# TSN/A CONFERENCE 2017
## TECHNOLOGY & APPLICATIONS
## (SEPTEMBER 20-21, 2017 STUTTGART, GERMANY)

**AN OPPORTUNITY FOR PARTICIPATION FROM THE IEEE 802.1 WORKING GROUP**

**CRAIG GUNTHER**

HARMAN

July 2017

## What is the purpose of this presentation?

The IEEE 802.1 Working Group has an opportunity to participate in the TSN/A Conference 2017. The event will take place at the Mövenpick Hotel Stuttgart Airport in Stuttgart, Germany on September 20-21, 2017.

The intent of this presentation is to provide enough background information to allow the members of the IEEE 802.1 Working Group to make an informed decision at the closing plenary regarding a motion to participate in this event.

Note: "participate" means to be prominently listed on the conference web site and other materials, and a potential keynote speaking opportunity. There may be a cost associated if we want booth space since a professional organizer has been contracted; that is yet to be determined.

It is important to recognize that this program is established by a NON PROFIT corporation that is focused on enabling the TSN standards in the market.

(http://www.ieee802.org/1/files/public/docs2017/admin-cgunther-TSNA2017-0717-v01.pdf)

## WHAT IS THE TSN/A CONFERENCE?

The TSN/A Conference 2017 (http://www.tsnaconference.com/) will highlight the technological aspects of the various TSN standards as well as application-specific topics relevant to the various markets and/or industries interested in TSN.

Avnu Alliance has held two previous TSN/A (Time Sensitive Network and Applications) Conferences; one in 2015 and a second in 2016. Michael Johas Teener, original TSN chair, was the keynote speaker at the 2015 event.

This will be the third annual meeting for the TSN/A Conference. This year the German "*Industrial Ethernet TSN Kongress*" will join with the "*TSN/A Conference*" to establish a new, common event focused on TSN in the Industrial Automation, Automotive, and Pro AV markets.

Avnu Alliance (http://www.avnu.org) is a non-profit organization with 65 member companies focused on "*creating an interoperable ecosystem servicing the precise timing and low latency requirements of diverse applications using open standards through certification*" for Automotive, Consumer, Pro AV and Industrial.

Current sponsors of the conference include: Hirschmann Automation and Control, Intrepid Control Systems, B&R Industrie-Elektronik, CALNEX SOLUTION, EBV, Future Electronics, Spirent Communications, TTTech, Digi-Key Electronics.

## WHAT BENEFITS DO ATTENDEES EXPECT TO RECEIVE?

What would make attendees want to come to this event? Companies new to Time-Sensitive Networking can get a quick-start introduction and companies that have been previously involved can learn what has happened over the last year. The program for this year's event can be found here:

http://www.tsnaconference.de/program.html

Attendees will leave with the following understandings:

- What's new in TSN in Automotive, Consumer, AV and Industrial

- Meet suppliers and users of the technology

- Learn more about national and international TSN-Testbeds

- TSN and its influence on Structures of Automation Technology

- Panel discussions: Conformance & Interoperability, On-going activities in Industrial Consortia

- Collaborate with other companies

- Gain exclusive access to information on current developments and upcoming solutions

## TAKING A LOOK BACK …

# Industrial Ethernet TSN Kongress 2016
# September 27, 2016 (Stuttgart, Germany)

(Official German press release for 2016 meeting: http://www.tsn-kongress.de/fileadmin/pictures/Events_2016/TSN/Teilnehmer/Programm_TSN_2016.pdf)

# INDUSTRIAL ETHERNET TSN KONGRESS 2016

HARMAN

## WHO WAS THERE? 160 ATTENDEES REPRESENTING 97 COMPANIES

3S-Smart Software Solutions GmbH, AIM GmbH, Altera Corporation, AMK Arnold Müller GmbH & Co., Bachmann electronic GmbH, Balluff GmbH, Baumüller , ürnberg GmbH, Belden Electronics GmbH, Berghof Automation GmbH, Bernecker + Rainer Industrie-Elektronik Ges.m.b.H, Bosch Rexroth AG, b-plus GmbH, Brückner Maschinenbau GmbH & Co. KG, Computer&AUTOMATION, Danfoss GmbH, DEE Dräxlmaier Elektrik- und Elektroniksysteme GmbH, DFKI GmbH, Dr. Johannes HEIDENHAIN GmbH, EBV Elektronik GmbH & Co. KG, eks Engel GmbH & Co. KG, elrest Automationssysteme GmbH, embeX GmbH, ENGEL Austria GmbH, ERNI Electronics GmbH & Co. KG, ETAS GmbH, exeron GmbH, Festo AG & Co. KG, FORTecH Software GmbH, Fraunhofer Gesellschaft - Institut FOKUS, Fraunhofer-Institut IOSB, Fraunhofer-Institut IPA, Fritz Kübler GmbH, Grossenbacher Systeme AG, HARTING AG & Co. KG, Hilscher Gesellschaft für Systemautomation mbH, Hirschmann Automation and Control GmbH, HMS Industrial Network GmbH, HMS Technology Center Ravensburg GmbH, Hochschule RheinMain, HOMAG Group AG, Indu-Sol GmbH, infoteam Software AG, Innovasic c/o mocom softw. GmbH & Co KG, Innovasic Inc., INSEVIS Gesellschaft für industrielle Systemelektronik und Visualisierung mbH, Intel Security Innovation Alliance, ISW Universität Stuttgart, KG Kaeser Kompressoren SE, KEBA AG, Kistler Instrumente AG, KROHNE Innovation GmbH, KUKA Roboter GmbH, KUNBUS GmbH, linutronix GmbH, logi.cals automation solutions & services GmbH, MESCO Engineering GmbH, Microsemi Semiconductor GmbH, Mitsubishi Electric Europe B.V., MPDV Mikrolab GmbH, Nordex Energy GmbH, NXP Semiconductors Germany GmbH, OPC Foundation Europe, Pepperl+Fuchs GmbH, Phoenix Contact Electronics GmbH, PILZ GmbH & Co. KG, prisma sales service GmbH, PROFIBUS Nutzerorganisation e.V., ProNES Automation GmbH, Renesas Electronics Europe GmbH, Robert Bosch GmbH, Salzburg Research Forschungsgesellschaft mbH, Schneider Electric Automation GmbH, Sercos International e.V., SEW Eurodrive GmbH & Co. KG, SICK AG, Siemens AG, Siemens AG Österreich, SmartFactory KL, Softing Industrial Automation GmbH, TE Connectivity Germany GmbH, Teleconnect GmbH, TenAsys Europe GmbH, Texas Instruments Deutschland GmbH, Toshiba Electronics Europe GmbH, TRUMPF Werkzeugmaschinen GmbH + Co. KG, TTTech Computertechnik AG, UMAN Universal Media Access Networks GmbH, VARAN-BUS-NUTZERORGANISATION, VeryLogic GmbH, Vitesse Semiconductor Corporation A/S, Voith Digital Solutions, Voith GmbH, WAGO Kontakttechnik GmbH & Co.KG, Weidmüller Interface GmbH & Co.KG, WOODHEAD SOFTWARE & ELECTRONICS, Zürcher Hochschule für Angewandte Wissenschaften

2016 exhibitors shown in red

## WHAT PRESENTATIONS WERE GIVEN?

Agenda, which includes the following presentations, can be found here:
http://www.tsn-kongress.de/fileadmin/pictures/Events_2016/TSN/Teilnehmer/Programm_TSN_2016.pdf.

(Please excuse my German to English translations)

- Why is TSN needed in factory automation (*Warum es TSN in der Fabrikautomation bedarf*)
- TSN on the way to the standard in different lines of business (*TSN – auf dem Weg zum Standard in unterschiedlichen Branchen*)
- OPC UA in the sign of TSN (*OPC UA im Zeichen von TSN*)
- The TSN activities of Avnu and their impact on automation (*Die TSN-Aktivitäten der AVNU und ihre Auswirkungen auf die Automation*)
- The TSN roadmap of semiconductor manufacturers (*Die TSN Roadmap der Halbleiter-Hersteller*)
- How does TSN change the control technology? (*Wie verändert TSN die Steuerungstechnik?*)
- TSN is reality - the view of a switch manufacturer (*TSN ist Realität – Die Sicht eines SwitchHerstellers*)
- TSN and the field bus: competition or supplement? (*TSN und die Feldbusse: Konkurrenz oder Ergänzung?*)
- TSN in the professional bus user organization - the status (*TSN in der Profibus Nutzerorganisation – Der Status*)
- TSN and Linux: Status and future developments (*TSN und Linux: Status und zukünftige Entwicklungen*)
- The TSN testbed in IIC (*Das TSN Testbed im IIC*)

TSN/A Conference 2016

April 12-13, 2016 (San Jose, USA)

(Official press release for 2016 meeting:
http://avnu.org/wp-content/uploads/2014/05/TSNA-Pre-Event-Release-FINAL.pdf)

## WHO WAS THERE?

Sponsors: Avnu Alliance, Intel, Calnex, TT Tech, Innovasic, National Instruments, Cisco, Meyer Sound, Spirent, Extreme Networks, Biamp Systems, Synopsys.

# What presentations were given?

**HARMAN**

## AGENDA DAY 1

| Time | Event |
|---|---|
| 7:45 AM | ARRIVAL, CHECK-IN & COFFEE |
| 8:15 AM | WELCOME |
| 8:30 AM | **Opening Keynote** - Thriving in the Digital Vortex, Using Standardization to Transition from Disruption to Growth |
| | **Future Technology Coming to Standard Ethernet** |
| 9:20 AM | A Rising Technology Tide |
| 9:45 AM | Distributed Clock Synchronization, Enabling Complex Coordinated Measurement and Control |
| 10:30 AM | COFFEE BREAK |
| 11:00 AM | Assuring Reliability, Security, and Latency through Reservations and Redundancy |
| 11:45 AM | Software - Taking New Network Capability from Theory to Reality |
| 12:30 PM | LUNCH & TECHNOLOGY DEMONSTRATIONS |
| 1:30 PM | **Keynote** - The future of self-driving vehicles and how time-coordinated, networked intelligence will make that future a reality |
| | **Application and Industry Impact** |
| 2:30 PM | Professional Audio Video: Successes, Challenges and Opportunities with AVB/TSN |
| 3:10 PM | COFFEE BREAK |
| 3:40 PM | The Backbone of Your Next Car. Ethernet In-vehicle from Infotainment to Advanced Driver Assist Systems. |
| 4:20 PM | View of Industry: Panel Discussion of How Converged Networking Will Enable the IIoT |
| 5:05 PM | HAPPY HOUR MIXER & OPEN DEMONSTRATIONS |
| 6:30 PM | DINNER |

## AGENDA DAY 2

| Time | TRACK 1 - Room: Donner | TRACK 2 - Room: Siskiyou |
|---|---|---|
| 7:45 AM | ARRIVAL & COFFEE | |
| | **Predicting the Future** | **Business Impact** |
| 8:30 AM | Time: An Integral Part of Cyber-Physical Systems | The Industrial Value Chain - How TSN Disrupts and Brings Value |
| 9:05 AM | ROOM CHANGE | |
| 9:10 AM | Software Defined Machines using TSN | Is AVB Really Much Better than Using Classic 802.1Q with SDN? |
| 9:45 AM | COFFEE BREAK | |
| 10:00 AM | Gateway devices that can interoperate with multiple PTP profiles. | How the Industrial Internet Consortium is Evaluating TSN for Smart Manufacturing in a Working Testbed |
| 10:35 AM | ROOM CHANGE | |
| 10:40 AM | Taking TSN Across SubNets - Overview of DetNet in IETF | Advantages of TSN and Reaching ASIL Targets for Automotive Applications |
| | **Implementation Tips and Tricks and Lessons Learned** | **Higher Level Protocols on-top of TSN** |
| 11:20 AM | Measuring the performance of gPTP components and networks | Applying TSN to Industrial Ethernet Control Applications |
| 11:55 AM | LUNCH | |
| 12:55 PM | Lessons learned when creating synchronized distributed systems | Using TSN for TDMA Legacy Protocols Shown at the Example of the Motion Network Sercos |
| 1:30 PM | COFFEE BREAK | |
| 1:45 PM | Testing the Time Aware Scheduler | Enabling Real-Time OPC UA Publish/Subscribe with TSN |
| 2:20 PM | ROOM CHANGE | |
| 2:25 PM | TSN Device Benchmark Suite | Two Steps Towards an Integrated Automation Platform Based on TSN |
| 3:00 PM | COFFEE BREAK | |
| 3:15 PM | **KEYNOTE (Room: Donner/Siskiyou)** - Creating Market Momentum with Deterministic Ethernet and TSN in Key IoT Industries | |
| 4:00 PM | WRAP-UP | |

TSN/A Conference 2017
September 20-21, 2017 (Stuttgart, Germany)

## How does IEEE 802.1 benefit?

- A chance for IEEE 802.1 to introduce itself to those who don't know about us

- Exposure to commercial users of our standards in a non-academic setting

- Introduce the IEEE 802.1 WG to future potential participants
  - Infusion of new requirements and ideas
  - Encourage more participation from real-life users (i.e. recruiting)
  - Face-to-face time with commercial users and suppliers

- On-stage opportunity at the Keynote to tell the attendees who we are

- Discuss and influence future TSN adoption

- Possible table-top space in exhibition area, but probably at a cost
  - Marketing staff can provide table/display, collateral and giveaways
  - IEEE-SA Marketing has already created marketing materials

- There is no fee associated with participating in this event

## What does it mean if IEEE 802.1 votes "yes"?

If the motion in the Closing Plenary is approved this opportunity will be submit to the EC for approval.

Previous discussions with IEEE-SA Marketing related to other conferences have provided this feedback:

*Once you receive EC approval, we will need to discuss expectations from IEEE-SA Marketing. Here is what I see you needing:*

**Marketing Tactics Needed (Please note required Lead Times.)**
*Craig's note: we are ~10 weeks away from the start of this event*

- *Collateral-flyer (Automotive and Industrial flyers already completed)*
- *Ad (Lead Time: 4-6 wks)*
- *E-Blast (Lead Time: 4 wks)*
- *Trade Show Support/Development/Mgt (Lead Time: 12 wks)*
- *Digital Community - Social Media Campaign (Lead Time:4-8 wks)*
- *PR-Press Release (Lead Time: 8 wks) Mktg will engage PR Staff*
- *New Giveaways (Lead Time: 8 wks)*
- *Event Promotion eBlast (Lead Time:4-8 wks)*

Please try to find some time this week to review the material in this presentation to determine if this is an activity the IEEE 802.1 WG should pursue.

# Questions? Discussion?

# Thanks!