NASPI Work Group Meeting
San Diego, CA
April 15-17, 2019

Hilton San Diego Mission Valley
901 Camino Del Rio South
San Diego, California, 92108
(619) 543-9000

The North American Synchrophasor Initiative (NASPI) Work Group meeting will be held in San Diego, California, April 15-17, 2019, featuring technical sessions and presentations that showcase innovative applications of synchrophasor technology. We will also feature opportunities associated with wide-area streaming applications of high-speed (so-called "point-on-wave") time-synchronized measurements, including issues associated with inverter-based generation and the ability to maintain essential reliability services. Mr. Ali Yari, Director, Electric Grid Operations, from San Diego Gas & Electric (SDG&E) will deliver the keynote speech.

NASPI will host a technical workshop related to communication and networking issues on the afternoon of April 15.

NASPI Work Group registration. The *early bird* registration fee will be $500 for regular attendees and $100 for students. The regular rate will be $600 and $175 respectively for registrations made after March 15, 2019.

Book your hotel reservations. A block of rooms at the Hilton San Diego Mission Valley is available at $139/night. This special rate will be applicable for the nights of April 11-21, 2019. The rate will be available until March 25, 2019, or until the group block is sold out, whichever comes first. You may reserve your room using the link above, or call 1-855-271-3617 and ask for a room using the NASPI group code NS1.

Draft Agenda (3/12/2019)

Monday, April 15, 2019	
1:00 - 5:00 pm	***Technical Workshop:*** *In-depth presentations and panel discussions related to communications and networking issues*
Tuesday, April 16, 2019	
8:00 - 9:00 am	**Registration and coffee**
9:00 - 9:10 am	Welcome, Introductions and Logistics Review -- Jeff Dagle (PNNL)
9:10 - 9:30 am	Keynote Speaker -- Ali Yari, Director, Electric Grid Operations, San Diego Gas & Electric (SDG&E)
9:30 - 9:40 am	NASPI Project Manager Update -- Alison Silverstein
9:40 - 10:00 am	Organizational Updates -- DOE, EPRI, NERC
10:00 - 10:20 am	Updates on Dominion Energy's Synchrophasor Analytics Development Initiative -- Kevin Jones (Dominion Energy)

10:20 - 10:35 am	**Break**

10:35 – 11:00 am	Tariq Rahman (SDG&E) • Real-time monitoring of controls and power flow on 2x400MVA 230kV Phase-shifting Transformer using PMUs -- Tariq Rahman & Bill Cook (San Diego Gas & Electric) and Kamal Garg (SEL) • Inertial Response of Synchronous Condensers: SDG&E Experiences -- Hassan Ghoudjehbaklou & Tariq Rahman (San Diego Gas & Electric)
Control implementation	
11:00 - 11:15 am	Data Considerations in Real-Time PMU Feedback Control Systems -- Felipe Wilches-Bernal, Brian Pierre, Ryan Elliott (Sandia National Laboratories) and Dan Trudnowski (Montana Technological University)
11:15 - 11:30 am	Adaptive Wide-Area Damping Controller Using Transfer Function Model Derived from Measurements: Case Studies on Realistic Power Grid Models -- Yilu Liu (The University of Tennessee/Oak Ridge National Lab), Lin Zhu, Yi Zhao, Huangqing Xiao, Ibrahim Altarjami (The University of Tennessee), Evangelos Farantatos, Mahendra Patel (Electric Power Research Institute), Atena Darvishi, George Stefopoulos (New York Power Authority) and Giorgio Giannuzzi & Roberto Zaottini (TERNA)
Point-on-wave measurements	
11:30 - 11:45 am	Session Introduction -- Farnoosh Rahmatian
11:45 - 12:00 pm	Development of low-cost time synchronized point-on-wave data recorder and fault-tolerant grid frequency measurements technologies -- Lingwei Zhan, Bailu Xiao, Zhi Li, Wenxuan Yao (Oak Ridge National Laboratory), Yilu Liu (Oak Ridge National Laboratory, The University of Tennessee), Fuhua Li, He Yin, Shutang You (The University of Tennessee), and Maozhong Gong (GE Global Research)
12:00 - 1:00 pm	**Lunch**
Point-on-wave measurements (continued)	
1:00 - 1:15 pm	High-speed synchrophasor computation for accelerated disturbance analysis -- Viktor Litvinov & Pavel Kovalenko (GRT Corp)
1:15 - 1:30 pm	Point-on-wave Data of EPFL-campus Distribution Network -- Asja Derviškadić, Guglielmo Frigo & Mario Paolone (Swiss Federal Institute of Technology (EPFL) – Distributed Electrical System Laboratory (DESL))
1:30 - 1:45 pm	Software-Defined Sensors with Point on Wave Measurements -- Dr. Kevin D. Jones (Dominion Energy), Dr. Benjamin Bengfort (PingThings), and Michael Andersen (University of California Berkeley)
1:45 - 2:00 pm	Benefits of Streaming Time-Series System for Operations Reliability and Resilience -- Dr. Greg Zweigle, Jared Bestebreur & Eric Hewitt (Schweitzer Engineering Laboratories)
2:00 - 2:15 pm	Analyzing Point-on-Wave Measurements with the Archive Walker Tool -- Jim Follum, Pavel Etingov, Frank Tuffner, Heng Wang, Urmila Agrawal (Pacific Northwest National Laboratory) and Dmitry Kosterev, Steve Yang & Tony Faris (Bonneville Power Administration)
2:15 – 2:30 pm	**Break**
2:30 - 3:30 pm	PANEL: Big Data Analytics Platforms Architecture Requirements and Analysis Techniques Moderator: Matthew Rhodes (SRP). Speakers: Dr. Anamitra Pal (ASU), Michael Chertkov (LANL), Sean Murphy (Ping Things), Tom Anderson (SAS), & Viktor Litvinov (GRT)
Statistical analysis and deep learning	

3:30 – 3:45 pm	EATT White Paper: Data Mining Techniques and Tools for Synchrophasor Data - Evangelos Farantatos
3:45 – 4:15 pm	Synchrophasor Analytics using Cloud Based Machine Learning Platform - Pavel Etingov, Jason Hou, Huiying Ren, & Heng Wang (Pacific Northwest National Laboratory)
4:15 – 4:45 pm	Grid Eye to Grid Mind - A Data-driven Autonomous Grid Dispatch Robot Based on PMU Measurements, Di Shi, Ruisheng Diao, Jiajun Duan, Zhe Yu (GEIRI North America), and Zhiwei Wang, Xiao Lu, Haifeng Li, Chunlei Xu (State Grid Jiangsu Electric Power Company)
4:45 – 5:15 pm	Statistical learning based online prediction, detection and classification of anomalies in distribution power grids -- Andrey Lokhov, Christopher Hannon, Deepjyoti Deka & Marc Vuffray (Los Alamos National Laboratory)
5:15 – 5:30 pm	Deep Learning Application for Power Grid Event Detection and Classification Using the Synchrophasor Data -- Tianzhixi Yin & Brett Amidan (Pacific Northwest National Laboratory)
6:00 - 8:00 pm	**NASPI Reception, Awards, & Poster Session**

Wednesday, April 17, 2019	
8:00 - 9:00 am	**Registration and coffee**
9:00 - 9:30 am	Use of Time-Synchronized Measurements in the Real-Time Ops Horizon -- Michael Cassiadoro (Total Reliability Solutions) and Eric Andersen (Pacific Northwest National Laboratory)
9:30 - 10:00 am	Performance, Requirements, Standards & Verification Task Team (PRSVTT)
10:00 - 10:30 am	Data & Network Management Task Team (DNMTT)
10:30 - 10:45 am	**Break**
10:45 - 11:15 am	Engineering Analysis Task Team (EATT)
11:15 - 11:45 am	Distribution Task Team (DisTT)
11:45 - 12:15 pm	Control Room Solutions Task Team (CRSTT)
12:15 – 1:15 pm	**Lunch**
Testing and standards	
1:15 - 1:30 pm	Life Cycle Testing of Synchrophasor Based Systems used for Protection, Monitoring and Control -- Mladen Kezunovic (Texas A&M University)
1:30 - 1:45 pm	Vulnerability Analysis of Distance Relays using PMU data -- Gopal Gajjar, Rajeev Gajbhiye, S. Soman (Indian Institute of Technology Bombay), and Vahid Madani (IEEE)
Model validation	
1:45 - 2:00 pm	How well does a model simulation match with system response? -- Mani Venkatasubramanian (Washington State University) and Ebrahim Rezaei (American Electric Power)
Renewable integration	
2:00 - 2:15 pm	Analysis on Impact of Renewable energy penetration on Power System Inertia in Indian Grid using Synchrophasors -- Abdullah Siddique, Sudeep Mohanan, & Abhimanyu Gartia (POSOCO SRLDC, INDIA)
2:15 – 2:30 pm	**Break**
DOE research updates	
2:30 – 2:45 pm	Real Time Applications Using Linear State Estimation Technology -- DE-OE0000849 Project Update -- Ken Martin, Lin Zhang, Neeraj Nayak, Iknoor Singh, Wenyu Ju, Heng (Kevin) Chen (Electric Power Group), Tony Faris (BPA), and Atena Darvishi (NYPA)

2:45 – 3:00 pm	Substation Secondary Asset Health Monitoring Based on Synchrophasor Technology -- DE-OE0000850 Project Update -- Heng (Kevin) Chen, Lin Zhang, Tianyu Hu (Electric Power Group), Yanfeng Gong & Qiushi Wang (American Electric Power)
3:00 – 3:15 pm	A Generic and Robust Model Validation Software with Real-world Multi-event Applications (Funded by the US Department of Energy under Award Number DE-OE0000858)-- Sherman Chen (PG&E), Xiaochuan Luo, Frankie Zhang (ISO-NE), Manu Parashar, Krish Srinivasan (GE Grid Solutions), George Zheng (Powertech Labs), & Honggang Wang (GE Global Research), and Haris Ribic, & Feng Dong (GE Energy Consulting)
3:15 - 3:30 pm	A practical approach to streaming point-on-wave data -- J. Ritchie Carroll (Grid Protection Alliance, Inc.)
3:30 - 3:45 pm	NASPInet 2.0 presentation -- Jeff Taft (Pacific Northwest National Laboratory)
NERC update	
3:45 - 4:00 pm	EI Large Oscillation Event -- Aftab Alam & Tim Fritch (NERC)
4:00 - 4:15 pm	SMS meeting preview -- Tim Fritch & Aftab Alam
4:30 pm	**Adjourn**

NASPI would like to say **"THANK YOU"** to the following partners for their support

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If you are interested in becoming a meeting partner, please email Paul Myrda pmyrda@epri.com for additional information.