

# INFORMATION, COMMUNICATION & CYBER SECURITY NEWSLETTER

Dear ICCS Advisors and Stakeholders,

As 2014 comes to a close, the Information, Communication and Cyber Security (ICCS) team wish all of you a Merry Christmas and Happy New Year and would like share a few highlights from 2014 and upcoming activities in 2015.



Those of you who are familiar with EPRI know that this is a busy time of the year for us as we wrap up all our 2014 research reports and deliverables.

Many of the deliverables are published already and are referenced throughout this newsletter and many more will be published in the coming weeks, so be sure to monitor the EPRI Member Center accessed via [www.epri.com](http://www.epri.com) to gain access to those reports and deliverables.

In the spirit of getting to the point, I'll stop there and include some highlights from several of our research programs.

I look forward to your continued engagement next year striving to achieve EPRI's vision "*Together.....Shaping the Future of Electricity*"

Sincerely,

Matt Wakefield  
Director, Information, Communication and Cyber Security Research

## In this Newsletter

[ICT Program \(161\)](#)

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Don Von Dollen and team have been working hard throughout the year as you can see by the long list of recent deliverables. One recent highlight is the work related to Distributed Energy Resource integration.

## Distributed Energy Resource Enterprise Integration Workshop

Brian Seal, Gerald Gray Ph.D., and Christina Huff lead an interoperability workshop for DER Enterprise Integration in Denver at the National Renewable Energy Laboratory (NREL). This event was the most significant step yet in a 2-year initiative to advance enterprise integration for DER. The listed documents give the history which is, in short:

In 2012, the successful creation of “[Integrating Smart Distributed Energy Resources with Distribution Management Systems](#)” for inverters where EPRI noted the next gap in regard to DER integration being primarily the central office and utility-to-aggregator integration.

EPRI coordinated with the DOE and NIST (DRGS DEWG) and held a kick-off prioritization workshop in DC at the end of 2012 – “[Collaborative Initiative to Advanced Enterprise Integration of DER – workshop results.](#)”

Throughout 2013, we managed an open interest group and translated these concepts into detailed methods, with supporting messages in MultiSpeak and CIM – “[Enterprise Integration Functions for Distributed Energy Resources.](#)”

In 2014, we managed a working group of companies willing to implement and test these methods in real software. By utilizing EPRI’s semantic test harness, which was modified to support DER integration testing per the identified methods, and in coordination with the DOE, we executed on that plan hosting an interoperability workshop at NREL with 6 vendors identified improvements and next steps. The use cases/scenarios tested included:

- DER Group creation and member maintenance
- DER status and monitoring
- DER forecasting
- DER real and reactive power management

It was a smashing success. The test tools worked, the vendor’s products interoperated, the standards served the needs. Everyone left encouraged and ready to take it to the next level. This activity will continue in EPRI’s ICT Program (161) and Integration of Distributed Renewables Program (174).

## Upcoming Webcasts

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

20-Jan-2015	ICT Program Project Set 161A End of Year Webcast
21-Jan-2015	ICT Program Project Set 161D End of Year Webcast
23-Jan-2015	ICT Project Set 161B End of Year Webcast
27-Jan-2015	ICT Program Project Set 161E Webcast
28-Jan-2015	ICT Program Project Set 161F Webcast
29-Jan-2015	ICT Program Project Set 161C End of Year Webcast

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

Title	Published
<a href="#">Standard Based Integration Specification: Common Information Model Framework for Asset Health Data Exchange</a>	16-Dec-14
<a href="#">Field Area Network Demo – October 2014 Advisors Meeting: Presentations and Minutes Presentations and Minutes</a>	12-Dec-14
<a href="#">Demand Response-Ready Electric Vehicle Service Equipment Specification: Preliminary Requirements for CEA-2045 Field Demonstration</a>	9-Dec-14
<a href="#">Demand Response-Ready Domestic Water Heater Specification: Preliminary Requirements for CEA-2045 Field Demonstration</a>	8-Dec-14
<a href="#">Demand Response-Ready Programmable Thermostat Specification: Preliminary Requirements for CEA-2045 Field Demonstration</a>	8-Dec-14
<a href="#">Data Class Requirements: Synchrophasor Communication Infrastructure</a>	4-Dec-14
<a href="#">Automated Demand Response Ancillary Services Demonstration Project Newsletter</a>	3-Dec-14
<a href="#">Finding Value: The Utility Enterprise Architecture Practice</a>	3-Dec-14
<a href="#">IntelliGrid Smart Grid Interoperability Newsletter December 2014</a>	3-Dec-14
<a href="#">Utility Enterprise Architecture Guidebook</a>	2-Dec-14
<a href="#">Guidebook for Advanced Distribution Automation Communications: An EPRI Information and Communications Technology Report</a>	21-Nov-14
<a href="#">Using the Common Information Model for Network Analysis Data Management: A CIM Primer Series Guide</a>	20-Nov-14
<a href="#">Advanced Metering Infrastructure-to-Outage Management System Use Case Exploration</a>	18-Nov-14
<a href="#">Big Data and Analytics in the Utility Industry: Key Findings to Successfully Shift from Data Collection to Action</a>	18-Nov-14
<a href="#">Enterprise Integration Functions Test Plan for Distributed Energy Resources Phase 1</a>	13-Nov-14
<a href="#">Transitioning to an Interoperability Testing and Certification Authority (ITCA): Considerations for Migrating the Utility Communications Architecture International Users Group (UCAIug) Quality Assurance Plan</a>	5-Nov-14
<a href="#">Synchrophasor Data Management: Data Linkages</a>	31-Oct-14
<a href="#">2014 Third Quarter CEA-2045 Field Demonstration Project Update</a>	28-Oct-14
<a href="#">Electric Utility Guidebook on Geospatial Information System (GIS) Data Quality</a>	21-Oct-14
<a href="#">Integration of Internal and External Data Sources to Support Transmission Operations Planning and Maintenance: Weather Event and Public Data Assessment</a>	15-Oct-14
<a href="#">Geospatial Information Systems (GIS) as a Situational Awareness Platform: Innovative Uses of GIS in Network Operations</a>	15-Oct-14



## Cyber Security Program Technology Transfer Workshop and DNP3 SAV5 Demonstration

Galen and the Cyber Security team took a more intimate approach to sharing and demonstrating research results this year by hosting an end-of-year “Technology Transfer” workshop. This workshop, hosted at our Knoxville office, updated members on all the 2014 results and how to apply those research results at their utility. As a follow on to the workshop we leveraged our Cyber Security Research Lab to do a coordinated multi-vendor demonstration of DNP3 Secure Authentication Version 5 (SAV5).

### NESCOR Project is Complete!

The [National Electric Sector Cybersecurity Organization Resource \(NESCOR\)](http://smartgrid.epri.com/NESCOR.aspx) is a multi-year project intended to strengthen the cyber security posture of the electric sector by establishing a broad-based public-private partnership with the Department of Energy (DOE) for collaboration and cooperation. NESCOR has served as a focal point to bring together domestic and international experts, developers, and users to specify and, if applicable, test security of novel technology, architectures, and applications for the electric sector. Numerous collaborative efforts have resulted in a rich set of resources for the electric sector available on the NESCOR web-site:

<http://smartgrid.epri.com/NESCOR.aspx>.

## Recent Cyber Security (183) Program Demonstration Deliverables

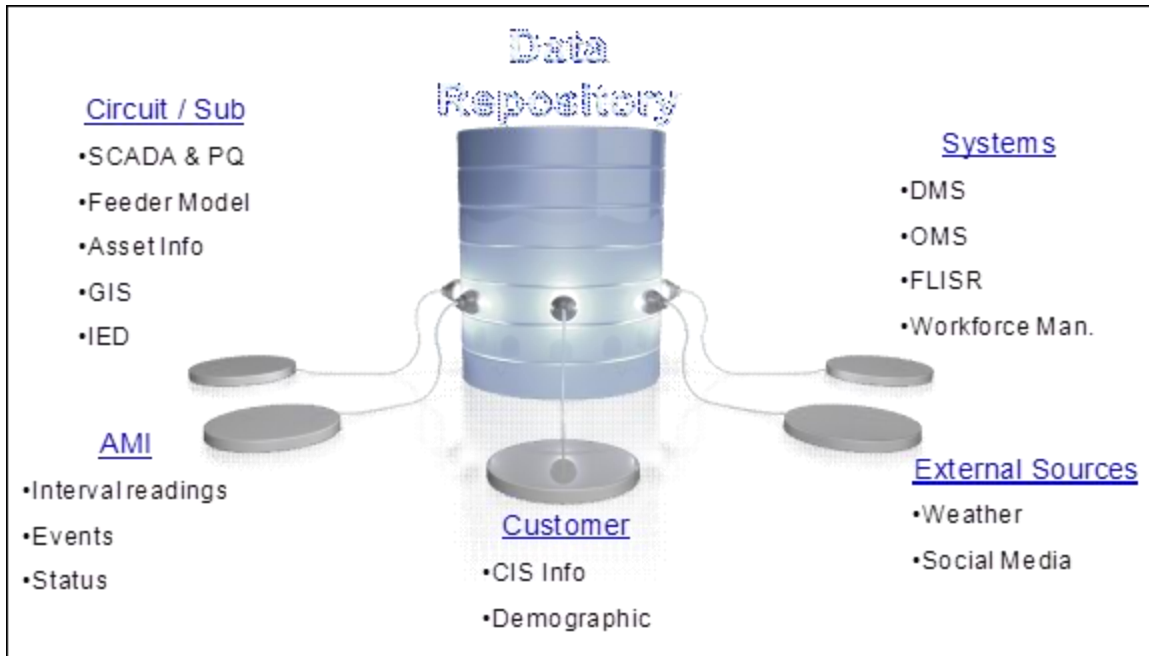
Title	Published
<a href="#">Risk Management in Practice: A Guide for the Electric Sector</a>	15-Dec-14
<a href="#">Cyber Security Risk Management in Practice: Comparative Analyses Tables</a>	14-Dec-14
<a href="#">Cyber Security Procurement Requirements Traceability for the Electric Sector</a>	12-Dec-14
<a href="#">Security Posture using the Electricity Subsector Cybersecurity Capability Maturity Model (ES-C2M2)</a>	12-Dec-14
<a href="#">Guidelines for Leveraging NESCOR Failure Scenarios in Cyber Security Tabletop Exercises</a>	12-Dec-14
<a href="#">Cyber Security Procurement - Application of the Methodology First Example: Digital Valve Controller</a>	28-Oct-14
<a href="#">Cyber Security and Privacy Industry Tracking Newsletter October 2014</a>	14-Oct-14



## Distribution Modernization Demonstration (DMD) Data Mining Initiative

The Data Mining Initiative is a new project in the DMD focused on validating solutions to the data challenges faced by the electric utility industry. Its purpose is to leverage collaboration between EPRI, electric service providers, and data solution providers, including universities and data analytics

companies. DMD members will provide specific datasets to the data repository. Examples of these datasets are shown in the figure below. The data repository will be accessible to EPRI, member electric service providers, and supportive data solution providers to explore ways to extract intelligence from the data. This “data playground” will afford all parties the ability to test and improve proprietary algorithms and software packages, work together to develop unique data analytics use cases, and develop a framework to analyze the value that can be extracted from the data. The enhanced partnerships established as part of this initiative will foster a better understanding of industry needs, capture leading data analytic practices, transfer knowledge from industry experts, and accelerate bringing solutions to the market.



**Figure 1** - Potential datasets to be included in Data Mining Initiative data repository

Work associated with this initiative is ongoing. EPRI is consulting with both members of the DMD project and data solution providers to determine which types of datasets to make available and which use cases are the highest value to explore. EPRI’s support staff is helping to lay the foundation of the data repository to ensure that the data is stored securely, access to the data can be segmented for different levels of users, and that data transfer rates are sufficient for uploading and downloading large data files.

It is envisioned that most, if not all, of the DMD member utilities will participate in this initiative and that a large number of data solution providers will also contribute.

More information about the initiative can be obtained at [www.smartgrid.epri.com/DMD-DMI.aspx](http://www.smartgrid.epri.com/DMD-DMI.aspx).

## Recent DMD and TMD Data Analytics Deliverables

Title	Published
<a href="#">Big Data and Analytics in the Utility Industry: Key Findings to Successfully Shift from Data Collection to Action</a>	18-Nov-14
<a href="#">IREQ Approach to Organizing Smart Grid Data: Case Study of Its Smart Meter Data Organization Process</a>	30-Sep-14
<a href="#">Automated Waveform Analytics for Improved Reliability and Operational Support: Demonstration of DFA Technology at Multiple Utility Companies</a>	30-Sep-14





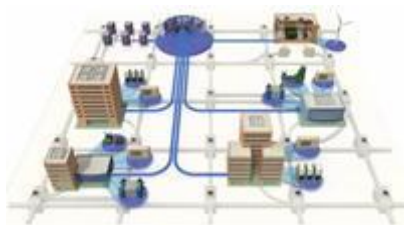
## Final Smart Grid Demonstration Conference Results

The Electric Power Research Institute (EPRI) and the U.S. Department of Energy's (DOE) Office of Electricity Delivery and Energy Reliability (OE) held a conference to assess progress, impacts, benefits, and lessons learned from utility smart grid projects and to exchange information about future challenges and opportunities. The conference provided participants with information and analysis resulting from unprecedented investments in smart grid deployments over the past five years, funded in large part through cost-shared grants under the American Recovery and Reinvestment Act of 2009 (Recovery Act). More than 150 participants representing electric utilities, federal and state government agencies, equipment manufacturers, vendors, universities, and national laboratories attended and contributed their experiences, perspectives, and insights. The event featured results from field experience gained in both the EPRI Smart Grid Demonstration Initiative and DOE's Smart Grid Investment Grant Program (SGIG) and Smart Grid Demonstration Program (SGDP), with a focus on smart grid successes, surprises, and challenges. Utility presentations and panel discussions covered a variety of topics such as technology readiness, customer responses, and future directions and possibilities for grid modernization. There were nine panel presentations and discussion and here are links to those presentations:

- [Realization of the Smarter Grid](#)
- [Transforming the Grid Through Integration](#)
- [Conservation and Optimization via Volt/Var Control](#)
- [Systems Driving the Integrated Grid – including DMS, DA, DERMS, DRMS](#)
- [Communications and Cyber Security – Foundations of the Modern Grid](#)
- [AMI: Beyond Meter Reading](#)
- [Studying the Smarter Consumer](#)

## Smart Grid Videos and Animations

Numerous EPRI Videos are available on the [EPRI YouTube Channel](#). Here are a couple related to the Smart Grid Demonstrations



## Recent Deliverables from the Smart Grid Demonstration Initiative

Name	Published
<a href="#">A Case Study on PJM Market Program Participation: FirstEnergy Smart Grid Demonstration</a>	16-Dec-14
<a href="#">EPRI Smart Grid Demonstration Final Update</a>	22-Oct-14
<a href="#">Cost/Benefit Analysis of CenterPoint Energy's Intelligent Grid Program</a>	31-Oct-14
<a href="#">Smart Grid Reference Guide to Integration of Distributed Energy Resources: 2014 Final Version</a>	16-Oct-14

Upcoming Events	Dates
<a href="#">DistribuTECH, EPRI Booth #4217 , San Diego, CA</a>	Feb 3-5
<a href="#">EPRI Power Delivery and Utilization Advisory Meetings, Phoenix, AZ</a>	March 2-4
<a href="#">EPRI Power Delivery and Utilization Sector Council Meetings, Phoenix, AZ</a>	March 4-5
<b>EPRI ICES European Engagement Summit, Madrid Spain (Save the Date)</b>	April 28-29
<a href="#">EPRI Smart Distribution &amp; Power Quality Conference and Expo, Columbus, OH</a>	June 22-24

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