NASPI North American SynchroPhasor Initiative

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)

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Accomplished | Recently Accomplished | Ongoing High Priority | Ongoing

Summary of PSTT Activities

PMU/PDC Hardware

- PMU Testing And Calibration
- Phasor Accuracy
- Define PMU
- Commissioning & Maintenance
- PDC Functions
- PDC Testing
- Multi-function PMUs
- IEC 61850 for PMU
- C37.118 for "Dynamic" Phasor

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 Data

- *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

PSTT-IEEE Standard Development | Phasor Tutorials

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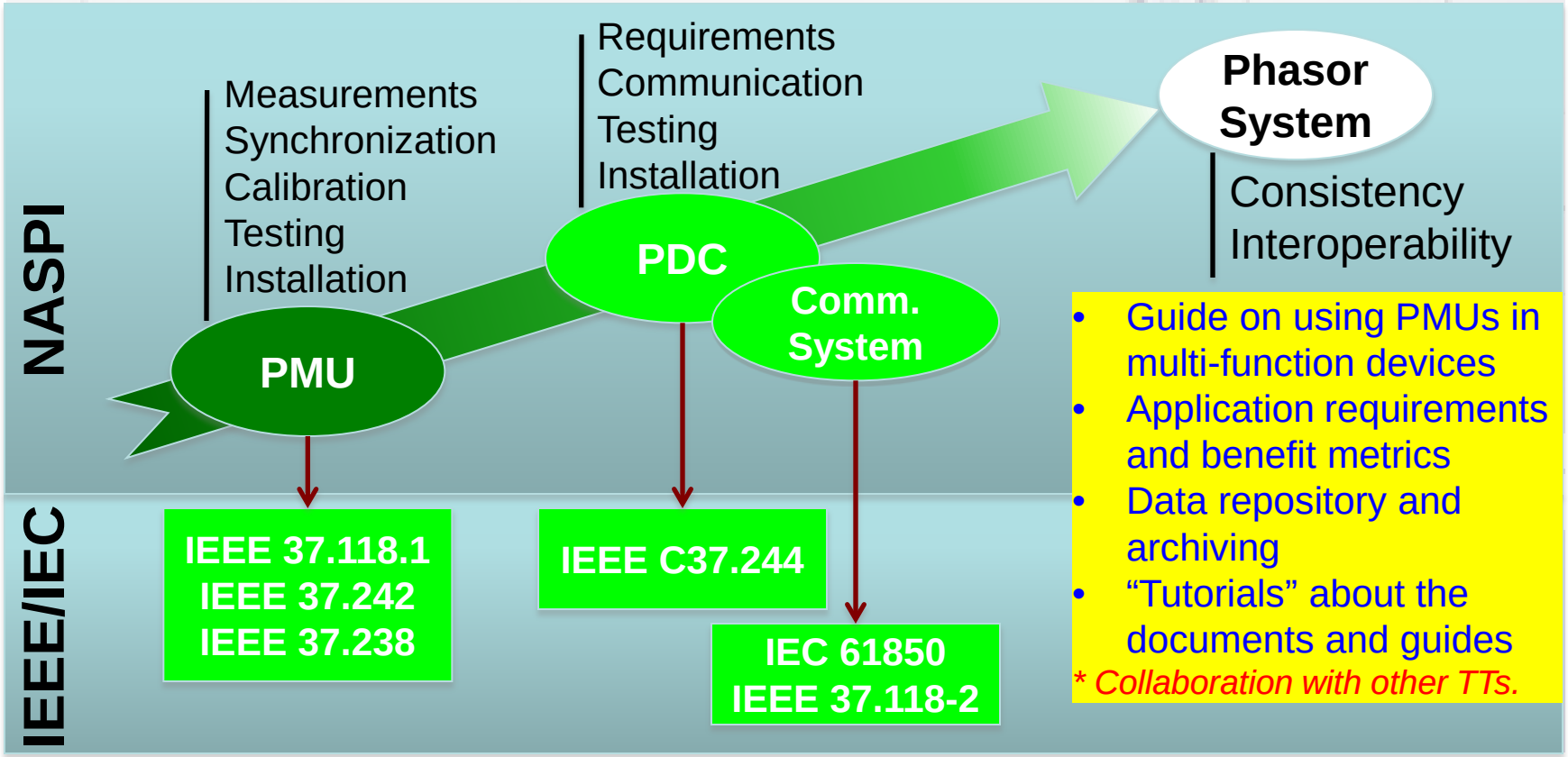
Synchrophasor System Standards/Guides



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NERC NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

IEC

IEEE

NIST

SGIP

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Current PSTT Goals and Metrics

Goal	Goal	Metric	Deliverable	Priority	Lead
1	Oversee the process of moving PSTT documents to IEEE/IEC and to expedite the process.	- IEEE 37.118.1 & .2 - IEEE C37.242 - IEEE C37.244 - IEEE C37.238 - IEC 61850	Various due date for each standard	High	Group effort: Vahid Madani, Damir Novosel, Paul Myrda, Ken Martin, Mladen Kezunovic, Galina Antonova, Farnoosh Rahmatian
2	Phasor Requirements and Benefit Metrics for Tools and Applications	Develop a draft guide	October '13	High	Dave Bertagnolli & Tony Weekes
3	Guide for Phasor Data Repository and Archiving	Develop a draft guide for review at PSTT	October '13	High	Vahid Madani & Henry Huang
4	Guide on Using PMU in Multi-Function Devices	Develop a draft guide	October '13	High	Yi Hu
5	Tutorials on Phasor Technology and Applications	Develop a draft tutorial	October '13	High	Harold Kirkham
6	Sharing Specification and Functional Requirements	Review and Approve documents submitted by NASPI members	on-going	Medium	Vahid Madani
7	Support SGIP/NIST/DOE activities on interoperability standards: Ex: Time	Participation at NIST/Enernex review meetings	on-going	Medium	Ron Farquharson
8	Support other TTs as needed	Joint meetings	on-going	Medium	Vahid Madani, Damir Novosel

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Strengthen NASPI/IEEE Collaboration

- IEEE C37.242 Guide for Synchronization, Testing, Calibration and Installation of PMUs
  - Scheduled to be published March 4, 2013.
- IEEE C37.244 Guide for PDC Requirements
  - 2nd circulation. Scheduled for approval by IEEE REVCOM March 2, 2013. If approved, then publish in 2-3 months.
- Participate in ICAP* Synchrophasor Conformity Steering Committee for PMU certification.
- PSTT Task Force on PMU Certification Process
  - Draft report completed. Presented to NASPI February 20, 2013.
- Get ready to transition to IEEE

*ICAP = IEEE Conformance Assessment Program

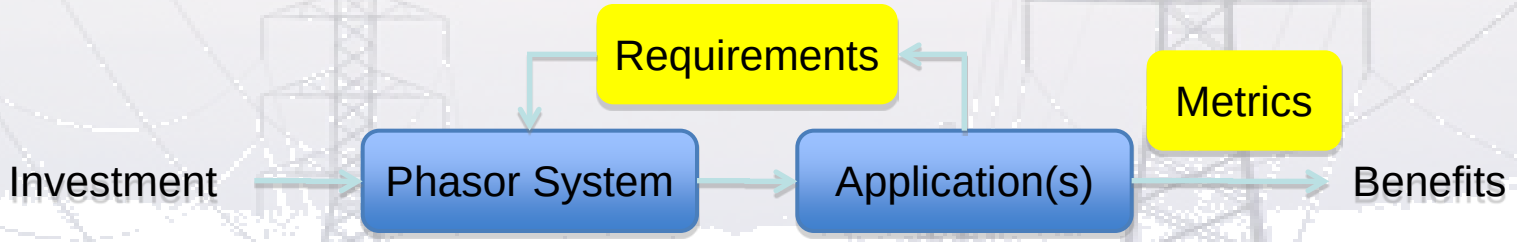
PSTT Four New Initiatives

- Guide on Application Requirements and Benefit Metrics (Phasor “ROI”)
- Guide on Data Archival Systems
- Guide on Using PMUs in Multi-Function Devices
- Synhrophasor System Tutorials

➔ Plan to complete all these activities by October 2013, aligned with NASPI transition.

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 guide.

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 and reconstruction
  - Data 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**: Outline developed. In the process of writing the guide.

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.

Phasor "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 phasor technology.
- **Status**: Coordinated with DNMTT. Revising tutorial outline.
- Target to present the tutorial at IEEE PES General Meeting 2014.