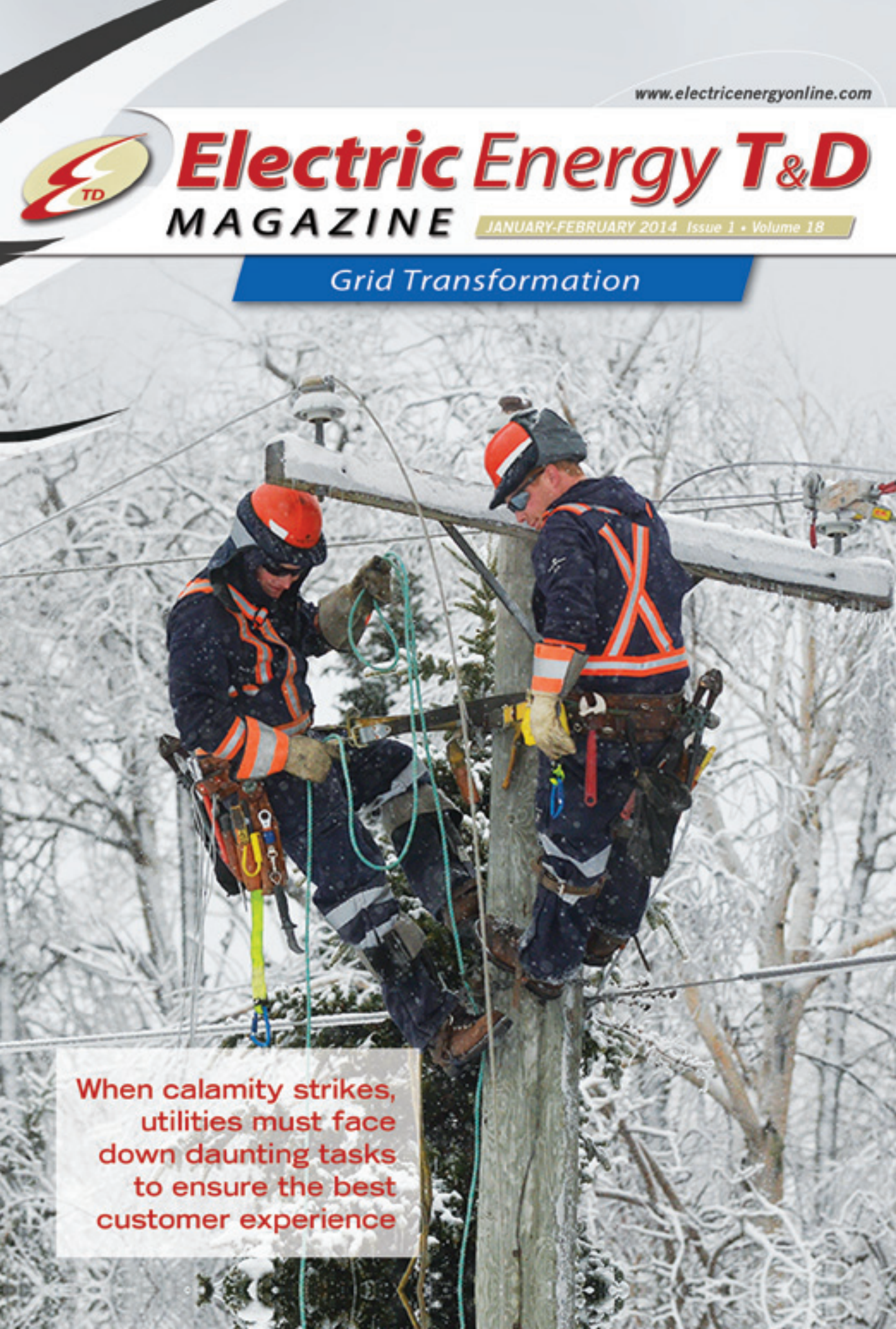
www.electricenergyonline.com

Electric Energy T&D MAGAZINE

JANUARY-FEBRUARY 2014 Issue 1 • Volume 18

Grid Transformation



When calamity strikes, utilities must face down daunting tasks to ensure the best customer experience

Electric Energy T&D MAGAZINE

Outage/Vegetation Management & Storm Restoration

Publisher:
Steven Desrochers:
steven@electricenergyonline.com

Editor in Chief:
Terry Wildman:
terry@electricenergyonline.com

Account Executives:
Eva Nemeth: eva@electricenergyonline.com
John Baker: john@electricenergyonline.com

Art Designers:
Anick Langlois: alanglois@jaguar-media.com

Internet Programmers:
Johanne Labonte: jlabonte@jaguar-media.com
Sebastien Knap: sknap@jaguar-media.com
Tarah McCormick: tarah@jaguar-media.com

Electric Energy Magazine is published 6 times a year by: Jaguar Media Inc.
1160 Levis, Suite 100,
Terrebonne, QC Canada J6W 5S6
Tel.: 888.332.3749 • Fax: 888.243.4562
E-mail: jaguar@jaguar-media.com
Web: www.electricenergyonline.com

***Electric** Energy **T&D** Magazine* Serves the fields of electric utilities, investor owned, rural and other electric cooperatives, municipal electric utilities, independent power producers, electric contractors, wholesalers and distributors of electric utility equipment, manufacturers, major power consuming industries, consulting engineers, state and federal regulatory agencies and commissions, industry associations, communication companies, oil & gas companies, universities and libraries.
Post Publication mail agreement #40010982
Account #1899244

The photo credit is to Tony Crawford, NB Power

ADVERTISERS INDEX

Smart Grid – The Roadmap to the Future

Jon Brock is in conversation with Robert Wong, Toronto Hydro's Vice President of IT and Strategic Management.

This year at the Smart Grid RoadShow/SmartGrid Canada event, an invite-only reception for utility executives was held in downtown Toronto. Sponsored by Schneider Electric and attended by over 50 of the industries' brightest thought leaders, Robert Wong addressed the crowd. I caught up with Mr. Wong recently and interviewed him based on that evening, specifically focusing on where he believes the smart grid is heading. I trust you will enjoy this interview with one of Ontario's leaders in the utility industry.

Brock: Some call it the smart grid. Some call it grid modernization. Whatever it is called, please describe what Toronto Hydro has done in recent years to bring its distribution grid into the future.

Wong: Beyond the AMI aspects of a smart grid, Toronto Hydro has deployed new technologies and equipment on its distribution grid. Monitors have been installed on many distribution transformers to track loading patterns and reconcile loads of individual customers against that of the transformer to identify any discrepancies. State-of-the-art line sensors (power line monitors) have been installed on distribution feeders to collect power quality and performance data, and provide new insights to improve grid operations planning and efficiency. Toronto Hydro has also embarked on distribution automation initiatives to move towards more decentralized control of logical segments of the grid and 'self-healing' technologies to restore power faster and more efficiently and safely. In keeping with the culture of energy conservation in the province, Toronto Hydro has led the way with the implementation of demand management technology to allow the utility to control customers' air conditioning units and pool pumps during high demand situations. Furthermore, with the growing number of electric vehicles (EV) on the roads, the company has installed separate smart meters for a number of EV customers on a pilot program to individually monitor the potentially disruptive impact of EV charging on the distribution grid. The findings so far have been very compelling and will inform the utility on future planning strategies.

A couple of other areas where Toronto Hydro is moving forward on are the construction of a new sub-station and the installation of electricity storage technologies.

What's unique about the new Copeland TS is that it is located in downtown Toronto (next to the CN Tower) and will be totally underground – the second of its kind in Canada. It is being built to relieve loading on the existing nearby sub-stations and to create new capacity to meet the increasing electricity demand created by the recent explosion of high-rise residential developments in the downtown core. There is more than double the number of high-rise developments in Toronto than in any other city in North America. Obviously, the new sub-station will be constructed with the latest smart grid technologies as well as the technical requirements for a large electrical installation in a subterranean environment. The Copeland TS is scheduled to be operational at the end of 2014. Earlier this year, Toronto Hydro installed the first urban Community Energy Storage (CES) unit at a local community centre/arena. This storage unit will help alleviate stress on the grid during peak times and also provide power to connected homes in the area in the event of a power interruption. It has built-in intelligence that can independently monitor grid conditions and respond appropriately by taking in electricity during off-peak times and releasing power if needed. Some of the other potential benefits of CES are the elimination of the need for diesel back-up generators, the smoothing of voltage levels for commercial and industrial customers who may have sensitive equipment, and the integration of renewable technologies such as solar panels and electric vehicles.

Probably the most important aspect of building and operating a smart grid is the data that is generated and collected by the smart grid components. In this regard, Toronto Hydro has developed and implemented some analytical tools and applications that make use of the data and transform it into useful information to assist the grid operators to better manage the grid (Outage Management System), the Engineers to develop better asset replacement and maintenance plans (Feeder Investment Model Analytics, Health Index Calculator), and the customers to better manage their electricity usage and costs (PowerLensTM Energy Calculator online application, PowerLensTM Time-of-Use mobile app).

Another thing that Toronto Hydro has started to work on recently is the upgrade of its telecommunications network. What makes a smart grid 'smart' is the ability to communicate vast amounts of information from the field back to the office in real-time or near-real-time basis. To enable this, a modern telecommunications network that can deliver the business and technical requirements (failover tolerance, availability, latency, and bandwidth) for each individual component of the smart grid is critical. To deliver a modern but cost-effective network, the company is deploying commercially available technologies and services such as fibre-optic network using Coarse Wavelength Division Multiplexing, Ethernet/IP, and commercial cellular. The upgrade of this telecommunications plant will be done in coordination with the upgrade of the distribution grid to ensure proper alignment and with the objective to select the most cost-effective and viable options for each component of the system.

Brock: When implementing a smart/modernized grid, old school silos need to be broken down. Please speak on the IT/OT integration that must take place and how Toronto Hydro has addressed the IT/OT issue.

Wong: With the introduction of 'smart' devices and equipment in the traditional distribution grid, the convergence and associated conflicts of IT/OT are inevitable. IT now plays a much bigger role in the area of grid operations. Electrical equipment and devices that were once electro-mechanical in nature are now largely IP-enabled. IT is now expected to manage the data, information, analytical tools, and even the telecommunication systems required by the smart grid as part of its service offerings. However, the environment in which these smart assets reside (distribution grid, sub-stations, transformer vaults, poles, etc.) is very different than those of traditional IT assets (data centres, telephone closets, etc.). This leads to the dilemma of having to decide and delineate who should be responsible for what aspect of the maintenance and support of the smart grid – IT staff or operations staff? This also imposes the need to expand the skill sets of each type of resource. To that end, as part of Toronto Hydro's certified in-house electrical apprenticeship line school program, it has enhanced its Sub-station Technician program to include additional technology training to meet this new skills requirement created by the advent of the smart grid. As well, we have seen that IT has now taken on more responsibilities related to the smart grid, such as support and management of the utility telecommunication systems, AMI systems, DMS/OMS, SCADA and SONET. The traditional lines of separation between IT and OT are becoming blurred and have forced IT and OT to work much more closely together and come to agreement on new roles and responsibilities. The convergence of IT/OT has also forced the company to look at the relationships among the various OT systems from a more holistic point of view. Because of the much tighter integration now required of the individual systems as a result of the business process dependencies associated with them, operational and planning decisions can no longer be made in isolation. There is now a critical need to ensure that the technical standards and functionality of each component of the overall smart grid are established in the context of the larger ecosystem and to acknowledge the requirements of the other individual components to ensure compatibility and overall effectiveness. Planning, design and implementation of the smart grid must start at the macro level, involving cross-functional teams of business and technical experts from the areas of grid planning, grid operations, customer care, IT and telecom. An example of this more collaborative approach is the Smart Metering Task Force that was established to perform planning activities to establish a roadmap for the future upgrades and enhancements to Toronto Hydro's smart grid infrastructure which includes not only AMI, but also the OT aspects of grid operations both in the field (SCADA RTU's) and in the work centre.

Brock: How important are customers in a smart/modernized grid world?

Wong: In a smart grid world, the management and servicing of customers become much more demanding than in the past. Customers today are more sophisticated as a result of the proliferation of technology in business, and the modern world in general. Huge amounts of data are created and collected everyday and businesses are offering new and innovative services to customers exploiting the vast amounts of data that are now available. Customers, in return, are now expecting and even demanding more and more services and greater access to data and information. The electrical utility industry is not immune to any of this, especially when the industry has been undergoing a bit of a renaissance in the last decade with the introduction of the smart grid and other developments such as rising electricity prices, time-of use rates, energy conservation, demand response and management, renewable energy, electric vehicles, mobility, and smart homes and appliances.

Brock: Looking to the future, how will an optimal smart grid look in year 2030?

Wong: In 2030, an optimal smart grid will be one that is comprehensive, efficient, reliable and secure. There will be end-to-end system integration right from the customer's smart home appliances to the smart meter on the house to the AMI system to the Customer Information System (CIS) to the electronic bill and to the customer self-serve web portal applications. There will also be full integration from the intelligent devices on the distribution grid to the 'intelligent' command and control systems that will automatically operate the grid to restore power and isolate a fault in fractions of a second to the Outage Management System (OMS) that pinpoints the outage and provides information for expedient dispatching of work crews to perform repairs to the grid and precise outage information that will be proactively pushed out to customers to notify them of the problem and provide an reliable estimated time of restoration so they can make appropriate plans. As well, there will be end-to-end integration from the various smart grid devices to the Distribution Management System (DMS) to assist the grid operator to configure and optimize the grid for greatest operating efficiency and provide performance data to Engineering analytical tools to gain greater insights into the health of the grid and point out areas for enhancements through targeted asset investment or maintenance programs. This optimal smart grid will drive future business processes across all areas of the entire utility and change the way a utility will operate.

An optimal smart grid in 2030 will be one that is heavily computerized and largely operates on its own through sophisticated software applications. Utility workers will play a much lesser role in the day-to-day operations of the smart grid but instead will devote most of their time maintaining the back-office systems that run the smart grid and analyzing the data produced by the smart grid and making business decisions based on it, including refinements to the algorithms and Engineering models to continually enhance the performance of the smart grid. The optimal smart grid will have an impact on the electrical utility industry (unmanned sub-stations, remote monitoring and operations) much like the way computerized trading has affected the trading of stocks in the financial markets industry or how robotics and computerized control systems have changed the automotive manufacturing industry.

Brock: What has to change to enable an optimal smart grid in year 2030?

Wong: A number of changes have to happen in order to enable an optimal smart grid in 2030. First, there must be convergence of technical standards, especially as they relate to communications protocols, to improve interoperability of smart grid components and enable full end-to-end integration of systems. Utilities, working in collaboration, will have to drive this convergence of standards. Having common standards will stimulate development of smart grid equipment by manufacturers and lead to their commoditization. This, in turn, will accelerate the implementation and maturation of the smart grid by electric utilities.

Utilities will also need to greatly improve the completeness and accuracy of all the data relevant to the smart grid. In order for an optimal smart grid to work effectively and efficiently, it must have complete and accurate data. Furthermore, the computing systems that run the smart grid must also be reliable, bug-free and secure. The electricity power system is a critical infrastructure and if it is to be 'computerized' as defined by an optimal smart grid, the underlying computing systems must be of a quality level much higher than other business computing systems. They must meet Engineering standards of quality, performance and security.

Because a defining feature of an optimal smart grid is the real-time capabilities of the various components to communicate data and control the grid, the enabling telecommunications systems must be robust, fast and highly available. Utilities must ensure that their utility telecommunications systems keep up with the technical requirements of the smart grid components as defined by the business requirements related to the operation of a smart grid utility in 2030. Investments must be made in the utility telecommunications systems to achieve this level of required performance.

Lastly, as with the introduction of any new technology or business process, it requires the user to adapt and make changes in how they conduct work. Successful change management of utility worker perceptions around acceptance of smart grid capabilities will be critical to the adoption and expansion of the smart grid. Utilities will have to allay employees' fears that their jobs will be rendered obsolete by computerization and automation of the smart grid and, instead, accept that in the future they will have to work even more closely with these computerized systems. An overall culture shift in how utility work will be done in the future must happen.

Brock: On behalf of myself and Electric Energy T&D Robert, I thank you for taking time out of your schedule to speak to our readers. Explaining in both practical and temporal terms how smart grid will win the future is extremely useful.


SUSTAINABILITY IS
GOOD BUSINESS
www.lockheedmartin.com/energysolutions
LOCKHEED MARTIN

LOCKHEED MARTIN

load

SEEload™ Dynamic Platform for Load Management and Demand Response

Our load optimization platform enables flexible, dynamic and accurate demand-side energy management. We're helping utilities integrate the market through the meter — providing situational awareness for better decision-making and grid reliability while meeting load requirements in a cost-effective manner.

How do utilities benefit?

- Reduces capital investments for new power generation requirements
- Enables the use of load as a resource
- Improves sustainability

view

SEEview™ Seamless Integrated View for Enterprise Energy Management

At Lockheed Martin, we can help you take control of energy utilization across your enterprise.

Our tools enable energy managers to view, measure and control energy demand and usage — with built-in analytics that integrate with existing systems, help capture cost savings and enable proactive interventions to best use energy resources on an enterprise-wide scale.

Why does it matter?

- Enables overall reduction in consumption by better management of multiple resources
- Improves sustainability.

SEEsuite
Smart Grid C2

Laying the foundation for a 21st century grid

Interoperability remains the focus for SGIP 2.0, Inc.

By John D. McDonald

It is difficult to overstate the importance of interoperability. It lies at the heart of complex systems with many components, all of which must work together. The greater the complexity, the greater the importance of interoperability. Need I mention interoperability's role in forward and backward compatibility? Small wonder it's critical to the emerging smart grid and the nascent Internet of Things.

That's the functional, technological side. On the commercialization and market side, of course, interoperability produces economies of scale, spreading benefits and reducing prices. In contrast, custom solutions are expensive fixes without much of a future.

Anyone not directly involved in the heavy lifting needed to achieve interoperability might be lulled into thinking about the topic like that old saw about the weather – everyone's talking about it, but nobody's doing anything about it.

Rest assured that the most pressing needs for interoperability are being addressed as you read this article, orchestrated by the *Smart Grid Interoperability Panel 2.0, Inc. (SGIP 2.0)*. Because it is part of SGIP 2.0's core mission to keep the power industry informed of its progress, and as current board chair of this nonprofit effort, I'd like to provide an update as we begin a new year. Even as we delve into the arcana of smart grid standards in order to achieve interoperability, so we must explain our work in lay terms to our members and the broader power industry to garner support for our shared goals.

First, the latest news

We begin the new year on an optimistic note. SGIP 2.0's membership in 2013 soared from 88 organizations to well over 200, as the value proposition of participation reached willing ears. We held our inaugural conference and members' meeting in November 2013 and, in December, we held two insightful webinars, including *How SGIP Supports Electric Utilities, Regulators, Manufacturers and Integrators in 2014 to Ensure Electric Grid Reliability*, and one by our Smart Grid Testing and Certification Committee on priority testing needs for smart grid interoperability. We all recognize that we must reinvent the grid while we keep the lights on, and SGIP 2.0 is well aware of the industry's practical need for timely insights.

Our agenda for 2014, which I'll explain in a moment, reflects an orderly, methodical approach and it's driven by the power industry itself. But I'm getting ahead of myself. Let's begin by clarifying the '2.0' and the 'Inc.' parts of our identity.

How did we get here?

Seven years ago, federal energy legislation provided the impetus for our current efforts. The Energy Independence and Security Act of 2007 directed the National Institute of Science and Technology (NIST), a branch of the Commerce Department, to form the Smart Grid Interoperability Panel (SGIP). SGIP (1.0, as we think of it) was established in 2009 as a public-private partnership. SGIP was charged with coordinating standards work to ensure interoperability and security as the grid is modernized.

The original SGIP identified 16 foundational standards needed for a smarter grid and more than 90 existing standards that can be leveraged to the same end. As it assessed the gaps that remained, SGIP coordinated the efforts of standards development organizations (SDOs) by determining which is best suited to develop a particular standard. SGIP's Priority Action Plan (PAP) process has been effective in accelerating the timeframe required for standards development from five years (60 months) down to 18, 12 and even as few as six months.

The strategy all along was to get SGIP up and running, then transfer it to the power industry to do the heavy lifting. Once SGIP developed a strategy and a structure, it transitioned in 2012 to SGIP 2.0, Inc., a member-funded, private sector organization that would move ahead on its predecessor's original mission. The transition essentially put the power industry in charge of its own destiny.

Looking forward

At this key juncture in its brief history, SGIP 2.0 has become fully operational as a private entity focused on critical power industry issues most relevant to our stakeholders, which include utilities, regulators, equipment vendors, and integrators.

The following issues we're addressing, to name a few, are familiar to practitioners in grid modernization:

a) Cyber security
b) Integration of renewable energy resources
c) Gaps in standards
d) Harmonization of global standards
e) Supply chain issues (including cyber security-related procurement)
f) Electrical vs. thermal storage
g) Consumer engagement and transactive energy

As we accomplish our work, the power industry should see tangible progress in these areas.

To clarify our mission, SGIP 2.0 doesn't develop standards, but it coordinates standards development by standards development organizations (SDOs). SGIP 2.0 defines requirements for essential communication protocols and other common specifications. And SGIP 2.0 offers stakeholders an open process to observe or participate in our mission.

Our Executive Director Patrick Gannon, hired in 2013, has described our work as providing 'a framework for orchestrating the work behind grid modernization.' If you've ever watched a conductor leading an orchestra with baton in hand, you've noticed the conductor sends signals but emits no actual sounds. You simply hear the result as various sections of the orchestra come to life. That's a good analogy for how SGIP 2.0 works and how its successes will become manifest as grid modernization progresses. Put another way, SGIP 2.0 is quietly sowing the seeds of value creation. Our work may take place behind the scenes, but the power industry will reap the fruits of our efforts sooner rather than later.

Strategy and execution

A word on strategy should preface our action items. Our strategic values are embodied in four buzz words:

1. Accelerate
2. Facilitate
3. Navigate
4. Communicate

SGIP 2.0 is working to ***accelerate*** interoperability benefits for grid modernization and, in the process, bring down costs through economies of scale. We are here to ***facilitate*** both the educational process for stakeholders and to propel the core, technical activities on which stakeholders must work together on. We are here to help stakeholders ***navigate*** their specific roadmaps. We are working to ***communicate*** the merits and impacts of interoperability.

Internally, we've organized committees and working groups to address pressing issues in power. Our stakeholders have told us they need guidance on implementing cyber security, clear technology use cases, tools and applications for customer interactions and the latest insights on substation automation, distribution system management, energy storage and updates on progress in the priority action plans (PAPs) that address gaps in standards.

The work products we've slated for 2014 will answer these myriad needs and take many forms. SGIP 2.0's output this year will include conceptual models, interoperability roadmaps, smart grid requirements, use cases, white papers and a catalog of (relevant) standards.

SGIP 2.0's board met in November 2013 and composed the following list of action items. Because our agenda is member-driven, we seek input, participation and support from qualified individuals and organizations as we continue to hone this agenda.

An ambitious agenda

Specific deliverables on SGIP 2.0's 2014 agenda are too numerous for this modest update. I encourage readers to visit our website for more details. But I'll group salient items on our 2014 agenda into a handful of flexible categories to make them more accessible than a laundry list.

Case studies document experiences and that provides opportunity for peer-to-peer exchange of lessons learned. Thus we'll develop:

- A case study and training class in cyber security risk management that will provide a pragmatic approach to a complex, often confusing subject for all stakeholders.

- Interoperability experience case studies that address smart grid functionality, particularly around distributed renewable energy resources, volt/VAR management, dynamic pricing and electric vehicle charging.

Use cases offer tangible frameworks upon which individual utilities can build their own business plans and regulators can be educated in how to evaluate those business plans. We'll be working to:

- Identify and capitalize on opportunities to work with regulators on educational seminars.
- Identify use cases that illustrate the benefits of bi-directional weather data exchanges between utilities; survey current weather-related standards efforts; and harmonize the exchange of weather data among utilities adhering to independent standards.

Guides and tools offer stakeholders the means to assess potential applications of technology and evaluate the impact on business processes, among other benefits. So we will:

- Publish white papers on smart grid cloud computing to clarify risks, costs and benefits for utilities; on electrical vs. thermal storage, and on transactive retail energy applications.
- Collaborate with NIST and other federal agencies on a Smart Grid Supply Chain Awareness Guide to highlight risks and inform stakeholders on cyber security procurement concepts.
- Contribute to the creation of a smart grid interactive Interoperability Mapping Tool, which can aid in the development and execution of utility-specific technology road maps.
- Build a directory of all industry test programs relating to smart grid standards, to ensure a common platform for utilities and equipment vendors to evaluate technology offerings.
- Develop an application or best practices guide to test smart grid systems and devices for interference from electromagnetic sources.

On the utility customer front, we have a raft of responsibilities, including:

- Improving communications between utilities and residential devices to facilitate demand response programs.
- Adapt home appliances for energy management programs and transactive energy markets.
- Improve data aggregation and privacy, and implement Internet Protocol (IP) for home devices focused on energy management.

The foregoing list would be a formidable undertaking for any organization and it is just the start for SGIP 2.0's work this year. We've got the strategy and structure and membership to make it happen. And we can use help. Please access our online Value Proposition to weigh your own participation.

We're confident that our to-do list for 2014 will provide a more solid foundation for grid modernization by informing and empowering stakeholders with the knowledge and tools they need to fulfill the promise of a smarter grid. Modernizing the generation, transmission and distribution of electrical energy will, in turn, provide the basis for economic vitality around the world. That's no small task, but with SGIP 2.0's strategy and structure, we have the means to achieve it.

About the author

John D. McDonald is director of technical strategy and policy development at GE Digital Energy. He earned his B.S.E.E. and M.S.E.E. degrees specializing in power engineering at Purdue University and his MBA in finance at the University of California, Berkeley. He is past president of the IEEE Power & Energy Society (PES), an IEEE PES distinguished lecturer, board chair of the Smart Grid Consumer Collaborative and board chair for the Smart Grid Interoperability Panel 2.0, Inc., among many other affiliations.

Mobile Apps: It's the journey and the destination that counts

By Mary Britain-White

It is 2008 and a company, let's call them Mechanical and Electrical Contractors or 'MEC,' has 800 technicians on both project-based and support contracts. The company targets the mining industry and large government projects but is underpinned by a substantial facilities management and HVAC division. As a successful company underwritten by solid finance companies, MEC set its sights on a growth strategy to delight shareholders.

For expansion, MEC executives realized they must gain greater consistency in processes both across and within divisions. By example, the company maintains the mobile tower installations of some of the national telecommunication carriers and reporting varies by state. In one state, every visit to a tower resolves in an invoice with a consolidating month end statement while in another state all visits within the month are entered into a local Excel log and a single invoice is dispatched to the carrier at month end. Furthermore, each telco asks for proof of attendance within the agreed service level contract and MEC can only provide an Excel sheet at the end of the month. Both parties understand that the Excel sheet is managed so all SLAs (service level agreements) are met and penalties avoided.

With the inconsistencies described above, MEC decided that a mobile app integrated with its billing system could be both a change agent in enforcing universal processes and improving their customer satisfaction. Moreover, with better processes in place, MEC's growth strategy would be more achievable as many of the current administrative constraints are removed.

So, MEC puts out an RFP (request for proposal) for mobile application vendors. The final three vendors have comparable solutions but the costs are strongly in contrast. MEC chose the solution that was license free despite no onshore support as it is under their telco's offerings and fully subsidized by the telecommunications spend.

Ten months later, the app and the integration are completed and ready for implementation with the pilot group of forty HVAC technicians in the first city. The costs have been substantial in both getting the app to work within their business environment and to achieve integration to their back office environment, more than double budget. They have also chosen a rugged PDA (personal digital assistant) sourced from the telco, which was free as well and again with no onshore support or maintenance.

The technicians weren't happy. The new procedures were different from established processes which caused problems but the biggest issue was reliability. Both the rugged PDA and the app were failing often, with confidence in new technology quickly eroding in just weeks. The project team regroups and recalls the devices and software but changes are slow with no local support and escalating through the telco changes literally take months. When reissued the solution was much improved but still not rock solid and the technicians thereafter actively refused to participate. In their view they are doing paperwork twice – once in the PDA and another on paper when the systems fail. Management halts the project.

This is a true story and what they did next was astounding – they asked the deep questions on why they had failed and decided that it was a systemic issue in their company and not just a poor vendor choice. The strategy pivoted to focus on addressing process issues before moving forward to automate them via a mobile deployment. It took two years and a number of management changes but at the end of it they had agreed processes that were uniform within each division. Then they went back out to market for a mobile solution.

When they went back out to market in late 2011 they had a substantial laundry list of must-have features for their required solution:

At the top was reliability – the absolute necessity for the technician to see the mobile solution as *a tool of trade* and if something goes wrong then data can be recovered on the job in just minutes. Similarly, this drove a technology requirement for the app to work out of coverage for up to a whole day.

Next on the list was workflow. The app needed to reflect MEC's workflow and not some idealized solution constructed by a software company. A service company differentiates itself by how it delivers its services to customers, so unlike billing solutions that can be the same as your competitors and not affect your competitiveness, the mobile app directly impacts the service and thus, competitiveness. Without reflecting MEC's workflow, technicians would not adopt the solution and productivity gains would not be met.

The third requirement was quality and timely support. Mobility has constant changes in operating systems, regional telecommunication network variations and end user problems that demand rapid problem resolution. Field service projects generate MEC's revenue, therefore they were seeking a stellar solution.

Lastly, was an identified need to easily change workflow and the data captured or referenced within the app. MEC had learnt that the app needed to reflect both their acquisition of new customers with their correlating information requirement and the reality that their internal needs kept evolving and needed to be reflected in the mobile solution.

There were pages more of specific requirements but the above were the stand outs, the key lessons learned from the first failed project. After selection of a quality vendor, MEC was running the first field deployment in six months. It is also noteworthy that in selecting the hardware they formed a selection committee of key stakeholders, predominantly the thought leaders in their technician groups, to ensure field acceptance of the devices.

Today, MEC's entire fleet is mobilized. It's successfully running a sophisticated application that is fully integrated with the asset management system, driving procedures in the field with over 1000 asset variations. Mobility has allowed for full transparency with customers concerning when technicians are on site. To achieve the formerly mentioned SLA regarding proof of attendance on a job, activity is time stamped via the application so travel charged to the customer and non-productive time is all captured. Parts used, purchases made, customer signatures, site history and safety compliance are all part of the application functionality. The new solution has been live for less than two years and MEC just completed its third business change revision to the app, which will be distributed to field technicians in just minutes the next time they turn on their tablet.

MEC's imagination has gone mobile. By example, they deployed a mobile app last year to their field supervisors, which allows them to see where each member of the team is and what they are doing. This year, the company will focus on integrating mapping and mobile collaboration tools into their solution.

Mobile is a continuing journey and MEC is glad it eventually found the right track.

About the author

Mary Brittain-White, CEO of Retriever Communications has 20 years in the wireless data industry, of which 16 years have been with Retriever. She has established herself as a thought leader in the area of wireless field automation. Prior to founding Retriever, Mary worked for a Silicon Valley based Motorola subsidiary, RadioMail, which pioneered wireless email. From University Mary joined IBM and over a 14 year career there held Sales and Marketing executive management roles. Mary has Bachelor of Economics from Sydney University and a post graduate Executive Development program from Melbourne University.