IEEE PES Subcommittee on Big Data & Analytics

Chair: Prof. Le Xie, Texas A&M University

Co-Chair: Dr. Jun Wen, South California Edison

TCPC: Prof. Christopher DeMarco, University of Wisconsin- Madison
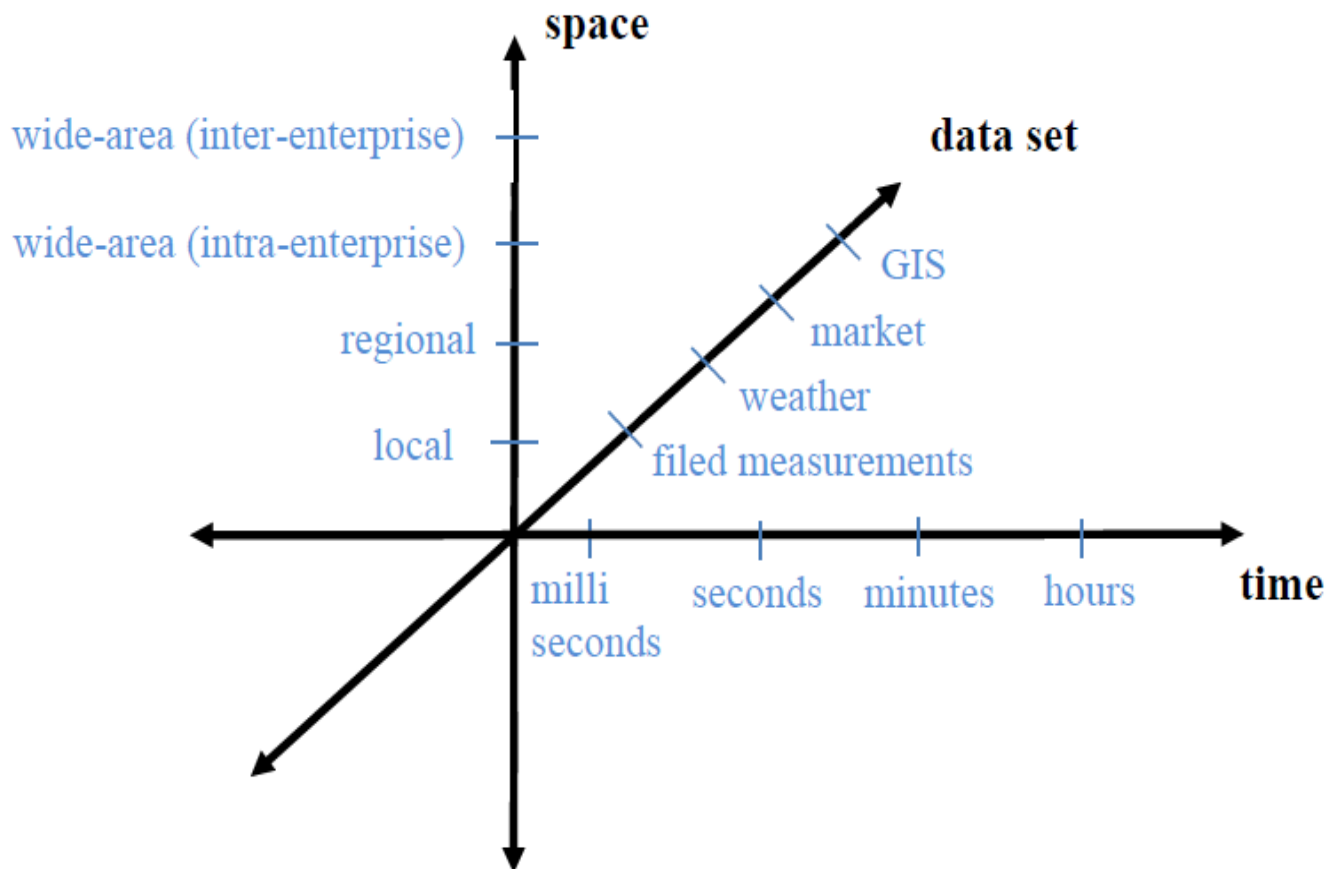
7/18/2017, 3-5 PM

Agenda

- Introduction
- Approval of minutes from 2016 meetings
- Announcements/Summary
- Subcommittee sponsored activities for 2018 GM
- Interaction with PES and other data science community
- Future activities
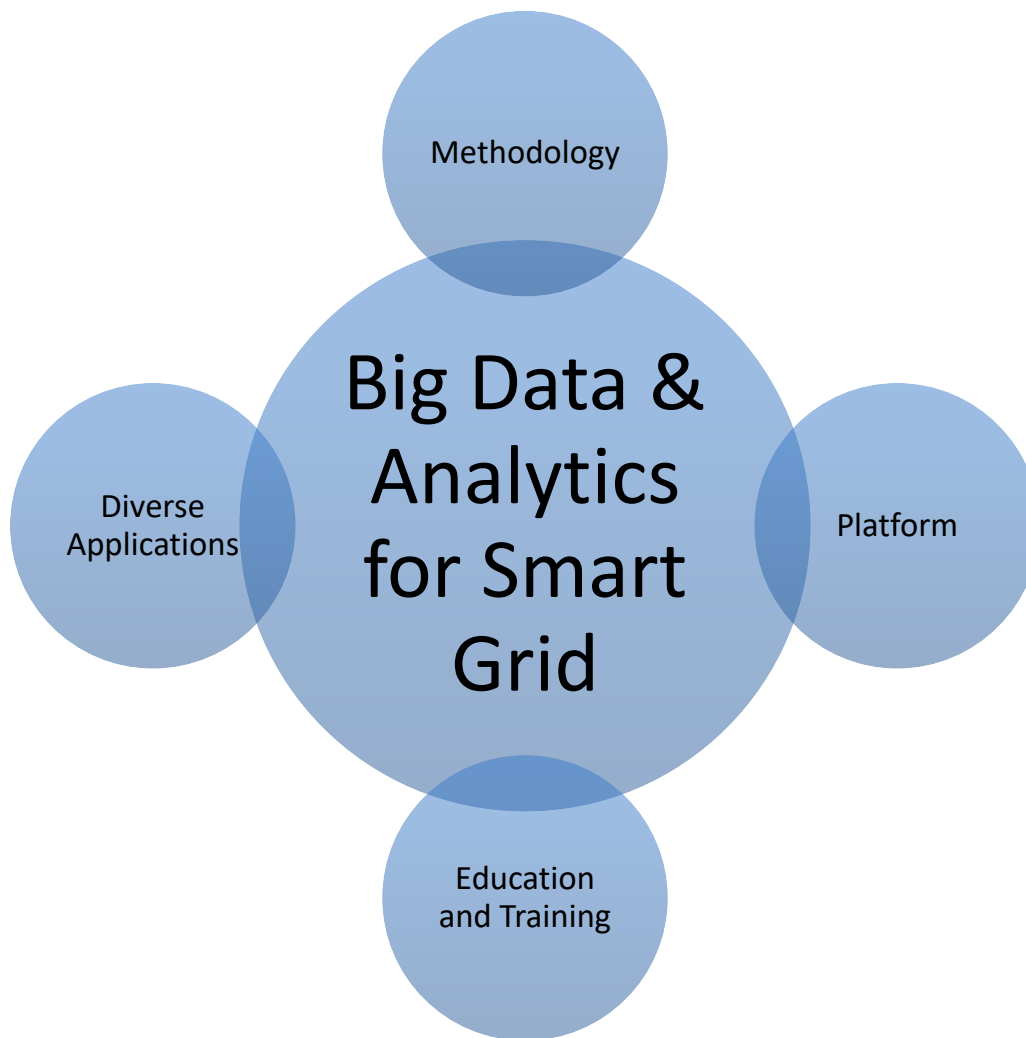- Election of new secretary

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Big Data & Analytics Subcommittee:
A Focal Point of Talents and Resources

What is the value proposition of big data in power grid?

Value Proposition

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Minutes from 2016 meetings

1. Introduction

Le Xie introduced the subcommittee and reviewed the meeting agenda.

2. Approval of minutes from the 2015 meeting

Mladen Kezunovic moved, Edwin Liu seconded. Members voted in favor of approving the 2015 meeting minutes.

3. Announcements / Summary
- Le Xie informed members that the Big Data Analytics (BDA) Working Group (WG) is now officially approved as a subcommittee under PSACE committee.
- The BDA WG was first proposed at 2012 PES GM, and had its first panel session at 2013 PES GM, and gradually grew over the years. There were extensive discussions around the scope and focus of the new BDA subcommittee, and how task force may be organized. The discussions have ranged from methodology, platform, education and training, to data applications.
- Several members brought up the importance of engaging more utility members and industry members.
- Panel session chairs provided updates on the BDA sponsored panels at 2016 PES GM:
  - Reza Arghandeh provided updates on the "Big Data on Power Distribution Networks" panel. The panel session engaged DOE, utilities, and research institutions, and focused on big data application for distribution system. The session had very good attendance of over 150 people, and hence the room is packed.
  - Haiwang Zhong provided updates on the "Big Data on Demand Response" panel. The session had good attendance of around 80 people, and extensive discussions on the use of big data for demand response.

4. Subcommittee sponsored activities for the 2017 GM (Chicago, IL Sun, July 16 – Thurs, July 20 2017)

Super sessions were panned way ahead of time, the subcommittee will try for 2018 GM super session.

The following panels are proposed for 2017 PES GM:
- Big Data Access and Big Data Research Integration in Power Systems
  - Session Chair: Hamed Mohsenian-Rad
- Big Data Analytics for Electricity Markets
  - Session Chairs: Ran Li, Furong Li
- Big Data for Integrated Energy Systems
  - Session Chairs: Goran Strbac, Zhaohong Bie
- Big Data in Power Systems: Transmission, Distribution, and Data Analytic Applications,
  - Session Chairs: Mladen Kezunovic, Nanpeng Yu

5. Interaction with PES and Other Data Science Communities
- IEEE Big Data Initiative, Yingchen Zhang will serve as the liaison
- Special issue on Big Data Analytics for Grid Modernization
- Transactions on Big Data Analytics
- Special topic course "Data Science for Modern Power System" at Texas A&M University
- Big Data course from Stanford
- Webinar on Big Data given through PSERC
- NSF Big Data Spoke
- EPRI utility data course

6. Future Activities

The following WG and TF have been proposed:
- WG: Data Access
  - Chair: Ning Zhou, Co-Chair: Hamed Mohsenain-Rad
- TF1: Big Data Applications in Power Distribution Systems
  - Chair: Reza Arghandeh, Vice Chair: Ram Rajagopal, Secretary: Nanpeng Yu
- TF2: Big Data Webinar Series
  - Chair: Bo Yang, Co-Chair: Yang Weng

The BDA core team consists of Chair, Vice Chair, TF leaderships, and IEEE Big Data liaison. The core team will meet bi-monthly or quarterly for subcommittee activities.

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Announcement

- Officially approved as a subcommittee under AMPS (Analytical Methods for Power System) committee
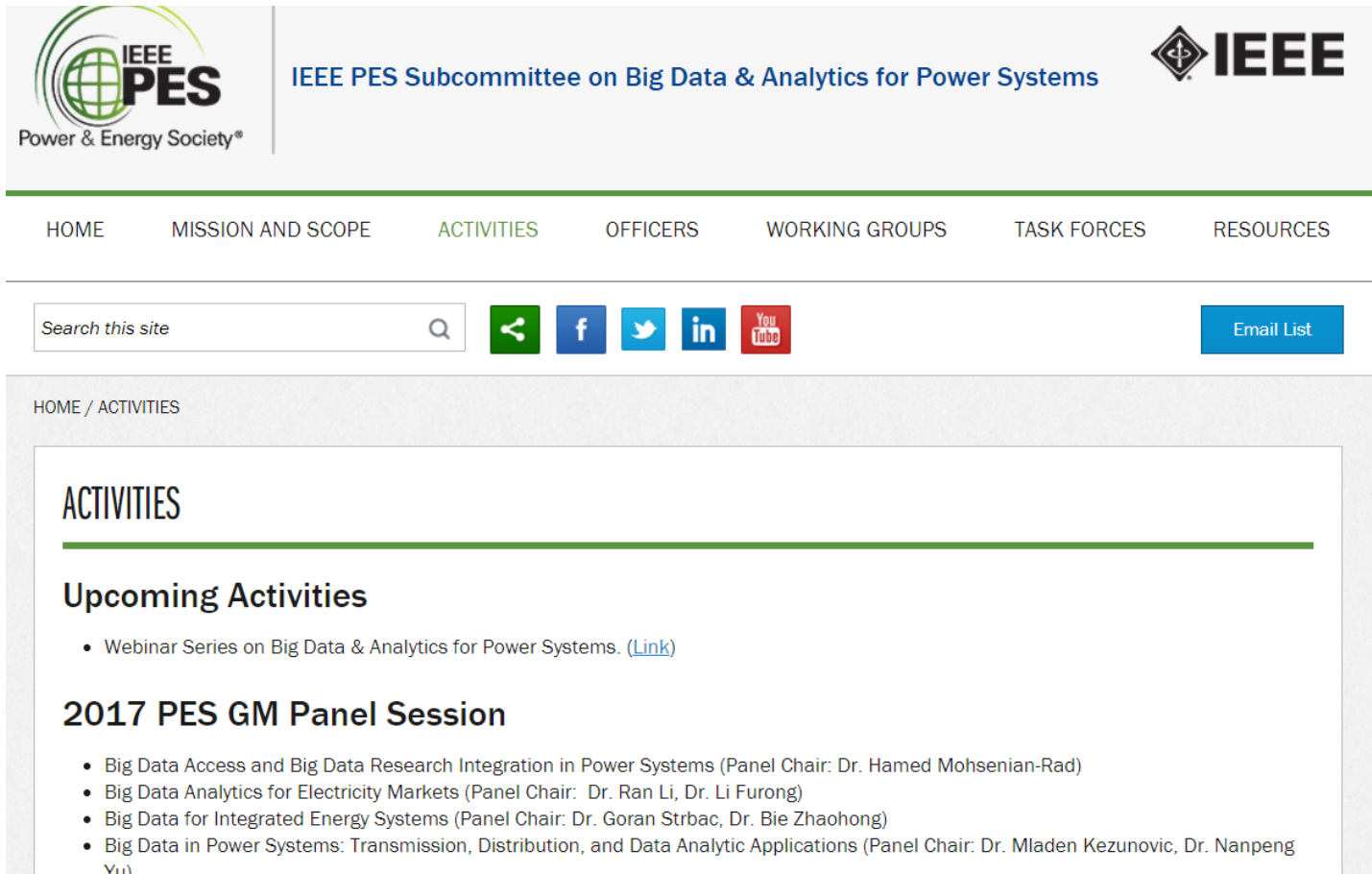
- 2017 Panels and Papers

Panels in GM 2017

- Big Data Access and Big Data Research Integration in Power Systems
(Panel Chair: Dr. Hamed Mohsenian-Rad)

- Big Data Analytics for Electricity Markets
(Panel Chair: Dr. Ran Li, Dr. Li Furong)

- Big Data for Integrated Energy Systems
(Panel Chair: Dr. Goran Strbac, Dr. Bie Zhaohong)

- Big Data in Power Systems: Transmission, Distribution, and Data Analytic Applications
(Panel Chair: Dr. Mladen Kezunovic, Dr. Nanpeng Yu)

Working Group/ TF meeting

- Big data application in power distribution system TF

- Big data webinar series TF

- Data access WG

Website Established and linked with AMPS

http://sites.ieee.org/pes-bdaps/

IEEE-level Initiatives

- IEEE workshop on utility big data
  - Under the leadership of IEEE Smart Grid Initiative, PES Executive Director, Patrick Ryan
  - We provide major input to the technical program
- First event scheduled September 18th, 2017 in San Antonio, TX (Collocated with ISAP)
- Second event under discussion likely to be collocated with T&D 2018 in Denver

Workshop at San Antonio : Your Inputs Needed!

Time	Agenda
8:30-8:45am	Morning Kickoff by IEEE (Jeff and Le)
8:45-10:15am	Panel Session 1: Big Data Challenges and Opportunities (Utility Perspective)
10:15-10:30am	Coffee break
10:30-12:00pm	Panel Session 2: Big Data Platforms and Warehouses (Vendors and Service Providers)
12:00-1:30pm	Lunch
1:30-3pm	Panel Session 3: Big Data Methodologies (Academia and National Labs)
3-3:15pm	Coffee Break
3:15-4:45pm	Panel Session 4: Big Data Case Studies and Demos (both in power and other domain)
4:45-5pm	Wrap-up and Next-steps
5-7pm	Workshop Adjourn and Networking Reception

Power & Energy Society®

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Outreach/Education

- Outreach to IEEE Big Data Initiative, Depository for Big Data Related Research (YC Zhang is the liason)
- Outreach to NSF Smart Grid Big Data Hub (Le Xie is th liason)
  - Major workshop on Smart Grid Big Data on Apr 18, 2017 in College Station TX
  - About 130 participants with online programs available
- Outreach to *Trends and Foundations on Electric Energy Systems*
- *Special Topic Course* "Data Sciences for Modern Power Systems" Taught for the first time in Fall 2015 at Texas A&M, also trained 30+ CenterPoint Engineers
- Springer Monograph under preparation
- *IEEE Webinar on Big Data*

Webinar Series

WEBINAR

Title: An energy IoT platform for real-time production and delivery of wind power generation forecasts

Webinar Address: Link

Time: June 28, 2017 at 2:00 PM EST (1:00 PM MST or 11:00 AM PST)

Abstract: Power generation using renewable energy resources such as wind turbines has grown increasingly popular. Because the underlying meteorological processes are highly unpredictable, it has become important to be able to provide accurate power forecasts in real-time. In this talk we will describe an end-to-end IoT platform that enables SCADA sensor data to be collected in real-time directly from a remote wind farm, securely and reliably transmitted to cloud servers where data is analyzed to create forecasting models. These models are then applied to the turbine sensor data stream to generate day-ahead power generation forecasts. We will also describe the machine learning techniques used as the basis for the forecasting models and our strategies to make the solution scalable for other big data applications.

Bio: Chandrasekar (Chandra) Venkatraman is Principal Research Scientist at Hitachi America Research and Development in the Big Data Laboratory focusing on Industrial IoT Architectures and Analytics for Energy. Prior to joining he was Chief Scientist at FogHorn Systems – Palo Alto based start-up focusing on Big Data Analytics and applications platform for Industrial Internet of Things (IoT). Chandra was with Hewlett Packard Labs, Palo Alto for almost two decades working on Information architectures, distributed computing, in-home network, ePrint architecture, sensor networks and Internet of Things. He has authored over 15 patents and a number of research papers and talks.

Pierre Huyn has over 30 years of research and advanced development experience in data management, big data analytics, and software engineering. His current interest is in big data architectures for IoT and deep learning for time series data in the domain of renewable energy.

Webinar_Hitachi_announcement Webinar_announcement_2017

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Priorities and Plans for Next Year

- Substantiate a few selected Initiatives
  - Big Data for Distribution Systems
  - Data Access
  - Webinar Series
  - Others
- 2018 Super Session? Tutorial? Need idea and action soon!

We Need Volunteers!

- How to sign up?
  - Email le.xie@tamu.edu and mention your interest
  - Please mention which initiative(s) you are interested.

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