 East towards the ocean and shortly after 195 turns into Route 138 (approximately 35 miles) watch for Route 18 North (Eatontown). Take Route 18 North to Exit 13A (Wayside West/Wyckoff Road). At end of ramp, bear left. At first traffic light (Hope Road) make a left turn. Make second left turn onto Industrial Way. The MITRE Corporation is next to the First Atlantic Credit Union on the left hand side of Industrial Way. There is a MITRE sign out front. There are two buildings on the left side of Industrial Way. The first building is MITRE, the second building is TYCO. Take a left turn into the parking lot of the first building, which is MITRE.

If traveling from the NORTH, get off the Turnpike at Exit 11 (Garden State parkway exit). Follow the Garden State Parkway until Exit 105 (Eatontown). Follow the directions from the Garden State Parkway below.

From the Garden State Parkway: Follow the Garden State Parkway from the North or from the South to Exit 105 (the exit numbers increase going from south to north). After paying the toll at Exit 105, make first right turn onto Hope Road. Follow Hope Road to Industrial Way (second left turn after crossing Wyckoff/Shafto Road). Make second left turn onto Industrial Way. The MITRE Corporation is next to the First Atlantic Credit Union on the left hand side of Industrial Way. There is a MITRE sign out front. There are two white buildings on the left side of Industrial Way. The first building is MITRE, the second building is TYCO. Take a left turn into the parking lot of the first building, which is MITRE.

When you are facing the front of the MITRE building, the entrance to the ASQ meeting will be from the left parking lot opposite First Atlantic bank. Follow the signs to the conference room.
Directions to the MITRE complex in Bedford, Massachusetts:

From New Hampshire to MITRE Complex:
Take Route 3 South to Exit 26 (Route 62)
Turn Left on Route 62. It is a short distance to the MITRE entrance on left--watch for building directories on MITRE grounds

From Manchester Airport (NH) to MITRE Complex:
Start out going West on Airport Rd. toward parking
Turn slight right onto Brown Ave/NH-3A
Merge onto NH-101 West via the ramp on the left toward Bedford/Nashua
Take the Everett Turnpike South exit toward Merrimack/Nashua
Merge onto Everett Turnpike (toll road)
Everett Turnpike becomes US-3 South
Take exit 26 (Route 62) toward Bedford/Burlington
Turn Left onto (Route 62) Burlington Road
At second set of traffic lights, turn left at MITRE Bedford Campus entrance--watch for building directories on MITRE grounds.

Logan Airport to MITRE Complex:
Exit airport toward Route 1A South/Sumner Tunnel (I-93) Boston.
Proceed through tunnel towards Storrow Drive (I-93 North).
Take I-93 North eleven miles to Exit 37B (Route 128 (I-95) South).
Take Route 128 (I-95) South six miles to Exit 32A.
Take Exit 32A, and proceed on Route 3 North.
Take Route 3 North for two miles to Exit 26 (Route 62).
Bear right on Route 62.
Take Route 62 a short distance to the MITRE Bedford Campus entrance on left--watch for building directories on MITRE grounds.