NASPI North American SynchroPhasor Initiative

NASPI RITT
Research Initiative Task Team

Austin, TX

February 24, 2010

L. Beard
J. Chow

NASPI North American SynchroPhasor Initiative

Agenda

1.	Introduction/Roster	All
2.	2010 Metrics and Goals	L. Beard, J. Chow
3.	White paper on PMU	J. Chow
4.	Research Repository	L. Vanfretti
5.	Success Stories	Z. Tate
6.	Research NDA	A. Silverstein
7.	2010 NASPI Roadmap	Y. Makarov
8.	New Activities/ Brainstorming	J. Chow
9.	Action Items	J. Chow

NASPI North American SynchroPhasor Initiative

RITT 2010 Goals and Metrics (Draft)

Goal #	Goal	Metric	Deliverable	Lead
1	Revise Mission statement		June '10 (NASPI Vancouver meeting)	Lisa Beard, Joe Chow
2	Populating research repository	Add at least 50 more entries; update the Wikipedia entries; write paper to publicize repository	December '10	Luigi Vanfretti, Yuri Makarov
3	Researcher NDA	5 research groups signing document	December '10	Alison Silverstein
4	Research PMU database of historical events	Determine what information will be available in data sets; 5 data sets (disturbance, blue sky) made available	December '10	Alison Silverstein, Lisa Beard (EI), Farrokh Habibiashrafi (WECC)
5	PMU siting guidelines	White paper	June '10 (by NASPI Vancouver meeting)	Dejan Sobajic, Lisa Beard, Joe Chow, Luigi Vanfretti
6	Success stories	5 stories written up and posted	December '10	Zeb Tate, Krishnanjan Dubba Ravikumar, Teresa Carlon
7	Research topics and priorties	Evolving and up-to-date list	Ongoing	Joe Chow, Lisa Beard

NASPI North American SynchroPhasor Initiative

PMU Placement Documents

Organizations/authors	Document Title	Date
CERTS/Martinez, Parashar, Dyer, Coroas	Phasor data requirements for real time wide-area monitoring, control and protection applications, for EIPP Real Time Task Team	Jan. 26, 2006
NERC Standard PRC-002-1	Regional disturbance monitoring and reporting requirements	
WECC Disturbance Monitoring Work Group/Mittelstadt, Hauer, Kehler, Kothapalli, Kwok, Pereira, Wu, Davis	Disturbance/performance monitoring plan siting requirements	Jun. 29, 2001
WECC/Dmitry Kosterev	WECC PMU Placement Criteria and Guidelines	Jan 26, 2010
NYISO/Dejan Sobajic	PMU placement (excel file)	Nov. 29, 2009
MISO NASPI Work Group	PMU placement weighting calculation (draft)	2009
MISO NASPI Work Group	Preferred PMU Placement Criteria (draft)	2009
MISO/Quinn	PMU Siting Criteria (a compilation)	Jul. 13, 2009

NASPI North American SynchroPhasor Initiative

PMU Placement White Paper

- A draft version of the white paper has been developed by a number of writers
- Given the availability of PMU placement documents developed by the various ISO/RTO, it is more appropriate for the white paper to refer to those documents and provide background materials and bridge “gaps”.
- White paper ready for community comments by NASPI June meeting.

“The general consensus was that there was no official ‘method’ but rather an unofficial set of criteria that has developed over the years.” P. Quinn, MISO

NASPI North American SynchroPhasor Initiative

Research Repository

- Currently 78 projects in the repository – 3 new added since 08/09
- Page views:
  - Main Page: 237
  - Project Detail Page: 773
  - Add Project Page: 44
  - Edit Project Page: 11
  - Export Project List: 64
- Minor changes to simplify new entry upload have been suggested.
- Additional changes for better **accessibility and visibility** of the repository are needed.
- 50 new entries for 2010 – should be coordinated with IEEE Conf. and Journals, and other journals (European Transactions on Power Systems).
- Need to reach out to encompass more international entries.

[Title]

Keywords: [a list of 5 keywords (or less)]

Motivation

[This section describes the situation/problem that is being addressed.

Some questions that may help in writing this section:

- Is there any relevant background material on the system that would help in understanding the problem/solution?
- What aspects of the system are affected by this problem?
- What time scales are involved?
- What is the important data?
- How common is this problem, both within your utility and throughout the entire industry?]

Solution

[This section describes the way in which the problem was addressed through a synchrophasor-based solution.

Some questions that may help in writing this section:

- Why were SynchroPhasor the best choice for solving the problem? Why couldn't you enact this solution if you didn't have synchrophasors?
- What other software/hardware tools were used in conjunction with synchrophasors? Did you rely on custom or commercially available tools?
- How specific is this solution to the particular system/situation? In other words, how hard would it be to apply this same solution to other systems?]

Benefits

[This selection lists the qualitative and (if available) quantitative benefits of implementing the solution

Some questions that may help in writing this section:

- If you were trying to convince others to implement this solution, what would you say is the greatest benefit?
- What would be different if this solution were not implemented?
- Were there any unexpected benefits to the solution aside from addressing the original problem?]

Future Directions

[This section describes how the work described here could be expanded.

Some questions that may help in writing this section:

- What other problems (specifically or generally) could be addressed by this solution?
- Are there other alternatives to addressing the problem?
- What would be needed to make the solution better?]

North American SynchroPhasor Initiative
Success Stories

Floyd Galvin, Entergy Services Inc., and
Chuck Wells, OSIsoft Inc.

Detecting and Managing the Electrical Island Created by Hurricane Gustav

Detecting and Managing the Electrical Island Created by Hurricane Gustav

Keywords: controlled islanding, natural disaster, frequency monitoring

Motivation

Hurricane Gustav, which formed on August 30, 2008, reached the Louisiana coastline as a Category 2 hurricane on September 1, 2008, at 9:30 am. The path of the hurricane cut directly through Entergy's transmission system, resulting in significant transmission line outages. On September 1, 2008, at 2:49 pm, an island was formed within the Entergy network.

The island that formed in the wake of the hurricane was approximately 100 miles across, and contained approximately 200-250,000 customers with a demand of 300 MW.

Knowledge of system topology is a key component of the situational awareness that operators need to operate the power grid. If operators are unaware that a system separation has taken place, they will not be able to properly maintain the two electrically

Solution

The synchrophasor monitors on the Entergy system significantly increased the situational awareness of grid operators during the hurricane and its aftermath. In particular, the creation of the "Gustav Island" within the system was recognized primarily through synchrophasor frequency measurements, as shown in the below figure.

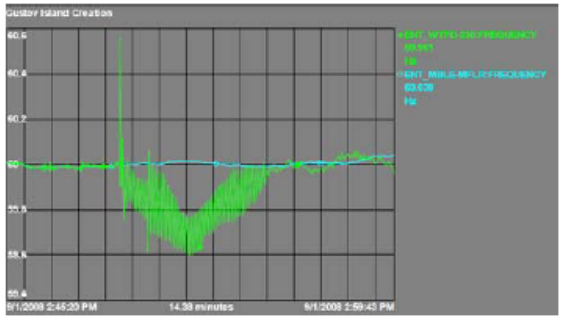

Figure 2: Synchrophasor frequency readings during the "Gustav Island" formation

2010 NASPI Roadmap for Synchrophasor Applications
(DRAFT v1.0)