

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: 2022/04/04	Minutes Revised:	Minutes Approved: 2022/04/11
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
Shane Haveron		AMETEK		W	M
Matt McPheeters		PG&E		W	M
Austin Wade		SEL		W	M
Anthony Sivesind		SRP		W	M
Andre Melo		Schneider Electric		W	M
Scott Mix		PNNL		W	M
Jose Ruiz		Doble		W	M
Thomas Rudolph		Schneider Electric GmbH		W	M
Veselin Skendzic		SEL		W	M
Ibrahim Abdulhadi		University of Strathclyde, Glasgow		W	M
Madhab Paudel		Eaton		W	M
Greg Zweigle		SEL		W	M
Herb Falk		OTB Consulting		W	M
Farzad Khalilpour		SCE		W	M
Eugenio Carvalheira		OMICRON		W	M
Steve Klecker		MidAmerican		W	M
Dean Samara-Rubio		Intel		W	M
Gayle Nelms		SEL			M
Jay Herman		EPRI			M
Jay Anderson		Retired			M
Mike Dood		SEL			M
Prithpal Khajuria		Intel			M
Paul Myrda		EPRI			M
Ted (Charles) Witham		Eaton			M
Cole Weber		Advantech			M
Nirmal Nair		University of Auckland, New Zealand			M
Alan Renouf		VMware			M
Joemoan Xavier		ABB			M
Prasad Shrawane		Greater Sudbury Hydro Inc.			M
Adam Caballero		Eaton			M
Nathan Wallace		Cybirical			M

Jani Valtari	ABB		M
Laurel Brandt	TVA		M
Jean Raymond	Hydro Québec		M
Michelle Afenya	S&C Electric		M
Mickey Schultz	Black & Veatch		M
Darrin Kite	SEL		M
Kannan Devarajan	TTTech		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
Jim Michaelis	Commonwealth Associates. Inc.		M
Jun Verzosa	Doble		M
James Formea	Eaton		M
Song Zhang	ISO New England		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
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
CALL TO ORDER	Meeting was called to order by the chair at approximately 10:03 AM Eastern.	
INTRODUCTIONS AND QUORUM	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.	
CALL FOR PATENTS	Pre-PAR patent slides were shown.	
IEEE-SA COPYRIGHT	IEEE-SA copyright slides shown.	
CHAIR'S REMARKS	General welcome given.	
AGENDA APPROVAL	Scott Mix motion to approve agenda, Austin Wade second. No objections or abstentions.	
APPROVAL OF PREVIOUS MINUTES	Scott Mix motion to approve March 28, 2022 meeting minutes, Farzad Khalilpour second. No objections or abstentions.	
Action Items	<ul style="list-style-type: none"> Follow up with chair of PSCCC P11 TF Cloud Computing, uses and Requirements of Electric Power Utilities (TW Cease) Copy of CIGRE B5.60 report for P21 will be available by the end of March 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. Erin has not provided information on how comments are submitted after publication – via email and US mail? 	B5.60 report still in progress and may be able to finalize this week, will be posted into iMeet by the chair at that time.
New Business	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).	
New Business	What does P21 want to recommend to P0 subcommittee <ol style="list-style-type: none"> PAR related work, working group (could address trial use) Report related work, task force No future work is needed 	
Review of Visio Diagram	The chair shared the Visio diagram created at March 28 meeting that shows the system architecture using different approaches. Edits were made to the diagram during the discussion.	Chair to post Visio diagram and pdf file of it on iMeet
	The chair noted that networking is missing on the diagram.	
	There was discussion of items to potentially provide to the H45 working group developing PC37.300 on Centralized Protection and Control (CPC):	

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	<ol style="list-style-type: none"> 1. There are no levels of CPC implementation. <ol style="list-style-type: none"> a. Does only implementing an HMI and RTU functionality mean that CPC does not apply? b. Does segmenting a system into one hardware platform handling HMI and RTU functionality and another handling protection fit the definition of CPC? 	
	<ol style="list-style-type: none"> 2. The chair shared a draft of PC37.300 that has been provided to P21. <ol style="list-style-type: none"> a. "Application integration" is not defined and may not be well understood in the virtualization that is taking place. b. Table 5 <ol style="list-style-type: none"> i. Type Tests are performed by the end-user or manufacturer. There is no mention that testing may be also linked to contractual language. ii. Will end users be familiar with Type Testing and have the facilities to perform it? SRP indicated that they continue to perform Type Testing. iii. Type tests, are they performed for each virtual machine? Or is this part of the software type test done by the vendor for their virtual machine? Such testing might include CPU, memory use, etc. c. Where does non-conformance happen – inside the VM or in the configuration of the host environment? 	
ITEMS REPORTED OUT OF EXECUTIVE SESSION	There was no executive session.	
TIME OF FINAL ADJOURNMENT	The meeting was adjourned at approximately 11:30 AM Eastern.	
NEXT FACE TO FACE MEETINGS	April 11, April 18, April 25 and May 2 May 9-12, 2022 <ul style="list-style-type: none"> • Reno, NV • Meeting draft has P21 scheduled on Monday, May 9 from 5-6 pm Pacific Time 	
FUTURE MEETING ROOM REQUIREMENTS	N/A for room size, projector, conflicts.	



Virtualization figure.vsdX



Virtualization figure.pdf