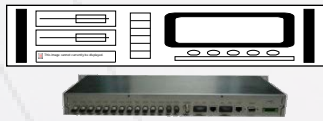


Performance and Standards Task Team

- Task Team Leader: Vahid Madani/PG&E
- Task Team Co-Leader: Damir Novosel/Quanta Technology
- Task Team Technical Support: Henry Huang/PNNL
- Task Team Administrative Support: Teresa Carlon/PNNL
- This task team comprises ~ 200 members (>70 Active)

Summary of PSTT Activities

PMU/PDC Hardware

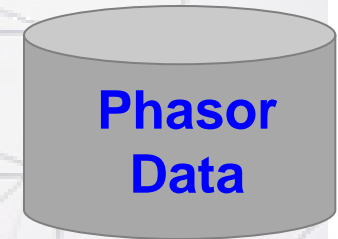


- PMU Testing And Calibration
- Phasor Accuracy
- Define PMU
- Commissioning & Maintenance
- PDC Functions
- PDC Testing
- Multi-function PMUs
- C37.118 for "Dynamic" Phasor
- C37.118.1 Advisory**

Phasor Network

- Synchronization Techniques
- PMU Installation
- PDC Communication
- HW & SW Upgrade
- Network Connection
- Network Configuration
- *Network Testing
- *Naming Convention
- *Cyber Security Std for Phasor

Phasor Tutorials
PSTT - IEEE Standards Development



- *Format & compression std
- Phase Angle Reference
- Phasing Survey
- Phase Mapping
- Archival System

Applications

- Req't for Visualization
- Req't for State Estimation
- Advanced Applications & Deployment
- Performance Matrix
- Phasor "ROI"
- Phasor Tools Repository

* Coordination with DNMTT

Recent Accomplishments

- Advisory on IEEE Standard C37.118.1-2011
- NASPI/IEEE Cooperation
 - IEEE C37.242 Guide for Synchronization, Testing, Calibration and Installation of PMUs
 - IEEE C37.244 Guide for PDC Requirements
 - Participate in ICAP* Synchrophasor Conformity Steering Committee for PMU certification
 - Coordination with IEEE PSRC (CTF23) and IEEE PES Technical Council
- Task Force on PMU Certification Process

*ICAP = IEEE Conformance Assessment Program

PSTT Initiatives

- Participate in ICAP* Synchrophasor Conformity Steering Committee for PMU certification
- Coordination with IEEE PSRC (CTF23) and IEEE PES Technical Council
- Guide on Application Requirements and Benefit Metrics (Phasor “ROI”)
- Guide on Data Archival Systems
- Guide on Using PMUs in Multi-Function Devices
- Synchrophasor System Tutorials

Performance Requirements, Standards & Verification Focus Area

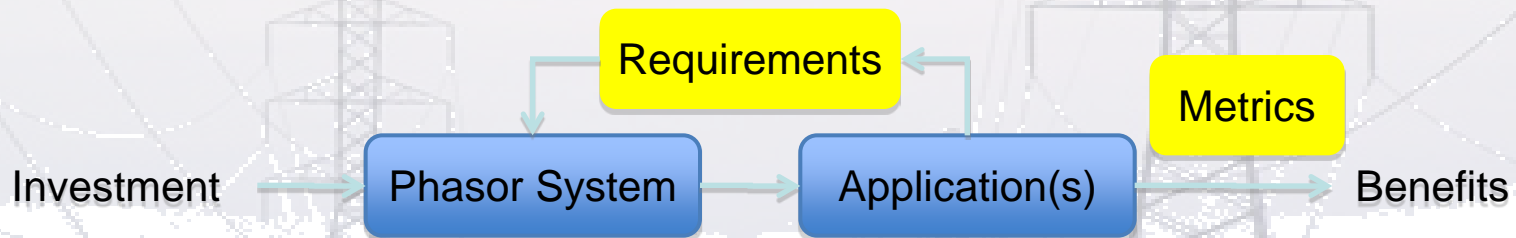
- System requirements and monitoring
- Standards and guidelines development and coordination
- Migration between versions of standards and interaction with standard-setting bodies
- Performance requirements for data exchange
- System interoperability and compatibility testing, conformance, and certification

Current and New Goals and Metrics

Goal #	Goal	Metric	Deliverable	Priorities	Lead
1	Phasor Requirements and Benefit Metrics for Tools and Applications	Develop a guide	May '14	High	Dave Bertagnolli and Tony Weekes
2	Guide for Phasor Data Repository and Archiving	Develop a guide	June '14	High	Vahid Madani and Henry Huang
3	Guide on Using PMU in Multi-Function Devices	Develop a guide	December '13	High	Yi Hu
4	Tutorials on Phasor Technology and Applications	Develop a tutorial	January '14	High	Vahid Madani, Harold Kirkham, and Henry Huang
5	Performance Requirements for Data Exchange	Develop a guide	October '14	To be reviewed	To be reviewed

Guide on Phasor Application Requirements and Benefit Metrics (*Phasor “ROI”*)

- **Scope:** Develop a guide for developing phasor system specifications and evaluating benefits of intended phasor applications. (Defining phasor “ROI”)



- **Background:** Post-SGIG needs investment from utility companies to sustain phasor development. This guide will help them to determine their phasor “ROI” in decision making.
- **Status:** Defined requirements and metrics. In the process of writing the basic guide. Need to coordinate with other focus areas based on their scope.

Guide on Phasor Data Archival Systems

- **Scope:** Develop a guide that addresses the following topics:
 - Archiving system hardware requirements
 - Data types and categorization
 - Data Management and Administration
 - Data query, reconstruction, and compression
 - Testing, training, and information dissemination
 - Cost vs. performance
- **Background:** Multiple formats for phasor data archiving exist, limiting data sharing, storage capabilities, portability, and interoperability.
- **Status:** In the process of writing the guide.
Put on Fast Track, then transfer to PSRC CTF23. Need to coordinate with other focus areas based on their scope.

Guide on Using PMUs in Multi-function Devices

- **Scope:** Develop a guide on the use of phasor functions in multi-function devices.
- **Background:** More and more multi-function devices (relays, DFRs, ...) provide phasor functions. Concerns exist about availability, interference, resource competition, and cyber security.
- **Status:** Draft developed. In the process of review via regular teleconferences. Transfer to PSRC CTF23.

SynchroPhasor “Tutorials”

- **Scope:** Develop a series of tutorials based on PSTT-developed documents and IEEE/IEC standards as well as today’s practices.
- **Background:** Documents and standards exist on individual topics. Users want a systematic view of synchrophasor technology.
- **Status:** Developed tutorial outline.
- Target to present the tutorial at IEEE PES venues
 - ISGT (February 2014)
 - T&D (May 2014)
 - GM (General Meeting, July 2014)
 - International events

Proof of Concept (POC) Facilities

- Risk management : Identifies and remedies product and system integration issues
- A conduit to the industry standards
- Tests have resulted in:
 - Identification of gaps and solutions related to standards
 - Remedied product and system integration issues with potential for serious delays during field installation and commissioning
- Fine tuning applications for functionality and performance
- Transition from development to operation for training future users



PG&E POC along with other established test facilities have provided the platform for gathering the knowledge to provide the industry with direction and a fast track process for maturing the standards such as the IEEE C37.118.2, C37.238, C37.242, C37.244, and IEC-61850-90-5

