

<b>Meeting of the IEC/IEEE 60802 Joint Project</b> 2018-11-15
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**INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)**

**TC65:** Industrial-process measurement, control and automation

**SC65C:** Industrial communication networks

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**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

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**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:** 2018-07-11 — 2018-07-13

**Location:** San Diego, CA, USA

**IEC MT9 Convenor and IEC/IEEE 60802 Joint Project chair:** Ludwig Winkel

**Daily minutes by:** Jordon Woods

**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/minutes/60802>

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Ludwig Winkel, IEC MT9 Convenor, and János Farkas, IEEE 802.1 TSN Task Group Chair, presided. Jordon Woods 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 (<https://mentor.ieee.org/802-ec/dcn/17/ec-17-0093-05-OPNP-ieee-802-participation-slide-ppt.ppt>)
- 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 MT9 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 shall 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. Participation from the IEC side is based on nominations by IEC national committees.
- The agenda and the expected results of the day were reviewed and approved. The final agenda is in Annex A.

Draft minutes were reviewed at the end of the meeting.

Attendance:

Last name	First name	Affiliation	Wed AM1 TSN TG	Wed AM2 TSN TG (Trk A: 60802)	Wed PM TSN TG	Thu AM TSN TG (Trk A: 60802)	Fri AM TSN TG	Fri PM TSN TG
Assmann	Ralf	Marvell Semiconductor, Inc.	•		•		•	
Bao	Shenghua	HUAWEI			•			
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	•		•	•	•	
Chou	Vincent	Marvell Semiconductor, Inc.	•	•	•	•		
Congdon	Paul	Tallac Networks; Huawei	•					

<b>Cummings</b>	<b>Rodney</b>	<b>National Instruments Corporation</b>	•		•	•	•	
<b>DeLaOlivaDelgado</b>	<b>Antonio</b>	<b>Universidad Carlos III Madrid</b>	•					
<b>Dorr</b>	<b>Josef</b>	<b>Siemens AG</b>	•	•	•	•	•	
<b>Elbakoury</b>	<b>Hesham</b>	<b>Huawei Technologies Co. Ltd</b>	•	•	•	•	•	
<b>Ellegaard</b>	<b>Lars</b>	<b>Microsemi Corporation</b>	•		•	•	•	
<b>Escudero-Sahuquillo</b>	<b>Jesus</b>	<b>University of Castilla-La Mancha</b>	•					
<b>Fan</b>	<b>Xiaojing</b>	<b>Fujitsu Research &amp; Development Center</b>	•		•	•	•	
<b>Farkas</b>	<b>Janos</b>	<b>Ericsson</b>	•		•		•	
<b>Finn</b>	<b>Norman</b>	<b>Huawei Technologies Co. Ltd</b>	•		•			
<b>Garner</b>	<b>Geoffrey</b>	<b>Huawei Technologies Co. Ltd</b>	•	•	•	•	•	
<b>Gravel</b>	<b>Mark</b>	<b>Hewlett Packard Enterprise</b>	•		•	•		
<b>Gray</b>	<b>Eric</b>	<b>Ericsson AB</b>	•	•				
<b>Gunther</b>	<b>Craig</b>	<b>Craig Gunther Consulting, LLC</b>	•		•		•	
<b>Gutierrez</b>	<b>Marina</b>	<b>TTTech Computertechnik AG</b>	•		•	•	•	
<b>Haddock</b>	<b>Stephen</b>	<b>Stephen Haddock Consulting, LLC</b>			•		•	
<b>Han</b>	<b>Ruibo</b>	<b>China Mobile Communications Corporation (CMCC)</b>					•	
<b>Hantel</b>	<b>Mark</b>	<b>Rockwell Automation</b>	•		•	•	•	
<b>Harima</b>	<b>Taro</b>	<b>Mitsubishi Electric Corporation</b>	•	•	•	•	•	
<b>Holness</b>	<b>Marc</b>	<b>Ciena Corporation</b>	•	•	•	•		
<b>Horner</b>	<b>Rita</b>	<b>Symopsys, Inc.</b>				•		
<b>Hotta</b>	<b>Yoshifumi</b>	<b>Mitsubishi Electric Corporation</b>	•	•	•	•	•	
<b>Itaya</b>	<b>Satoko</b>	<b>National Institute of Information and Communications Technology (NICT)</b>	•	•				
<b>Ito</b>	<b>Yoshihiro</b>	<b>Nagoya Institute of Technology</b>	•	•	•	•		
<b>Kabra</b>	<b>Lokesh</b>	<b>Synopsys, Inc.</b>				•		
<b>Kehrer</b>	<b>Stephan</b>	<b>Hirschmann</b>	•	•	•	•	•	

		Automation and Control, Inc.							
Kondo	Yoshihisa	Advanced Telecommunications Research Institute International (ATR)	•	•					
KOTO	Hajime	National Institute of Information and Communications Technology (NICT)	•	•		•			
Mangin	Christophe	Mitsubishi Electric Corporation	•	•	•	•	•		
Mansfield	Scott	Telefon AB LM Ericsson	•		•				
Maruhashi	Kenichi	NEC Corporation	•	•	•				
McIntosh	James	Microsemi Corporation		•				•	
Mustala	Tero	Nokia Networks	•		•	•			
Myers	Roy	INDEPENDENT	•		•				
NOMIZU	TAKUMA	Hitachi, Ltd.	•	•	•	•	•		
Ohsawa	Tomoki	NICT	•	•					
Osagawa	Daisuke	Mitsubishi Electric Corporation	•	•	•	•	•		
Pannell	Donald	NXP Semiconductors	•		•	•	•		
Potts	Michael	General Motors Company	•		•	•			
Prakash	Rajat	Qualcomm Incorporated	•	•	•	•			
QIU	WEI	Huawei Technologies Co., Ltd	•		•	•	•		
Reilly	Denis	Spectracom (Orolia USA)	•	•	•	•	•		
Rouyer	Jessy	Nokia			•				
Sato	Atsushi	Yokogawa Electric Corporation	•	•	•	•	•		
Schafman	Limor	Telecommunications Industry Association (TIA)	•	•					
Schewe	Frank	Phoenix Contact	•	•	•	•	•		
Seewald	Maik	Cisco Systems, Inc.	•			•	•		
Specht	Johannes	University of Duisburg-Essen and General Motors Company	•		•	•			
Steindl	Guenter	Siemens AG	•	•	•	•	•		
Sun	Liyang	HUAWEI				•			

Tarui	Isao	Mitsubishi Electric Corporation	•		•	•	•	
Tinnakornsrisuphap	Peerapol	Qualcomm Incorporated			•	•		
Unbehagen	Paul	Avaya Inc.		•	•	•		
Wamsser	Reiner	IEC SC65C MT9-Member	•	•	•	•		
wang	haifei	Huawei Technologies Co. Ltd					•	
Wang	Hao	Fujitsu Research & Development Center	•				•	
Wang	Tongtong	Huawei Technologies Co. Ltd			•	•	•	
Winkel	Ludwig	Siemens AG	•	•	•	•	•	
Wood	Graeme	British Standards Institution (BSi), Rockwell Corp	•	•	•	•	•	
Woods	Jordon	Analog Devices Inc.	•		•	•	•	
Yamaura	Takahiro	Toshiba	•	•	•	•	•	
YU	XIANG	Huawei Technologies Co., Ltd	•					
Zein	Nader	NEC Europe (NLE)	•		•	•	•	
Zuponic	Steven	Rockwell Automation	•		•	•	•	

**Wednesday 11 July 2018**

**8:00 AM (call to order by Ludwig Winkel and János Farkas) to 6:00 PM with a 90-minute lunch break**

Ludwig Winkel and János Farkas:

- Welcomed the participants of the IEC/IEEE 60802 Joint Project, a joint effort of the:
  - IEC 65C/MT9/PT 60802 (TSN) Project Team, led by Ludwig Winkel; and
  - IEEE 802.1 Time-Sensitive Networking Task Group, led by János Farkas.
- Provided information about emergency exits, internet access, copyrights and IPR, lunch, attendance log to the IEC/IEEE 60802 Joint Project and whole TSN TG sessions.

Ludwig Winkel noted that the presented documents are also available in the IEC document repository (called Collaboration Tool) at <http://collaboration.iec.ch/>. The IEC dashboard contains official IEC documents circulated to the national committees: see <http://www.IEC.ch>.

János Farkas announced a joint IEEE TSN – IETF DetNet workshop immediately preceding the November IEEE 802 plenary meeting in Bangkok, Thailand. The workshop will be on Sunday, November 11, 2018.

**Disposition:** János Farkas will continue working on the logistics of the meeting and keep the IEC/IEEE 60802 Joint Project informed.

János Farkas presented and the IEC/IEEE 60802 Joint Project reviewed the liaison response to the OPC Foundation

<http://www.ieee802.org/1/files/public/docs2018/liaison-OPCF-liaison-and-drafts-0718-v01.pdf>

**Disposition:** It was agreed to have a motion at the 802.1 closing plenary meeting to approve sending the liaison response.

János Farkas presented and the IEC/IEEE 60802 Joint Project reviewed a joint eBlast encouraging participation in the latter:

<http://www.ieee802.org/1/files/public/docs2018/60802-draft-cfp-0718-v01.pdf>

**Disposition:** It was agreed to have a motion at the 802.1 closing plenary meeting to approve release of the eBlast.

Josef Dorr presented *Use Cases IEC/IEEE 60802 V0.7*

<http://www.ieee802.org/1/files/public/docs2018/60802-industrial-use-cases-0618-v07.pdf>

**Disposition:** Continued in a later session.

Jordon Woods presented *Status of Accumulated latency in industrial applications CFI*

<http://www.ieee802.org/1/files/public/docs2018/new-woods-CFI-accumulated-latency-0710-v01.pdf>

**Disposition:** Interested parties were invited to participate in the NEA activity.

Mark Hantel and Steve Zuponic presented *TSN Interdomain Communications*

<http://www.ieee802.org/1/files/public/docs2018/60802-Hantel-TSN-Interdomain-Communications-0718.pdf>

**Disposition:** Further discussions needed.

Mark Hantel and Steve Zuponic presented *Isochronous drive synchronization*

<http://www.ieee802.org/1/files/public/docs2018/60802-enzinger-use-case-isochronous-drive-synchronization-0718-v01.pdf>

**Disposition:** Further discussions needed.

Mark Hantel and Steve Zuponic presented *Cycle timing models in industrial applications*

<http://www.ieee802.org/1/files/public/docs2018/60802-enzinger-cycle-timing-models-0718-v04.pdf>

**Disposition:** Further discussions needed.

Atsushi Sato presented *Process Automation System Quantities*

<http://www.ieee802.org/1/files/public/docs2018/60802-sato-pa-system-quantities-0718-v01.pdf>

**Disposition:** Further discussions needed.

Josef Dorr led a discussion of additional use cases per *Use Cases IEC/IEEE 60802*

*V0.7* <http://www.ieee802.org/1/files/public/docs2018/60802-industrial-use-cases-0618-v07.pdf>

**Disposition:** It was agreed Josef Dorr should upload by July 20, 2018 to the IEC and IEEE 802.1 document repositories an update based upon comments and providing

new use cases. All should review this before the July 24-26, 2018 interim meeting in Frankfurt, Germany.

Josef Dorr presented *Industrial Requirements*

<http://www.ieee802.org/1/files/public/docs2018/60802-industrial-requirements-0618-v02.pdf>

**Disposition:** It was agreed Josef Dorr should upload to the IEC and IEEE 802.1 document repositories by July 20, 2018 an update based upon comments and providing new use cases. All should review this before the July 24-26, 2018 interim meeting in Frankfurt, Germany.

Maik Seewald presented *the IEC TC57 WG10 effort on IEC 61850-90-13 Deterministic Networking* <http://www.ieee802.org/1/files/public/docs2018/60802-Seewald-intro-to-IEC61850-90-13-0718.pdf> based on the Liaison with IEC 65C/MT9.

**Disposition:** Further reports will be given during upcoming meetings. Incoming liaison letter to IEEE 802.1 expected.

Günter Steindl presented *Network Configuration & Stream Configuration*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-Configuration-0718-v02.pdf>

**Disposition:** Further discussions needed.

Stephan Kehrer presented *TSN Configuration Enhancements*

<http://www.ieee802.org/1/files/public/docs2018/new-kehrer-TSN-CNC-NBI-0718-v01.pdf>

**Disposition:** Further discussions needed.

Josef Dorr presented *Deadline Application Model & Stream Class Based Scheduling Model*

<http://www.ieee802.org/1/files/public/docs2018/60802-Dorr-StreamClassBasedScheduling-0718-v01.pdf>

**Disposition:** Further discussions needed.

#### Thursday 12 July 2018

#### 8:00 AM (call to order by Ludwig Winkel) to 9:20 AM

Mike Potts presented *Automotive Specification Profiles*

<http://www.ieee802.org/1/files/public/docs2018/new-autoprof-mpotts-tsn-automotive-profile-0718-v1.pdf>

**Disposition:** It was agreed to have a motion at the 802.1 closing plenary meeting authorizing the Working Group to generate a PAR and CSD for the proposed project. Satisfaction with the work flow of the IEC/IEEE 60802 Joint Project and a desire to have a close relationship between the IEC/IEEE 60802 Joint Project and the proposed project (if approved) were expressed.

Günter Steindl presented *Stream DA-MAC constraints*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-DaMacConstraints-0718-v02.pdf>

**Disposition:** Further discussions needed.

As additional contributions to the IEC/IEEE 60802 Joint Project were intended to be presented in the common session with the IEEE 802.1 TSN TG on Friday and all other contributions had been presented, the IEC/IEEE 60802 Joint Project went into recess for the day at 9:20 AM.

**Friday 13 July 2018**

**8:00 AM (call to order by Ludwig Winkel) to 1:15 PM**

János Farkas provided an overview of IEEE 802.1 TG activities during this plenary meeting <http://www.ieee802.org/1/files/public/docs2018/admin-TSN-agenda-0718-v07.pdf>

**Disposition:** [administrative](#)

Ludwig Winkel and János Farkas led a review of future agreed face-to-face meetings of the IEC/IEEE 60802 Joint Project:

- July 24-26, 2018 in Frankfurt am Main, Germany
- September 11-13, 2018 in Oslo, Norway as part of the IEEE 802.1 Interim
- November 12-14, 2018 in Bangkok, Thailand as part of the IEEE 802 Plenary (note that an IEEE TSN - IETF DetNet workshop is to be held on November 11, 2018 at the same location)
- January 15-17, 2019 in Hiroshima, Japan as part of the IEEE 802.1 Interim
- March 13-15, 2019 in Vancouver, BC, Canada as part of the IEEE 802 Plenary

Ludwig Winkel presented *Draft Timeline for IEC/IEEE 60802 Joint Project* <http://www.ieee802.org/1/files/public/docs2018/60802-winkel-schedule-milestones-0718-v02.pdf>

**Disposition:** Timeline updated per discussion.

Günter Steindl presented *Timeliness Use Cases*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-TimelinessUseCases-0718-v02.pdf>

**Disposition:** Further discussions needed.

Günter Steindl presented *Timescale reference for planning frame transmission*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-TimelinessFrameAtTheWire-0718-v02.pdf>

**Disposition:** Further discussions needed.

Günter Steindl presented *Synchronization problems*

<http://www.ieee802.org/1/files/public/docs2018/60802-Steindl-Synchronization-0718-v02.pdf>

**Disposition:** Further discussions needed.

Don Pannell presented *Quality of Service for PLCA*

<http://www.ieee802.org/1/files/public/docs2018/new-TSN-pannell-QoS-for-PLCA-0518-v02.pdf>

**Disposition:** Further discussions needed.

The IEC/IEEE 60802 Joint Project meeting was adjourned at 1:15 PM.



# Annex A

**Agenda of the IEC/IEEE 60802 Joint Project meeting held in San Diego, CA, USA July 11-13, 2018**

Ludwig Winkel (Convenor IEC SC65C/MT9 and of IEC/IEEE 60802 Joint Project);

János Farkas (chair of IEEE 802.1 TSN TG)

Rev rev4

Key:		means	Joint meeting of the IEC/IEEE 60802 Joint Project and the IEEE 802.1 TSN TG
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Wed	11-07-18	[h:min]	[min]	Topics	Responsible	Related contributions	
Common session Room Seaport F 2L	8:00 - 8:10		10	Welcome and organizational issues (IEEE intro, IEC intro)	Ludwig, János	<a href="#">IEEE intro</a>	<a href="#">65C dashboard, IEC.ch, CollTool</a>
	8:10 - 8:20		10	Membership, attendees registration (IEEE imat), roster; administrivia	János, Ludwig	<a href="#">Participation</a>	
	8:20 - 8:25		5	IETF(DETNET)/TSN joint workshop in Bangkok	János	<a href="#">detnet-bangkok-0518-v01</a>	
	8:25 - 8:45		20	Agenda	Ludwig, János	<a href="#">Agenda</a>	
	8:45 - 9:20		35	Liaison from OPC Foundation	Ludwig, János	<a href="#">Liaison letter</a>	
	9:20 - 9:30		10	eBlast	Ludwig, János	<a href="#">IEC-link to the draft eBlast</a>	
	9:30 - 9:50		20	Status of use cases	Josef	<a href="#">Status of "use cases"</a>	
	9:50 - 10:00		10	Status of NEA on accumulated latency	Jordon	<a href="#">Update on the NEA</a>	
	10:00 - 10:00						
Seaport F 2L	10:00 - 10:30		30	Break			
	10:30 - 11:30		60	TSN Interdomain Communications	Mark	<a href="#">TSN-Interdomain-Comm</a>	
	11:30 - 11:45		15	Use Case: Additional Motion Cycle Timing Models	Mark	<a href="#">use case cycle-timing</a>	
	11:45 - 12:00		15	Use Case: Isochronous Drive Synchronization	Mark	<a href="#">use case isochr-dr.</a>	
	12:00 - 13:45		105	Lunch			
Trk A: JWG	13:45 - 14:15		30	Process automation System Quantities	Atsushi Sato	<a href="#">pa-system quantities</a>	
Room	14:15 - 14:35		20	Use case list	Josef		
Seaport F 2L	14:35 - 14:45		10	Requirements list	Josef		

14:45 - 15:00	15	Intro to IEC61850-90-13	Maik Seewald	<a href="#">intro-to-IEC61850-90-13.pdf</a>
15:00 - 15:30	30	Break		
15:30 - 16:00	30	Network Configuration & Stream Configuration	Günter	<a href="#">Configuration-0718-v01.pdf</a>
16:00 - 16:35	35	TSN Configuration Enhancements - > Enhancements of the CNC North Bound Interface	Stephan	<a href="#">CNC-NBI</a>
16:35 - 17:25	50	Deadline Application Model & Stream Class Based Scheduling Model	Josef	<a href="#">StreamClassBasedScheduling</a>
17:25 - 17:35	10	Review of minutes of the day	Minute maker	
17:35 - 17:35		Recess of 60802 JP meeting		
17:35 - 18:30	55	Break		
18:30 - 19:20	50	Social event		
19:20				

Thu	12-07-18	[h:mi n]	[min ]	Topics	Responsible	Related contributions
Trk A: JWG	8:00 - 8:10		10	Review Agenda; expected results of the day	Ludwig, János	
Room	8:10 - 8:20		10	Intended Automotive profile	Mike	<a href="#">tsn automotive profile</a>
Seaport F 2L	8:20 - 9:20		60	Stream DA-MAC constraints to simplify the support of the required number of streams	Günter	<a href="#">DA-MAC-Constraints-0718-v01.pdf</a>
	9:20 - 9:20					
	9:20 - 12:00		160	recess		
	12:00 - 12:00					
	12:00 - 12:00					
	12:00 - 12:00					
	12:00 - 13:30		90	Lunch		
	13:30 - 18:00		270	Closing 802.1 plenary	Glenn/John	

18:00 - 18:00			
18:00 - 18:00			
18:00 - 18:00			
18:00 - 18:00			
18:00 - 18:00			
18:00 - 18:00			
18:00		Recess of 60802 JP meeting	

Fri	13-07-18	[h:mi n]	[min ]	Topics	Responsible	Related contributions
Common session Room Seaport F 2L	8:00 - 8:10		10	Review Agenda; expected results of the day	Ludwig, János	<a href="#">Next meeting dates</a> <a href="#">IEEE 802.1 meetings</a>  <a href="#">Schedule-milestones</a> <a href="#">TimelinessUseCases</a>  <a href="#">Timeliness-0718-v01.pdf</a>  <a href="#">Steindl-Synchronization-0718-v01</a> <a href="#">QoS-for-PLCA</a>
	8:10 - 8:25		15	Recap past days	Ludwig, János	
	8:25 - 8:55		30	Next meetings	Ludwig, János	
	8:55 - 9:00		5	Identify and discuss IEEE 802 gaps for TSN-IA profile	Ludwig, János	
	9:00 - 9:05		5	Workplan	Ludwig	
	9:05 - 10:10		65	Timeliness use cases	Günter	
	10:10 - 10:30		20	Break		
	10:30 - 11:30		60	Timescale reference for planning frame transmission	Günter	
	11:30 - 12:50		80	Synchronization problems - identified topics for IEEE 802.1AS-Rev	Günter	
	12:50 - 13:10		20	Any other business	Don	
	13:10 - 13:15		5	Review of the minutes	Minute maker	
	13:15 - 13:15			Adjournment of IEC/IEEE 60802 JP meeting		
	13:15 - 13:15			Lunch		
	13:15 - 13:15					

	13:15 - 13:15			
	13:15 - 13:15			
	13:15 - 13:15			
	13:15 - 13:15			
	13:15		Adjournment of IEC/IEEE 60802 JP meeting	