

<p style="text-align: center;">Meeting of the IEC/IEEE 60802 Joint Project 2020-03-19</p>

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: 2020-01-22 — 2020-01-24

Location: Geneva, Switzerland

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 Copyright Policy slides <https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/copyright-policy-WG-meetings.potx>, the IEEE-SA PatCom Patent Slides for Standards Development Meetings <https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.pdf> and the IEEE 802 Participation slide <https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093-05-0PNP-ieee-802-participation-slide-ppt.ppt> were presented.
- 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/2020-01-tsn-agenda/>.

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

Attendance:

IEC/IEEE 60802 Joint Project (Friday, 24-Jan-2020, 13:30 - 18:00)																														
Time-Sensitive Networking TG + IEC/IEEE 60802 Joint Project (Friday, 24-Jan-2020, 10:30 - 12:30)																														
Time-Sensitive Networking TG + IEC/IEEE 60802 Joint Project (Friday, 24-Jan-2020, 08:00 - 10:00)																														
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Time-Sensitive Networking TG + IEC/IEEE 60802 Joint Project (Wednesday, 22-Jan-2020, 08:00 - 10:00)																														
Last Name	First Name	Affiliation																												
ADEMAJ	Astrit	TTTech Computertechnik AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Assmann	Ralf	Marvell Semiconductor, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
BEAL	Julien	Robert Bosch GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bernasconi	Eric	Robert Bosch GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Bierschenk	Jens	Robert Bosch GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Boiger	Christian	b-plus GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Canchi	Radhakrishna	Kyocera International Inc	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Chen	Feng	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Congdon	Paul	Tallac Networks; Huawei	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Cummings	Rodney	National Instruments Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Dorr	Josef	Siemens AG	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Ehlers	Kristian	Microchip Technology, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
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	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
GHARBA	Ahmed	Huawei Technologies Duesseldorf GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Gunther	Craig	Robert Bosch GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Haasz	Jodi	IEEE Standards Association (IEEE-SA)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Han	Ruibo	China Mobile Communications Corporation (CMCC)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hantel	Mark	Rockwell Automation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Holness	Marc	Ciena Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Horrmeier	Bernd	Phoenix Contact	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Hotta	Yoshifumi	Mitsubishi Electric Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Huszk	Gergely	Kone	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Katsalis	Kostas	Huawei Technologies Duesseldorf GmbH	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Kehrer	Stephan	Hirschmann Automation and Control, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Kojima	Fumihide	National Institute of Information and Communications Technology (NICT)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
KOTO	Hajime	National Institute of Information and Communications Technology (NICT)	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Lawlis	James	Ford Motor Company	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mangin	Christophe	Mitsubishi Electric Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Mansfield	Scott	Telefon AB LM Ericsson	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Maruhashi	Kenichi	NEC Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
McMillan	Larry	Western Digital Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Nakano	Hiroki	CAHI Corporation	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Natarajan	Sriram	Cisco Systems, Inc.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Osagawa	Daisuke	Mitsubishi Electric Corporation
Ostertag	Martin	Zurich University of Applied Sciences

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Last Name	First Name	Affiliation
Parsons	Glenn	Ericsson AB
Petre	Razvan	Spirent Communications
Potts	Michael	Molex Incorporated
Proell	Dieter	Siemens AG
QIU	WEI	Huawei Technologies Co., Ltd
Rhee	Jong Myung	University of Myongji
Rouyer	Jessy	Nokia
Sato	Atsushi	Yokogawa Electric Corporation
Seewald	Maik	Cisco Systems, Inc.
Specht	Johannes	University of Duisburg-Essen and General Motors Company
Staengler	Ferenc	KONE
Stanica	Marius	ABB AB
Steindl	Guenter	Siemens AG
Takita	Daisuke	Mitsubishi Electric Corporation
Tarui	Isao	Mitsubishi Electric Corporation
Tatolov	Ievgen	Robert Bosch Car Multimedia GmbH
traore	karim	Microchip/Microsemi Corporation
Turner	Max	Ethernovia
Varga	Balazs	Ericsson AB
Wang	Tongtong	Huawei Technologies Co. Ltd
Weber	Karl	Beckhoff Automation
Winkel	Ludwig	PNO e.V.
Woods	Jordon	Analog Devices Inc.
YU	XIANG	Huawei Technologies Co., Ltd
Zein	Nader	NEC Europe (NLE)

Wednesday 22 January 2020

8:00 AM call to order by the TG Chair and the 60802 Chair

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.

Mark Hantel and Ludwig Winkel reported on the 60802 Conformity Assessment (CA) status and activities. The next meeting will be held February 26-28, 2020 in Tampa, Florida. Interested participants are invited to contact Mark Hantel or Ludwig Winkel for details.

Geoffrey Garner presented *Information on IEC/IEEE 60802 status and references to IEC/IEEE 60802 and 802.1AS by 3GPP Service Requirements for Cyber Physical Control Applications* <http://www.ieee802.org/1/files/public/docs2020/60802-garner-60802-status-and-3GPP-references-0120-v00.pdf>.

Disposition: The presentation was discussed. Further discussion is needed.

Jordon Woods, 60802 editor, presented *Editor's Report 60802 Draft 1.1* <http://www.ieee802.org/1/files/public/docs2020/60802-woods-D1-1-update-0120-v00.pdf>. The comments from the IEC review are now included in the editor's report and in the comment database.

Jordon Woods, 60802 editor continued the resolution of comments received on <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

Disposition: Continued later.

10:10 AM recess

Following recess, the IEC/IEEE 60802 Joint Project met as TSN TG track A throughout Thursday CoB: minutes of track A follow.

10:30 AM call to order by the 60802 Chair

Geoffrey Garner presented *Input for Comment #406 Against 60802/D1.1* <http://www.ieee802.org/1/files/public/docs2020/60802-garner-input-related-to-comment-406-against-d1-1-0120-v01.pdf>.

Disposition: The proposed ITU-T definitions will be referenced in the next IEC/IEEE 60802 draft as resolution to comment #406.

Geoffrey Garner presented *Comparison of 802.1AS Annex B and 60802 Clock Stability* <http://www.ieee802.org/1/files/public/docs2020/60802-garner-comparison-of-802-1AS-AnnexB-and-P60802-clock-stability-0120-v02.pdf>.

Disposition: For information.

Geoffrey Garner presented *Discussion of Assumptions Needed for 60802 Network Simulations* <http://www.ieee802.org/1/files/public/docs2020/60802-garner-discussion-of-assumptions-needed-for-60802-network-simulations-0120-v01.pdf>.

- **12:30 – 1:30 PM recess**

Disposition: The assumptions arising from discussion can be used as a starting point for initial simulations to calculate max|dTE|.

Jordon Woods, 60802 editor, continued the resolution of comments received on <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

- **3:00 – 3:30 PM recess**
- Comment resolution continued.

Disposition: Continued later.

6:00 PM recess

Thursday 23 January 2020

8:00 AM call to order by the TG Chair and the 60802 Chair

Jordon Woods, 60802 editor, continued the resolution of comments received on <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

- Agreed, none dissenting, to move subclause *5.1.11 Hot standby for synchronization redundancy* to Annex Z because IEEE P802.1ASdm was initiated to cover this topic. Comments on this subclause were not discussed in the meeting because of this reason. The commenters are encouraged to take part in IEEE P802.1ASdm.
- **10:00 – 10:30 AM recess**
- Comment resolution continued.
- **12:30 – 1:30 PM recess**
- Comment resolution continued.
- **3:20 – 3:50 PM recess**
- Comment resolution continued.

Disposition: Continued later.

6:00 PM recess

Friday 24 January 2020

8:00 AM call to order by the TG Chair and the 60802 Chair

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.

The TG Chair indicated that future meetings are listed at [https://1.ieee802.org/tsn/iec-ieee-60802/#Meetings and conference calls](https://1.ieee802.org/tsn/iec-ieee-60802/#Meetings_and_conference_calls) and pointed out that a DetNet/TSN workshop is planned after the November 11-13, 2020 plenary meetings in Bangkok, Thailand. The 60802 Chair indicated that 60802 teleconferences will be held following email announcements on February 3 and 17, 2020, March 2 and 30, 2020, April 27, 2020, and May 11, 2020. There will be no 60802 teleconferences the week of the March 2020 IEEE 802.1 plenary session.

Marius Stanica presented *IEEE 802.1 Interim Preparations for a proposal Location: Helsinki, Finland* <http://www.ieee802.org/1/files/public/docs2020/admin-stanica-Helsinki-interim-proposal-0120-v02.pdf>.

Disposition: The TG expressed a preference for the Sokos Hotel.

It was indicated that the move of subclause 5.1.11 to Annex Z is the only change in the gaps list of 60802 draft 1.1 <http://ieee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

Stephan Kehrer presented *IEEE P802.1CBcv Editor's Report for Ballot Comment Resolution (v2)* <http://www.ieee802.org/1/files/public/docs2020/cv-kehrer-editors-report-d0-2-0120-v02.pdf>.

Disposition: None.

Geoffrey Garner presented *Information on IEC/IEEE 60802 status and references to IEC/IEEE 60802 and 802.1AS by 3GPP Service Requirements for Cyber Physical Control Applications* <http://www.ieee802.org/1/files/public/docs2020/60802-garner-60802-status-and-3GPP-references-0120-v03.pdf> updating the presentation given on Wednesday with comments also received on Wednesday.

Disposition: None.

Johannes Specht presented *On Standardization of Cut Through Forwarding (CTF)* <http://www.ieee802.org/1/files/public/docs2020/new-specht-cut-through-tech-0120-v01.pdf>.

Disposition: Presentation discussed. Further discussion needed.

10:30 – 11:00 AM recess

Günter Steindl presented *TSN inter domain communication concept* <http://www.ieee802.org/1/files/public/docs2020/new-Steindl-TSN-inter-domain-communication-0120-v4.pdf>.

Disposition: Presentation discussed. Further discussion needed.

A clarification was needed on what is allowed in a profile concerning selecting functions by not selecting a normative function within a base standard. The 802.1 Chair indicated that one reason for the success of IEEE 802 is widespread interoperability based on a minimum set of mandatory functions in 802 standards that have not changed in a long time. However, this does not prohibit discussing whether certain functions should continue to be mandatory. The 802.1 Chair indicated that such a discussion should only happen rarely when there is no other option, but if the consensus of the Working Group supports a change, then it can be progressed. While updating the base standard is preferred, implementation details would need to be decided on a case-by-case basis.

Disposition: After discussion, this was agreed as a principle. The TG chair noted that the IEC/IEEE 60802 PAR may need to be changed. This PAR will be checked and if needed IEEE 802.1 and IEC/IEEE 60802 management will take action.

1:00 PM recess

Following recess, the IEC/IEEE 60802 Joint Project met as TSN TG track A throughout session adjournment: minutes of track A follow.

2:00 PM call to order by the 60802 Chair

Jordon Woods, 60802 editor, continued the resolution of comments received on 60802 draft 1.1 <http://iee802.org/1/files/private/60802-drafts/d1/60802-d1-1.pdf>.

- **3:30 – 4:00 PM recess**
- Comment resolution continued.

Disposition: Ballot comment dispositions are recorded in <http://www.ieee802.org/1/files/private/60802-drafts/d1>. Comment resolution will be continued in the next 60802 teleconference.

Günter Steindl presented *IEC/IEEE 60802 to IECEE Reference Model* <http://www.ieee802.org/1/files/public/docs2020/60802-Steindl-60802-to-IECEE-reference-model-0120-v2.pdf>.

Disposition: Presentation discussed. Further discussion needed.

Any Other Business

No further business was discussed in this session.

5:10 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 Geneva (Switzerland) at 2020-01-22 ... -24

Meeting Agenda of IEC 65C/WG9.PT 60802 and the IEC/IEEE 60802 Joint Project of IEEE 802.1 held in Geneva (CH), at 2020-01-22... -24

Rev	rev02	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	####	[h:min]	[min]	Topics	Responsible
Room	8:00 - 8:15		15	Welcome and organizational issues (IEEE intro, IEC intro), membership, attendees registration (IEEE imat), roster; administrivia	Ludwig, János
	8:15 - 8:25		10	Agenda	Ludwig, János
	8:25 - 8:30		5	Update on Conformity Assessment (CA) activity	Mark, Ludwig
	8:30 - 9:15		45	60802 status and 3GPP references	Geoff
	9:15 - 9:15				

	9:15 - 9:15			
	9:15 - 9:25	10	Editor's report on Draft 1.1 TG ballot and IEC CD	Jordon
	9:25 - 10:10	45	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	10:10 - 10:40	30	Break	
	10:40 - 11:25	45	Input related to comment 406 against D1.1	Geoff
	11:25 - 12:10	45	Comparison of 802.1AS Annex B and 60802 clock stability	Geoff
	12:10 - 12:30	20	Discussion of assumptions needed for 60802 network simulations	Geoff
	12:30 - 12:30			
	12:30 - 13:30	60	Lunch	
	13:30 - 14:00	30	Discussion of assumptions needed for 60802 network simulations	Geoff
	14:00 - 14:00			
	14:00 - 15:00	60	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	15:00 - 15:30	30	Break	
	15:30 - 15:30			
	15:30 - 15:30			
	15:30 - 18:00	150	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	18:00 - 18:00			
	18:00 - 18:00			
	18:00 - 18:00	0	Review of minutes of the day	Josef
	18:00		Recess of 60802 JP meeting	

Thu	####	[h:min]	[min]	Topics	Responsible
Room Gallery	8:00 - 8:10		10	IEEE Intro, Review Agenda; expected results of the day	Ludwig
	8:10 - 8:10				
	8:10 - 10:00		110	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	10:00 - 10:30		30	Break	
	10:30 - 10:30				
	10:30 - 12:30		120	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	12:30 - 12:30				
	12:30 - 12:30				
	12:30 - 12:30				
	12:30 - 13:30		60	Lunch	
	13:30 - 15:00		90	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	15:00 - 15:00				
	15:00 - 15:00				
	15:00 - 15:00				
	15:00 - 15:30		30	Break	
	15:30 - 15:30				
	15:30 - 17:45		135	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	17:45 - 17:45				
	17:45 - 18:00		15	Review of minutes of the day	Josef
18:00			Recess of 60802 JP meeting		

Fri	####	[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 - 8:30		15	Next meetings, incl. DetNet-TSN workshop in Bangkok in November	Ludwig, János
	8:30 - 8:35		5	Identify and discuss IEEE 802 gaps for TSN-IA profile	Jordon
	8:35 - 8:45		10	Status update on P802.1CBcv/D0.2 TG ballot comment resolution, Editor's report	Stephan
	8:45 - 8:50		5	60802 status and 3GPP references	Geoff
	8:50 - 10:30		100	Standardization of cut-through	Johannes
	10:30 - 11:00		30	Break	
	11:00 - 11:45		45	TSN inter domain communication	Günter
	11:45 - 12:50		65	IEC/IEEE 60802/D1.1 comment resolution	Glenn
	12:50 - 13:00		10	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	13:00 - 13:00				
	13:00 - 14:00		60	Lunch	
	14:00 - 15:30		90	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	15:30 - 15:30				
	15:30 - 16:00		30	Break	
	16:00 - 16:00				
	16:00 - 16:25		25	IEC/IEEE 60802/D1.1 comment resolution	Jordon
	16:25 - 16:55		30	Mission and Scope of 60802 and Conformance test	Günter
	16:55 - 17:10		15	Review of the minutes	Josef
17:10			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	Wood	Analog Devices	Editor
Josef	Dorr	Siemens AG	Secretary
Mark	Hantel	Rockwell Automation	Web master, IEC/AVNU ALLIANCE Liaison officer
Astrit	Ademaj	TTTech	IEEE 802.1 participant
Günter	Steindl	Siemens AG	IEC expert, IEC/PI Liaison officer
Rodney	Cummings	NI	IEEE 802.1 participant
Karl	Weber	Beckhoff	IEC expert