THE CONDUCTOR

News & Activities of SGIP

February 25, 2016

President's Update

Dear Members,

SGIP launched the Grid Management Working Group at DistribuTECH. This utility-focused group will discuss key operational concepts/capabilities and architecture principles relating to future Grid Control and Operational technologies needed to manage a more complex grid due to the rapid rise of DERs. The group aims to share use cases, collaborate on business and technical requirements, exchange insights and coordinate on research and development opportunities that will help evolve vendor solutions and industry standards. The group intends to put together requirements that can be used for sourcing systems. The next meeting will be via conference call on March 18th at 3pm Eastern. The meeting focus will be to agree on the group charter and to name two industry leads for the group. Utilities that are interested in joining and have not already registered, should contact me directly at sallan@sgip.org. The meeting details and dial in number will be sent to you.

SGIP had a productive time at DistribuTECH. Thanks to EnerNex for sharing their booth space. It was much appreciated. In addition to connecting with so many of our members, we also had meetings with several non-SGIP members such as: Austin Energy, PowerTech, Schneider Electric, Cyiente, WaterFall Security, KCPL, GridCure, IBM, FPL... to name a few. We are not just looking for new members but rather leaders who are aligned with our mission and wish to join our efforts to make a difference in the Industry. Our consortium is only as strong as our membership and I appreciate the support so many of you have given as we have pivoted our strategy to be more project-focused and intentional about DER, IoT, and Cybersecurity. Our OpenFMB™ work received visibility in many different booths on the exhibit floor as well as being discussed in at least four DTECH sessions and being picked up by more than

four trade press reports. Thank you to all member companies who carried the message.

SGIP also met with the Korean Smart Grid Association at DistribuTECH on Feb 11, 2016 to discuss a date and venue for a joint face-to-face working group meeting. Thanks to *Robby Simpson, PhD, System Architect, GE Grid Solutions* and *Cuong Nguyen, Program Manager, NIST* for their participation.

SGIP is looking to convene a group of interested parties around Appliance frameworks and standards. If you are interested in participating in a meeting please reach out toasmallwood@sgip.org and provide your contact information and stated interest. The meeting will likely occur in Washington DC sometime in May.

Thanks to our former Chairman of SGIP, John McDonald, GE, I will be speaking the week of February 24th in Costa Rica to participants from Central America and the Caribbean on the "Future of Grid Modernization." Any member companies with an interest in this region, please contact me and I will share any information and leads I obtain from this meeting.

We were excited to learn that our Interoperability Process Reference Manual (IPRM) has been accepted as an ANSI/NEMA standard. Thanks to Donald Heirman for his work in getting the word out about the ANSI/NEMA SG-IPRM Canvass Group and to the Canvass Group's Secretary Khaled Masri and the group's Chair, Cuong Nguyen for their time and efforts. Congratulations to the SGIP Smart Grid Testing and Certification Committee (SGTCC) for its distinguished work on this important manual.

As SGIP continues to push forward with activity to accelerate the smart grid, we are pleased with the work of all involved in developing whitepapers that highlight our key leadership role. The recently published SGIP white paper, *Local Grid Definitions* details some of the terms and definitions related to power distribution infrastructures that enable some local grid functionality. Bruce Nordman served as author of the paper. The *Cybersecurity Information Sharing in Electric Utilities* white paper, written by SGIP staffer Ramesh Reddi, provides an overview of some sharing programs and standardized approaches for sharing, as well as an overview of the recently enacted law on Cybersecurity Information Sharing Act 2015.

Regards,

Sharon Allan
President and CEO

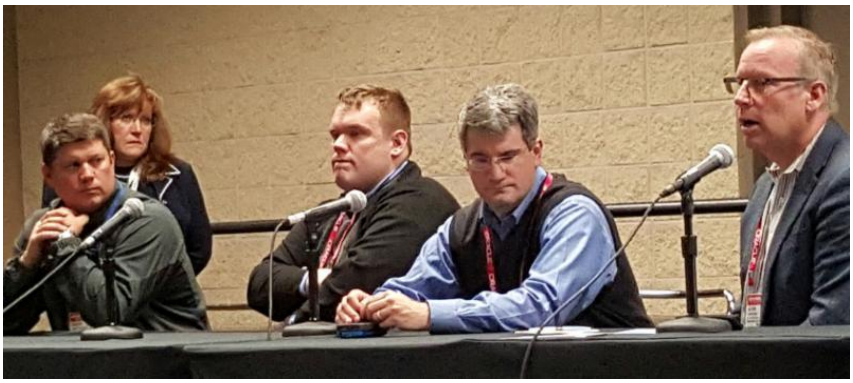
SGIP Activities at DistribuTECH

Grid Management Working Group Holds Successful Inaugural Meeting

Twenty-two people representing utility grid operations technology and business met on February 8, 2016 while at DistribuTECH to explore and determine requirements for grid modernization as part of SGIP's new Grid Management Working Group.

The working group unites utility leaders in discussions on key operational concepts, capabilities and architecture principles relating to future grid control and operational technologies needed to manage a more complex grid due to the rapid rise of DERs. The group will collaborate to:

- Share use cases around integration of DER;
- Drive and document the requirements engineering planning, architecture, and system control for penetration of DER. Utilities want to drive the requirements so they can then share this with vendors as to what their future needs/requirements are versus building the systems designed around vendor capability. The intent is to be able to create an RFI from the requirements this group puts together;
- Share utility architecture and IT/OT lessons learned to help each other with updating five - and 10-year strategic plans;
- Exchange research and the subsequent outputs; and
- Unite utility, IT, architecture, and T&D executives working across the utility functional areas to collaborate in discussions around the planning and design of the future grid.



Panelists speaking on behalf of SGIP's Grid Management Working Group at the February 8th meeting in Orlando included Raiford Smith, Vice President of Corporate Development and Planning, CPS Energy; Jason Handley, Duke Energy's Director of Smart Grid Emerging Technology and Operations; John Bubb, Principal Advisor, SCE; and Aleski Paaso, PhD, Sr. Smart Grid Specialist from ComEd. Panelists discussed the merits of:

- DER integration not interconnection;
- Developing a definition and understanding the relationship of DER-DSO;
- Commitment to learn from other group members;
- The opportunity to share use cases and business requirements; and
- An interest in the development of specific procurement language

The next working group meeting will be via conference call on March 18th at 3pm Eastern. Currently 37 utility members have registered to participate in the March conference call. At this time, the working group led by SGIP is a utility-only group. Further discussions will seek to determine if it should be open to academia, national labs, consultants, and government entities. Additional meeting details will be sent via email to those already registered. In the meantime, please contact Sharon Allan directly atsallan@sgip.org if you wish to join the March meeting and have not already registered.

SGIP's OpenFMB™ Well-Received during DTECH Demo

SGIP's OpenFMB™ was demonstrated daily during the DistribuTECH conference to a well-received audience. The OpenFMB™ live demo was hosted in the Duke Energy booth at DistribuTECH and included 25 big grid and technology vendors who have partnered to make their hardware and software compatible with an emerging standard for leading-edge communications and computing. The real-time edge-of-network device interoperability demonstrated on the DTECH showroom floor is also being matched by lab and field tests in locations including North Carolina, Colorado and California. This is an important trend for an industry that's long been beholden to proprietary vendor technologies and costly and complicated systems integration challenges.

OpenFMB™ is part of SGIP's EnergyIoT™ initiative to bring the Internet of Things (IoT) and advanced interoperability to the power grid. It is a distributed intelligence platform that can support peer-to-peer messaging, by using widely available, economical internet technologies, to enable grid devices to speak to each other. The OpenFMB™ framework provides a specification for power system's field devices to leverage a non-proprietary and standards-based reference architecture, which consists of internet protocol (IP) networking and IoT messaging protocols.

Currently, OpenFMB™ passed the initial vote by NAESB executive committee on February 4, 2016 and is in a 30-day ratification period for approval.

For additional information on the OpenFMB™ demo at DistribuTECH, go to http://www.duke-energy.com/coalition/.

SGIP and the Korean Smart Grid Association Joint Meeting at DTECH

The Korean Smart Grid Association and SGIP met at the Hyatt Regency Orlando during the DistribuTECH conference on Feb 11, 2016 to discuss plans for a joint face-to-face working group meeting in 2016. Attendees of the meeting included:

- Hyeon Gi, Lee (R&D Strategy Team Manager of Standards R&D Division
- Kwang Kun, Lee (Assistant researcher of Quality and Certification Center
- Yun Young, Ahn (Principal Researcher, Electronics and Telecommunications Research Institute)
- Chnag Min, Park (Principal Researcher, Electronics and Telecommunications Research Institute)
- Gu Hwan, Kim (CEO, GridWiz)
- Gabrielle Puccio, SGIP Vice President, Member and Public Affairs
- Robby Simpson, PhD, System Architect, GE Grid Solutions
- Cuong Nguyen, Program Manager NIST

The team discussed topics around present and future plans for the diffusion of the Smart Grid including: Korean and US Smart Grid frameworks, shared Smart Grid market and business models, regulations and policies for building Smart Grid environments, as well as testing and certification and security for Smart Grid initiatives, The date, venue, and agenda for the joint face-to-face working group meeting will be topics for the next meeting.

SGIP Announcements

Interoperability Process Reference Manual (IPRM) Is Now ANSI/NEMA Standard

SGIP and the National Electrical Manufactures Association (NEMA) have successfully worked to convert the Interoperability Process Reference Manual (IPRM) into an ANSI/NEMA standard.

The IPRM is a key foundational element of the vision of the SGIP Smart Grid Testing and Certification Committee (SGTCC). The SGTCC developed and issued the IPRM to detail the committee's recommendations on testing and certification processes and best practices that enhance the introduction of interoperable products in the marketplace. These recommendations build upon international standards-based processes for interoperability testing and certification. The standard defines requirements and recommendations for general test policies, test suite specifications, test profiles, interoperability testing and certification authority technical programs, governance, laboratory qualifications, and (process) improvements as well as an approach to implementation.

SGIP Selected to Participate in Four DOE Grid Modernization Lab Consortium Funding Awards

SGIP has been named to participate in four projects as part of the U.S. Department of Energy's recently announced groundbreaking $220 million grid modernization funding awards.

DOE's Grid Modernization Laboratory Consortium (GMLC) funding to National Labs and partners will help strengthen regional grid strategies while defining a diverse and balanced national strategy. The funds will help address the needs of incorporating individual grid technologies like solar or energy storage, and assist with the development of cross-cutting projects that have impact across multiple technologies.

The $220 million, three-year funding initiative will support research and development in advanced storage systems, clean energy integration, standards and test procedures, and a number of other key grid modernization areas. SGIP has been named as a partner in three core activities projects: Grid Architecture, Interoperability, and Grid Modernization Laboratory Consortium Testing Network; and as a partner in a cross-cutting activity project: Standards and Test Procedures for Interconnection and Interoperability.

Specifically, SGIP was named in the following projects:

- Grid Architecture-Build a new stakeholder-driven architecture for grid modernization, provide it to the industry along with the tools they need to adapt it to their needs, and use it to inform the playbook for GMLC program managers.
- Interoperability-Provide strategic vision for interoperability endorsed by stakeholders with tools to measure interoperability maturity and the progress of related

investments. It prioritizes interoperability gaps and develops an overarching roadmap for stakeholder endorsement.

- Grid Modernization Laboratory Consortium Testing-Establish a Grid Modernization Laboratory Consortium - Testing Network (GMLC-TN); federated lab-based resource for standards-based testing and validation of grid devices and systems. Develop and establish a Grid Modernization Laboratory Consortium - Open Library (GMLC-OL) public repository for validated component models, simulation tools and testing resources.
- Standards and Test Procedures for Interconnection and Interoperability-Build on prior efforts and leverage existing activities spanning multiple DOE programs that are developing interconnection and interoperability standards and test procedures to:
    - harmonize requirements across jurisdictions
    - eliminate conflicting requirements across technology domains
    - streamline conformance test procedures to the fullest extent possible

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SGIP in the News

SGIP was published in two articles this month.

Microgrid Knowledge article on the SGIP Test Bed Survey, published Feb 8, 2016:
http://microgridknowledge.com/microgrid-configurations/

I**ntelligent Utilities Article Sharon Allan byline, published Feb 18, 2016**:
http://www.intelligentutility.com/article/16/02/strength-numbers-solving-industry-issues-will-take-collaboration

Sharon Allan talks about SGIP at DistribuTECH

Sharon Allan, President and CEO, SGIP gives a compelling discussion on advancing grid modernization, collaborating across the industry ecosystem, and breaking down barriers to promote interoperability and connectivity of system components across the grid. She talks about SGIP's OpenFMB™, the new utility-focused Grid Management Working Group and what it takes to be a member of SGIP. **View Now**

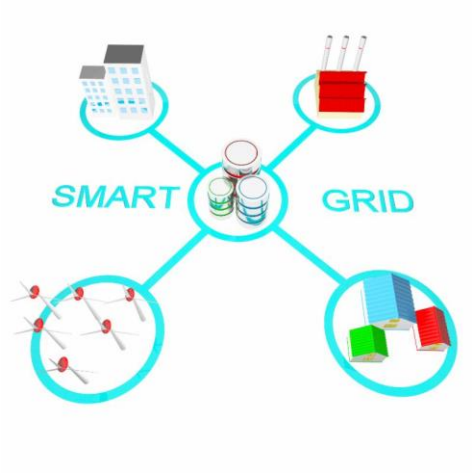
SGIP Thought Leadership

SGIP thought leaders are speaking at these events in February 2016.

SGIP member Dr. Kenneth Wacks is speaking at the Smart Energy Summit February 22- 24, 2016 held at the Omni Hotel Downtown in Austin, Texas. Dr. Wacks is invited to speak on "Direct Participation of Energy Platform Providers in Energy Markets."

http://www.parksassociates.com/events/smart-energy-summit

SGIP President and CEO Sharon Allan is speaking at the Future of Smart Grids in Central America - Towards a Global Vision Conference in Costa Rica from February 24-26, 2016. Her topic is Cybersecurity and Info-communications.



Upcoming Events

Smart Cities Need Smart Grids

By Randy Wedin, NIST

Thousands of smart city projects are under way around the world, and they offer a glimpse into a future where the Internet of Things has become an essential part of our daily lives. At the heart of each of these smart cities will be a smart grid.

A number of utilities, vendors, and service providers from the smart grid community are finding themselves increasingly involved in these smart city projects. Following are two upcoming smart city events that will be of interest to those SGIP members involved in the EnergyIoT™ sector.

Global City Teams Challenge's "Tech Jam 2016" - March 22-23, 2016

The Global City Teams Challenge (GCTC) Tech Jam will take place on the Gaithersburg, MD campus of the National Institute of Standards and Technology (NIST) on March 22-23, 2016. At the Tech Jam, existing Action Clusters (i.e., GCTC teams comprising experts from industry, government, and academia) will present their project plans, discuss project measurements and key performance indicators, and identify additional Action Cluster partners. The Tech Jam will also provide an opportunity for interested parties to create new Action Clusters.

GLOBAL CITY TEAMS CHALLENGE

The first day will feature presentations by invited GCTC partners and smart city leaders, followed by the presentations from registered Action Clusters. The second day of the Tech Jam will focus on facilitated breakout sessions for team building and

project planning. To register an Action Cluster and present at the Tech Jam, please find the instructions and a sample worksheet in the Participation Guide. For additional information about the GCTC program, please visit http://www.nist.gov/cps/sagc.cfm andwww.globalcityteams.org.

IoT-Enabled Smart City Framework Workshop

NIST is establishing an international technical public working group to help develop an "IoT-Enabled Smart City Framework" that will identify pivotal points of interoperability across the many existing and deployed architectures. The motivation for this activity is the great interest in the Internet of Things (IoT) envisioned and deployed in smart cities around the world. At the present time, dozens of unconnected standardization and specification activities are competing for mind and market share throughout the world. This international group will be holding initial workshops immediately following the GCTC Tech Jam in the United States (March 24-25, 2016 in Gaithersburg, MD) and in Europe (April 14-15, 2016 in Rome, Italy). The collaboration project website ishttps://pages.nist.gov/smartcitiesarchitecture/

To register for one or both of these March workshops at NIST, please visit the registration webpage.

New SGIP Publications

SGIP Industry White Papers Guide the Acceleration of Grid Modernization

SGIP recently released two industry white papers that will help guide the acceleration of grid modernization.

Local Grid Definitions reviews key terms and definitions related to power distribution infrastructures in buildings (or campuses) that enable some local grid functionality. Developed by SGIP's Home Building and Industrial Working Group, the paper makes recommendations about which definitions are preferable. It also includes a discussion about the merits and limitations of existing and alternate definitions. The paper clarifies the terms microgrid, picogrid and nanograd as well as identifies their key defining aspects. It also offers questions about how local grids relate to the utility grid and utility meter. SGIP member and Lawrence Berkley National Lab's Bruce Nordman is the author of the whitepaper. Click here for the *Local Grid Definitions* white paper. http://goo.gl/vv2gKn

The second paper, titled ***Cybersecurity Information Sharing in Electric Utilities***, provides an overview of various sharing programs and standardized approaches for sharing, as well as an overview of the recently enacted law on Cybersecurity Information Sharing Act 2015.

Written by Ramesh Reddi, SGIP's Cybersecurity Consulting Manager, the paper outlines the significance of developing a good framework for securing the electric grid with a good balance between liability and privacy protections. Click here for the ***Cybersecurity Information Sharing in Electric Utilities*** white paper. http://goo.gl/T4Mao4

More SGIP News

PMO Update from Aaron Smallwood, SGIP Director of Technology Operations

The SGIP PMO and the Technical Committee are leading a planning exercise to assemble a view of the SGIP Technical Activities on deck for 2016. The PMO is reaching out to all groups for their 2016 technical plans:

- Smart Grid Architecture Committee
- Smart Grid Implementation Methods Committee
- Smart Grid Testing and Certification Committee
- Smart Grid Cybersecurity Committee
- Transactive Energy Coordination Group
- Business and Policy Working Group
- Distributed Renewables, Generation, and Storage Working Group
- Home, Building, and Industrial Working Group
- Electromagnetic Interoperability Working Group

Once collected, these plans will be communicated to the Technical Committee and the SGIP Board of Directors as an input to the strategic planning and priority setting process. Thanks to the chairs, leads, and members of the groups for their participation.

Working Group change*:* Effective this month, the H2G, B2G, and I2G (Home, Business, and Industry to Grid) working groups have combined to form the new HBI (Home, Building, and Industrial) Working Group. The HBI Working Group will have two sub-groups, H2G (Home to Grid) and B&I (Building and Industry). The H2G sub-group will be led by Dr. Ken Wacks, and the B&I subgroup will be led by Dr. David

Holmberg. We'll be working to update the SGIP Kavi collaboration workspace to reflect the new structure.

The PMO and Technical Committee are also coordinating with SGIP working groups to more closely align their charters to a standard template.

SGIP's Implementation Methods Committee Update

On February 18th, 2016 SGIP's Implementation Methods Committee (IMC) met to discuss the group's 2016 activities including the following:

- Develop a white paper on the topic of how utilities deal with innovation.
- Develop a methodology for a business case for interoperability.
- Develop a best practices guide for specifying interoperability in utility procurements.
- Advance the Interoperability Maturity Model and investigate how to determine the value of moving from one maturity level to another.

The IMC will begin to meet on a monthly basis. The next meeting will be held on March 24. To join the IMC, contact Group Chair, Don Von Dollen at DVONDOLL@epri.com.

John Gillerman Details How Grid Modernization is Key to Smart Cities

SGIP's grid modernization efforts will focus in part on business issues and use cases related to the growing installation of DER, but also on wider issues related to increasing resiliency at lower cost.

The progressive widespread connectivity of intelligent devices could result in greater impact of electrical disturbances. However, the potential exists to react to a regional crisis in a more coordinated way. While a smart thermostat will likely never be directly controllable by a utility, integration of systems can enable lower cost adaptability.

Previously, utility applications and communications systems employed utility specific architecture. Now, IoT presents utilities with the ability to more effectively reuse massively deployed device monitoring and control technology. By reusing cross-industry software architecture, utilities can enable integration of systems that previously would have been too expensive. This unified architecture will enable existing utility systems to become part of a coordinated toolset for cities.

Complementary to the grid modernization effort, SGIP is also aggressively pursuing deployment of its Open Field Message Bus (OpenFMB™), a distributed intelligence platform that can support peer-to-peer messaging, by using widely available, economical internet technologies, to enable grid devices to speak to each other. The OpenFMB™ architect provides a specification for power system's field devices to leverage a non-proprietary and standards-based reference architecture, which consists of internet protocol (IP) networking and IoT messaging protocols. OpenFMB™ enables knowledge of system topology to be distributed among smart subsystems and enable those subsystems to directly communication with one another. Decentralized control becomes complementary to centralized orchestration.

Smart Grid Interoperability Panel | 401 Edgewater Place, Suite 600 | Wakefield, MA 01880 | www.SGIP.org

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