

North American SynchroPhasor Initiative (NASPI)
[Formerly, Eastern Interconnection Phasor Project (EIPP)]

Performance and Standards Task Team (PSTT)

Meeting Minutes

March 27, 2009

By Teleconference and LiveMeeting

A conference call of the NASPI Performance and Standards Task Team was held on **March 27, 2009**. **Thirteen (13)** participants were in attendance. The attendance list can be found in Appendix A. The following action items and agreements resulted from the meeting.

NEXT MEETING

Next PSTT Teleconference is scheduled for April 24, 2009 Friday, 8:00am-9:00 am PT. (1.0 hour). Please adjust for your respective time zones. Instructions for teleconference and LiveMeeting can be found in Appendix B.

Please start your set-up 5 minutes before the start of the teleconference.

Individual task forces can send request to Teresa Carlon (teresa.carlon@pnl.gov) for setting up additional teleconferences.

ACTION ITEMS AND AGREEMENTS

1. **ALL PSTT Members:** The NASPI Phasor Tool Repository is now available for testing. Click here <http://www.naspi.org/resources/pstt/toolsrepository.stm> to access the repository. As you enter records into the repository, please document any issues you encounter and send your feedback to Teresa Carlon (teresa.carlon@pnl.gov). Suggestions for improving the repository are always welcome.
2. **Teresa Carlon:** Post “Guidelines for Synchronization Techniques Accuracy and Availability” on the PSTT Resource web page (<http://www.naspi.org/resources/pstt/psttresources.stm>).
3. **ALL PSTT Members:** PRC002-2; Teresa will distribute to PSTT members and ask for review and comments. Issue needs to be addressed by PSTT. Focus group may then tackle the issues. Possible presentation at the next work group meeting and discuss topic further at the PSTT breakout session.

CONTACT INFORMATION

- Performance and Standards Task Team Co-chairs – Vahid Madani, PG&E, (510)874-2300, VXM6@pge.com; Damir Novosel, Quanta Technology, (919) 334-3010, DNovosel@Quanta-Technology.com. Supported by Henry Huang, PNNL, (509) 372-6781, zhenyu.huang@pnl.gov.
- PSTT Resources Website: <http://www.naspi.org/resources/pstt/psttresources.stm>
Contact: Teresa Carlon, (509) 375-3628, teresa.carlon@pnl.gov.

- Prior PSTT Meeting Minutes and Agenda's:
<http://www.naspi.org/meetings/pstt/psttmeetings.stm>
- PSTT SharePoint Site: <http://www.eippshare.org/prtt/default.aspx>. Contact: Teresa Carlon, (509) 375-3628, teresa.carlon@pnl.gov.

MINUTES

Agenda items with some discussion points were sent out to the team prior to the meeting. Notes from the resultant discussion for each agenda item are as follows.

1. Roll call – see Appendix A.
2. Review of NASPI meeting survey
Develop a scope statement for system and device requirements for combine applications.
Define function requirements for PMU; Tony leading effort, high priority/high amount of work.
3. Clarifying relationships between PRC-002-2 & PSRC C37.118

Harish presented his comments on PRC-002-2. Discussions were centered on how PSTT may coordinate the efforts between NERC and PSRC. A focus group may be formed for this purpose. Harris shared the following items with the conference call attendees

- ✓ NERC's Webinar discussions related and the mandatory regulations for disturbance monitoring and reporting
- ✓ Time Stamp Accuracy
- ✓ The need for different filters to obtain accurate phasor values for different types of disturbances – Within a PMU design, a single data stream means a single filter. Does this mean a PMU needs to be configured for a specific disturbance condition? Would data quality for other conditions suffer?
- ✓ Whether we know if meeting NERC PRC-002 data recording requirements is acceptable for phasor applications?

There was some discussions regarding NIST being the forum these topics are raised. NASPI leadership can help highlight the role of the PSTT and various Task Teams and how the topics Harish has raised may best be addressed by PSTT. For example, PSTT may provide set of examples to illustrate a recommendation.

Vahid indicated that we plan to hold a special session to address NIST / NAPI / IEC and IEEE coordination for April 14

4. Phasor Tool Repository

Teresa Carlon demonstrated the NASPI Phasor Tool Repository on the NASPI web site using LiveMeeting. Please contact Teresa (teresa.carlon@pnl.gov) if you have comments, questions, or improvement to the repository. Teresa will keep a list of improvements to be implemented into the repository in the near future. Forwarding the repository link to your contacts in the phasor community is highly encouraged.

2008 Goals	Task Leader (Bold)
<p data-bbox="188 373 386 405">1. Define PMU</p> <p data-bbox="224 426 350 457">11/21/08: Ken was not present. But he sent the team an update prior to the teleconference that no further comments were received on the Standard PMU Definition.</p> <p data-bbox="224 611 334 642">9/26/08: Ken has not received any feedback on his document. This topic should be discussed at the NASPI/PSTT meeting in October. Vahid suggested moving document to web site for general access.</p> <p data-bbox="224 795 334 827">8/29/08: Ken has not received any comments from the team yet. The definition targeted current and future PMU's, not necessarily older PMU's. Some existing PMUs do not meet the current standard. Comments from team will be forwarded to Ken. Ken's new email address is kemartin8421@comcast.net.</p> <p data-bbox="224 1052 318 1083">8/6/08: Document was distributed to PSTT for review and comment.</p> <p data-bbox="224 1161 334 1192">6/27/08: Vahid reported that the current version defines an NASPI PMU instead of a general PMU. It is well received by the NASPI Leadership team and the NASPI Working Group. It is ready for NASPI leadership team approval.</p> <p data-bbox="224 1346 594 1377">6/11/08 @ NASPI Meeting: Ken to provide a copy of the discussion notes regarding the definition.</p> <p data-bbox="224 1455 334 1486">5/30/08: Ken Martin provided an update on the content of the PMU Basic Specification. Document will be sent to the PSTT team for comments before June NASPI meeting.</p> <p data-bbox="224 1640 334 1671">4/18/08: The user will be interested in data coming out of the PMU box. The team needs to determine what capabilities the PMU box should have. Should data streaming be included at a requirement in the write-up? From the user perspective, Vahid would like to see guidance as opposed to "requirements."</p> <p data-bbox="224 1854 1162 1885">Vahid asked if Ken and his team can finalize before mid May so it can be</p>	<p data-bbox="1237 373 1403 573">Ken Martin, Sakis Meliopoulos, Harish Mehta, Mladen Kezunovic</p>

2008 Goals	Task Leader (Bold)
<p>sent out to the entire PSTT in preparation for brief discussion at the May conference call, and for report out at the June PSTT meeting.</p> <p>3/28/08: Ken discussed the definition of a PMU. A question was asked with regards to what is the driving factor of this document? The team was in agreement that the word “standard” in the title of the goal may present a problem and may not accurately describe what the intention of the document. What is the goal’s objective? If the objective is to provide educational material to users then a name change maybe warranted. The document should help users better understand a PMU. This document may also be helpful to the manufacturers. Vahid suggested maybe there is a need for two documents as opposed to one.</p> <p>1/25/2008 – Ken reported that the team had not received any comments, and the writing team thinks the final version is in good condition.</p> <p>11/2/07: Ken Martin sent out the scope document prior to the teleconference. Discussions were focused on at what level the standard PMU should be defined: at the device level, the function level, or the applications level? With a multi-function PMU, PMU function should not affect other functions, and vice versa. In China, a PMU can also serve as a local PDC with certain phasor applications. The tentative consensus is that the standard PMU should be defined considering all levels. 1/25/2008 – Ken reported that the team had not received any comments, and the writing team thinks the final version is in good condition.</p>	
<p>2. Requirements to guide PMU deployment and system architecture needs, locally and regionally</p>	
<p>a) System and device requirements for combined applications</p> <p>2/4/09: Mark McVey prepared and presented draft survey at the PSTT meeting in Scottsdale.</p> <p>1/23/09: Need to check with Krish regarding the scope document.</p> <p>11/21/08: Krish was not present. Follow-up with Krish for the updated document and any further actions for Krish</p>	<p>Mark McVei, Yi Hu, Jim Hackett - Review draft document prepared by Mark and presented at the NASPI meeting</p>

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<p>10/31/08: Krish volunteered to come up with a draft scope within a week. This item may need NERC funding support.</p> <p>9/26/08: Yi suggested that the “combine applications” might be too broad of a topic. Team members suggested starting the document with an example might help clarify the system and device requirements. Henry suggested starting with a design using a few applications – maybe the applications that are in high demand. Jim will start a draft and then contact Yi when he has something.</p> <p>8/29/08: Jim Hackett has been out of the loop for the last couple of meetings, but will get updated.</p> <p>6/27/08: No progress reported.</p> <p>4/18/08: User interested in data coming out of the PMU box. Team needs to determine what capabilities the PMU box should have. Should data streaming be included as a requirement in the write-up? From a users perspective, there should be guidance as opposed to “requirements.”</p> <p>11/2/07: A scope document was sent to the team prior to the teleconference. Applications need to be grouped into categories before requirements can be addressed. Chris Anderson will send a related document to Yi and Jim. This task seems to have some overlap with item #7 “Requirements for Protection and Control”. Vahid will look at Yi’s scope document against item #7 to identify commonalities and differences. A question was raised regarding why we need combined requirements if we already have requirements for individual applications. This needs more discussion.</p>	
<p>b) Phasor Tools Listing - Requirements and specifications for phasor tools</p> <p>2/27/09: Improvement list has been given to the knowledge systems group and the suggested changes will be incorporated into the Phasor tool repository.</p> <p>2/4/09: Phasor tool repository was demonstrated at the PSTT meeting in Scottsdale. Improvements or changes can be sent to Teresa Carlon</p>	<p>Henry Huang, Jim Hackett, Enrique Martinez, Tony Weekes., Sushil Cherian</p>

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<p>(teresa.carlon@pnl.gov).</p> <p>1/23/09: Several improvements to the repository were suggested:</p> <ul style="list-style-type: none"> - Add “fault location” as a keyword. - Provide a fill-in option when select “other” in the category and the keyword boxes. - Change “company” to “organization” to include non-company organizations. - In the contact information section, change “company” to “affiliation”. <p>11/21/08: The website for the phasor tools repository has been posted for comments and input. Alfredo Vaccaro commented that the repository is an extremely useful source. He suggested to add a note to indicate the capability of multiple choices of “tool category” and “tool keywords”, disable other choices if “other” is selected, and add “system requirements” of tools (operating systems, minimum hardware requirements, is it only a library or a ‘stand alone’ tool). Kevin Richardson tested the website by submitting the very first external entry. The website is functioning well. Housekeeping issues (approval process, editing function, maintenance as committee members move, or as offices move, etc) were brought up. Vahid requested the PSTT members to submit tool entries or to ask other tool developers to submit entries.</p> <p>Robert also brought up some key considerations.</p> <p>Vahid would like to put this item on the February Agenda. If we have enough information in the repository, we can have a presentation about the repository at the Feb NASPI meeting.</p> <p>10/31/08: Teresa Carlon announced the completion of the web-based Phasor Tool Repository. The repository has been published externally and is available for testing. A notice was sent to the team asking them to enter data and send comments/suggestions/issues to Teresa.</p> <p>9/29/08: The first draft of the Phasor Tool Repository is ready for external testing. Click here to view the repository: http://www.naspi.org/resources/pstt/toolsrepository.stm. If you would like more keywords or categories listed, just let us know. Feedback and comments should be emailed to Teresa Carlon (teresa.carlon@pnl.gov).</p>	<p>Repository information approval group: Henry Huang, Teresa Carlon, Tony Weekes, Vahid Madani, Brian Kirby, Robert Folkes, Alfredo Vaccaro, Ken Martin, and Kevin Richardson.</p>

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<p>8/29/08: The Phasor Tool Repository forms and database are built and will be connected during the first week of September. The repository will be available for internal testing the week of September 8 and shortly thereafter available for external testing (those folks outside PNNL's firewall).</p> <p>6/27/08: The initial webpage for phasor tools listing was developed with help from Teresa Carlon and Courtenay Turner (PNNL). Ongoing efforts are on the refinement of the design and finalization of some details like tool categories and key words. Henry emphasized the purpose of this webpage is to collect and disseminate phasor tool information so vendors/developers can gain visibility for their tools and users can search/browse phasor tools. This webpage is expected to serve as a bridge between phasor tool vendors/developers and users. Henry expected the beta version would be ready within two months for testing. Rob Folkes suggested adding a function on the web for listing tool user references. The team concurred.</p> <p>Further input from PSTT members on the webpage design, tool categories and keywords is encouraged and should be directed to Teresa Carlon (teresa.carlon@pnl.gov).</p> <p>6/11/08 @ NASPI Meeting: Vahid and Robert Folkes described the intent and some good feedback was received – Many of the attendees are interested to participate in the postings. The users welcome the listings as well.</p> <p>After the June meeting, Lisa Beard talked to Vahid and suggested a link to the Research Initiative Task Team to further coordinate the NASPI task team efforts.</p> <p>5/30/08: Henry and Teresa reported on the new web-based database for the Phasor Tool list and provided a description of how the site would function and what it might look like. The database would be used by prospective phasor tool users for information search and learning as well as by vendors to give visibility to their products. A panel will be set up to review and approve or reject submissions to the database. The approval/rejection process will be handled by email. The ad hoc group members are: Henry Huang, Teresa Carlon, Tony Weekes, Vahid Madani, Brian Kirby, Robert Folkes, Alfredo Vaccaro, Ken Martin, and Kevin Richardson. This group will help determine what data needs to be captured and what data needs to</p>	

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<p>be displayed.</p> <p>4/18/08: Henry and Teresa discussed creating a web-based Phasor Tool list in more detail. Teresa will prepare a cost estimate for Jeff Dagle and Henry to review. Henry liked to structure of the NASPI Research Project Repository and would a similar web-based format for the Phasor Tool list.</p> <p>Teresa and Henry to provide link if possible in advance of May conference call. If link, not available, provide a proposal with list of challenges in order for the committee members to comment or determine other ways.</p> <p>Henry to follow-up with Robert Folkes and Tony Weekes to gather a list of tools as a starting point based on the experience Psymetrix team has in dealing with their clients. Also, check with Tony Weekes and other team members to help prepare a list before May Conference call. This item will also be on the June PSTT meeting.</p> <p>3/28/08: Phasor tool listing: Henry has been thinking about how to move this forward. One of the steps is to survey existing tools and provide categorization/summary. Inspired by the NASPI research repository site developed by PNNL. Maybe we can create a similar web site to collect information on various phasor tools. The site would be accessible by the public and can be filled by tool developers. Incentive for the vendors to provide information is that the site can be an "advertisement" for their tools.</p> <p>If on-line based listing is feasible, Henry will work with Teresa to see how we may set it up.</p> <p>Vahid asked if Robert Folkes would join this group. Robert offered to assist with providing a list of tools as a starting point based on the experience Psymetrix team has in dealing with their clients. Also, Tony Weekes and other team members will help Henry and will add to the list.</p> <p>11/2/07: A scope document was sent to the team prior to the teleconference. Accessibility tools were proposed to be added to the scope. Also users should be able to make specifications for phasor tools. Several people provided valuable comments based on their experiences. Vahid encouraged everyone that has developed a tool or has recognized value for a particular tool based on their experience to send a note to Henry for consideration.</p>	

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<p>c) Guidelines for synchronization techniques - Accuracy and Availability</p> <p>3/27/09: Remove from agenda.</p> <p>1/23/09: The document has been finalized. It will be posted at PSTT website and announced to the NASPI working group at the upcoming Scottsdale meeting.</p> <p>10/31/08: Jerry received some feedback regarding the document. A new draft is planned to be distributed in the 3rd week of November. It was mentioned solar storms have impact on GPS performance.</p> <p>8/6/08: Document was distributed to PSTT for review and comment.</p> <p>6/27/08: Alfredo Vaccaro reported that previous comments have been incorporated into the current version of the document. It is ready for another round of review. Jay Murphy will comment. The current document will be distributed to the entire PSTT for comments. Jerry Stenbakken will coordinate with Alfredo regarding how this document may be incorporated into the PMU Testing Guide. One proposed idea is to have the synchronization technique document as an appendix in the PMU Testing Guide.</p> <p>5/30/08: Alfredo V. provided background on the Guidelines for Synchronization Techniques. Vahid wants to remove comments and tracking and send to PSTT for review. Feedback will be sent back to Alfredo for consideration.</p> <p>4/18/08: Alfredo has received comments from Krish and is updating the Guidelines.</p> <p>3/28/08: Krish will send out guidelines out prior to the April meeting.</p> <p>2/22/08: Should the testing of the GPS be part of Jerry's document or should the testing of GPS be a stand alone document? Should we address vulnerability? Henry suggested to start with separate documents then in the future we can combine if needed. This method will allow the Guidelines for Synchronization Techniques can remain stable for a while without opening it</p>	<p>Bill Dickerson, Jerry Stenbakken, Alfredo Vaccaro</p> <p>Sub-team: Krish and Jay to comment and provide feedback to Alfredo</p>

2008 Goals	Task Leader (Bold)
<p>backup for comments. Jerry suggested we steered away from the term GPS – instead focus on “time reference.” Alfredo is going to prepare a new version of the document and probably a presentation for the March meeting.</p> <p>1/25/08: Alfredo Vaccaro distributed an updated draft document after incorporating Bill Dickson’s comments. Unfortunately, Alfredo was not able to join the conference call due to phone connectivity issues. The draft document will be posted at the SharePoint site.</p> <p>11/9/07: Discussion of synchronization codes: GPS, IRIG-B, and 1488. Each type has different errors and issues. A reference sheet listing pros and cons of each would be useful. Also, discuss the requirement for synchronization. Goal would be to develop a guideline. Vahid had started such a document and will send to Jerry Stenbakken.</p>	
<p>d) Requirements for hardware and firmware upgrades</p> <p>3/17/09: Teresa Carlon will try to contact Krish Narendra and Shane Haveron regarding PSTT participation.</p> <p>11/9/07: No progress to report.</p>	<p>Shane Haveron, Jim Hackett, Floyd Galvan., Enrique Martinez</p>
<p>3. Procedures for testing PMU at the commissioning level</p> <p>3/27/09: Vahid’s follow-up action regarding time stamping not being addressed. There is a difference between two time stamps and Vahid offered to look into the issue. Should the time stamping issue be communicated to NIST? Vahid will talk to Damir/Mladen.</p> <p>1/23/09: Mladen suggested to expand this task into three subtasks:</p> <ul style="list-style-type: none"> - PMU Installation - PMU Commissioning - PMU Maintenance <p>PSTT already have two documents on the first two topics. This task needs to review those documents and determine what to be developed next.</p> <p>11/9/07: Vahid Madani reviewed existing document. If the document has covered all</p>	<p>Vahid Madani, Tony Weekes., Ken Martin, Mladen Kezunovic, Alfredo Vaccaro</p>

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<p>areas, including testing, then the document may be considered complete. Discussion as to whether or not the title of the document needs to be changed or if other information still needs to be added. Other people need to be involved to review and approve document.</p>	
<p>4. Standardizing PMU Configuration for IEC 61850 Applications</p> <p>10/31/08: Goal is in progress and moving forward.</p> <p>Implementation Agreements (Standards) for Interoperability of the Synchronphasor Values</p> <p>6/27/08: Vahid Madani mentioned the goal of this activity is to have a common platform for including phasor data into the operating environment. The 61850 group requested for components regarding phasors. Jialong Wang is interested in participation.</p> <p>6/11/08 @ NASPI Meeting: Sushil provided a summary power point highlighting the PSTT progress, focus areas, and coordination with the IEC Standards committee – Vahid and Shusil are working with IEC for the creation of Work Item Proposal for synchrophasors data systems. There is a lot of interest in this area.</p> <p>After the meeting, Armondo Guzman mentioned he will participate in this effort and will join Sushil’s team.</p> <p>5/30/08: Vahid provided an update. Develop modules for the WAS (sp). System Integrity protection schemes. Modules would have elements that would be used for uniform applications. Sushil provided a summary of discussion points in a document titled_“Update on standardizing PMU configuration for IEC 61850 Applications.”</p> <p>4/18/08: Shane will report at the May meeting what the vendors are doing. Vahid wants to make sure the PSTT is prepared to show the users and vendors a the June NASPI Work Group meeting what the PSTT has to offer.</p> <p>1/25/08: Sushil distributed updates on the work plan prior to the teleconference. IEC 61850 has been contacted and they are interested in working with PSTT on this important issue.</p> <p>Action Item: Comments on the work plan are requested and are due Sushil by Feb</p>	<p>Shane Haveron, Roger King., Sushil Cherian</p>

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<p>22.</p> <p>11/30/07: Shushil presented the resource estimate to the attendees.</p> <p>11/9/07: The scope document was sent to the team prior to the teleconference. The goal is to develop a companion standard for IEEE 61850. Deliverables need defined so resources can be identified. For example, ESG/NERC financial support to help hire consultants. Action Sushil will develop an estimate by next task team meeting.</p>	
<p>5. Expand guidelines for using devices with Integrated PMU Functionality</p> <p>3/27/09: Vahid will call Krish and get an update on the progress for goal 5.</p> <p>1/23/09: Vahid will call Krish and get an update on the progress for goal 5.</p> <p>10/31/08: Define deliverable from report, working with Tony Weekes on resources. NERC may have funding to help complete the task. Frame expectations into scope and draft proposal by next meeting, 11/21/08. Vahid will follow-up with Krish.</p> <p>3/28/08: Krish will have a draft before the April meeting for review.</p> <p>11/9/07: The goal is to expand a previous presentation to a document, including testing guide for integrated PMUs. Coordinate with Jerry Stenbakken to decide what should reside in which document regarding testing.</p> <p>Invited Chris Anderson, Jerry Stenbakken and Roberto Cimadevilla to the team.</p>	<p>Krish will lead, with the team consisting of Anurag, Damir, Jay, Jerry, Jim, Enrique, and Yi.</p>
<p>6. Issues with “Dynamic Phasors”</p> <p>3/27/09: Henry will discuss items with Vahid. Anyone interested in working on</p>	<p>Henry Huang, Tony Weekes,</p>

2008 Goals	Task Leader (Bold)
<p>dynamic phasors should get in contact with Ken Martin.</p> <p>8/29/08: Jerry Stenbakken mentioned Ken's group is working to update the standard on dynamic phasors.</p> <p>8/6/08: No update at this time.</p> <p>6/27/08: Jerry Stenbakken updated about dynamic phasors at the June NASPI meeting. Ken Martin has a PAR for expanding the IEEE phasor standard. Ken currently has two working groups: one on dynamic frequency and phasors; the other on PDC.</p> <p>5/30/08: Henry indicated more work is needed on dynamic phasors.</p> <p>4/18/08: "Reference Values for Dynamic Calibration of PMUs" presentation (http://www.naspi.org/resources/pstt/stenbakken_kansas_city_2008may.pdf). PSTT please provide feedback to Jerry Stenbakken.</p> <p>11/9/07: The goal is to determine whether the current steady-state based phasor definition would still be applicable with higher sampling rates, transient signals, frequency tracking, etc. Higher sampling rates increase data volume, which may exceed practical technical limits. Identify deliverables so that resources can be determined.</p> <p>Roberto Cimadevilla was welcomed to join the group.</p>	<p>Jerry Stenbakken, Bogdan Kasztenny, Mark Adamiak, Ken Martin, Arun Phadke</p>
<p>7. Standards & requirements for Protection and Control Applications</p> <p>4/18/08: No updates at this time.</p>	<p>Shane Haveron, Enrique Martinez, Ken Martin, Jim Hackett, Virgilio Centeno, Vahid Madani, Yi Hu, Sakis</p>

2008 Goals	Task Leader (Bold)
	Meliopoulos, Mohammad Zubair
8. Identify requirements for redundancy (part of architecture)	
<p>9. Discussions with IEEE on COMTRADE file use with PMU – See notes from January 2008 conference call.</p> <p>4/18/08: Please let Vahid know if you have any feedback.</p> <p>Feedback from PSRC indicates that COMTRADE standard defines only formats but not contents. An add-on configuration may be developed to satisfy the need when Comtrade is used for phasor measurements. Jim Hackett, as vice chair of PSRC WG H10, invites PSTT members to attend the next H10 meeting at Kansas City on May 13-14, 2008 or give Jim some feedback for discussion at the H10 meeting.</p>	
<p>10. Define Standard requirements for the Phasor Data Concentrator (PDC) Hardware Input protocols, and protocols needed if in the future we want to go to the SE - Whether it is better to have a independent server or independent database etc. for future expansion, what data bases will match what PDCs.</p> <p>3/27/09: PDC document will be converted into functional spec and passed along to a consultant. Action: Teresa, follow up with Vahid, get Alison’s bullets for Tony Weekes to follow up. IEC 61850, Mark would like to contribute to the Standardizing PMU configuration for IEC 61850 (Focus Area 1).</p> <p>1/23/09: Tony updated the scope slides. This task will be a topic at the Scottsdale meeting PSTT breakout session.</p> <p>11/21/08: Tony Weekes presented the updated slides (with Henry’s comments embedded) about the scope of PDC requirements. The team determined that IEC 61850, though may affect PDC functions in the future, is not a critical issue for now. The core format a PDC would support is C37.118. There were discussions about PDC remote configuration and control. Difficulty with proprietary protocols was mentioned. Several potential solutions to this difficulty were also suggested. Whether it should be optional needs to be further discussed. Tony will further update the slides and will then discuss with the PDC Requirements team and Vahid, Henry, Damir to identify the</p>	<p>Tony Weekes, Jim Hackett, Ken Martin, Yi Hu, Sushil Cherian</p>

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<p>path forward.</p> <p>11/7/08: Tony met with team.</p> <p>10/31/08: Tony Weekes will arrange a conference call with Robert Folkes, Jim Hackett, Ken Martin, Yi Hu, and Sushil Cherian to discuss future of the PDC requirements. The goal it to define the work in order to help identify resources.</p> <p>6/27/08: Tony Weekes stated the objective of this activity is to define PDC requirements and provide educational information to the user community. A presentation was made at the June NASPI meeting, and a meeting with the Data Management Task Team was held to coordinate the efforts on Phasor Gateway. The Data team responded that the Phasor Gateway would not be affected by PSTT PDC requirements. There is no need to coordinate in terms of data structure. Henry commented that given the commonality between a PDC and the Phasor Gateway, a PDC may be used as Phasor Gateway. However, consensus of the PSTT team and the Data team was that the two efforts are complimentary. Only naming convention may need to coordinated. The Data team aims to develop hierarchy and functional definition of a phasor network. Hardware like PDCs will be developed in other groups. Then Alfredo briefly presented different scenarios of PDCs for different applications.</p> <p>Henry will check SharePoint posting of Tony’s presentation at the June NASPI meeting.</p> <p>6/11/08@NASPI Meeting: Tony Weekes and Yi Hu provided a power point summary related to the PDC requirements – Presentation is posted on the PSTT SharePoint site. Comments from the attendees will be incorporated in the team’s efforts.</p> <p>5/30/08: Tony discussed the PDC requirements and core functionalities, which need to be expanded and formalized. Tony reviewed Sushil Cherian’s input for PDC requirements. Appendix could contain architecture, hardware and functional considerations. Vahid suggested creating a 20 minute presentation focusing on the main points to help facilitate discussions at the June meeting. Feedback will be obtained at the meeting and incorporated as necessary.</p>	

2008 Goals	Task Leader (Bold)
<p>Henry suggested to coordinate this activity with the Data Management Task Team. The PDC has some commonality with the PhasorGateway currently being developed by the Data team.</p> <p>4/30/08: Tony Weekes held a meeting with Jim, Yi and Sushil to discuss PDC requirements.</p> <p>4/18/08: It has been difficult to narrow down the scope. Architecture or requirements do not have to be identified. Is there a relationship between 2A and 10? There may be some similarities. The challenge has been reaching a single acceptable architecture and hardware with continual changes. User need to have a document s/he can use without starting from the beginning. The idea is to provide a blue print that others can draw from because the infrastructure will not be the same from site to site. The information needs to be generalized to meet the different applications. Maybe the title needs to be changed from “Standard” to “Functional” and sub-bullets to discuss PDC security and Role of Hardware with System Integration.</p> <p>If you have any ideas, please share your thoughts with Tony.</p> <p>Action: Tony will have a draft ready one week prior to the PSTT May meeting.</p> <p>3/28/08: Tony gave on overview of the Phasor Data Concentrator Standard Requirements document. Form a team: Robert Folkes, Sushil Cherian, Ken Martin, Jim Hackett, Yi Hu; Krish Narendra</p>	

9. Next Meeting: **April 24, 2009, Friday, 8:00am-9:00am PT.**

10. Meeting adjourned.

Appendix A: Conference Call Attendees

Name	Affiliation
Anurag Srivastava	Mississippi State University
Damir Novosel	Quanta Technology
Farzaneh Tafreshi	ICFI
Franco de Villiers	ESKOM
Harish Mehta	MethaTech
Henry Huang	PNNL
Ken Martin	BPA
Mladen Kezunovic	Texas A&M University
Robert Folkes	Psymetrix
Teresa Carlon	PNNL
Tony Weekes	Manitoba Hydro
Vahid Madani	Pacific Gas and Electric Co.
Yi Hu	Quanta Technology

Appendix B: Instructions for Teleconference and LiveMeeting

1. Instructions for Teleconference:

NEW CONFERENCE CALL INSTRUCTIONS.

Please use the instructions below for connecting to the PSTT teleconference, Friday October 31, 2008, 8-9am, PT. The conferencing system has been automated so that you can go directly into your conference bridge.

Local participants (Richland, WA): **Dial 376-0190 then dial zero** at the prompt and they are in the conference bridge.

Long distance participants: **Dial 1-800-664-0771, at Octel voice message dial 376-0190 then dial zero at the prompt** and they are in the conference bridge.

This should make it much quicker for your participants to get into the conf bridges.

If you are experiencing problems with your conference call, dial 376-7411(local) and (long distance) dial 1-800-664-0771, at the Octel voice messaging system dial zero and we will assist you – Hanford Operator.

2. Instructions for LiveMeeting:

Teresa Carlon has invited you to attend an online meeting using Microsoft Office Live Meeting.

<https://www.livemeeting.com/cc/pnnl/join?id=JPGN7J&role=attend&pw=Fc%25%60KH%216m>

Add to my Outlook Calendar:

<https://www.livemeeting.com/cc/pnnl/meetingICS?id=JPGN7J&role=attend&pw=Fc%25%60KH%216m&i=i.ics>

FIRST-TIME USERS

To save time before the meeting, check your system to make sure it is ready to use Microsoft Office Live Meeting.

<http://go.microsoft.com/fwlink/?LinkId=90703>

TROUBLESHOOTING

Unable to join the meeting? Follow these steps:

1. Copy this address and paste it into your web browser:

<https://www.livemeeting.com/cc/pnnl/join>

2. Copy and paste the required information:

Meeting ID: JPGN7J

Entry Code: Fc%`KH!6m

Location: <https://www.livemeeting.com/cc/pnnl>

If you still cannot enter the meeting, contact support:

http://r.office.microsoft.com/r/rlidLiveMeeting?p1=12&p2=en_US&p3=LMInfo&p4=support