NASPI REORGANIZATION PLAN
October 2013

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OVERVIEW

Since 2006 when NASPI began operation, NASPI and the North American electric industry have successfully completed many of the activities associated with synchrophasor technology commercialization -- there is agreement around technical interoperability standards for PMUs and a variety of associated measurement and communications protocols, numerous commercial PMU vendors and products competing in the marketplace, almost a thousand PMUs have been deployed, linked by high-speed communications networks, and several phasor data applications are mature and commercially available. In recognition of this progress, the North American Electric Reliability Corporation is ending its incubation funding of NASPI and the U.S. Department of Energy and Electric Power Research Institute are partnering to support NASPI, with the near-term goal of realizing value from a decade of federal and industry synchrophasor technology investments through developing and deploying high-quality phasor data and phasor data applications.

NASPI is adopting a new vision, mission and scope statement that reflect this change in focus. That statement is attached below.

It is now time for NASPI to reorganize and refocus its Work Group to better serve the updated vision, mission and goals.

NASPI CHARTER
Vision, Mission, Scope and Structure for 2014 and 2015

NASPI Vision

The vision of the North American Synchrophasor Initiative (NASPI) is to enhance electric power system reliability, efficiency and resilience through the use of synchrophasor technology for wide-area measurement, monitoring, analysis and control.

NASPI Mission

NASPI provides a forum to accelerate the value of a robust, secure, widely-shared synchronized data measurement infrastructure to achieve greater reliability of the interconnected North American electric power system. NASPI will facilitate expanded synchrophasor monitoring, analysis and control of the bulk power electric system with collaborative information-sharing, problem-solving, and identification of best practices.

NASPI's strategic objectives include:

- Expand the use of synchrophasor data to identify and understand each interconnection's basic operational patterns, diagnose in real time grid conditions and precursors that could lead to disturbances, and identify and develop ways to mitigate or prevent adverse grid events;
- Provide coordinated focus for technical applications development and deployment broadly within the industry to enhance secure and reliable grid operations;
- Target wider applications of synchrophasor technology to increase grid asset utilization and system efficiency by expanding grid throughput and operating closer to the margin reliably and securely;
- Enable reliable and secure dynamic grid operation with changing resource mix, including integration of variable renewable resources, demand response, and variable load characteristics; and,
- Facilitate and enhance the exchange of phasor measurement unit (PMU) data among system operators in North America's respective interconnections.

NASPI Scope

NASPI collaborates across the synchrophasor community and enables resource contributions from the electric industry, the Department of Energy, NERC, and the Electric Power Research Institute (EPRI). NASPI will focus efforts for entities to provide tangible deliverables for industry application in the following areas:

- Assure security and reliability measures for existing and planned synchrophasor systems to support high-speed, high-quality data suitable to support real-time grid analytics and operations.

- Identify and undertake analytical needs and processes necessary to support more sophisticated synchrophasor data applications to provide decision support for real-time electric operations.
- Develop and share business processes and best practices that advance and institutionalize effective synchrophasor technology applications in real time operations and historical analytic environments.
- Working with appropriate standard-setting organizations to complete the development and adoption of PMU device and network standards and performance requirements to permit effective data exchange, and synchrophasor system and device interoperability and conformance.
- Provide a forum to coordinate, strengthen, but not duplicate the diverse expertise among various industry groups, including IEEE PSRC, NERC committees, WECC Joint Synchronized Information Subcommittee, Reliability Organization Committees, and others that seek to stimulate effective technology deployment and use by utilities and grid operators.

NASPI STRUCTURE

NASPI Membership

NASPI is a volunteer organization comprised of utility, vendor, government, academic and other specialists in many areas related to synchrophasor technology.

NASPI Structure

Work Group -- The Work Group is the body of volunteers who are interested in synchrophasor technology and have signed up to be part of NASPI. Sign up to join the Work Group at https://www.naspi.org/informed.

Leadership Team -- NASPI is guided by a strategic Leadership Team that provides alignment and continued focus on the near-term and longer-term delivery of tangible results that demonstrate value for reliability. The Leadership Team will strive to ensure that efforts among task teams, DOE research, EPRI, NERC committees, and other industry entities are coordinated and effective in achieving NASPI's goals, while avoiding duplication and redundancies.

Handy acronyms
WG = Work Group (full NASPI community)
LT = Leadership Team
TT = Task Team (topic-focused work group)
TF = Task Force (narrow-focus, fast-turn-around work group)

The LT shall consist of representatives of the sponsoring organizations (DOE and EPRI) and those organizations that are major stakeholders, contributors and users of NASPI work products (including NERC, NIST and the standards-setting bodies). Task Team leads will be LT members, as will some representatives from the synchrophasor system asset owners community. The LT will meet almost every month by conference call or in person; meetings will be facilitated by the NASPI Project Manager and DOE Project Manager.

Task Teams -- Now that most of the synchrophasor technology commercialization fundamentals have been accomplished, NASPI's Task Team structure will adjust at the start of 2014 to reflect the shift in priorities to realizing the value of the system hardware and application deployments for grid reliability, efficiency and resilience.

We hope that each NASPI Task Team will undertake the following activities and document and share its findings with the rest of the NASPI community:

- Identify and prioritize challenges to realization of synchrophasor technology value
- Share information (problems, lessons learned, insights) across projects, applications, task teams, etc.
- Solve problems
- Identify best practices
- Identify business practices (training, maintenance, business line ownership, etc.) and governance obstacles necessary to recognize the value of synchrophasor technology
- Collaborate with other task teams
- Identify and articulate needed research or data to achieve priority goals and tasks
- Where feasible, work with DOE, national labs and EPRI to see how we can focus resources to address challenges
- Continue efforts to mainstream synchrophasor technology by sharing successes with partner organizations and communities.

NASPI Task Teams will have a two-year focus (2014 and 2015) and specific deliverables and goals to execute over that period. Task Teams or the Leadership Team could form a task force to address a specific, narrow issue with a short-term focus and work product.

The list below represents those focus areas that the NASPI Leadership Team believes support NASPI's updated mission and scope. These focus areas update and redirect much of the work and interests of the Task Teams in place from 2006 through 2013.

NEXT STEPS

Process

The Task Team focus areas described below are deliberately vague at this point (October 2013) because the current NASPI Work Group members need to review NASPI's updated mission and scope and fine-tune the focus areas into the Task Teams and deliverables you are willing to support over the next two years. Here is the process we ask the NASPI members and current (2013) Task Teams to think about and use during this meeting (October 2013) and the months ahead:

During this NASPI meeting, each Task Team should:
1. Identify key learnings and accomplishments of your Task Team to date
2. Identify specific current TT work that remains incomplete and needed
3. Within the broad TT focus areas below, identify the top priority issues and challenges that need to be addressed in 2014-2015 (consistent with the mission and goals)
4. Based on those priority issues and challenges, determine whether they can be addressed within a single TT (single group with a common focus that will work for 2 years or maybe longer) or need multiple TTs or a TT plus a short-term, task-oriented task force.
5. Develop a name for your new TT
6. Identify several specific tasks and deliverables (with timelines if possible) that each TT or TF wants to accomplish within 2014-2015.
7. Look at current unfinished work and determine whether it can and should be completed or transitioned into the new TT
8. Each attendee should sign up for new TT areas of interest; where the new TTs are fairly consistent with (but evolutionary relative to) the current TTs, we roll current TT members into new TT list-servs….
9. Report out (briefly) Thursday morning your TT's accomplishments, new name, priorities and prime deliverables to the full NASPI WG.

In November and December:
- Once new TTs and TFs (if any) are articulated, get these written down to share with the entire NASPI community
- TTs and LT refine new TT plans and finish up existing TT work and deliverables.
- The LT will work with the new TTs to identify new or continuing leads for each TT (and TF?) as a function of the new TT focus and priorities and the availability of talented leaders with matching interests.
- Send out updated NASPI and TT materials to all NASPI WG members and push sign-ups for new TTs.

In December and January:
- Collect, document, post and distribute all 2013 TT deliverables to the NASPI community and external stakeholders

- January 2014 -- start new TTs up with new leads and plan for February mtgs. Begin discussing work plan elements for the new TTs.
- February 2014 -- get detailed work plans (priorities, tasks, timelines, deliverables, what help is needed for success in each) under way for each new TT.

Topic focus areas as starters for new TTs

These are organized to respect both industry organization patterns and current Task Team alignments.

Control Room Applications focus area – Advance synchrophasor applications and practices to improve control room operations. Includes real-time operations, wide-area situational awareness and alarming, operational real-time models, visualization, data requirements for these applications, analysis needed to support these applications (overlap with baselining and pattern recognition in Engineering Analysis focus area). The activities include development of control room applications that provide grid operators with indicators of power system stress, including voltage instability or unstable power oscillations. The group will provide guidance on best practices in information visualization and intelligent alarming and look at using synchrophasors to improve robustness and quality of real-time operational (state estimator) models. This group could work on issues that impede the real-time (near-instantaneous use) of PMU data and seek out applications that are robust in that they can withstand minor data gaps or imperfections of real-time yet still provide reliable information to the end user. This group might frequently interact with the data & communications group to seek out improvements in data quality or network architecture issues that limit real-time applications or concepts. The software tools for this environment include visualization, operating boundaries specific to the current and future expected state, enhanced state estimation, and other EMS-type applications.

Engineering Analysis focus area – Advance synchrophasor applications and practices that improve grid engineering analysis. Includes development of applications for power system dynamic performance assessment, grid modeling, lessons learned, system performance baselining, setting alerts-alarms-norms-limits, and other off-line uses of synchrophasor data. This may include post-event analysis of events or planning studies where complete (gapless) data is required or long durations of data for trending or other analytics is needed. This group could look at power system planning studies, dynamic studies, forensic analysis and other analytic methods where complete (gapless) data is essential (with external data such as power system topology or system states across time). This group may interact with the data and communications team to ensure that appropriate event meta-data is included with datasets for proper event or situational analysis. Software tools include but not limited to import / export tools to feed phasor data into production-grade power flow and dynamics software, visualization tools for replay of events or study time periods, data decimation tools to reduce data for long term studies. Additional baselining and pattern recognition work is needed as well as coordination, linkage and sharing between interconnections.

Data Delivery focus area (Communications & Data Systems) – Advance synchrophasor communications and data management designs, protocols and practices to enhance high-quality PMU data collection and delivery. Includes synchro-phasor network design and performance, data quality analysis and metrics, data paths, data storage-archiving-retrieval requirements, naming conventions, physical and cyber-security. The group should provide the guidance on the best practices for designing and operating synchrophasor networks to maximize the data availability and security. This focus area will look at end-to-end solutions from the PMU router, intra-utility network, control center network, gateway and inter-utility communications. The team could act as a clearinghouse for problem-sharing and rectification, network security, performance and overall operating practices. Data quality, archiving, decimation and other data-related practices including administrative aspects such as synchrophasor signal naming, procedures for taking a PMU/PDC out of service, should be shared and managed through this group. This group should identify performance improvement requirements for the network and data components that support the evolving maturity of applications developed in support of other teams' requirements (e.g., if future applications need a faster sample rate, then tell the data group so they can design and spec networks to support the application).

Performance Requirements & Verification focus area – Articulate performance requirements, guidelines and standards necessary to assure consistent, compatible synchrophasor system elements. Includes standards and guidelines development, interoperability, testing-conformance-certification for PMU-PDC-gateway and other functions, migration between versions of standards, interaction with standard-setting bodies, interoperability and compatibility, …? If agreement is reached this could link to PSCR TF23.

Research, Education, and Data Exchange Collaborative -- As opposed to a 'Task Team' that handles research initiatives alone, we propose a *Research, Education, and Data Exchange Collaborative (REDEC)*. Research is a cross-cutting function across all NASPI focus areas. The collaborative as proposed would have conveners (in the place of chairs), mediators, and participants. The conveners would facilitate the periodic meetings of the collaborative. The mediators will be active participants/leaders from the other task teams whose role is to inform the REDEC of the research, education, and/or data exchange needs. The REDEC would hold periodic conference calls for this purpose. This group would work in parallel to the other TTs to offer tutorials, create NASPI meeting proceedings, special publications, topical digests, and other educational materials as directed, and facilitate dialogue between stakeholders (e.g., e-data harmony as a way to match research data needs and data owners). The REDEC would serve as a gateway to the research community, serve the educational needs of the industry, and facilitate dialogue between synchrophasor data seekers and synchrophasor data owners. Current members of the RITT would join other task teams.

Industry Outreach – This is a cross-cutting requirement that the NASPI Project Manager and LT should lead. The activity will include development of:

- Material on synchro-phasor value proposition
- Information facts sheets on synchro-phasor technologies, i.e. what it takes to join the synchro-phasor community – cost of PMUs installed, network and control center requirements, gateways, data historians, applications available and their maturity
- Publications on synchro-phasor success stories and lesson's learned publications (e.g. a paper written by Phil Overholt, Dmitry Kosterev, Joe Eto, Steve Yang on the value of PMUs for power plant model validation)
- Facilitate the policy and procedural activities necessary to enhance the free and open exchange of PMU data among system operators in the Eastern Interconnection.

NASPI BACKGROUND

Originally founded in 2003 as the Eastern Interconnection Phasor Project and taking its current form in 2006, NASPI is a collaborative effort between the U.S. Department of Energy (DOE), the North American Electric Reliability Corporation (NERC), North American electric utilities, vendors, national laboratories, consultants, federal and private researchers, and academics. By 2013, the greatly expanded deployment of PMUs and related network infrastructures enabled industry leadership to conclude that the overall goal of reaching PMU technology commercialization has been realized. Beginning in 2014, EPRI will join DOE in supporting and coordinating NASPI, while NERC will transition from incubation funding to leadership advisor.

The NASPI community is working to advance the deployment and use of networked phasor measurement devices, phasor data-sharing, applications development and use, and research and analysis. With major synchrophasor systems now installed, NASPI is shifting its focus to maximize the value of those systems and data generated through collaborative information-sharing, problem-solving and identification of best practices.

Important applications for synchrophasor technology today include: wide-area monitoring; real-time operations; power system planning; and forensic analysis of grid disturbances. The near term objectives for expanded applications of synchrophasor technology is expected to focus on tangible benefits for enhancing bulk power system operational reliability, integrating renewable and intermittent resources, automated controls for transmission and demand response, increasing transmission system throughput, and improving system modeling and planning. Realizing the full potential of North America's synchrophasor systems requires further development of advanced applications and business processes.

Industry and DOE together have invested almost $400M, including funds provided by the American Recovery and Reinvestment Act of 2009, to develop synchrophasor technologies and applications and accelerate their deployment. DOE invested in the development of synchrophasor capabilities, phasor data applications, communications network architecture design, and the design and installation of modern synchrophasor systems. Similarly, since the inception of the EIPP, NERC has provided incubation funding of the various efforts designed to stimulate greater deployment, advancement of the technologies underlying greater adoption, and applications for practical utilization of PMU data.

NASPI has emerged as an important forum for information and experience-sharing among electric industry asset owners, grid operators, vendors, consultants, government staff and researchers. NASPI has been supported by the industry through extensive volunteer labor and participation, by NERC funding the meetings and NASPI project manager, and by DOE co-funding deployment of synchrophasor systems and applications, national lab research, and supporting NASPI-related technical activities.

NERC recognized the potential value of synchrophasor technology for enhancing grid reliability and made critical early decisions to partner with DOE and the industry to create NASPI and fund meetings and project management from 2007 through 2013. While NERC's co-funding for NASPI activities will end in December 2013, its role will transition to leadership advisor and liaison to activities being pursued within NERC's technical committee structure.

Given its large investment in synchrophasor technology development, DOE will be working with EPRI and its industry partners to continue NASPI as an organization and facilitate changes in its organization and mission to support the evolving needs of the synchrophasor community. DOE, EPRI, and NERC are equally excited to support this important activity that is leading to a more reliable and resilient electric power transmission system.