

## INFORMATION, COMMUNICATION & CYBER SECURITY NEWSLETTER

Before we dive into the newsletter, I'd like to take a moment to extend our heartfelt condolences to those affected by the tragedy in Paris on Nov. 13. You are in our thoughts and prayers.



Dear ICCS Advisors and Stakeholders,

The recent book from Ted Koppel titled "Lights Out: A Cyberattack, A Nation Unprepared, Surviving the Aftermath" is prompting questions within utility executive suites and boardrooms about cyber security strategies.

As you know, EPRI's Cyber Security program helps utilities develop security architectures, assess innovations in security technologies, and establish performance metrics. Our focus on standards and

ICT Program (161) **Cyber Security Program (183) Smart Grid Upcoming Events** 

November 2015

In this Newsletter

interoperability help ensure that your utility avoids investing valuable cyber security funding into proprietary solutions at risk of future asset stranding. Our comprehensive research/development/demonstration (R/D/D) approach to the multiple operational domains in utilities helps address IT/OT convergence issues within cyber security initiatives. Our R/D/D also helps utilities understand the impacts of new security technologies and practices on legacy equipment.

Do you know about EPRI's Integrated Threat Assessment Framework supplemental project? This project helps utilities manage threats and build appropriate mitigation plans. This project is designed for two classes of utilities. Level 1 is valuable for utilities that are ready to incorporate this research into their plans to create integrated security operations center (ISOC). Level 2 is targeted to utilities that have already created their ISOC, and would like assistance with integration testing by leveraging EPRI's Cyber Security Research Lab.

If you'd like to discuss how EPRI's Cyber Security program and supplemental project can help you identify and address the important steps to enhance your cyber security posture and plans, contact Scott Sternfeld, Technical Advisor East or Christine Hertzog, Technical Advisor West.

At EPRI, we strive to be actively involved in our community. To that end, Chuck Thomas, EPRI ICT Engineer, participated in the Karns Middle School Career Day in Knoxville Tennessee. In a 3 ½ hour period more than 500 students had the opportunity to see some of EPRI's work.



As we near the end of the year we're working diligently on deliverables. Read on to see what's been completed this past month.

Sincerely,



Matt Wakefield

**Title** 

Director, Information, Communication and Cyber Security Research

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Information and Communication Technology (ICT) (161)

business areas, assess the growth implications of synchrophasor data, and identify practices to help utilities benefit from not only real-time applications, but also from applications that use archived data. The guidebook focuses on the application to synchrophasor data of the Data Management Body of Knowledge



**Date** 

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

# Guidebook on Synchrophasor Data Management: Current State Update The power industry is achieving unprecedented wide-area synchrophasor coverage of the North American grid; and with thousands of synchrophasors continuously streaming data, managing, storing, and using data present ongoing challenges. This guidebook focuses on the value and technical concerns associated with synchrophasor data management within the utility enterprise. The objective is to assimilate recommended practices from other related

(DMBOK), which defines a standard industry view of data management functions, terminology, and best practices.

#### **Electric Utility Data Synthesis**

21-Oct-2015

Electric utilities are awash in data from a multitude of sources including substation data, enterprise data, and data from external sources. Bridging the existing data sources at electric utilities will benefit the utility by creating a more robust dataset useful in a wide variety of ways across business areas. Synthesis of utility data is basic to the assessment of assets and business processes. However, developing a complete picture of the operational history, specifications, and environmental exposure of an asset is not trivial. Further research is needed to develop algorithms to adequately interpret the integrated data as well as methods to display assessments of large quantities of assets. The technological tools needed to connect the various data sources do exist, but not all are designed to work seamlessly within the enterprise and there is a definite need for demonstration projects to more effectively identify persisting problems and suggest solutions to them.

## Electric Utility Guidebook on Integration of Internal and External Data Sources: Industry Risks, Technical Challenges, and Data Integration Methodologies

20-Oct-2015

The increased frequency and intensity of extreme weather events experienced by many electric utilities in the past decade poses several risks and raises technical challenges in regards to data integration. Integrating various data sources so that system operators can make the most informed decisions before, during, or after an event can help alleviate some of the vulnerability posed to infrastructure and operations systems. This report describes industry risks and technical challenges, including the identification of data gaps, evaluation of data integration methodologies, and a discussion of the importance of geospatial information to enhance the assessment of weather events on operations assets.

### Advanced Metering Infrastructure Requirements for Future-Proof Deployments

19-Oct-2015

Advanced metering infrastructure (AMI) meter deployment has been steadily increasing throughout the world. An AMI meter is one that measures and records usage data at hourly or more frequent intervals and that transmits these data at least daily. The two basic functions of an AMI meter are to make measurements and to communicate these measurements to facilitate the use of the data by both utilities and end consumers in a timely manner. In addition, AMI meters may include service connect/disconnect capability. As part of ongoing AMI research efforts of the Electric Power Research Institute, this paper analyzes some of the factors involved in writing "future-proof" specifications for AMI systems. The Oxford English dictionary defines "future-proof" as "protected from the consequences of future events; especially designed in a manner that provides protection against rapid obsolescence." This paper describes the

current state of AMI requirements and highlights five specific areas that are essential to consider when deploying an AMI system.	
Demand Response-Ready Programmable Packaged Terminal Air Conditioner  Specification: Preliminary Requirements for CEA-2045 Field Demonstration	19-Oct-2015
This document is a specification for an air conditioning unit with built-in demand response (DR) capabilities with a standard communication interface. The context for the development of this specification is a field demonstration project that	
EPRI is facilitating to evaluate the ANSI/CEA-2045 modular communication standard. In this project, utilities are fielding consumer end-use products and integrating them into a wide range of demand response systems in order to assess the standard and determine the degree to which interoperability is	

#### Meeting/Webcast Materials Available

#### EPRI: ICT Interoperability Webcast - 2015 IEC 61850 IOP Results Webcast

On October 29, Paul Myrda presented on the results of the 2015 IEC 61850 Interoperability Test held in Brussels, Belgium. The areas tested included GOOSE, SCL, HSR/PRP, 1588, Client Server and SV.

#### **Upcoming Webcasts**

achieved.

(Details are available in the Member Center under the ICT Cockpits)

	Date	
with Open AMI  The convenience and flexibility of widely deployed Open Advanced Metering Infrastructure (Open AMI) holds the promise of both simplifying and reducing the cost of purchasing, deploying, and maintaining AMI systems. This aspect of Open AMI is broadly understood and appreciated, however, there are also some other potential aspects to Open AMI that may cause us to hesitate in fully realizing this goal. For example, if the utility buys disparate pieces and assembles an Open AMI	rt Grid Enterprise Architect Interest Group Webcast 19-Nov-2015	5
Infrastructure (Open AMI) holds the promise of both simplifying and reducing the cost of purchasing, deploying, and maintaining AMI systems. This aspect of Open AMI is broadly understood and appreciated, however, there are also some other potential aspects to Open AMI that may cause us to hesitate in fully realizing this goal. For example, if the utility buys disparate pieces and assembles an Open AMI		5
ready for that challenge? This webinar, and the associated paper, reviews opportunities and hesitations associated with Open AMI, examining some of the underlying assumptions of both.	ture (Open AMI) holds the promise of both simplifying and reducing the rechasing, deploying, and maintaining AMI systems. This aspect of Open adly understood and appreciated, however, there are also some other aspects to Open AMI that may cause us to hesitate in fully realizing this example, if the utility buys disparate pieces and assembles an Open AMI is may put utility personnel in the role of system integrator. Are utilities that challenge? This webinar, and the associated paper, reviews ties and hesitations associated with Open AMI, examining some of the	



#### Cyber Security Team Industry Contributions and Collaborations

#### **Expert Cyber Security-Expert Group (EECSP-Expert Group**

I am pleased and excited to announce that EPRI's Annabelle Lee, Senior Technical Executive, has been accepted as a member of the European Commission's <a href="Energy Expert Cyber Security-Expert Group">Energy Expert Cyber Security-Expert Group</a> (EECSP-Expert Group). The group is comprised of 15 industry experts from academia, energy and other industry affiliates, representing Germany, Italy, Switzerland, France, Denmark, Austria, Netherlands, UK, and the US.

The mission of the EECSP-Expert Group is to provide guidance to the Commission on policy and regulatory directions at European level, addressing the energy sector key points including infrastructural issues, security of supply, smart grids technologies as well as nuclear.

The first deliverable of the EECSP-Expert Group is to analyse existing legislation, initiatives, projects and cyber security strategies related to all parts of the energy sector in order to pinpoint areas where a sectoral approach is needed. The EECSP-Expert Group will also analyse the interplay between various EU legislative instruments applicable to the energy sector, ways to streamline the corresponding obligations impacting the energy sector as well as indicate specific solutions.

The second deliverable is to develop a short-, medium-, and long term strategy building on the first deliverable and to reinforce the implementation of the new legal basis of the forthcoming NIS directive and the GDPR and to provide input for future legislative acts to be adopted in future.

The third deliverable will involve regular monitoring of the various findings in line with the implementation of relevant legislation and the evolution of risks, threats and vulnerabilities in the energy sector.

Stay tuned for reports from Annabelle on the Group's activities.

#### Meeting/Webcast Materials Available

#### P183B Technology Transfer Workshop

This technical workshop targeted the end users of the 183B research with the objective of enhancing the technology transfer process. It included a mixture of training, demonstrations, and detailed technical updates on the 183B projects.

#### P183D Technology Transfer Workshop

This technical workshop targeted toward the end users of the 183D research with the objective of enhancing the technology transfer process. It will include a hands-on working sessions and detailed technical updates on the 183D projects.

#### Smart Grid Demonstration



#### Recent Smart Grid Demonstration Initiative Deliverables

Title Date

Smart Grid Demonstration Initiative Case Studies Volume 2  This is the second compendium of case studies from utilities participating in the Smart Grid Demonstration Initiative. Each case study provides results and lessons learned from smart grid research and field experience.  Numerous tests and deployments of technology and applications are covered in	12-Nov-2015
this second volume, ranging from volt-var optimization to customer response to smart-grid-enabled load control information services. This volume also includes updates of case studies from Ireland on smart green circuits and distribution system volt-var control integrated with wind turbines. Part 1 of these studies was published in Volume 1; part 2 and a continuation of part 1 are provided here.	
Resource Sensor Data: EPRI Smart Grid Demonstration  This case study describes the methodology and results of a FirstEnergy research project on the analysis of sensor data acquired from the FirstEnergy Integrated Distributed Energy Resource (IDER) system for use in distribution planning activities and energy delivery operations. The project was undertaken to create new tools and concepts for distribution feeder analytics. Analyses are being used to help FirstEnergy understand issues around integrating load and distributed energy resources (DER), such as large photovoltaic systems on the electric distribution system. Data analyses have also been done to assist with operations, maintenance, and resolution of customer complaints.	06-Nov-2015

Upcoming Events	Dates
Save the Date: Connected Devices Working Council	Dec. 1-2, 2015
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.	
EPRI Company Holiday Shutdown	Dec. 24, 2015 thru Jan. 3, 2016
Save the Date: EPRI Power Delivery and Utilization Advisory Meetings Austin, TX	Feb. 22-25, 2016
Save the Date: EPRI European ICCS Engagement Summit Dublin, Ireland	April 19-20, 2016

Save the Date: EPRI Smart Distribution and Power 2016 Quality Conference and Exhibition Atlanta, GA	June 28-30, 2016
Save the Date: EPRI Power Delivery and Utilization Advisory Meetings Hollywood, FL	Sept. 19-22, 2016

#### Together ... Shaping the Future of Electricity

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