INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)
TC65: **Industrial-process measurement, control and automation**
SC65C: **Industrial communication networks**
PT 60802: **Time sensitive networking profile for industrial automation**

Institute of Electrical and Electronics Engineers, Inc. (IEEE)

IEEE 802: **LAN/MAN Standards Committee**
IEEE 802.1: **Higher Layer LAN Protocols Working Group**
IEEE 802.1 TSN: **Time-Sensitive Networking Task Group**

Meeting: IEC/IEEE 60802 Joint Project
Meeting was based on the meeting announcement; see IEC collaboration tool http://collaboration.iec.ch/ and http://www.ieee802.org/1

Date: 2019-09-18 — 2019-09-20

Location: Edinburgh, UK

IEC WG9/PT 60802 Convenor and IEC/IEEE 60802 Joint Project chair: Ludwig Winkel

Daily minutes by: Josef Dorr

Minutes compiled by: Ludwig Winkel and Jessy Rouyer

Published minutes: Collaboration tool http://collaboration.iec.ch/, and IEEE 802.1 web site http://www.ieee802.org/1/files/public/60802

Ludwig Winkel, IEC WG9/PT60802 Convenor and IEC/IEEE 60802 Joint Project Chair (60802 Chair), and János Farkas, IEEE 802.1 TSN Task Group Chair (TG Chair), presided. Josef Dorr, IEC/IEEE 60802 Joint Project Secretary (60802 Secretary) wrote the minutes.

At the beginning of the meetings on each day:
- The IEEE-SA PatCom Patent Slides for Standards Development Meetings and the IEEE 802 Participation slide were presented (http://standards.ieee.org/about/sasb/patcom/materials.html).
- The Call for Potentially Essential Patents was made. There were no responses to the calls prior to the end of the week's session.
- The IEC WG9/PT60802 Convenor reminded the IEC participants that patent rules similar to those of IEEE-SA apply in IEC, reminded all that patents required for use of the IEC/IEEE 60802 profile must be announced to IEC and IEEE and made available

using the IEC licensing form, and reminded that presentations shall not have copyright marks or confidentiality information.

- The agenda and the expected results of the day were reviewed and approved. The final agenda is available at https://1.ieee802.org/september-2019-interim-session-in-edinburgh-uk-tsn-tg-agenda/.

Draft minutes were reviewed at the end of the week's meetings under the lead of the 60802 Secretary.

Attendance:

Session columns (left to right, 1–6):

1. Time-Sensitive Networking TG + IEC/IEEE 60802 Joint Project (Wednesday, 18-Sep-2019, 08:00 - 12:30)
2. IEC/IEEE 60802 Joint Project (Wednesday, 18-Sep-2019, 13:30 - 18:00)
3. IEC/IEEE 60802 Joint Project (Thursday, 19-Sep-2019, 08:00 - 12:30)
4. IEC/IEEE 60802 Joint Project (Thursday, 19-Sep-2019, 13:30 - 18:00)
5. Time-Sensitive Networking TG + IEC/IEEE 60802 Joint Project (Friday, 20-Sep-2019, 08:00 - 12:30)
6. IEC/IEEE 60802 Joint Project (Friday, 20-Sep-2019, 13:30 - 18:00)

Last name	First name	Affiliation	1	2	3	4	5	6
ADEMAJ	Astrit	TTTech Computertechnik AG	•	•	•	•	•	•
Bierschenk	Jens	Robert Bosch GmbH	•					
Boiger	Christian	b-plus GmbH	•				•	
Bottorff	Paul	Hewlett-Packard Development Company, L.P.	•				•	
Canchi	Radhakrishna	Kyocera International Inc	•	•	•	•	•	•
Chang	Xin	Huawei Technologies Co. Ltd	•	•			•	
Chen	David	Nokia	•					
Chen	Feng	Siemens AG	•				•	
Congdon	Paul	Tallac Networks; Huawei	•				•	
Cummings	Rodney	National Instruments Corporation	•	•			•	
Dorr	Josef	Siemens AG	•	•	•	•	•	
Enzinger	Thomas	B&R Industrial Automation GmbH	•		•	•	•	•
Farkas	Janos	Ericsson	•				•	
Fedyk	Donald	LabN Consulting, L.L.C.					•	
Fincher	Scott	Extreme Networks	•					
Finn	Norman	Huawei Technologies Co. Ltd	•				•	
Garner	Geoffrey	Huawei Technologies Co. Ltd	•	•	•		•	
Gunther	Craig	Robert Bosch GmbH	•				•	
Gutierrez	Marina	TTTech Computertechnik AG	•					
Haddock	Stephen	Stephen Haddock Consulting, LLC	•					
Hantel	Mark	Rockwell Automation	•	•	•	•	•	•
Hasegawa	Akio	Advanced Telecommunications Research Institute International (ATR)	•	•				
Holness	Marc	Ciena Corporation	•					
Hotta	Yoshifumi	Mitsubishi Electric Corporation	•	•	•	•	•	•
Igarashi	Shunsuke	Mitsubishi Electric Corporation			•	•		•
Itaya	Satoko	National Institute of Information and Communications Technology (NICT)	•	•	•	•	•	
Katsalis	Kostas	Huawei Technologies Duesseldorf GmbH	•	•			•	
Kehrer	Stephan	Hirschmann Automation and Control, Inc.	•			•	•	•
Kelsey	Randy	Engineering Solutions, Inc			•			
Kojima	Fumihide	National Institute of Information and Communications Technology (NICT)	•	•			•	
KONDO	Kenji	Yaskawa Electric Corp	•	•	•	•	•	•
KOTO	Hajime	National Institute of Information and Communications Technology (NICT)	•				•	•
Lawlis	James	Ford Motor Company	•					
Mangin	Christophe	Mitsubishi Electric Corporation	•			•		•
Maruhashi	Kenichi	NEC Corporation	•	•		•	•	
Messenger	John	ADVA Optical Networking Ltd.	•					
Mustala	Tero	Nokia	•			•	•	
Nakano	Hiroki	NETREQS Co., Ltd.	•					
Ostertag	Martin	Zurich University of Applied Sciences	•	•	•	•	•	•
Parsons	Glenn	Ericsson AB	•					
Proell	Dieter	Siemens AG	•	•	•	•	•	•
Rouyer	Jessy	Nokia	•				•	

		IEC/IEEE 60802 Joint Project (Friday, 20-Sep-2019, 13:30 - 18:00)						
		Time-Sensitive Networking TG + IEC/IEEE 60802 Joint Project (Friday, 20-Sep-2019, 08:00 - 12:30)						
		IEC/IEEE 60802 Joint Project (Thursday, 19-Sep-2019, 13:30 - 18:00)						
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		Time-Sensitive Networking TG + IEC/IEEE 60802 Joint Project (Wednesday, 18-Sep-2019, 08:00 - 12:30)						
Last name	First name	Affiliation						
Sato	Atsushi	Yokogawa Electric Corporation	●	●	●	●	●	●
Seewald	Maik	Cisco Systems, Inc.	●	●	●	●	●	●
Sivakolundu	Ramesh	Cisco Systems, Inc.	●					
Specht	Johannes	University of Duisburg-Essen and General Motors Company	●			●		
Stanica	Marius	ABB AB	●	●	●	●	●	
Steindl	Guenter	Siemens AG	●	●	●	●	●	●
Takita	Daisuke	Mitsubishi Electric Corporation	●	●	●	●	●	●
Tarui	Isao	Mitsubishi Electric Corporation	●	●	●	●	●	●
traore	karim	Microchip/Microsemi Corporation	●					
Wang	Tongtong	Huawei Technologies Co. Ltd	●			●		
Wang	Xinyuan	Huawei Technologies Co. Ltd	●	●		●		
Wang	Xuehuan	Huawei Technologies Co. Ltd	●			●	●	
Weber	Karl	Beckhoff Automation	●			●	●	
Winkel	Ludwig	Siemens AG	●	●	●	●	●	●
Woods	Jordon	Analog Devices Inc.	●	●	●	●	●	●
Wuesteney	Lukas	Hirschmann Automation and Control, Inc.	●	●	●	●	●	●
YU	XIANG	Huawei Technologies Co., Ltd					●	
Zein	Nader	NEC Europe (NLE)	●				●	
Zhu	Chunhui	Futurewei Technologies	●					
Zuponcic	Steven	Rockwell Automation	●	●	●	●	●	●
Zweck	Harald	Infineon Technologies AG	●					

Wednesday 18 September 2019

8:00 AM call to order by the TG Chair and the 60802 Chair, 10:00 – 10:30 AM recess

The TSN TG and IEC/IEEE 60802 Joint Project had a joint meeting.

The TG Chair and the 60802 Chair:
- Welcomed the participants of the IEC/IEEE 60802 Joint Project, a joint effort of the:
  - IEC 65C WG9/PT 60802 (TSN) Project Team, led by Ludwig Winkel; and
  - IEEE 802.1 Time-Sensitive Networking Task Group, led by the TG Chair.
- Provided information about internet access, lunch, attendance log to the IEC/IEEE 60802 Joint Project.

The 60802 Chair proposed to continue aligning IEC/IEEE 60802 Joint Project meetings with IEEE 802.1 meetings, starting Wednesday and ending Friday during IEEE 802.1 sessions. The meeting agreed (none dissenting) to the proposal.

The 60802 Chair reported on the 60802 Conformity Assessment (CA) status and activities. The CA decisions on the business model are expected at the SPS fair to be held 26-28 November 2019 in Nuremberg, Germany.

Jordon Woods, 60802 editor, presented *Editor's Report 60802 Draft 1.1* http://www.ieee802.org/1/files/public/docs2019/60802-woods-D1-1-update-0919-v02.pdf on 60802 draft 1.1 http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf.
Disposition: Presentation discussed. Related to ongoing project.

The 60802 Chair stated that the IEC voting period for the 60802 draft 1.1 http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf will start the weekend after Friday, September 20, 2019 and end after an eight-week period.

Rodney Cummings presented his proposal for the hot standby redundancy for time synchronization in subclause 5.1.11 of http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf.
Disposition: To be reviewed via TG balloting and IEC CD.

Günter Steindl provided an overview of the results of an IEC/IEEE 60802 ad hoc group that met 6:00 PM to 7:00 PM on September 16, 2019 to further develop *Conformance Class* http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf as a contribution to the 60802 profile.

Astrit Ademaj presented *PTCC* [PubSub TSN Centralized Configuration] *-TSN Endstation Centralized Configuration Interface for OPC UA PubSub Systems* http://www.ieee802.org/1/files/public/docs2019/60802-ademaj-PTCC-0918-v05.pdf.
Disposition: Presentation discussed. Further discussion needed. Continued Friday.

12:30 PM recess

1:30 PM call to order by the 60802 Chair, 3:10 – 3:40 PM recess

The IEC/IEEE 60802 Joint Project met separately from the TSN TG until Friday.

Günter Steindl led the review of *Conformance Class* http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf.
Disposition: Continued Thursday.

Günter Steindl and Geoffrey Garner presented *Constraints about Sync* http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ConstraintsAboutSync-0919-v10.pdf that is already integrated http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf.
Disposition: Continued on Friday.

6:00 PM recess

<p align="center">Thursday 19 September 2019</p>

8:00 AM call to order by the TG Chair and the 60802 Chair, 10:00 – 10:30 AM recess

Günter Steindl and Geoffrey Garner continued to present *Constraints about Sync* http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-ConstraintsAboutSync-0919-v10.pdf that is already integrated http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf.
Disposition: To be reviewed via TG balloting and IEC CD.

Günter Steindl led the review of *Conformance Class* http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf.
Disposition: Continued in the afternoon.

12:30 PM recess

1:30 PM call to order by the 60802 Chair

Ludwig Winkel presented *Compatibility levels of communication network devices* http://www.ieee802.org/1/files/public/docs2019/60802-Winkel-CompLevels-0919-v0.pdf.

Disposition: Further discussion needed.

Günter Steindl led the review of *Conformance Class* http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf.
Disposition: Continued Friday.

3:00 PM recess

Friday 20 September 2019

8:00 AM call to order by the TG Chair and the 60802 Chair, 10:00 – 10:30 AM recess

The TSN TG and IEC/IEEE 60802 Joint Project had a joint meeting.

The TG Chair and the 60802 Chair summarized the work performed so far in this session.

Josef Dorr and Karl Weber presented an LNI4.0 liaison: *LNI4.0 Testbed MSRP Enhancement Introduction* http://www.ieee802.org/1/files/public/docs2019/new-Dorr-LNI40-MSRP-enhancement-0919-v01.pdf.
Disposition: Further discussion needed. Further contributions are expected.

Craig Gunther provided an overview of http://www.ieee802.org/1/files/private/dg-drafts/d1/802-1DG-d1-0.pdf.
Disposition: For information.

Mick Seaman provided an introduction to *Running with Scissors: Cut-through in bridged networks* http://www.ieee802.org/1/files/public/docs2019/new-seaman-cut-through-scissors-0119-v01.pdf. Astrit Ademaj and Günter Steindl then presented *Cut-Through* http://www.ieee802.org/1/files/public/docs2019/60802-Ademaj-et-al-CutThrough-0919-v10.pdf.
Disposition: Paper and presentation discussed. Further discussion needed. Further contributions are expected.

Stephan Kehrer presented http://www.ieee802.org/1/files/public/docs2019/admin-kehrer-sep2020-interim-proposal-0919-v01.pdf as an update to a proposed September 21-25, 2020 IEEE 802.1 interim session in Stuttgart, Germany.
Disposition: Presentation discussed. A straw poll was held for various options regarding the organization of the Stuttgart meeting:
- Would a room rate of 204 EUR (including tax) prevent you from staying at the meeting hotel?
  - Yes　　　　　　　_16_
  - No　　　　　　　_13_
  - Abstain　　　　　__8_
  - Room count　　　_47_
- Would you prefer a higher meeting fee with no room-block available at the hotel over a lower fee with a room-block available at the hotel?
  - Yes　　　　　　　_14_
  - No　　　　　　　_15_
  - Abstain　　　　　_11_
  - Room count　　　_47_

The 60802 Chair presented the updated IEC/IEEE 60802 timeline in http://www.ieee802.org/1/files/public/docs2019/60802-Winkel-timeline-0919-v03.pdf.
Disposition: For information.

Astrit Ademaj presented *PTCC -TSN Endstation Centralized Configuration Interface for OPC UA PubSub Systems* http://www.ieee802.org/1/files/public/docs2019/60802-ademaj-PTCC-0918-v05.pdf.
Disposition: Presentation discussed. Further discussion needed.

12:30 PM recess

1:30 PM call to order by the 60802 Chair

Günter Steindl led the review of *Conformance Class* http://www.ieee802.org/1/files/public/docs2019/60802-Steindl-et-al-ExampleSelection-0919-v11.pdf.
Disposition: Further discussion needed.

Future meetings/teleconferences

The next teleconference will be held October 28, 2019.

Any Other Business

No further business was discussed in this session.

2:03 PM adjournment

Annex A
Final Agenda

**Meeting Agenda of IEC 65C/WG9.PT 60802 and the
IEC/IEEE 60802 Joint Project of IEEE 802.1
held in Edinburgh (GB), at 2019-09-18… -20**

Rev	rev03	Ludwig Winkel (Convenor IEC SC65C/WG9 and chair IEC/IEEE 60802 Joint Project); János Farkas (TG chair of IEEE 802.1 TSN)	
Key:		means:	Common session of "IEC/IEEE 60802 Joint Project" & "TG TSN"

Wed	**18-09-19**	[h:min]		[min]	**Topics**	Responsible
	8:00	-	8:10	10	Welcome and organizational issues (IEEE intro, IEC intro), membership, attendees registration (IEEE imat), roster; administrivia	Ludwig, János
Room	8:10	-	8:20	10	Agenda	Ludwig, János
The Gallery	8:20	-	8:25	5	Next meetings	Ludwig, János
	8:25	-	8:25	0	Liaison reports, e.g. LNI	
	8:25	-	8:30	5	Status of Conformity Assessment (CA) activity	Ludwig
	8:30	-	9:30	60	Editor's introduction to D1.1	Jordon
	9:30	-	10:00	30	Hot-standby time sync proposal in draft	Rodney
	10:00	-	10:30	30	Break	
	10:30	-	11:25	55	Hot-standby time sync proposal in draft	Rodney
	11:25	-	11:25			
	11:25	-	12:10	45	60802 adhoc group "Selection" overview of the result	Günter
	12:10	-	12:35	25	PubSub TSN Centralized Configuration (PTCC): TSN Endstation Centralized Configuration Interface for OPC UA PubSub Systems	Astrit
	12:35	-	12:35			
	12:35	-	13:30	55	Lunch	
	13:30	-	15:10	100	60802 adhoc group "Selection" results	Günter
	15:10	-	15:10			
	15:10	-	15:10			
	15:10	-	15:40	30	Break	
	15:40	-	15:40			
	15:40	-	15:40			
	15:40	-	17:45	125	Constraints about Sync	Günter
	17:45	-	17:45			
	17:45	-	17:45	0	60802 adhoc group "Selection" results	Günter
	17:45	-	18:00	15	Review of minutes of the day	Josef
	18:00				Recess of 60802 JP meeting	

Thu	**19-09-19**	[h:min]		[min]	**Topics**	Responsible
	8:00	-	8:10	10	IEEE Intro, Review Agenda; expected results of the day	Ludwig
	8:10	-	8:10			
Room	8:10	-	10:00	110	Constraints about Sync	Günter
Gallery	10:00	-	10:30	30	Break	

					Topics	Responsible
10:30	-	10:30				
10:30	-	12:30	120		60802 adhoc group "Selection" results	Günter
12:30	-	12:30				
12:30	-	12:30				
12:30	-	12:30				
12:30	-	13:30	60		Lunch	
13:30	-	14:20	50		Compatibility levels of communication network devices	Ludwig
14:20	-	15:00	40		60802 adhoc group "Selection" results	Günter
15:00	-	15:00				
15:00	-	15:00				
15:00	-	15:00			Break	
15:00	-	15:00				
15:00	-	15:00				
15:00	-	15:00				
15:00	-	15:00	0		Review of minutes of the day	Josef
15:00					Recess of 60802 JP meeting	

Fri		**20-09-19**	[h:min]	[min]	**Topics**	**Responsible**
Room Gallery	8:00	-	8:05	5	Review Agenda; expected results of the day	Ludwig, János
	8:05	-	8:15	10	Recap past days	Ludwig, János
	8:15	-	9:45	90	Possible MSRP enhancements	Karl, Josef
	9:45	-	9:45	0	Discussion on draft profile document Annex Z	Jordon
	9:45	-	10:00	15	Automotive profile	Craig
	10:00	-	10:30	30	Break	
	10:30	-	11:30	60	Cut through	Astrit, Günter
	11:30	-	11:30			
	11:30	-	12:05	35	Sept 2020 meeting	Stephan
	12:05	-	12:15	10	Update of 60802 time line	Ludwig
	12:15	-	12:30	15	Recap of PubSub PTCC	Astrit
	12:30	-	12:30			
	12:30	-	13:30	60	Lunch	
	13:30	-	13:50	20	60802 adhoc group "Selection" results	Günter
	13:50	-	13:50			
	13:50	-	13:50			
	13:50	-	13:50			
	13:50	-	13:50			
	13:50	-	13:50			
	13:50	-	14:03	13	Review of the minutes	Josef
	14:03				Adjournment of IEC/IEEE 60802 JP meeting	

1st Names in the Agenda	Name		Affiliation	Position in the joint project	
Ludwig	Winkel		Siemens AG	Convenor IEC SC65C/MT9 and chair IEC/IEEE 60802 Joint Project	
János	Farkas		Ericsson	Chair IEEE 802.1 TSN TG	
Jordon	Woods		Analog Devices	Editor	
Josef	Dorr		Siemens AG	Secretary	
Mark	Hantel		Rockwell Automation	Web master, IEC/AVNU ALLIANCE Liaison officer	
Astrit	Ademaj		TTTech		
Günter	Steindl		Siemens AG	IEC expert, IEC/PI Liaison officer	
Rodney	Cummings		NI		
Karl	Weber		Beckhoff	IEC expert	