

# INFORMATION, COMMUNICATION & CYBER SECURITY NEWSLETTER

Dear ICCS Advisors and Stakeholders,

The past few weeks have been very busy and very productive for the ICCS team. Here are a few photos of some of our activities.



ICCS Roadmap completed



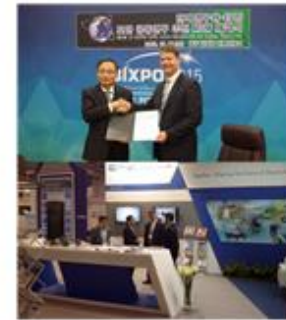
Fall Advisory Committee and Sector Council Meetings in Baltimore



Energy Efficiency and Renewable Energy (EERE) Day at ORNL



hosted the SGIP OpenFMB demonstration staging, Knoxville



Bitgaram International Exposition of Electric Power Technology (BIXBO) in Seoul, Korea



End-to-End Project Demonstration in the Knoxville lab (images from Knoxville News Sentinel, October 20, 2015)

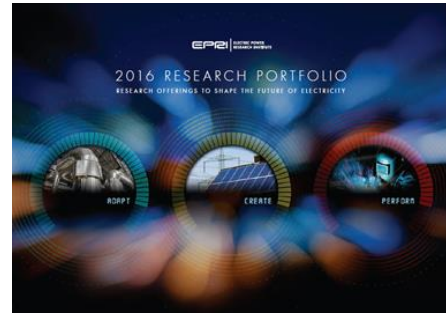
October 2015

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The Fall Power Delivery & Utilization Fall Advisory and Sector Council meetings in Baltimore were extremely well attended, with more than 600 registered attendees over the 4 days of meetings. Here are the links to the session presentations: [Information and Communication Technology Advisory Meeting](#), [Cyber Security and Privacy Advisory Council Meeting](#), and [The Communication & Cyber Security Committee \(ICCS\) Breakout](#).

The EPRI 2016 Research Portfolio is now available. The portfolio focuses on the transformation of the power grid from the perspective of its primary enablers – robust, reliable, flexible, and resilient telecommunications networks with strong cyber security capabilities. The ICCS technical teams are finalizing a number of deliverables to help utilities address challenges along the timelines of today and into the future.



During Wednesday's Sector Council plenary session, Bennett Gaines, FirstEnergy, was recognized for his contributions as the first chairman of the Information, Communication & Cyber Security (ICCS) Committee. Bennett was instrumental in the start-up and growth of the committee, and we are grateful for all his hard work. Bennett has stepped down as the chairman and Alberto Ruocco, AEP, has agreed to continue to lead the committee in its commitment to identify, prioritize and guide EPRI research efforts.

[The Communication & Cyber Security Committee \(ICCS\) Breakout](#) session held on Thursday, October 8<sup>th</sup>, generated great attendance and information sharing. Session notes were sent out October 21<sup>st</sup>. The primary topics discussed included:

- Internet of Things (IoT) from a Grid Perspective – Substations & Field Connected Devices Risks and Protections
- Operational & Roadmap update for the ICT and Cyber Security programs
- Distributed Energy Resources: Interconnection Standards, Communication and Control
- Round Table Discussion
- Telecommunications Needs & Options for the Future Grid

This pace will continue, as we are rapidly approaching deliverable due dates and year end. Stay tuned ...

Sincerely,

Matt Wakefield  
Director, Information, Communication and Cyber Security Research

Information and Communication Technology (ICT) (161)



## ICT Team Media Contributions and Collaborations

### [Utilities & Augmented Reality: Challenges, Opportunities and Standards](#)

Interest in Augmented Reality (AR) solutions continues to grow across many industry segments. The [IEEE Standards Association](#) (IEEE-SA) recently co-sponsored the [Augmented Reality in Leading Utilities \(ARLU\) workshop](#) hosted by the Electric Power Research Institute (EPRI) at their Charlotte, NC, facilities. ARLU was organized in collaboration between EPRI, IEEE-SA, and AREA (Augmented Reality Enterprise Alliance). With a focus on the electric power utility industry, the workshop drew a range of participants representing a number of utilities, EPRI researchers across several technology domains, government, and vendors of AR solutions. [Full article](#)

### Recent ICT / IntelliGrid (161) and Related Demonstration Deliverables

Title	Date
<a href="#">ICCS Roadmap</a>	Sep 30-2015
<a href="#">Demand Response Use Cases for New York: Scope Setting for Demonstration of Interoperable DR-Ready Air Conditioners</a> <i>In New York State (NYS), small commercial and residential customers have become significant contributors to local and system-level peak electric demand. This is primarily driven by the addition of air conditioning units, resulting in summer peaks. Urban areas such as New York City face challenges in making upgrades to distribution systems to serve these rising demands. Real estate is generally unavailable (or unaffordable) for new distribution substations, while increases in feeder capacity are difficult due to limited space in underground vaults and distribution channels. As a result, “non-wires” alternatives such as demand response (DR) are of particular interest.</i>	06-Oct-2015
<a href="#">2015 Second Quarter CEA-2045 Field Demonstration Project Update</a> <i>EPRI’s Field Demonstration Project, which is described in EPRI Report 3002004009, is a three-year collaborative research activity designed to assess this new standard. Participating utilities are fielding various end-devices and connecting them into existing and new DR programs to evaluate the standard in terms of achieving interoperability and supporting the needs of a wide range of programs. Consensus functional requirements for end-use devices are being developed and shared with manufacturers who are producing the CEA-2045 based products for field installation and testing. Communication system providers are producing plug-in communication modules needed to connect and test. This report provides an update on project activities through the second quarter of 2015.</i>	30-Sep-2015
<a href="#">Smart Grid Communications Intelligencer, Fall 2015</a> <i>Smart Grid Communications (“Comms”) Intelligencer is a triannual newsletter published by EPRI’s Information and Communications Technology (ICT) Program. This newsletter highlights issues of relevance and interest to utility communications engineers and managers. The focus is on developments in communication technologies and standards, and business issues that can affect the design, deployment, or operation of utility communications infrastructure.</i>	30-Sep-2015
<a href="#">Electric Utility Guidebook for GIS Data Quality: Conflation</a>	18-Sep-2015

<p><i>The utility industry has witnessed the rapid adoption and implementation of geographic information systems (GIS). The importance of GIS is increasing with the widespread acceptance of smart grid technologies. This foundational technology relies on the quality of its data.</i></p>	
<p><b><a href="#">Technical Immersion Sets Utility on the Path to Optimize Its Geospatial Information System</a></b></p> <p><i>For many utilities, data from a Geospatial Information System (GIS) represents an under-utilized asset. For most of its history, GIS was just the way people obtained maps—a very fancy and expensive way to put dots and lines on paper. That is slowly changing as the need for a central repository of asset identification, relationship, and spatial information becomes apparent. With grid-modernization programs underway at many, if not most, utilities, GIS data is becoming the basis for planning, grid operations, metering, management of distributed generation, situational awareness, and outage management. As a result, accurate GIS data is quickly becoming central to the success of an operations center.</i></p>	03-Sep-2015
<p><b><a href="#">Survey of Sensor Technologies for Individual Customer-Level Situational Awareness: Alternatives to the Advanced Metering Infrastructure (AMI)</a></b></p> <p><i>Communication-enabled smart meters provide an opportunity to attain better granularity in terms of customer-level situational awareness. In fact, for notification of outage and service restoration, smart meters enable a utility to know the on/off status of individual customers. Many electric service providers are already taking advantage of this peripheral benefit as part of their Advanced Metering Infrastructure (AMI) data processing and visualization activities.</i></p>	02-Sep-2015

## Meeting/Webcast Materials Available

<p><b><a href="#">EPRI: ICT Webcast – MODSARUS®</a></b></p> <p><i>The researchers at Electricite de France presented on a free of charge software tool that they have developed called MODSARUS® (MODelling SmartGrid ARchitecture Unified Solution). This tool 's scope is for Modelling Interoperable Electronic Data Interchanges for the Use Cases of the Electric Power System. This is a complete modelling solution to provide, in UML, a methodology to support IEC standards from Use Cases (IEC62913 and IEC62559) down to data flow modelling in particular regarding IEC CIM standards.</i></p>
<p><b><a href="#">EPRI's Information and Communication Technology Program 2016 Launch Webinar</a></b></p> <p><i>An informational webinar to kick off EPRI's 2016 ICT research program. During this webinar we explored the 2016 portfolio offerings, and talked about the wins, challenges, goals and long-term vision for each piece of our research portfolio, including: ICT for Transmission(161B); ICT for Distribution (161C); ICT for Distributed Energy Resources (161D); Enterprise Architecture (161E); and Advanced Metering Infrastructure (161F).</i></p> <p><i>The ICT Program conducts research, development and demonstrations in:</i></p> <ul style="list-style-type: none"> <li>• <i>mission-critical telecommunications</i></li> <li>• <i>hardware, software, and data integration and interoperability</i></li> <li>• <i>data management focused on veracity, volume, variety, velocity, and value</i></li> <li>• <i>systems and processes that support IT/OT convergence</i></li> <li>• <i>maximizing the value of advanced metering systems</i></li> </ul>
<p><b><a href="#">EPRI: ICT Informational Webcast - Update on EPRI Network Model Management Activities</a></b></p> <p><i>Network model data is foundational for a wide variety of applications used in planning and operating the grid. During this webcast we covered recent activities and results in applying the</i></p>

Common Information Model standard to facilitate the organization, management and sharing of network model information. Topics included:

- A review of recently-published publicly-available EPRI deliverables related to improved Transmission network model management
- An overview of the major AEP Network Model Management Improvement project
- A look ahead to network model management practices and concerns in the Distribution domain

#### **EPRI: GIS Interest Group – "What to do with your GIS now!"**

GIS is morphing from an application to store and display utility asset data to a location platform. The change is both philosophical and technological. Modern GIS incorporates the web, the cloud and servers. A modern GIS crosses all platforms from smart phones to tablets to desktops. This presentation focuses on this shift – which has the greatest impact on the execution of work in the field. This often is referred to as mobile GIS. Instead, it might be better to think of this new kind of GIS as a platform that empowers workers throughout the enterprise, including those outside the office.

#### **EPRI: ICT Interoperability Webcast – GWAC Transactive Energy**

Transactive Energy is a concept 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 that is being investigated by several organizations. Dr. Gerald Gray will provide an overview of the concept and describe ongoing work.

#### **Grid 3.0 – Architectural Commandments**

This is an edited version of a talk given by Dr. Gerald R. Gray at the Grid 3.0 conference held at the National Institute of Standards and Technology (NIST), Washington, D.C., in 2015. As part of the Grid 3.0 conference, speakers were asked to consider the changes that they would make if they were "King for a day." With a tongue firmly planted in cheek, Dr. Gray was inspired by a higher authority and decided to designate some "commandments" that he would suggest for industry colleagues.

## Upcoming Webcasts

**(Details are available in the [Member Center](#) under the ICT Cockpits)**

Title	Date
EPRI: Smart Grid Enterprise Architect Interest Group Webcast	22-Oct-2015 19-Nov-2015

Cyber Security and Privacy Program (183)



## Cyber Security Team Industry Contributions and Collaborations

### **Subcommittee on Energy and Subcommittee on Research and Technology Hearing: Cybersecurity for Power Systems**

On October 21<sup>st</sup> Annabelle Lee, EPRI Sr. Technical Executive, testified on cybersecurity before the House Science Committee's Joint Subcommittees on Energy and Research & Technology. She was joined by the following witnesses: Bennett Gaines (FirstEnergy); Brent Stacey (INL); and Greg Wilshusen (GAO). Overall, this was an excellent opportunity for EPRI to showcase both our expertise in this area as well as our work with our utility members in this critical space. There remains a lot of

interest in grid security and reliability issues in Congress, particularly in the House and we did ourselves and our members a service of participating in this public event.

For those who are interested in viewing the hearing or who wish to obtain copies of witness statements can do so via the website [here](#). The record will remain open for 2 weeks.

## Recent Cyber Security (183) and Related Demonstration Deliverables

Title	Date
<p><b><a href="#">Cyber Security and Privacy Newsletter, October 2015</a></b>  <i>EPRI's tracking and outreach efforts reflect its continued commitment to support the power industry in the identification of cyber security and privacy issues and efforts for the electric sector. In support of these efforts EPRI works diligently to stay abreast of the present state of standards and guideline developments as well as regulatory governance. This newsletter provides highlights and status of ongoing efforts by numerous working groups, as well as insights into future activities.</i></p>	14-Oct-2015
<p><b><a href="#">PRE-SW: Security, Cyber, Risk Assessment Methodology (SCRAM) v1.0 – Beta</a></b>  <i>This web application provides an interface to a cross reference database of cyber security risk management guidelines for the electric sector.</i></p>	06-Sep-2015
<p><b><a href="#">Update on FAA Regulations on Unmanned Aircraft Systems: An EPRI White Paper</a></b>  <i>The Federal Aviation Administration (FAA) is in the process of integrating unmanned aircraft systems (UAS) into national airspace for civil use. The steps taken by the FAA include issuing exemptions for the commercial operation of small UASs and the issuance of a Notice of Proposed Rulemaking leading towards the adoption of permanent operating rules for commercial UAS operations. This EPRI white paper provides an update on evolving UAS regulations. The paper summarizes existing regulation for three types of UAS operations, certificates of authorization for UAS operations, and the FAA's Final Rule pertaining to small UAS for civil use.</i></p>	04-Sep-2015

## Meeting/Webcast Materials Available

### **[EPRI: Threat Management Task Force Webcast](#)**

*The meeting agenda included a review of the threat scenarios for the Integrated Security Operations Center research, and a presentation by Aunshul Rege, PhD, titled "Applying a Criminological Framework to Understand Adaptive Adversarial Decision-Making Processes in Critical Infrastructure Cyberattacks."*



## Recent DMD and TMD Data Analytics Deliverables

Title	Date
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[\*\*Ameren Missouri Tackles Storm Forecasting to Anticipate System Damage and Accelerate Restoration of Service\*\*](#)

31-Aug-2015

*This edition of Data Analytics for Utilities describes the efforts of Ameren Missouri and Saint Louis University to develop a unique neighborhood-by-neighborhood weather-forecasting system called Quantum Weather, which harnesses the data from more than 100 strategically located weather stations to forewarn emergency response planners, prepare staff, and dispatch resources to where they will be needed most.*

Automated Demand Response (OpenADR 2.0b)



## Recent Automated Demand Response (OpenADR) Deliverables

Title	Date
<a href="#"><b>Automated Demand Response and Ancillary Services Demonstration Project Newsletter, August 2015</b></a> <i>This newsletter provides information about EPRI's Automated DR and Ancillary Services Demonstration project. Articles about security options in OpenADR 2.0b and about recent OpenADR Alliance working group activities are featured. Also included is a description of a new EPRI project, funded by the California Energy Commission, which will be using the EPRI OpenADR software to help increase the ability of distribution grids to accommodate greater penetration of solar power. More information on these topics and others can be found in this issue.</i>	18-Sep-2015

Smart Grid Demonstration



## SG Team Media Contributions and Collaborations

As IEEE 802.11 (the standard Wi-Fi is built on) celebrates its 25th anniversary, *Smart Grid News* caught up with Tim Godfrey, chair of the [IEEE 802.24 Technical Advisory Group](#), who began working with the [IEEE 802.11 standard](#) in 1994. [Full Article](#)

## Recent Smart Grid Demonstration Initiative Deliverables

Title	Date
<a href="#"><b>Kansas City Power &amp; Light Residential Time-of-Use Impact Study: EPRI Smart Grid Demonstration</b></a> <i>This study estimated residential-customer demand response to time-of-use (TOU) rates at Kansas City Power &amp; Light (KCP&amp;L) as part of its Smart Grid Demonstration. The rate was offered to customers in the Green Impact Zone of Kansas City, a geographic area that was the focus of the demonstration. All Green Impact Zone customers were eligible to and able to join TOU because smart meters capable of recording hourly usage were installed prior to 2012.</i>	15-Oct-2015

**[FirstEnergy Case Study on Integrated Control Platform Visualization: EPRI Smart Grid Demonstration Initiative](#)**

08-Sep-2015

*This FirstEnergy case study for the EPRI Smart Grid Demonstration Initiative describes the Integrated Control Platform Visualization (ICPV) tool deployed and used in an area of Jersey Central Power & Light (JCP&L), a FirstEnergy operating company.*

Upcoming Events	Dates
<p><b><u>DMD/TMD Data Analytics for Transmission &amp; Distribution Fall Advisory Meeting</u></b></p>	<p><b>26-27-Oct-2015</b></p>
<p><b><u>EPRI IEC 61850 Hands-on Workshop</u></b>  <i>The IEC 61850 Hands-On Training Workshop will allow participants to try out protection and control devices, and testing and maintenance tools from multiple vendors to demonstrate the standard-based interoperable approaches for equipment isolation, protection function and scheme testing, and condition based maintenance that are being investigated in EPRI's "Application Guides, Software Tools and Migration Strategies for the Implementation of the IEC 61850 Standard – Level 2" project.</i></p>	<p><b>10-11-Nov-2015</b></p>
<p><b><u>Energy Efficiency Symposium 2015</u></b>  <i>The Energy Efficiency Symposium 2015 will cover three research areas: Heat Pumps, Data Centers, and Non-Intrusive Load Monitoring (NILM). Each topic will take place on a separate day, so please plan to attend whichever day/s that best fits your interest. All invitees are welcome to attend all 3 days.</i></p>	<p><b>11-13-Nov-2015</b></p>
<p><b><u>EPRI IEC 61850 Utility Forum</u></b>  <i>EPRI will be hosting its fourth Utility Forum on the IEC 61850 standard on November 12 and 13 at the EPRI office in Charlotte, NC. The objective of the Utility Forum is to bring together representatives from utilities that are implementing the IEC 61850 standard or that are interested in implementing the standard to share experiences, lessons learned, concerns and best practices.</i></p>	<p><b>12-13-Nov-2015</b></p>
<p><b>FAN Demo Advisors Meeting will in San Diego, hosted by SDG&amp;E</b></p>	<p><b>17-18-Nov- 2015*</b>  <b>note date change</b></p>
<p><b>Save the Date: Connected Devices Working Council</b>  <i>EPRI is launching a new stakeholder group, the Connected Devices Working Council, as a joint effort of Energy Utilization and Information and Communications Technology. EPRI's role in bringing together utilities, vendors and other stakeholders has been successful in other spaces, including electric vehicles, energy storage, smart inverters, and distributed energy resources. The Connected Devices Working Council will focus on connected consumer devices and provide a forum to collaborate and share information with a goal of enabling participants to develop business strategies that bring value to the shared electricity customer.</i></p>	<p><b>01-02-Dec-2015</b></p>
<p><b>Save the Date: EPRI Power Delivery and Utilization Advisory Meetings, Austin, TX</b></p>	<p><b>Feb. 22-25, 2016</b></p>
<p><b>Save the Date: EPRI European ICCS Engagement Summit, Dublin, Ireland</b></p>	<p><b>April 19-20, 2016</b></p>



**Save the Date: EPRI Power Delivery and Utilization Advisory Meetings,  
Hollywood, FL**

**Sept. 19-22, 2016**

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