

Performance and Standards Task Team

- **Task Team Leader:** Vahid Madani/PG&E
- **Task Team Co-Leader:** Damir Novosel/Quanta Technology
- **Task Team Support:** Henry Huang/PNNL
- This task team comprises > 140 members (>50 Active)

Scope

- The scope of the Performance and Standards Task Team includes coordinating and acting as liaison to standards efforts and determining consistent and satisfactory performance of synchronized measurement devices and systems by creating guidelines and reports in accordance with best practices.
- PSTT has been active in developing guidelines and requirements documents to serve NASPI needs. The scope of the documents covers a wide spectrum from PMU testing to phasor network deployment to phasor applications.

Highlights

- Completed 13 documents including:
 - PMU System Testing and Calibration Guide, Jerry Stenbakken (NIST)
 - SynchroPhasor Accuracy Characterization, Sakis Meliopoulos (Georgia Tech)
 - PMU Installation/Commissioning/Maintenance Guide, Part I (Ritchie Carroll/TVA), Part II, (Ken Martin/BPA), and Survey (V. Centeno/Virginia Tech)
 - Eastern Interconnection Phase Angle Reference, Henry Huang (PNNL)/Ritchie Carroll (TVA)
 - Phasor Requirements for State Estimation, Lucy Wu (Areva)
 - Phasor Requirements for Raw Data Utilization, S. Meliopoulos (Georgia Tech)
- TT members, including Damir and Vahid, have been receiving a lot of support from the industry to coach and lead in building standards and roadmaps in SGIG activities.
- Lead the development of guidelines and support development of industry standards to help the SGIG Awardees and other users of synchrophasor technology.
- Actively working with IEEE on converting PSTT documents to standards.

Accomplishments Since Last Meeting

- A list of PSTT documents has been compiled for inclusion in IEEE and IEC standards and guidelines.
- PSTT is working with IEEE PSRC on creating an IEEE guide based on documents created by NASPI to address the following topics:
 - Test and calibration procedures for PMUs with emphasis on performance and interoperability, for laboratory and field applications. Performance tests include those specified in IEEE Std. C 37.118 as well as extended test procedures to address the power system dynamic.
 - Synchronization techniques with focus on the overall accuracy and availability of the measurement chain and will characterize time synchronized data for both power frequency and during transients
 - PMU installation based on general installation requirements for PMUs and typical (sub) station configurations
- Complete the work by the January 2011 to facilitate the fast track process to support installation of synchronized phasor measurement systems (e.g. ARRA infrastructure investment grants)

Accomplishments Since Last Meeting

- Actively participating in NIST Prior Action Plan (PAP) team 13 Time Synchronization, IEC 61850 Objects/IEEE C37.118 Harmonization.
- Defined a scope document on PDC functional requirements.
- Developing a matrix of applications and performance parameters to address the relationship between NERC PRC-002-2 and PSRC C37.118.
- Identified gaps in interoperability standards related to phasor measurements and smart grids, in support of NIST interoperability standard activities.

PSTT 2010 Goals and Metrics

In collaboration with NIST & SGIG, IEEE, IEC

Goal #	Goal	Metric	Deliverable	Priority	Lead	Funding Required to Reach the Target
1	Oversee the process of moving PSTT documents to IEEE Standards and Guides and to expedite the process	Form WG addressing: - Test and calibration procedures - Synchronization techniques - PMU Installation requirements and typical station configurations	IEEE TF initiated. Documents to be completed on December '10.	High	Group effort: Paul Myrda (lead), Mladen Kezunovic, Vahid Madani, Damir Novosel	NO
2	Identify and formalize the gaps not in present standards	Develop white paper	October '10	High	Farnoosh Rahmatian	YES: to speed up and reach the target
3	Define certification of PMUs	Develop white paper	October '10	High	Jerry Stenbakken	YES: to speed up and reach the target
4	Sharing Specification and Functional Requirements	Review and Approve documents submitted by NASPI members	on-going	High	Vahid Madani/ Damir Novosel	NO
5	Phasor Data Concentrator Requirements	Develop specification or use existing one (see item 4)	November '10	High	Tony Weekes	YES: to speed up and reach the target
6	PMU-PDC/PDC-PDC Communication Methods	Develop a guide to be used by and coordinated with IEEE to develop a guide	March '11	High	To identify (Coordinated between PSTT and DNMTT)	YES: to speed up and reach the target
7	Phasor Data Concentrator Testing and Calibration Standard	Develop a guide to be used by and coordinated with IEEE to develop a standard	March '11	High	To identify	YES: to speed up and reach the target
8	Guide on using PMU as part of the multi-function devices.	Develop a guide	March '11	Medium	Krish Narendra	May be needed to speed up and reach the target
9	Develop guide on Requirements for Combined Applications using Synchronized Measurement Data.	Develop a guide	July '11	Low	Yi Hu	Low priority
10	Support other TT as needed	Request for support and identifying the type of support needed (e.g. Coordination with DNMTT on NasPInet)		High	Vahid Madani / Damir Novosel & Respective TT Leads	TBD

Plans for Next 3 Months

- Oversee and expedite the process of moving PSTT documents to IEEE standards.
- Coordinate with DNMTT on NASPI API and data storage guidelines.
- Develop a white paper on gaps in interoperability standards related to phasor measurements and smart grids.
- Develop a white paper on PMU certification.
- Examine the Cyber Security Implications / Impact to the PSTT work
- Development of three high-priority PDC documents:
 - Standardized requirements for main PDC functions
 - PMU-PDC/PDC-PDC communication methods
 - PDC calibration and test guideline

Standardized Requirements for Main PDC Functions

- Current Status
 - PDC is a main component
 - No PDC standard exists.
 - PDC requirements vary widely.
- Industry Needs
 - Standardize requirements, critical to many SGIG projects.
- PSTT Proposed Actions:
 - Identify and finalize main PDC functions
 - Specify the requirements for each main PDC function
 - Document the specified requirements for selected functions

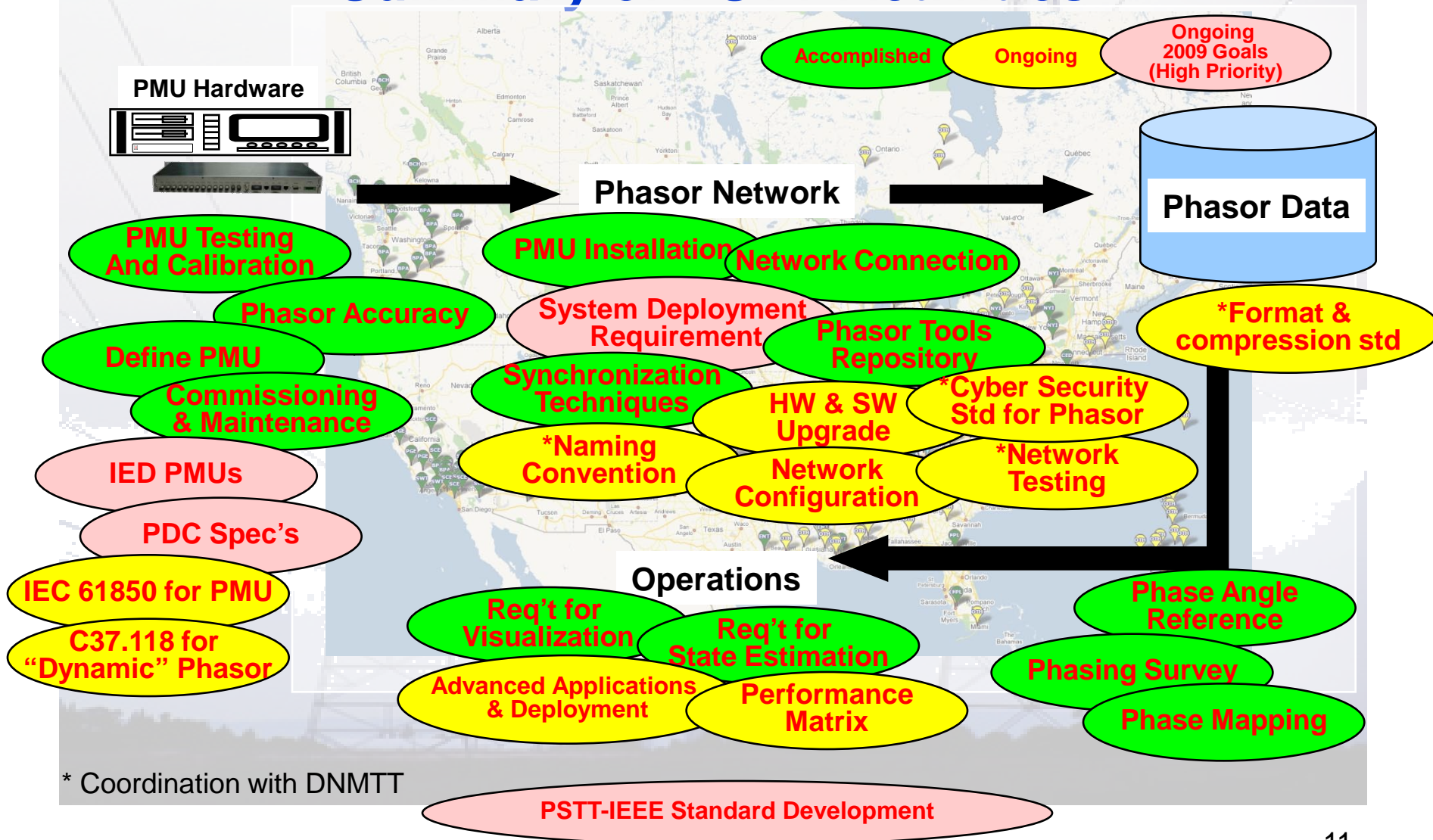
PMU-PDC/PDC-PDC Communication Methods

- Current Status
 - IEEE C37.118-2005 does not address several critical issues for interoperability in a large phasor system: inter-device communications, handling of missing data due to loss of communications, automatic device (PMU and/or PDC) registrations / configurations.
- Industry Needs
 - Establish common methods/protocols to address these issues.
- PSTT Proposed Actions:
 - Identify the missing elements of the inter-device (PMU and PDC) communication methods
 - Devise protocols/methods to address these elements
 - Document the protocols/methods

PDC Calibration and Test Guideline

- Current Status
 - Lack of specific standard for PDCs and the relevant testing guidelines.
 - Impossible to verify the performance and interoperability of PDC.
- Industry Needs
 - Develop a “PDC calibration and test guideline” to meet the overall phasor system performance requirements.
- PSTT Proposed Actions:
 - Specify the test setup and procedures for verifying the performance of main PDC functions.
 - Specify the test setup and procedures for test PMU-PDC and PDC-PDC communication interoperability.
 - Document the specified test setup and procedures.

Summary of PSTT Activities



* Coordination with DNMTT

Accelerated/Concurrent Standards Development Process

