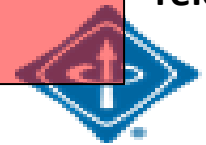
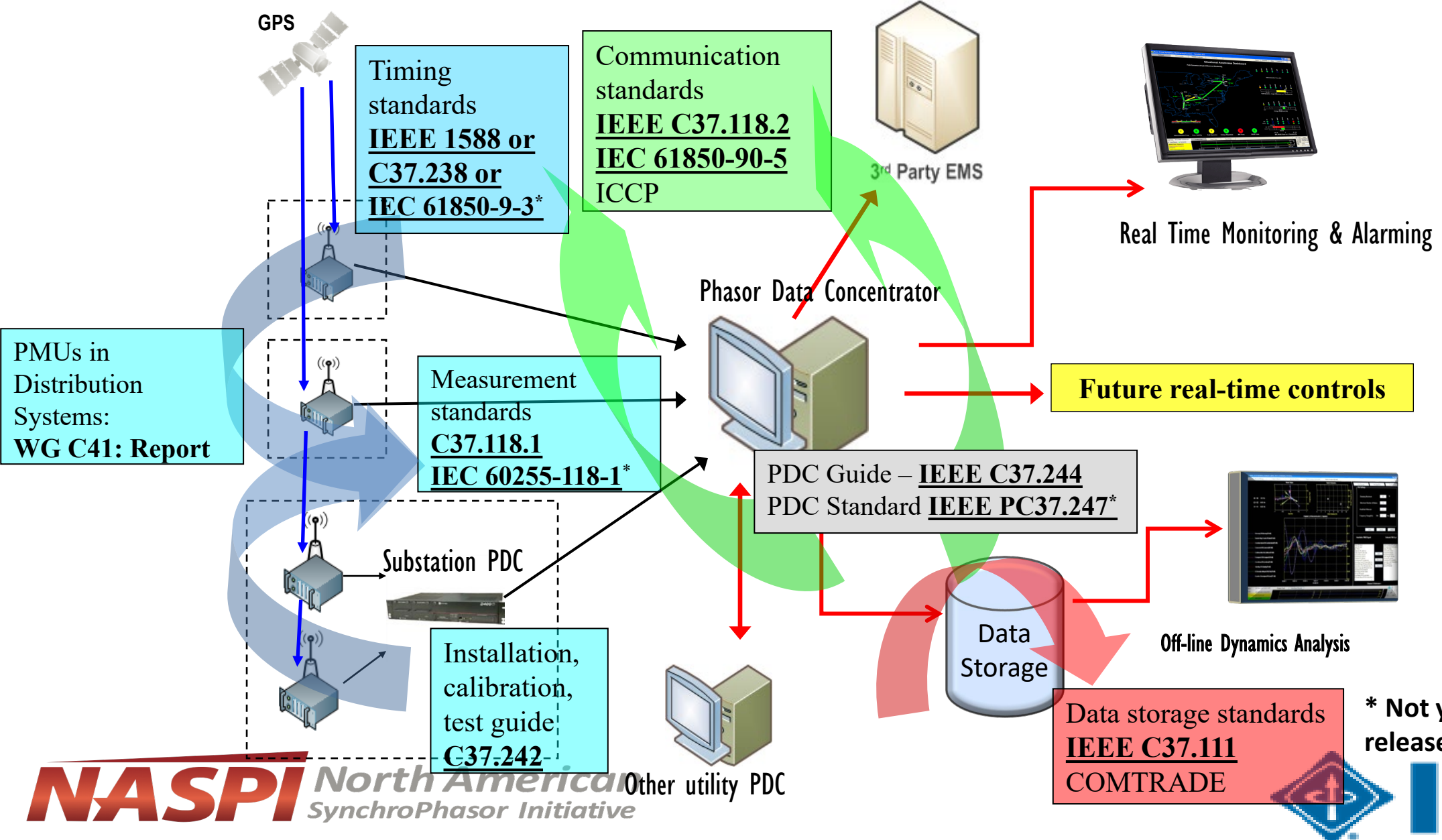


# Coordination of Synchrophasor Related Activities

IEEE PES PSRC C23  
(last met virtually in Sept, 2021,  
next PSRC meeting January 9-12, 2022)

Presented by:  
Allen Goldstein  
Chair

# Phasor Measurement Systems



# IEEE PES PSRC Activities

- C23: Coordination of Synchrophasor Related Activities
- C28: C37.242 IEEE Guide for Synchronizing, Calibration, Testing, and Installation of PMUs – **Accepted by RevCom, now in final-final edit.**
- CTF46: Prepare a summary transactions paper on C37.242 – becoming a working group. Meets monthly
- H40 C37.1.2 Databases used in Utility Automation Systems
- C41: Investigate Measurement Performance Requirements for PMUs in Distribution System Applications – Draft a report. - meets regularly, expected completion 1 year from now.
- C40: Tutorial on C37.247 Standard for Phasor Data Concentrators (possibly at PES General Meeting)
- H50: Requirements for Time Sources in Protection & Control Systems

# IEEE PES PSCC activities

- P1: Std. Profile for ... 1588... in Power Systems...Amendment adding a TLC for leap second.
- P8: Recommended Mapping Approach between IEEE C37.118.2 and IEC 61850
  - Available now at IEEE Resource Center
- P9: Revision of C37.118.2 Synchrophasor Data Transfer for Power Systems
  - Sponsor Ballot expected 2022: please indicate interest on IEEE SA website
- P10: IEEE Standard for Streaming Telemetry Transport Protocol (IEEE P2664)
  - Possible ballot in 2022
- P16 & T&D: P1864 Review by PSCC/T&D for Communications and Cyber Security Requirement
- P20: Joint revision of IEC 61850-9-3 (IEEE 1588) Power Utility Profile
- S5: Revision of IEEE C37.240 Cyber Security Requirements for Power System Automation, Protection and Control Systems
- S8: P2658 Guide for Cybersecurity Testing in Electric Power Systems
- S15: Guide for Securing Generic Object Oriented System Events (GOOSE) and Sampled Values (SV) Protocols of IEC 61850 using IEC 62351-6 and IEC 62351-9
  - Particular interest to NASPI is R-GOOSE and R-SV security.

# NASPI past work

- **CRSTT:**
  - TRS & PNNL: Operational Use Cases for Time-Synchronized Measurements.
  - Using Synchrophasor Data to Determine Disturbance Location.
  - Using Synchrophasor Data for Oscillation Detection.
  - PMU versus SCADA Video Events Library.
  - Time synced measurements training for operators.
- **DNMTT:**
  - NASPInet 2.0 Architecture Guidance (led by PNNL's Dr. Taft)
  - Utility survey of those collecting PMUs for architecture structure and analytics interface.
- **PSRVTT:**
  - Categorizing Phasor Measurement Units by Application Data Requirements.
  - A Guide for PMU Installation, Commissioning and Maintenance.
- **DisTT:**
  - Synchronized Measurements and their Applications in Distribution Systems: an update
  - DG-Load Disaggregation Use Case
  - Equipment Health Diagnostics Use Case
  - Fault Location Use Case
  - Phase Identification Use Case
  - Wildfire mitigation webinar
- **EATT:**
  - Data Mining Techniques and Tools for Synchrophasor Data.
  - Integrating Synchrophasor Technology into Power System Protection Applications.
  - Phase Angle Calculations: Considerations and Use Cases.

# NASPI current work

- CRSTT:
  - System Inertia Monitoring use case.
  - Time synchronized measurements *simulation* training virtual course. Hope to get the course face to face again as the country opens.
  - Coordination with DisTT.
  - Michael Cassiadoro stepped down as a co-lead and replaced by Cody Parker (SPP).
  - NASPI WG Spring 2022 panel session with operations personnel presenting.
- DNMTT:
  - Synchrophasor Archive and Network Strategy Task Force (SANSTF) co-led by Laurel Dunn and Manjari Asawa are working on a Synchrophasor Application-Based Guide for Archive and Network Strategies (SABGANS).
  - Renewed focus on data exchange formats, naming conventions and clock issues.
  - Investigation of network architecture for synchrophasor edge computing solutions
  - Looking for new co-lead.

# NASPI current work

- DisTT:
  - Use Case documents development with CRSTT.
  - Provided feedback on “Distribution Synchronized Measurements Roadmap” – Draft Final Report, Quanta Technology and Oak Ridge National Laboratory.
- EATT:
  - Shaun Murphy stepped down as co-lead and was replaced with Matthew Rhodes.
  - Continues to make progress on the white paper, “Advanced Model Validation & Calibration” led by Honggang Wang.
- PSRVTT:
  - Survey of PMU connected instrument transformers.
  - Development of three white papers nearing completion:
    - Survey of Existing PMU applications Around the World and Classification.
    - Analyzing Synchrophasor Performance Requirements for Synchrophasor based Control Applications.
    - Data Quality Impacts on Synchrophasor based Control Applications.

# NASPI Work Group

- Completed the NASPI 2021 [Webinar Series](#) on:
  - merging units
  - synchrophasor cybersecurity for grid operations
  - digital voltage and current sensors
  - system inertia monitoring
  - FOA 1861 awardee report updates
  - human factors, human-machine teaming.
- IEEE-NASPI Oscillation Source Location Contest.
- “Phasors or Waveforms: Considerations for Choosing Measurements to Match Your Application” Report, Jim Follum ([PDF](#)).
- NASPI Work Group Virtual Meeting and Vendor Show, October 5-7, 2021 (details [here](#)).



# Discussions and new business

- “High speed measurements” (focus on IBR (load as well as gen.))
  - Just POW or other processed info (high-speed phasors?)
  - Goodness of Fit
    - Synchrophasors are a form of signal compression (lossy)
- Advanced Networks (technologies on the horizon (MPLS, etc.))
- Applications of the measurements (AI, ML, Data Mining, etc.)
  - What data needs to be archived? (compression?)
    - What about retrieval?
- Cybersecurity – both streaming and archival
  - Not particularly applicable to NERC – should be discussed
    - How do we pass data between organizations? CIP compliance
- How do these map to PES work?

Thank you  
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