[IEEE P2030 TF3 SG2]

Date: 2010-10-26

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IEEE P2030 TF3
Interoperability for the Smart Grid

SG2 Use Cases
Presentation at
Plenary Meeting in Las Vegas, NV
October 26-29, 2010
Agenda

• SG2 Purpose
• SG2 Actions to Date
• SG2 Smart Grid Evaluation Criteria (SGEC)
  – Future Working Group Submittals
• SG2 Use Case Template
• SG2 Future Actions
PURPOSE

• **IEEE P2030 TF3 SG2 USE CASES**
  - Provides an means to evaluate Smart Grid Use Cases to determine the respective communications requirements. This is being accomplished with an evaluation criteria given that many Use Cases do not provide sufficient information.
  - The criteria will apply attributes that can be mapped to communications technologies.
  - The result of this evaluation is to advised the Architecture Subgroup to denote those requirements in consideration of its intended use.
  - The selected technologies including protocols should meet the requirements of the Use Cases
SG2 Actions to Date

- SG2 included a total of 2 telecoms
- There were 6-11 attendees on GotoMeeting conference calls since the last Plenary meeting in May 2010
- Recent meetings since May were on July 8 and September 17, 2010
- There has been participation in the SG1 Architecture Subgroup meeting whenever possible
- Information gathered to further enhance the SGEC (Smart Grid Evaluation Criteria). NOTE - The use of the acronym for Level of Assurance (LOA) does not represent a conflict with Letter of Assurance in the context of our use
SG2 Actions to Date

- There was a discussion on renewable and alternative energy sources which included alternative communications approaches for AMI and DR.
- There were refinements discussed to the SGEC on the September 17th conference call that will be submitted to the next Writing Group meeting in November 2010 since it was not ready in time for the last meeting.
- There has been additional information gathered with participation in NIST PAP #2, and OpenSG.
- There still needs to be further engagement into clearly stating the characteristic requirements.
SGEC
Smart Grid Evaluation Criteria
(Working Group Submittal)

{For submittal at November 2010 meeting}
Smart Grid Evaluation Criteria (SGEC)

- The following should be added to the SGEC as submitted by YOSHIHIRO OHBA*, SUBIR DAS** which defined the CIA for interfaces defined in the SG1 Architecture: (Submit for next Writing Group meeting)
  - This information is very useful for Architecture considerations in that it provides a mapping for Confidentiality, Integrity, and Assurance (CIA).
  - This information indicates that stating this requirement for CIA will require further discussion as to how this will be achieved and maintained to provide end-to-end security at a packet level.
  - This concern has surfaced in NIST PAP #11 for CIA of functions required for transmission systems
Smart Grid Evaluation Criteria (SGEC)

• The following was provided to SG1 with regard to TIER CLASS assignments of interfaces: (Submit for next Writing Group meeting)
  • [https://mentor.ieee.org/2030/dcn/10/2030-10-0332-00-0012-sg1-interfaces-by-tier-class.xls](https://mentor.ieee.org/2030/dcn/10/2030-10-0332-00-0012-sg1-interfaces-by-tier-class.xls)

• The Protocols used and their relationship to TIER CLASS are already stated in the P2030 Draft 3.1

• The Technologies that may be considered appear on the next slide and are not currently stated in the current draft.
Smart Grid Evaluation Criteria (SGEC)

- This table provides examples of characteristics of technologies under consideration:

<table>
<thead>
<tr>
<th>Interface</th>
<th>Speed</th>
<th>General Characteristics (Examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>802.3</td>
<td>HIGH</td>
<td>Most common interface</td>
</tr>
<tr>
<td>LTE (4G)</td>
<td>HIGH</td>
<td>Price per packet, low cost</td>
</tr>
<tr>
<td>802.16 (4G)</td>
<td>HIGH</td>
<td>Free commercially and possibly user owned</td>
</tr>
<tr>
<td>1901</td>
<td>HIGH</td>
<td>Homeplug accepted for use</td>
</tr>
<tr>
<td>802.11</td>
<td>MED</td>
<td>End-user owned or operated by 3rd party</td>
</tr>
<tr>
<td>3G</td>
<td>MED</td>
<td>Price per packet, flat rate</td>
</tr>
<tr>
<td>802.15.1</td>
<td>MED</td>
<td>Generally used in short range applications</td>
</tr>
<tr>
<td>802.15.4a</td>
<td>MED</td>
<td>Mesh could be used for extended range</td>
</tr>
<tr>
<td>802.15.4</td>
<td>LOW</td>
<td>Mesh used at short range</td>
</tr>
<tr>
<td>RS232/RS485</td>
<td>LOW</td>
<td>Requires conversion to Ethernet</td>
</tr>
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</table>

- NOTE – This is just one consideration with respect to expected latency of which there are other concerns such as scalability, coexistence, and security. The characteristics of use must be considered in mapping to requirements for Use Cases and a particular interface that is needed.
Smart Grid Evaluation Criteria (SGEC)

- The following List of Actors contents was expanded to include TIER CLASS reference NISTIR 7628): (Submit for next Writing Group meeting)
Smart Grid Evaluation Criteria (SGEC)

• ISA Wireless Industrial and Automation Network mapped to SGEC: (Submit for next Writing Group meeting)


• ISA100 have taken the constructs of the SGEC and performed a mapping to use classes for wireless networks be generally also applies to wired networks

• The SGEC constructs and the characterization mappings will have a wider benefit for all industrial and automation networks
Smart Grid Evaluation Criteria (SGEC)

• The SGEC constructs have been shared with NIST PAP #2, OpenSG, ISA99/100, and DHS since they have all reached a point of needing to address the same concerns related to Use Cases, Interfaces, Protocols, and Technologies to be used for the Smart Grid. They also were advised that this is still a work-in-progress and that wish to align our efforts with theirs such that the community will mutually benefit.
SG2 Use Cases Template

{Please review the purpose of the template}
Use Cases Template

• This is a review from the last plenary meeting with regard to the Use Cases template was developed by Joel Silverman for participants and others to submit evaluations utilizing the SGEC

• It is encouraged that any P2030 member submit at least one Use Case and submit questions to help us to collect further information

• It is desired to improve the criteria so that others outside of P2030 can utilize the SGEC given that there is a need for people who are not from a particular domain to clearly state the characteristic requirements
Use Cases Template

- There is risk in not utilizing a common point of reference such as the SGEC in that there are different qualitative and quantitative aspects that should be considered.
- It is recognized that this is the first time that a criteria has been formally stated to capture these conditions and thought. It is difficult since it represents a risk-based assessment and critical thinking that can yield substantial results in safe, reliable, and secure operations of the Smart Grid.
Future Actions

• These will include review of characterizations and mappings in a series of discussions to further our understanding of application of the SGEC for various Use Cases and Architectural concerns.

• SG2 solicits any P2030 member to contribute to our discussions and share their experience so that we can gain further insight into areas of concern and how the SGEC can be applied -

• Submittal of recent mappings to Writing Group

• Review and comment on P2030 Draft 3.1
Questions?

Thank you!