

*GridWise Architecture Council * Meeting Minutes – February 12, 2011, Washington, DC*

Members

Erich Gunther, EnerNex Corporation
Ron Ambrosio, IBM T.J. Watson Research Center
Robert Burke, ISO New England
Rik Drummond, Drummond Group
Tony Giroti, BRIDGE Energy Group, Inc.
Amr Ibrahim, Ohio Consumer Council
Alex Levinson, Lockheed Martin
Wayne Longcore, Consumers Energy
H. Ward Camp,
Tracy Markie, Engenuity
Robert Saint, NRECA
Tom Sloan, Kansas State Legislator
Ken Wacks, consultant to Sensus Metering Systems Inc.

Support – Pacific Northwest national Laboratory (PNNL)

Ron Melton, GWAC Administrator
Sherry Kowalski, PNNL
Steve Widergren, PNNL

Call to Order

Erich Gunther, GWAC Chairman

Erich Gunter called meeting to order at 9:00 a.m.

Proprietary Information Notice

Ron Melton, GWAC Administrator

The members and guests were reminded of the proprietary information disclosure policy according to the bylaws.

Agenda Review

Ron Melton, GWAC Administrator

No items were added to the agenda during the review.

Speakers and Guests

Anto Budiardjo, Clasma Events
William Cloutier, DTE Energy Company
Dave Oldak, Utilities Telecom Council
Ray Palmer, FERC
Dave Wollman, NIST
James Matter, Quality Logic
Jerry Fitzpatrick, NIST
Catherine Weldon

Members – not present

David Hardin, Invensys Process Systems

Members Emeritus

Richard Schomberg, EDF

Interoperability Maturity Model Update

Steve Widergren

Steve Widergren provided an update on the Maturity Model.

We haven't had any interaction with NEHTA recently. Seems like a good idea.

Replace term "domain" with sub-area, element or some other term. The term "domain" will be overloaded because it has already been used in the smart grid conceptual model and other NIST documentation.

NERC has object naming convention for objects in the US power system – may or may not be the same as CIM topology and related CIM requirement for unique object identifiers (at least as we've interpreted it for NWSGD.)

Level 4 – components -> interfaces

Outcome (what we probably need) vs. process (CMMI)

GridWeek Planning: The GWAC Interop Workshop

Bob Saint & Anto Budiardjo

Anto shared that Gridweek planning is underway and provided the following overview:

- The major partners include: Department of Energy (DOE), NIST, EEI, APPA, NEMA, EPRI, NRECA, UTC, Galvin Electrical Initiative and International Trade Administration.
- Theme – The Way Forward is the overall theme.
 - Tuesday: Looking forward - Where is the electric system headed in the next 10 year time frame?
 - Wednesday: Solutions – strategic solutions (not just technology)
 - Thursday: State of deployments. Where are we? A virtual report card. EPRI is leading much of this. Trying to put together a methodological report card.
- GWAC Interop Workshop fits into the second day and this has been the baseline assumption. Might fit better horizontally (something each day) rather than vertically.

Eric Gunter posed the question to the council to consider where they would like to position GWAC in terms of the conference's structure. Further, what is the message from GWAC to this community?

Regulators are both adjudicators and policy makers. An example of the latter is PUC's setting renewable portfolio standards.

Wayne Longcore opened the discussion about intelligent consumption as opposed to intelligent device consumption. The former allows for humans to make intelligent choices on energy consumption.

Ward Camp suggests that we don't want to tell regulators to focus on technology. Keep their attention focused on the things they are good at. Change their vision of the future.

GWAC concluded to have some presence on day 1 related to the smart grid vision and focus the GWAC Interop Workshop on day 2.

Connectivity Week Planning

Ron Melton, GWAC Administrator

Anto provided background on Connectivity Week planning and shared this year's focus will be on technology, application of technology, consumer focus and value proposition.

The overall theme for Connectivity Week is Smart Grid, Beyond the Grid, which will be broken down into four tracks.

- BuildConn
- HomeConn
- IndConn
- InfraConn

GWAC has committed to one day of GridWise Expo. Ron Melton asked for feedback on what the topics should be for the GWAC's, sessions. Perhaps the Council could try some newer topics such as engaging the academic aspect?

Steve Widergren shared that SGIP would like to focus on education providing background and perhaps a bootcamp. SGIP would also like to have a status reports. Which would be a mandatory plenary meeting and is scheduled on the last day – arrangements for F2F participation if there, but really a mandatory 2 hour plenary (on Thursday).

Discussion continued on and how GWAC could participate in Connectivity Week as well as possible track leads and speakers. GWAC has committed to three, 90 minute sessions. The Following Council members volunteered as track leads.

- Erich Gunther and Ron Melton will coordinate the overall tracks.
- Dave Elve - Environmental Benefits Session
- Amr Ibrahim - Economic /Regulatory Session
- Robert Burke – Reliability Session

University Outreach / Curriculum Development

Ron Melton, GWAC Administrator

Catherine Weldon shared that there is a current topic of discussion in the universities and the smart grid community about curriculum development. The upcoming fall semester target is 1.5 hours of material related to smart grid. To help insure the future of smart grid the educators are seeking collaborative curriculum to keep the material fresh over longer term.

Catherine Weldon is requesting simple seed material that would provide a starting point for the collaborative curriculum for this coming fall. She isn't asking us to develop an entire course right now but perhaps one lecture that will provide an overview of what smart grid's role is in the future and the role of interoperability.

Rik Drummond shared that he has observed that many of the power programs are all hardware oriented. Need to engage the software community too.

Steve Widergren and Ken Wacks did map out some research topics a couple of years ago. Ken Wacks shared that they have a lot of material but it would be a lot of work to break it down into curriculum. One approach would be to get one or more motivated Universities to take the first step and then work with the council to review and comment.

PSERC – could also be associated. They have been focused on power but need to expand their focus to include the IT part. GWAC might be able to feed some material to them.

Jeff Hammerlund has developed a survey course on smart grid at Portland State University. Which is available to graduate level and non-registered students. James Mater has put together some material for that course. One lecture is a good starting point. Possibly one to two hour outline with some slides. James Mater would be willing to contribute some of his material.

Dave Elve stated that NC State has a smart grid research center led by Ed White (former Itron chairman). Dave can make an introduction. Ward Camp added that there a lot of universities, virtually every state has something going on.

The Council agreed to pursue this activity and that an item should be added to the next GWAC meeting agenda to explore further.

Lunch Speaker - Smart Grid Related Activities at the Utilities at the Utilities Telecom Council

Mike Oldak

Mike Oldak presented on the activities of the Utilities Telecom Council which is a 63 year old organization the represents over 500 critical infrastructures with telecommunications needs. Currently there are three aspects to UTC activities.

- Reliability – Keeping the lights on for consumers
- Public Concerns – Talking to the public
- Emergency Response – D Block

Reliability

Keeping the lights on and the grid in balance, e.g., PMUs – depends on private systems that meet specific requirements. Sponsored Verizon to do a study and found a lot of utilities using commercial T1 lines.

Customer interface – some needs are not as time critical, e.g., meter reading. A variety of solutions will work – cellular, cable, etc.

Enterprise communications – large industry enterprise needed by the large, geographically extended utility organizations.

Scott Hempling – the system we have today is based on the needs we put on the system yesterday.

Public Concerns

Additionally there is a lot of public concern about critical infrastructure protection, cyber security, radiation exposure.

- Privacy – differing generational views. Some looking at privacy in relation to “when to rob me” or “when to attack me.”
- AARP is still engaged in opposition to much of smart grid implementation. Claims about impact on low-income customers even in the face of results to the contrary.
- The public’s fear of smart meters and possible radiation exposure. Klaus Bender has done a paper regarding RF exposure and smart meters. The smart meter radiation is extremely low and is generally shielded between the meter and the house.

Emergency Response

One activity that UTC engages in is public safety and emergency response which is coming into its own as a major issue. There are huge potential synergies between utilities and fire / law enforcement. They have common needs in disasters, etc. See an article by Mike Oldak on utc.org regarding utility communications capabilities versus commercial telecommunication carriers. This relates to D block spectrum reallocation “public safety.”

The FCC currently does not view the utilities as being a part of emergency response – thus not eligible for access to the spectrum being allocated to emergency response. Utilities want to share the spectrum with public safety users.

NIST / SGIP Update

Dave Wollman

Dave Wollman shared that NIST is planning to make improvements and upgrade the framework. During this process they would like input from GWAC such as the question of how to handle the legacy systems/standards?

Some issues to discuss:

- SGIP’s various efforts of SGIP’s vision, role and interactions between SDOs.
- Federal funding and making sure smart grid priorities survive the funding process.
- How long is SGIP’s level of involvement is required?
- How do DEWGs fit into fleshing out the catalog of standards?

SGIP Collaboration: Issues and actions update.

Dave Wollman shared a few things with the state of the SGIP. One thing that is happening in the SGIP is over time maturing the processes that they have in place. Need to respond to current events. One thing is that it is causing everyone to think it is the follow on from the FERC Technical conference that was held on January 31, 2011. That gave some very important feedback, for example there was positive voices that pointed out the some of the benefits of the NIST process and some of the progress that has been made, but also pointed out the need to understand where FERC is headed as far as what adoption means and also looking at the consensus of some of the standards that we have identified as writing for some of the regulators. Some of the comments during the conference pointed to the smart grid interoperability panel and things such as the catalog of standards but even with that the process is evolving. It is not a finalized process. One of the things that has been interesting throughout this entire time is that we have tried to make very rapid progress by putting

in place things like a framework document and then setting up the processes such as the interactions with the community through the smart grid interoperability panel and have handoff from the things we have done into a forum where longer term progress can be made and sustained. As we continue to evolve that SGIP would be interested in various opinions and ask for feedback on a variety of different things.

There are several Priority Action Plans that are producing results. There have been standards that have been output from the process and have been review by the Governing Board and received their recommendation. SGIP has all the activities going on with the sub-committees and in fact we have the leads for the Architecture and Testing and Certification committees present. SGIP has had a close relationship with GWAC the entire time we have been developing this process.

Upcoming is that NIST is intending to update the framework, which has been opened for public comment for over a year. We have some items in place to start making improvements and upgrades to the framework. For example there is a realization that we need to conceptually handle the legacy. That might be an issue that deserves attention within the framework and could be a forum to address issues like the evolution of standards as well as specific circumstances.

Some general issues there are various ongoing efforts with the SGIP and we have to keep in mind, reinforce and talk about the various visions. There is a NIST governing Board activity that is looking into this continuing evolution as we all move forward. Where the SGIP fits in the overall scheme of things, in essence, NIST set SGIP up to help NIST fulfill their mission under the Energy Independence and Security Act, so it has certain benefits and can be a home for certain activities but we need to always look at what its role is and what the benefit is. In seeing the progress that has been made we have paths that are a little more zoomed in on a particular SDO and sometimes it's easier to make quicker progress in but some of the issues that are longstanding are the interactions between SDOs. Realizing in the very beginning of the SGIP process, as well as the NIST framework process, we had some efforts that were tackling some of those interactions issues. Dave Wolman shared that he would be interested in the feedback in regards to how people feel the state of this are in that particular front.

There has obviously been an international emphasis with the recent news being the Smart Grid of China has joined the SGIP. They continue to reach out to Korea, Japan and others.

Another issue that NIST has to deal with is the Federal situation and making sure the emphasis and priority towards smart grid survives in a very different Federal funding environment.

NIST has set up a Federal advisory committee that helps to formally advise NIST on the state of all of its programs within smart grid. This was set up a public/private partnership and forum. Overtime you can imagine that there being a Federal role in the beginning to kick start but we also need to look at the eventual evolution of the entire system. How long is that level of effort sustainable or warranted?

We brought the DEWGs within the SGIP and in an evolving role we haven't taken advantage of the DEWGs as much as we can but there have been spots of brilliance within the various efforts. Many of the GWAC members have been very instrumental in helping to make sure these serve a useful

purpose and role. NIST has been looking on how to integrate and use the DEWGs within the SGIP. For example, we can call upon them for different roles in standards evaluations. Looking back however, was this the best way possible to utilize the DEWGs? One of the DEWGs that has been resurrected is the Business and Policy DEWG that Ron Melton and Dave Wollman leads and looking for infusion of new blood with the addition of Ward Camp who can help lead us forward. Within this particular DEWG we can have some interesting interactions between the GWAC Council and those within the SGIP in addressing some issues. This DEWG had been a lot for the outreach to the regulator community and serving that forum is one useful purpose however, we also need to move towards evolving more actionable timely work products. Some subgroups that they are considering are the model language groups, appliance communication policy issues and perhaps one group on privacy. The Vehicle to Grid DEWG is up and running. One thing that we need to do is step back and look at what is pertaining to the DEWGs and do we have complete coverage of the conceptual model? Should we have something dealing with markets, operations or renewable to grid?

SGIP Collaboration: issues and actions update

Ron Melton, GWAC Administrator

Ron Melton opened discussion with Council members regarding GWAC's general role and relationship with SGIP.

Ken Wacks made a comment that some efforts need to be coordinated. For example the DEWG subgroups of appliance communications and privacy are both addressed in the Home to Grid DEWG.

Ron Ambrosio agreed that the domains may not be adequately covered; however he would suggest that we continue that pattern of not using domain expert group in operations but a domain expert group in the interface with the operations domain. In doing this we are insuring to keep the focus on the interoperability at the interfaces.

Jerry Fitzpatrick added that there has been a lot of focus and experimentation on PAPs, which are the more tactical of the working groups. However, we need to have the strong support of the DEWGS in filling out that catalog is the first step to establishing more standards in our framework.

Ron Ambrosio echoed Jerry Fitzpatrick's comments and added that he feels there is much GWAC can do with the DEWGs. The DEWGs have a different role than the PAPs and that a lot of the focus has been on the PAPs and that needs to evolve.

As far as GWAC, our role has been better defined as we integrated and provided input into the multi-path lifecycle of the PAPs. Some of the comments Ron Ambrosio has made has to do with, what the flow of things that don't need a PAP? There are existing standards or specific technical issues that don't have a lot of consensus that need to be driven. We need to follow a similar process that is parallel to that. We still need to have the cyber security and architecture committee to review those before they move to final steps, even if they haven't come through a PAP.

He added that he believed the conceptual and the semantic modeling work being done by the Architecture Committee is going to become very valuable. It's a little bit difficult for people to see how to utilize something like this conceptual architecture but when it is completed it will become

clear. Having that traceability between national goals and regional goals, requirements to business services and actually mapping into standards across the conceptual model domains horizontally than vertically across the different layers of the GWAC Stack it will become very valuable to be able to verify if the standard applies and to what cases and layers. This will be very helpful dealing with the SDOs and identifying where we feel there is unnecessary gaps or if there are gaps that aren't covered. So there are some important outcomes from the work that is going on right now.

Rik Drummond shared that GWAC put out a major document out last year which was our plan to allow people to uniformly test their standards. It would help drive to adopt the standards to the marketplace much more rapidly. It would also help make the meaning of the word interoperable more consistent across all these standards. So far we have seven different organizations lining up stating they are going to go implement this thing over the next year, which is pretty significant because these are key organizations. We will start seeing more uniform interoperability standards come out of those during this year. An example is MultiSpeak. One problematic thing that he sees is the ability for NIST to say they accomplished something this year as oppose to just saying that they are just testing. Because of this we really pushed to get the document accomplished last year and because of that we are outrunning architecture. When you consider it and do it correctly you would have architecture define what the standards are, what the loads are and then come through with a testing instrument and test the flows and standards.

Rik Drummond is happy to hear of more involvement with the DEWGs because both he and Ken Wacks were heavily involved with the Grid to Home DEWG.

One major issue that Rik Drummond sees for NIST is the integration of SGIP and NIST is very confusing and hampers things. One reason he isn't meeting on of his deliverables is because of NIST and SGIP confusion. This is really causing problems if you are trying to implement something outside of SGIP or going to a wider scale.

NIST legal does not want you on a list because it implies you are supporting these things which should be SGIP verses NIST. We have this unclear boundary here and when other participants get closer to releasing things you will have the same sort of problems. Rik Drummond doesn't look at the relationship between NIST and SGIP any different from the relationship between the DOE and GWAC.

Ron Melton added in theory it may not be but in principle the relationship is quite a bit different because the DOE, other than providing the Council money to operate, it is hands-off. The NIST model has not been hands-off.

Erich Gunter added the relationship model is similar and the funding model is similar but NIST is utilizing SGIP as one of their tools to fill their EISA obligations. In terms is funding this activity significantly to accomplish that and as a result it is less hands-off?

Ward Camp asked what exactly are the deliverables for the DEWGs? One issue that he deals with is regulatory certainty and how it is important for the utilities to the extent that it provides clarity. One of the big failures he recognizes is that, although we provided a vision as to where we wanted to be we didn't have an accurate assessment where we were on interoperability. MultiSpeak was a

perfect example of this issue. One reason this occurred is because there was an extensive amount of standards groups with many standards of their own so the landscape was tough. He submitted that there was a lot more interoperability work that was done in certain levels and very little done on other levels but we didn't have a crystal clear vision when we started. So when he starts to think of vision and continuing evolution he always thinks about smooth migration and smooth transitions to meet the vision, but how do we evolve smoothly? We also need to evolve quickly, yes, because like many other counties that don't have a legacy are going straight to the standards and have an opportunity to leapfrog us.

Ron Melton stated the heterogeneity of the power system in the United States is not something that is always recognized and it not necessarily embraced. He feels that people come up with things that might reduce the heterogeneity. What Ron Melton has observed in the Northwest is that because of the different business models between the coops, PUDs, Munis and IOUs; usually operate on different scales the heterogeneity is going to be present. So rather than pretending that it's a bad thing and go away, the problem needs to be turned on its edge and let's accepted. We need to work with heterogeneity rather than fight it.

Ward Camp added that the catalog needs to be much more universal and encompassing all the different alternatives.

Ron Melton asked the question how GWAC can help SGIP be successful. How can GWAC interact and provide input into the process? One recommendation is engaging SGIP and engaging the Governing Board in particular. If the SGIP is going to work the Governing Board then it must be a most effective body.

James Mater shared that he is still struck with the ambiguity around standards identified in the Road Map document and what they mean. People are really confused by that and then you add the SGIP Catalog of Standards and it gets even more confusing and then you add the NIST process and it is extremely confusing. So what is an adopted standard? He hopes the update to the Framework document helps.

Secondly, with all the experience we had over the last three years with trying to implement EISA 2007 who is reviewing the process? Given what we know, how would we rewrite EISA today if we were to improve it?

Ward Camp shared that this discussion was brought up at the FERC Technical Conference. Some other questions that were brought up were:

- What is the applicability of these standards?
- What does it mean that they are adopted?
- What is the mechanism for saying they are essential?
- When you say consensus, what does consensus mean?

James Mater then asked what are the political landscape and the prognosis for funding to continue with the SGIP support. Dave Wollman reiterated that they are going under budgetary exercises in response to both Administration and Congress as they look towards the likelihood of cuts moving forward. However, it is recognized that of the progress that is being made today but unless there is a global discussion of those priorities things tend to slip off the table. It is one of those things where you have to constantly reaffirm what you are doing, why it is important, and why it matters, with larger and larger audiences?

NIST recognizes the importance of the SGIP and EISA clearly states that they are to do their work with critical stakeholders, which they list several by name. The Mechanism that NIST has put together to do that action and to create that forum is the SGIP. So with that, it places the relative importance of the SGIP as an entity. NIST set up the SGIP using ARRA stimulus funds. So the rapid acceleration they have been able to achieve has been in part due to funding. What they have learned by this is you identify a structure plus technical champions within that structure that can drive work you can make rapid progress. Further discussion continued on SGIP's and GWAC's funding.

Ken Wacks stated that the focus we have had on standards was the appropriate response to the mandate from Congress to NIST to determine if there is an adequate compilation of standards to promote the smart grid however, one of the things we have been emphasizing in GWAC is the GWAC Stack that the business policies really drives the information model and the technology that needs the standards. What we are finding, especially from the recent FERC hearings, is a number of the utilities aren't sure the standards fit into the way they do business. Ken Wacks feels that one of the things GWAC can do is to reemphasize that standards are a response to filling a business decision made by the utilities. Discussion continued regarding preferred standards and the mandated standards. Ken Wacks suggested that utilities may have been responding in fear to mandated standards by FERC and the confusion on how those standards applied to how they conduct business.

Ken continued that since we are looking at the strategic view of GridWise® we should look at real practical business problems, not just from a theoretical perspective, and approach it from the top of the GWAC stack down and looking at what the options are for a business solutions, what would we choose and what are the implications for the information model and standards as a way of educating the industry.

Ron Melton shared that another aspect is as the origins in the legislation, in the process of standards from NIST over to FERC, this perhaps is bad legislation and may be a bad model. That discussion needs to take place with FERC.

Ron Ambrosio built off of a comment that Ron Melton made on the importance of the SGIP Governing Board. Ron Ambrosio feels we need to keep looking at the SGIP Governing Board keeps the role in which it was created for which was the governance over the larger SGIP organization. He feels that there has been the tendency to take on more of a technology oriented role. What we can't have is a governing board that becomes a microcosm over the overall SGIP.

Steve Widergren stated that the fear of a technologist to have a set of standards mandated to them by a regulatory agency is overwhelming. What sort of ruling can regulatory agencies make? The way that the SGIP was approaching the catalog of standards was that this was going to be a list of relevant standards to smart grid type of activities and needs to be divorces of whatever decision making that NIST would make which would lead to the decision making that FERC would make within the legislation. Dave Wollman pointed out that there are differences of opinions on that statement. Discussion continued about the evolution of SGIP and the differing opinions as to the roles of various groups within the smart grid and their influence in the process.

Jerry Fitzpatrick added that there needs to be clarity in the SGIP Catalog of Standards and the NISP process. He is of the opinion changing the legislation is not productive but what would help is FERC interrupt what adoption means. The states are looking to FERC for guidance on these standards so it is very important that FERC get it right. The states will most likely do what FERC recommends.

Rik Drummond made a comment that we need to be mindful not to confuse the issue.

Anto shared that the positioning of SGIP and GWAC is confusion to an outsider. Both SGIP and GWAC talk about standards and interoperability and from an outsider position there is questions as to why both these entities exist. Erich Gunter added that this is the reason why we need to spend some time to identify key bullet points what we see as the difference are between the roles. How we are supporting SGIP activities but also what are separate activities?

Discussion continued regarding the reason for the set of standards from SGIP and the NIST Road Map. Dave Wollman clarified that when the SGIP was established we did not yet have a Federal Advisory Committee. The Federal Advisory Committee is the valid way for an agency to can get specific advice from Administration. With the SGIP everything they do in essence is to talk to the public commons, so all of the work done in the SGIP is done in the full view of the public. NIST uses that as a source of material that can act upon but we can't specifically ask it for advice, so there has to be the ability to have the separation between the two.

Ron Ambrosio added that although the reason to have the SGIP is extremely valuable, it is a separate piece from what NIST has to accomplish and NIST still has to make those final decisions on what it is handing over but hopefully is using as much information as possible, as Congress asked it to do from SGIP.

The question was raised if the Federal Advisory Committee provided input in the Catalog of Standards. Dave Wollman responded that the Committee was not asked for input. The Committee's purpose is to provide for broad input on the entire NIST Smart Grid Program of which this is an element and within that they can comment on our processes.

Jerry Fitzpatrick added that one of the reasons there is this confusion between the Catalog of Standards and the NIST Framework is because the catalog is not official yet; the processes have not been officially defined and are still undergoing development. The SGIP has the technical expertise to conduct a technical review of the standards. To look at and refine the requirement for the smart grid and to compare those standards to those requirements and to make an assessment on how well

these standards meet the requirements. For both standards that exist and those coming into existence through the PAs.

Secondly, SGIP is to evaluate the interoperability of those standards and the implementations of them through the testing certification activities. Mr. Fitzpatrick sees SGIP's role as the tool to fully flush out the information available on these standards in the form of a technical assessment and evaluation and in using this NIST can fulfill its role as the decider of what standards will appear in the NIST framework.

Ron Melton asked if there would be any utility in engaging FERC in the notion that they could make a decision not to regulate any of these standards and that it doesn't serve a useful purpose. Ron Melton recommended that GWAC can give input to FERC by providing a set of criteria for deciding where it would be sensible to have a rule making. What is the definition of useful purpose?

Ray Palmer mentioned that the one time that people read information is when comments are filed in a commission docket. March 2, 2011 is the deadline to file comments for the FERC Technical Conference.

Outreach & Liaison Update

Ron Melton, GWAC Administrator

Update was postponed to March meeting due to time.

Adjourn

Ron Ambrosio motioned to adjourn the meeting, Amr Ibrahim seconded the motions. All Council members were in favor and the meeting adjourned at 3:07 pm.