



PSMA

Reliability Committee

TIME: Wednesday, 12/9/20, 11-12pm CST

PLACE: Zoom (669-900-6833 or 408-638-0968), 272 780 335, <https://zoom.us/j/272780335>

MINUTES: https://www.pdma.com/technical-forums/reliability/meeting_minutes

ATTENDEES:

PRESENT?	COMMITTEE MEMBER
	TBD – Co-Chair
X	Brian Zahnstecher, PowerRox – Co-Chair
X	Joe Horzepa, PSMA – PSMA Representation
	Lisa Horzepa, PSMA – PSMA Representation
X	John Horzepa, PSMA – PSMA Representation
X	Ada Cheng, AdaClock – Member
X	Rick Fishbune, IBM – Member
X	Patrick Le Fèvre, Powerbox – Member
	Tim McDonald, Infineon – Member
	Steve Miller, SL Power (RETIRED) – Member
	Kevin Parmenter, Taiwan Semi – Member
	Shane Callanan, AEI – Member
	Greg Miller, Silanna – Member
	Mike Seeman, Eta One Power – Member
X	Ed Massey, Ed Massey Consulting – Member
X	Eric Swenson, IBM – Member
	Finbarr Waldron, Tyndall National Institute – Member
X	Bill Mallory, SL Power – Member
	Jon Fifield, Astronics – Member
	Burak Ozpineci, ORNL – Member
	Dao Zhou, Aalborg University – Member
	Huai Wang, Aalborg University – Member
	Shobhana Punjabi, Cisco – Member
	Patrick McCluskey, Univ of MD, CALCE Lab – Member
	Abhijit Dasgupta, Univ of MD, CALCE Lab – Member
	Hamish Laird, ELMG Digital Power – Member
	Francesco Carobolante, IoTissimo – Member
	Nitish Agarwal, SL Power – Member
X	Manish Bhardwaj, TI – Member
	Evan Lucore, Artesyn – Member
	Gary Gong, Cisco – Member
	Denis Downey, Cisco – Member

* Attending APEC

GREEN = NEW MEMBER, 1st MEETING (i.e. – introduce yourself)

RED = REMOVING MEMBER, NO ATTENDANCE AND/OR RESPONSE FOR LONG TIME, PURGING

ACTIONS (w/OWNER) HIGHLIGHTED BELOW

ACTION COMPLETED

AGENDA:

IF ANYONE IS INTERESTED IN CO-CHAIR ROLE, THEN PLEASE REACH OUT TO BZ RIGHT AWAY.

- **New Comm Introductions / Membership**
 - Elevator pitch intros, roundtable.
 - NEW MEMBERS =
 - New Member Recruiting
 - Time to survey Comm members, confirm interest, purge rest. **BZ WILL PROPOSE A PROCESS FOR THIS.** Ed offers to help reach out. **BZ WILL SYNCH WITH PSMA OFFICE ON UPDATING MEMBERSHIP LISTS.**

- **Comm Website / Purpose Statement**
 - Comm website up and running on PSMA.com ADA REPORTS FULL PSMA WEBSITE REVAMP UP BY END-JAN
 - **COMM = IF HAVE ANY GOOD RESOURCES, LINKS, PAPERS, ETC. TO POST ON WEBSITE (REMINDER, OPEN TO PUBLIC), THEN PLEASE SEND TO BZ & TO FOR POSTING VIA LISA.**

- **Initiatives**
 - New Committee Execution Strategy
 - Separate champions for key initiatives, run meetings accordingly.
 - **1. PS Comm Bus Reliability (Brian), 2. PTR Webinar(s) (CHAMPION NEEDED), 3. APEC '21 IS (Ed)**

 - **Power Supply Communication Bus Reliability (BRIAN SPEARHEADS)**
 - Schedule (**BZ WILL COMMUNICATE TO BoD IN MTG THIS FRI**)
 - **10/9/20: Project Restart**
 - **Oct. '20 – Jan. '21: Draft Chapter 1-8 Generation**
 - **2/9/21 – 4/12/21: Draft Chapter 1-8 Comm Review Period**
 - **2/16/21 – 4/19/21: Draft Chapter 1-8 Parallel Discussion/Iterate Period**
 - **5/3/21: Presentation of Draft Deliverables for Final Editing (END OF SPECIAL PROJECT)**
 - **5/24/21: Presentation of Final Deliverables**
 - **Week of 6/9/21: APEC IS Target**
 - **??/21: Webinar Target**
 - **??/21: Follow-on Supporting Media Target(s)**
 - Actions
 - SubComm Review Needs: no team support requested until project back on-track
 - TO notes we can hone expectation and “editing quality level” so **NEEDS TO PROVIDE FIRST-PASS REVIEW BEFORE PUSHING OUT RAW CAPTURE. ED VOLUNTEERS TO HELP FIRST-PASS EFFORT, BZ WILL SYNCH OFFLINE**
 - Steve m. Notes proj should be sure to capture content/app exams outside of ICT (auto, medical, other common busses).
 - **TENTATIVELY** back on as of 9/18/20. Chapters 1-3 on Dropbox for review, BUT NO REVIEW REQUESTS BEING MADE UNTIL **BZ CAN VERIFY MATERIAL LOOKS TO BE MEETING EXPECTATIONS.** Comm needs to review proposed, updated project schedule. Comm finds general schedule acceptable, though expresses desire for hybrid version in which off-line reviews may occur as content is written and before formal review sessions (can also be requested earlier, as appropriate).
 - For APEC '21 support, Comm is supportive of IS proposal, but feels it is not solid enough to submit PES at this time so will wait for future opportunities.

- PTR Webinars (**NEED NEW CHAMPION SPEARHEADS**):
 - Topics? Speakers? Schedule? **FOR ANY WEBINAR, DECIDE IF PROPOSE TO PTR OR IF RELIAB COMM INDEPENDENT EVENT.** TO PREFERRED TO PRIORITIZE FOR PTR, DEFAULT TO INDY IF JUSTIFIED.
 - **COMM ACTION: WEBINAR TOPICS, PERHAPS FROM WITHIN COMM.**
 - Ada attended webinar on SW Reliability topic (“Covariate Software Reliability Models and Applications” from UMass Dartmouth), did not find enough interesting content to warrant pursuing for us.
 - Bob White, Power Supply Communication Bus Reliability (pending special project activities **ON-COMING OFF HIATUS**)
 - Bob is back “in play” again after getting project going again. Initial priority for APEC ’21 IS session, then webinar after that.
 - Charles Hymowitz, AEi Systems
 - “Test vs. Analysis; what’s the right ratio?”
 - **Consider for PTR webinar? BZ TO REACH OUT. CHARLES CONFIRMS PRELIM INTEREST, ASKING FOR TIMEFRAME...ADA MENTIONS MAY HAVE ALREADY PRESENTED, JOHN/BZ WILL INVESTIGATE.** Has not given before so free to do so. PTR Comm requested more detail to justify as part of supporting PTR series. **BZ WILL PING AGAIN FOR RESPONSE TO PTR CLARIFICATIONS.** PTR Co-chairs now pinging (last 8/9/20) Charles direct for date. **BZ WILL CHECK ON STATUS WITH PTR TEAM.** Charles now has schedule conflicts...looking to date in early ’21. **PTR COMM KICKING UP SCHEDULING, EXPECT TO SLOT CHARLES IN NEXT QUARTER.**
 - Doug Kirkpatrick, CEO, Eridan Communications
 - “System Reliability for Small Cells Enable 5G”
 - **Consider for PTR webinar? BZ TO REACH OUT. GIVING COMP TIME TO WORK OUT LOGISTICAL ISSUES FIRST, REVISIT IN LATER JAN.**
- **APEC ’21 INDUSTRY SESSION (ED SPEARHEADS APEC 1/11/21 ACCEPTANCE NOTICE, 3/26/21 FINAL PPT DUE TO APEC, COMM TARGET FIRST DRAFT BY 2/1/21 FOR REVIEW/ITERATION, ED TO GENERATE DETAILED COMM SCHEDULE):**
 - **SCHEDULE**
 - **12/08/20:** Speaker provides: Title, abstract, bio (completed)
 - **02/01/21:** Speakers provide presentation for review
 - **02/12/21:** Rel. Comm provides initial presentation feedback
 - **02/26/21:** Speaker provides updated presentation for review
 - **03/12/21:** Rel. Comm completes presentation review and provides final feedback
 - **03/26/21:** Final presentation submitted to APEC
 - Prelim proposal for 4-slot session abstract submitted to APEC for consideration, **BZ WILL SHARE WITH MTG MINS.** Ed has agreed to own this for us, THANKS ED!!! **BZ ADDING ED TO ALL DISCUSSIONS AS APPROPRIATE. ED TO SEND SPEAKER SUMMARY. BZ WORK WITH ED ON GETTING ABSTRACTS UPLOADED. ED TO CHECK AVAILABILITY TO SUPPORT BEING SESSION CO-CHAIR, BZ TO FOLLOW-UP w/ ENABLING FOR ePAPERS.**
 - Ada notes importance to highlight interests of academics that need help understanding how to transition developments from research to production (particularly through lens of reliability). **COMM WILL NOTE AS FOCUS FOR SPEAKER SEARCH.**
 - Potential Speaker Chase List (**TARGET CLOSE ON SPEAKERS/TOPICS BY END-NOV**) –

1. Ada suggests we consider highlighting collaboration efforts with IPC (particularly IPC-9592 or other investigation spearheaded by Rick/Eric). *Aside from APEC IS, other calls to action likely to come out of this effort for us to track and turn into actionable stuff, **WILL CHECK-IN ON MONTHLY BASIS.***
 - *“**IPC-9592B - What is it? What isn't it?**” from Eric Swenson, IBM*
 - *ABSTRACT: **The IPC-9592 standard, "Requirements for Power Conversion Devices for the Computer and Telecommunications Industries," was first released in September 2008. This document defined design, test, and manufacturing requirements for various types of power assemblies from AC/DC converters to battery packs. This standard covers requirements for each of these topics in varying degrees of detail. Specifics on qualification testing are especially well covered. However, this standard has several omissions that need to be addressed. The development and testing of firmware is one important topic not addressed in this standard. Another area where the standard could be strengthened is better defining manufacturing process requirements for each product class. This presentation will summarize the strengths and weaknesses of the current IPC-9592B standard and discuss various options to strengthen it.***
2. Bob White, Embedded Power Labs (representing PSMA Reliab Comm) = Special Project Overview (major assumption on sufficient project status and APEC slippage past April). **BZ WILL SOLICIT TALK PROPOSAL.** Abstract received 11/10/20.
 - *“**The PSMA Power Supply Communication Reliability Report**”*
 - *ABSTRACT: Digital communication is now commonly used with all types of power supplies and power converters. Communication interfaces allow for configuration, control, and monitoring by system management functions. The management of power converters can be at the local level, such as with point-of-load converters on a single circuit board to managing the power supplies in an entire data to managing power converters in cellular base stations scattered around the world. With communication with power converters now so widely used it is important that this communication be reliable. A corrupted value in a command to change a converter's output voltage could cause problems ranging from a loss of data to the destruction of the system. Loss of communication with power converters in servers in a data center could mean a loss of revenue from power metering charges. Recognizing this importance, the Power Sources Manufacturers Association commissioned a report on the reliability of communication with power supplies and power converters. This presentation will provide an overview of that report.*

The first part of the presentation will provide an overview of the contents of the report including:

- Why we want to communicate with power conversion equipment
- An brief introduction to the various methods used to communicate with power converters
- A review of the common failure modes and effects in power converter communication
- Specific discussion of common interfaces and protocols and failure modes and effects specific to those interfaces and protocols

- Recommended best practices for designing and implementing communication with power converters to minimize failures and maximize reliability

The second half of the presentation will present selected examples of particular failure modes and the recommended practices to minimize those failures.

3. Jonathan Pollet, Red Tiger Security.
 - ***“Security Lessons Embedded Vendors Should Learn from Big IT Vendors”***
 - ABSTRACT: Recently Red Tiger Security had the opportunity to work alongside HP to help develop a security strategy for one fleet of embedded devices that has an install base of over 500 million devices – network IP enabled printers. HP recognized that while computers, laptops, servers, and most devices with mature operating systems offer an extensive set of security features, their embedded devices (printers) generally had multiple vulnerabilities due to not supporting authentication, encryption, security logging, centralized asset management, and more. This presentation will discuss the lessons that we learned from working with a large IT vendor, how similar excuses such as limited system resources were overcome, and how a security platform was created and deployed to all devices, regardless of the model number so that all network printer devices could receive the same amount of security rigor as a computer resource, and truly be an equal citizen on the network from a security perspective. This presentation will also compare and contrast the security features supported in most IT appliances versus IoT and Industrial controllers.
 4. Ada notes PSMA newsletter (<https://www.psm.com/HTML/newsletter/page17.html>) recently highlighted iNemi article about the impacts COVID needs have on equipment reliability. **BZ WILL FIGURE OUT WHOM TO SOLICIT FOR TALK PROPOSAL**. BZ emailed iNEMI 10/14/20 with a follow-up 11/10/20 since no response to-date.
 - ***“Recommended Best Practices for Protecting the Reliability and Integrity of Electronic Products and Assemblies when Disinfecting for SARSCoV- 2 (COVID-19)”*** from Julie Silk, Keysight (on behalf of iNEMI)
 - ABSTRACT: The disinfecting procedures developed in response to the COVID-19 crisis could potentially have a detrimental impact on electronic equipment and assemblies. Many commonly recommended disinfection substances and/or application methods could potentially cause failures in electronic equipment if the internal electronics were inadvertently exposed to them. This is an obvious concern for electronics manufacturers who want to ensure the safety of their employees, supply chain partners and customers, while protecting the reliability and integrity of their products. A team of experts from across iNEMI member organizations reviewed key industry, government and technical sources and assembled a best practices document. The team assessed chemicals and common application methods, identifying those substances that minimize the risk of negative impact on electronic equipment when applied in an appropriate manner.
- **General**
 - Post-mortem PS SW/FW Reliability Report Update

- Powerbox: given to design teams, lot of interest, inhibited by language barrier (Japanese in this case).
- SL: given to teams, already have Reliab stakeholders involved, driving change in FW review process.
- IBM: presented to some suppliers, neutral response so far, awaiting next major project kickoff for true assessment.
- Patrick notes similar activities kicking-up within EPSMA, **PATRICK WILL INQUIRE FURTHER TO SEE IF THERE ARE ADDITIONAL COLLABORATION OPPORTUNITIES**. Patrick reports no response as of 10/14/20, 11/11/20 (Patrick pinged again, expecting response).
- Any other revenue-generating thoughts for PSMA?
 - Virtual Workshop (recent '20 Cap & Mag Virtual Workshop success as example)
 - Very well-received thus far, most seem to be ok with virtual format.
 - Joe notes guidance to reduce proposed event budget by ~20% for offset, F2F expenses, and pass through to attendee registration. Also, consider turning PS SW/FW Reliability Report into workshop theme.
 - Viability determined by success of existing webinar efforts.
 - Standards (primarily through conversion of existing project outputs)
 - Input into IPC-9592B standard update. Consider SW/FW input? **Rick former colleague of IPC CTO (Matt Kelly), will work with IPC/PSMA efforts to cultivate opportunity here. BZ to facilitate email discussion with Mike Hayes as part of overall PSMA/IPC collaboration efforts.** SW/FW report currently with IPC for review/feedback/suggestions. Eric also notes deep experience with this and interest in efforts. IPC currently reviewing with their committees to determine best course of action.
 - Offer supporting resources to enable utilization of PS SW/FW Reliability Report. **COMM ACTION TO SUGGEST OTHER POTENTIAL RESOURCES/TOOLS TO CREATE TO SUPPORT THIS.**
 - For example, extract a checklist from report to simplify barrier to entry (i.e. – team code review checklist). **COMM ACTION (ADA SPEARHEADING) TO PROPOSE LIST OF POTENTIAL TOOLS FOR DETERMINING ACTIONABLE PRIORITIES.** White paper? Checklist?
 1. Thoughts from Nitish: commonly challenged by disconnect between SW/FW & HW stakeholder expectations...could be helped by Process Checklist (for code reviews, functional flowchart/review, test plan, etc.).
 2. Thoughts from Ada: “Dashboard” of Metrics, Process Diagram, Prototyping & BIST...**ADA WILL EMAIL LIST w/ DESCRIPTIONS**. Ada sent analysis to Comm list 9/9/20, captured below for convenience (**REVIEW NXT MTG**):
 - **Those already in the report are as follows:**
 - * Sources of Coding Standards (p. 80)
 - * SW Development Process Audit Checklist (p. 85)
 - * Safety Assessment using a Risk Matrix to determine acceptable and unacceptable risks (p. 93)
 - * Regulatory inputs for software quality (p. 98)
 - * Example Software Quality Specification (pp. 98-100)
 - * Software Development Process Assessment Template (pp. 101-104)

- * Software Security Assessment Specification (pp. 104-105) includes security checklist (also on p. 150)
 - * Digital PSU Verification Test Plan Example (pp. 106-109)
 - * Development Team Specifications (pp. 110-112) includes PSU Functional Partition Specification Template, & SW Interface Specification Template.
 - * Testing Checklist example (p. 159)

 - **Some proposed resources/tools that are not currently in the report:**
(COMM PRIORITIES) BZ WILL PREPARE PROPOSAL FOR ADDRESSING BY NEXT MTG. Ada suggests once have enough of these tangible tools, introduce to industry via webinar and package tools (delivery mechanism for monetization TBD, **ONCE TOOLS IN HAND, CAN REACH OUT TO MKG COMM FOR ADVICE**).
 - * Process Flow Diagram **(1)**
 - Translate Hamish’s text into more functional diagrams. **MANISH CAN LOOK INTO CONTRIBUTING TO THIS TASK, BZ TO GENERATE FOCUSED EMAIL DISCUSSION TO DRIVE.**
 - * Design checklist? **(2)**
 - Generate bulleted, process checklist. **MANISH CAN LOOK INTO CONTRIBUTING TO THIS TASK.**
 - * BIST examples? **(3.1)**
 - Functional examples very enabling to new users.
 - * “Dashboard” of metrics **(3.2)**
 - Propose hybrid dashboard of HW and SW metrics.
 - * Code review checklist? **(5)**
 - Generate bulleted, process checklist.
 - * Software release checklist? **(6)**
 - Generate template for release roadmap, examples and references.

 - **Some inputs on the report for next phase/revision:**
 - * Add prototyping?
 - * Need to define code escrow
- **Next Meeting**
- Wed 1/13/21, 11am CST.
 - Regular Schedule = 2nd Wed of each month, 11am-12pm CST