

## PSCC Subcommittee Study Group Meeting Minutes

Designation: P21		Name: System Architectures Supporting the Virtualization of Substation Protection and Control Applications			
Meeting Location: Teleconference		Meeting Time: 10 AM	Meeting Date: 2022/02/14	Minutes Revised:	Minutes Approved: 2022-02-28
PAR Output: N/A	PAR Output: N/A	PAR Approval Date: N/A	PAR Expiration Date: N/A	Target Sponsor Ballot Date: N/A	Target Completion Date: N/A
Presiding Officer: Craig Preuss, Chair			Recorded by: Craig Preuss		Draft Number: N/A
Attendance:					
Name		Affiliation		Attending via Phone (P) / Web (W) or Local (L) M/CM/G	
Craig Preuss		Black & Veatch		W	M
Herb Falk		OTB Consulting		W	M
Shane Haveron		AMETEK		W	M
Scott Mix		PNNL		W	M
Joemoan Xavier		ABB		W	M
Jani Valtari		ABB		W	M
Gayle Nelms		SEL		W	M
Veselin Skendzic		SEL		W	M
Laurel Brandt		TVA		W	M
Ibrahim Abdulhadi		University of Strathclyde, Glasgow		W	M
Austin Wade		SEL		W	M
Jean Raymond		Hydro Québec		W	M
Jay Anderson		Retired		W	M
Mike Dood		SEL		W	M
Thomas Rudolph		Schneider Electric GmbH		W	M
Prasad Shrawane		Greater Sudbury Hydro Inc.		W	M
Alan Renouf		VMware		W	M
Madhab Paudel		Eaton		W	M
Paul Myrda		EPRI		W	M
Dean Samara-Rubio		Intel		W	M
Greg Zweigle		SEL		W	M
Michelle Afenya		S&C Electric		W	M
Mickey Schultz		Black & Veatch		W	M
Farzad Khalilpour		SCE		W	M
Nirmal Nair		University of Auckland, New Zealand		W	M
Cole Weber		Advantech		W	M
Steve Klecker		MidAmerican		W	M
Adam Caballero		Eaton			M
Andre Melo		Schneider Electric			M
Ted (Charles) Witham		Eaton			M
Darrin Kite		SEL			M
Jose Ruiz		Doble			M

Kannan Devarajan	TTTech		M
Nathan Wallace	Cybirical		M
Priyanka Nadkar	SEL		M
Jeff Pack	POWER Engineers		M
James Bougie	GPT		M
Alex Apostolov	OMICRON		M
Anthony Johnson	SCE		M
Benton Vandiver	Hitachi Powergrids		M
Byungtae Jang, KR			M
Chris Huntley	SEL		M
Dean Ouellette	RTDS Industries		M
Dennis Holstein	OPUS Consulting Group		M
Dustin Tessier	Tesco Automation		M
Jay Herman	EPRI		M
Jim Michaelis	Commonwealth Associates. Inc.		M
Jun Verzosa	Doble		M
James Formea	Eaton		M
Song Zhang	ISO New England		M
Prithpal Khajuria	Intel		M
Anthony Sivesind	SRP		M
Miguel Rios	Southern Company		M
Michael Thompson	SEL		M
Fred Agyekum	SEL		M
Sai Chandra Reddy Thota	Megger Ltd		M
Noor Mohd Fadzli B Hj. Othman	PETROLIAM NASIONAL BERHAD (PETRONAS)		M
Eugenio Carvalheira	OMICRON		M
Hao CHEN (来宾)	State Grid Corporation of China		M
Chris Heron	Integrated Power Services		M
Joseph Yang	Advantech		M
Jeff Brown	Advantech		M
Antonello Monti	RWTH Aachen University		M
Arun Shrestha	IEEE		M
Chand Tailor	Eaton		M
Charles Adewole	ERL Phase Technologies		M
Daniel Ridenour	Dominion Energy		M
Daqing Hou	SEL		M
David Dolezilek	SEL		M
Deepak Maragal	NYPA		M
Deryk Yuill	is5		M
Eric Thibodeau	Hydro Québec		M
Florian Ainhirn	Versuchsanstalt für Hochspannungstechnik Graz GmbH   High Voltage Test Laboratory Graz Ltd.		M
Gurudatha (Guru) Pai	GE Digital		M
Jeremy Slimmer	Cybirical		M
Jesse Silva	SCE		M
Joshua Hughes	Patterson Power Engineers		M
Juan Placid	J J Power & Energy Inc.		M
Luke Hebert	Cybirical		M
Mital Kanabar	GE Renewable Energy		M

Murty Yalla	Hubbell		M
Ramakrishna Gokaraju	University of Saskatchewan		M
Richard Kephart	Emerson		M
Steven Blair	Synaptec		M
Thai Li	Hubbell		M
Wayne Stec	Distregen		M
Xavier Manel-la	Siemens		M
Zeus Xioco	SCE		M
M: Member CM: Corresponding Member G: Guest			

Item no.	Notes	Action by
<b>CALL TO ORDER</b>	Meeting was called to order by the chair at approximately 10:00 AM Eastern.	
<b>INTRODUCTIONS AND QUORUM</b>	Introductions were not undertaken, the participants list was used. Quorum does not apply to study group per IEEE-SA rules all attendees are considered voting members.	
<b>CALL FOR PATENTS</b>	Pre-PAR patent slides were shown.	
<b>IEEE-SA COPYRIGHT</b>	IEEE-SA copyright slides shown.	
<b>CHAIR'S REMARKS</b>	General welcome given.	
<b>AGENDA APPROVAL</b>	Scott Mix motion to approve agenda, Mike Dood second. No objections or abstentions.	
<b>APPROVAL OF PREVIOUS MINUTES</b>	Chair noted problems in meeting minutes drafted for Jan 31, 2022 meeting and will be updated and voted on at next meeting.	Chair to update 1/31/2022 minutes
<b>Action Items</b>	<ul style="list-style-type: none"> <li>• Follow up with chair of PSCCC P11 TF Cloud Computing, uses and Requirements of Electric Power Utilities (TW Cease) – not meeting at JTCM</li> <li>• Copy of CIGRE B5.60 report for P21 may be subject to new CIGRE and IEEE MOU</li> <li>• Prithpal to coordinate utility presentations (Entergy, National Grid, AEP)</li> <li>• IEEE-SA presentation on trial-use standards – scheduled</li> <li>• CIGRE D2.42 report on time synchronization and distribution, that is a challenge for virtualization. Dennis Holstein will investigate whether that work is addressing virtualization or not, it may have been a survey.</li> </ul>	
<b>New Business</b>	Definition of substation virtualization:  A consistent, secure, and managed approach to the decoupling of software from its dedicated hardware using a variety of hardware architectures to support multiple real-time or near real-time substation applications such as protection, automation, monitoring (e.g., condition-based monitoring, validation, transformation), metering, control (closed- or open-loop), or simulation (e.g., digital twin).	
<b>New Business</b>	Upcoming presentations <ul style="list-style-type: none"> <li>• February 28                             <ul style="list-style-type: none"> <li>○ Hydro-Quebec</li> <li>○ CIGRE D2.43</li> </ul> </li> <li>• March 14                             <ul style="list-style-type: none"> <li>○ VMWare</li> <li>○ IEEE-SA</li> </ul> </li> </ul>	

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<b>Regular Web Meetings</b>	How much background / reference / presentation is needed PSCCC S1 P1686??? PSRC H46 PC37.1.3??? PSRC H27 COMSET PC37.251??? PSCCC S7 WG, IEEE Std 2808 Standard for Function Designations used in Electrical Power Systems for Cyber Services and Cybersecurity PSCCC P11 TF, Cloud Computing, uses and Requirements of Electric Power Utilities ISO TS 23167, general cloud that is applicable Analytic Methods for Power Systems (AMPS) Technical Committee, Big Data & Analytics (BDA) Subcommittee, Cloud for Power Grid IEEE Computer Society Technical Committee on Cloud Computing <a href="https://tc.computer.org/tccl/">https://tc.computer.org/tccl/</a> Others???	Prithpal still working on coordinating presentations from other utilities.
<b>Next Steps</b>	What does P21 want to recommend to P0 subcommittee <ol style="list-style-type: none"> <li>1. PAR related work, working group (could address trial use)</li> <li>2. Report related work, task force</li> <li>3. No future work is needed</li> </ol>	
<b>Presentation</b>	Presentation by Jani Valtari from ABB. Refer to embedded file below.	
<b>ITEMS REPORTED OUT OF EXECUTIVE SESSION</b>	There was no executive session.	
<b>TIME OF FINAL ADJOURNMENT</b>	The meeting was adjourned at approximately 11:22 AM Eastern.	
<b>NEXT FACE TO FACE MEETINGS</b>	Bi-weekly meetings continue. Final face-to-face meeting will be held May 9-12, 2022, presently scheduled for Reno, NV.	
<b>FUTURE MEETING ROOM REQUIREMENTS</b>	N/A for room size, projector, conflicts.	



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