# 2018 IEEE Standards Association
# Ethernet & IP @ Automotive Technology Day

## Program
## &
## Speakers' Biographies

**Last Updated: 13 September 2018**

## 9 - 10 October 2018

**Olympia London**

**London, UK**

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# PROGRAM

| MONDAY 8 OCTOBER 2018 | |
|---|---|
| **13:00 – 17:00** | **Exhibitors Setup**<br>*** Exhibitors' Delegates Only *** |
| **16:00 – 18:00** | **Registration Counter Opens**<br>Get your badge today and skip the registration line tomorrow! |

| TUESDAY 9 OCTOBER 2018 | |
|---|---|
| **07:30 – 19:00** | **Registration Counter Open** |
| **08:00 – 09:00** | **Morning Snack (coffee, tea, fruit, pastries)** |
| **08:00 – 19:00** | **Exhibit Hall Open** |
| **09:00 – 09:30** | **Opening**<br>*Master of Ceremonies – Rudi Schubert (IEEE Standards Association)*<br><br>**Welcome Speech**<br>*Simon Chandler (Jaguar Land Rover)* |
| **09:30 – 10:00** | **Keynote: The Inevitable – High Speed Ethernet in Automotive**<br>*Amir Bar-Niv (Aquantia) – Representing NAV Alliance* |
| **Network, Architecture, Connectivity** | |
| **10:00 – 10:30** | **Evolution of Ethernet-based Automotive Networks: Faster AND Cheaper**<br>*Kirsten Matheus (BMW)* |
| **10:30 – 11:00** | **Mid-morning Coffee Break** |
| **11:00 – 11:30** | **1000BASE-T1 from Standard to Series Production - Enabling Next Generation Scalable Architecture**<br>*Christopher Mash (Marvell Semiconductor), Olaf Krieger (Volkswagen)* |
| **11:30 – 12:00** | **Software-defined Networking in Automotive**<br>*Michael Döring (Robert Bosch), Jens Bierschenk (Robert Bosch)* |
| **12:00 – 12:30** | **End to End Connectivity Design with Automotive Ethernet and Service-Oriented Architecture**<br>*Won Seon Sim (Hyundai Motors), Seung Jun Lee (AirPlug)* |
| **12:30 – 14:00** | **Lunch** |
| **14:00 – 14:30** | **Seamless Communications for on-/off-board applications**<br>*Harita Joshi (Jaguar Land Rover), Max Turner (Jaguar Land Rover)* |
| **14:30 – 15:00** | **Harmonization of TSN Parameter Modeling with Automotive Design Flows**<br>*Marina Gutierrez Lopez (TTTech)* |
| **15:00 – 15:30** | **Afternoon Coffee Break** |
| **Security** | |
| **15:30 – 16:00** | **Intrusion Detection Adapted for Automotive – Challenges for HW and an Implementation Example**<br>*Harald Zweck (Infineon Technologies), Ronny Schulze (Infineon Technologies)* |
| **16:00 – 16:30** | **Making gPTP capable for secure time synchronization**<br>*Bernd Jesse (Vector Informatik)* |
| **16:30 – 17:00** | **Break/Special Panel Session Setup** |
| **17:00 – 19:00** | **Panel Session: *Challenges of implementing a complete Ethernet vehicle*** *(E/E Architecture, cybersecurity, safety, quality of service, connectivity, upgradability in the field)*<br><br>***Moderator****: Syreeta Bath (Jaguar Land Rover)*<br>***Panelists****: Kirsten Matheus (BMW), Don Pannell (NXP), Siddharth Shukla (ESCRYPT), George Zimmerman (CME Consulting), Norman Finn (Huawei)* |
| **20:00 – 23:00** | **Networking Dinner** |

| WEDNESDAY 10 OCTOBER 2018 | |
|---|---|
| **07:30 – 12:00** | **Registration Counter Open** |
| **08:00 – 09:00** | **Morning Snack** |
| **08:00 – 17:30** | **Exhibit Hall Open** |
| **PHY, Switch, µC** | |
| **09:00 – 09:30** | **New 10BASE-T1S in future automotive networking applications**<br>*Martin Miller (Microchip)* |
| **09:30 – 10:00** | **Standardized Automotive Ethernet Cables and Connectors**<br>*Steve Carlson (HSP Design)* |
| **AVB/TSN, Higher Layer Protocols, Software** | |
| **10:00 – 10:30** | **Increasing Network Efficiency by Combining Ethernet/TSN Standards**<br>*Don Pannell (NXP Semiconductors)* |
| **10:30 – 11:00** | **Mid-morning Coffee Break** |
| **11:00 – 11:30** | **Automotive Ethernet for Virtual Machines**<br>*Michael Ziehensack (Elektrobit)* |
| **11:30 – 12:00** | **A comparative analysis of Precision Time Protocol in native, virtual machines and container-based environments for consolidating time sensitive automotive workloads**<br>*Usman Sarwar (Intel), Boon Leong Ong (Intel), Anil N Kumar (Intel)* |
| **12:00 – 12:30** | **An innovative traffic management scheme for deterministic/event-based communications in automotive applications with a focus on Automated Driving Applications**<br>*Giancarlo Vasta, Davide Fontana (Magneti Marelli)*<br>*Lucia Lo Bello, Filippo Battaglia, Gaetano Patti (University of Catania)* |
| **12:30 – 14:00** | **Lunch** |
| **14:00 – 14:30** | **Short Presentations: Platinum Exhibitors, IEEE Standards Association**<br>*Dave Robbins (Intrepid Control Systems)*<br>*Will Chu (Marvell Semiconductor)*<br>*Rudi Schubert (IEEE Standards Association)* |
| **Validation & Test** | |
| **14:30 – 15:00** | **A Simulation Based Analysis of Dynamic Priority Allocation Strategy of IEEE 802.1Q for In-Vehicle Networking Systems**<br>*Liz James (University of Warwick)* |
| **15:00 – 15:30** | **Afternoon Coffee Break** |
| **15:30 – 16:00** | **Insights into the performance and configuration of TCP in Automotive Ethernet Networks**<br>*Nicolas Navet (University of Luxembourg), Jörn Migge (RealTime-at-Work)* |
| **16:00 – 16:30** | **First insights to compliance verification of Automotive Ethernet Switches based on OPEN TC11**<br>*Alon Regev, Avik Bhattacharya (Keysight Technologies), Fabian Nikolaus (C&S Group)* |
| **16:30 – 16:35** | **Closing Remarks**<br>*Master of Ceremonies – Rudi Schubert (IEEE Standards Association)* |

# Speakers Biography (alphabetical by last name)

**Amir Bar-Niv:** VP Marketing and Strategy, Automotive - Aquantia Corporation

Seasoned executive with over 25 years of engineering and marketing experience in the Communication, Consumer and Automotive semiconductors industries, with major focus on high-speed interfaces for video and automotive applications. Mr. Bar-Niv served as SVP and GM of the Video and Consumer group at TranSwitch Corporation. Prior to TranSwitch Mr. Bar-Niv was a co-founder of Mysticom, a provider of high speed semiconductor Ethernet PHY products. Before joining Aquantia as VP of Marketing, Mr. Bar-Niv led the Marketing and business development of Cadence's IP group, setting the roadmaps for the Infrastructure and Automotive markets. Mr. Bar-Niv received a BSEE degree from Tel Aviv University and MBA from the University of Phoenix. Author of 14 patents.

**Syreeta Bath:** Technical Specialist, Vehicle Network Communications - Jaguar Land Rover

Syreeta Bath studied Hardware and Software Engineering and has been working in the Automotive industry for the last 16 years. She has been working in vehicle networks within Jaguar Land Rover for almost 10 years where she has worked on all aspects of Networking Technologies from physical layers through to software platforms and protocols. Syreeta is currently the Technical Specialist for Vehicle Network Communications and is responsible for setting the future strategy for in-vehicle networks Including the first delivery into vehicle programs to ensure that they are robustly deployed.

**Avik Bhattacharya:** Product Manager, Ixia Solutions Group - Keysight Technologies

Avik Bhattacharya is the Product Manager for Automotive and Industrial Ethernet validation in Ixia Solution Group now part of Keysight. He has more than 12 years of experience working on cutting-edge networking technologies

**Jens Bierschenk:** System Architect - Robert Bosch GmbH

Jens Bierschenk is employed by Robert Bosch GmbH and works in the Advanced Development Communication Systems, Body Electronics and Components business unit of Automotive Electronics. His recent focus is deterministic communication over Automotive Ethernet. He earned his M. Sc. degree of Computer Science in 2011 from the University of Applied Sciences Karlsruhe, Germany. He is active in the 802.1 TSN Task Group and Avnu Alliance.

**Steven B Carlson:** President - High Speed Design, Inc.

Steven B. Carlson is the President of High Speed Design, Inc., a Portland, Oregon-based consulting company. Mr. Carlson has over 45 years' experience in embedded control systems and networking for the entertainment, architectural lighting and energy management industries. Mr. Carlson's products have been used in theatres, motion picture and television studios, themed entertainment and commercial buildings. He currently serves as the Chair of the IEEE P802.3ch Multi-Gigabit Automotive Ethernet PHY Task Force, past chair of the 802.3bp 1000BASE-T1 and 802.3bw 100BASE-T1 Task Forces, and is the Executive Secretary of the IEEE 802.3 Ethernet Working Group. Mr. Carlson previously served as the Chair of IEEE 802.3af-2003 DTE Power via MDI project, usually referred to as "Power over Ethernet," the IEEE 802.3bf - 2011 Time Sync Task Force and was a founder of the Entertainment Services and Technology Association's Technical Standards Program, ANSI E1-Entertainment Technology.

**Simon Chandler:** Electrical Architecture and Software Platform - Jaguar Land Rover

Simon Chandler is head of the Electrical Architecture and Software platform group at Jaguar Land Rover. He is responsible for ensuring the design of a scalable and efficient electrical platform with a particular focus on supporting the future needs of autonomous driving, connected services and electrification. A veteran of the automotive industry with over 20 years' experience, Mr Chandler has led teams in IVI, Powertrain, UI/UX design and Chassis Electronics, working in both the strategy phase and the industrialization/launch phases. Simon earned his honours degree in Electrical and Electronic Engineering in 1994 and his MBA in 2010.

**Will Chu:** Vice President and General Manager, Automotive - Marvell Semiconductor

Will Chu is the Vice President and General Manager at Marvell Semiconductor. In his position, he is responsible for the strategic direction and implementation of Marvell's semiconductor business for the automotive space. Will brings over 20 years' experience to the Marvell team, most recently at Maxim where he managed Automotive RF, Battery Management, Exterior LED and Sensors product lines. Will received an MBA from MIT Sloan and a BSEE & MSEE from Tufts University.

**Michael Doering:** Research Engineer - Robert Bosch GmbH

Michael is a computer scientist specialized in communication and network technologies for automotive and industrial applications. He has more than ten years' experience in adapting architectures, system designs, and technologies from ICT to the automotive domain. In 2006, for example, Michael deployed one of the first in-vehicle gigabit Ethernets (20+ active ports) in one of the first urban self-driving cars. His current work at Bosch's Corporate Sector Research and Advance Engineering focusses on in-vehicle software-defined networks.

**Norman Finn:** Consultant - Huawei

Norman Finn is an industry expert on Layer 2 protocols, Ethernet switching, and Deterministic Networking. He began his standards activities in the ATM Forum, where his work on LAN Emulation and Muilti-Protocol Over ATM earned him an ATM Spotlight Award. He worked for Cisco Systems from 1993 to 2016, retiring as a Cisco Fellow, and now is consulting for Huawei. Norm has been active in IEEE 802 since 1996, where he has served as an editor of eight standards in 802.1 and one in 802.11. Norm has made more than a hundred technical and liaison contributions over the years, starting with the origins of 802.1Q VLANs, and to numerous projects in IEEE 802.3, 802.17, and 802.11, for which he received the IEEE Standards Association Medallion. He now serves on the IEEE 802 / IETF Coordination Committee. Norm has also participated meaningfully in ITU-T (Y.1731), AVnu Alliance, and the IETF, where he was instrumental in the creation of the Deterministic Networking Working Group. At present, his focus is on expanding Deterministic Networking into mixed routed and bridged networks.

In addition to his standards activity, Norm invented and/or influenced many of the Cisco Catalyst switching concepts and protocols including VLANs, the Port Aggregation Protocol, Cisco Discovery Protocol, Provider Ethernet, and Deterministic Networking. He has been awarded more than 100 patents. His publications include an IEEE Spectrum article and a book chapter. Norm is proud of his B.S. in Astronomy from the California Institute of Technology. He and his wife, Nilene Thompson-Finn, enjoy living in Spring Valley, CA; both have been singing in barbershop quartets and choruses for more than 30 years

**Marina Gutiérrez Lopez**: Project Engineer – TTTech Computertechnik

Marina Gutiérrez Lopez is a project engineer at TTTech Computertechnik AG. She is a voting member of the IEEE 802.1 TSN working group and the editor of the P802.1Qcw, a project standardizing YANG models for TSN features. She holds a bachelor's degree in Physics and a master's in Computer Science from the University of Cantabria and is currently enrolled at the Mälardalen University as a PhD student. Her research is focused on the configuration and management of deterministic communications for cyber-physical systems.

**Liz James:** EngD Candidate - University of Warwick

Liz James is an Engineering Doctoral Research Degree candidate with Warwick Manufacturing Group (WMG) at the University of Warwick. Working alongside sponsor company Jaguar Land Rover, her current research investigates how standards developed by the Time Sensitive Networking (TSN) working group could be employed within dynamic, service orientated, vehicular architectures. Her Master's degree in Physics from Swansea University (2015), leading to a solid background into parallel solid-state physics simulation, coupled with her fascination in all forms of computing, provides her with a keen eye toward some of the problems that distributed systems can face, as well as strong analytical skills and a wide base of background knowledge to draw new and interesting solutions from.

**Bernd Jesse:** Principal Product Management Engineer - Vector Informatik GmbH

Bernd Jesse is a graduated engineer for electrotechnics and is working since almost 20 years for Vector Informatik in the automotive embedded software division. Since a few years he is responsible as Principal Product Management Engineer for product solutions in the fields of Time Sensitive Networking and Global Time Synchronization. He assists complex projects and contributes actively to the AUTOSAR Global Time concept.

**Anil Kumar:** Principal Engineer - Intel Corporation

Anil Kumar is a Principal Engineer in the Architecture, Silicon and Platform Engineering Division of IOTG at Intel Corporation, and is responsible for the Connectivity Platform Architecture across IOTG. Additionally, he is the CISA Ethernet Domain Architecture lead, harmonizing multiple TSN Ethernet solutions across Intel. Prior to this, he lead the effort with the planning team to create IOTG's first ever roadmap for connectivity solutions. He is currently driving platform and chip level integration of several key connectivity technologies, such as Ethernet Time Sensitive Networking (TSN) which are critical for Cyber Physical Systems. Anil is keenly exploring intersections of key technology domains to ensure that they enhance each other and lead to competitive solutions. Anil joined Intel in 2007 as a design engineer in Digital Home Group. He served as Platform Architect for several Intel Architecture based Media Processors for TV and Set Top Box applications. As the chief architect in Intel Media Group Anil lead several designs that resulted in award winning consumer electronic devices at CES (Consumer Electronics Show). The world's first Google TV devices were based on reference design lead by Anil as well. Prior to joining Intel, Anil held design engineering positions at multinational companies such as Fujitsu & Alcatel. He was instrumental in taking several products from concept to high volume production throughout his career.

**Seung Jun Lee, PhD:** CTO - AirPlug, Inc.

Seung Jun Lee is a co-founder and CTO of AirPlug, Inc., Seoul, Korea-based company providing connectivity solutions and services. Dr. Lee has over 25 years' experience in data communication and embedded software. He has founded 2 companies and has more than 50 patents granted. His

current focus is on designing optimal automotive connectivity ranging from Ethernet/IP-based in-vehicle connectivity to legacy and external connectivity.

**Ong Boon Leong:** Software Development Architect - Intel Corporation

Ong Boon Leong works for IOTG Group at Intel Corporation. He has built and led several teams in developing Yocto Project BSP layers for intel product lines (from Xeon-class to Atom-class) which covers technologies such as DPDK, QAT, boot-loader, secure boot & etc. In addition, he is technical lead that oversees the enablement of technologies such as Ethernet, TSN and Sensor Framework. He is an active speaker in Yocto Project Summit and intel Software Professional Conferences. From time to time, he provides adjunct lectures to academia and STEM organization. He is passionate in bridging the gap of FOSS projects adoption by internal product team and local academia. He presented in EmbeddedWorld 2017 on "Rapid and Efficient Methodology to convert Android into Linux-based IOT OS: A case study on Intel SoFIA" and EmbeddedWorld 2018 on "Demystifying Time Aware Traffic Shaping Technologies for TSN: A case study for Linux driver enabling".

**Lucia Lo Bello, PhD:** Tenured Associate Professor - Università degli Studi di Catania

Professor Lucia Lo Bello is tenured Associate Professor with the Department of Electrical, Electronic and Computer Engineering, University of Catania, Italy. She received the M.S. degree in Electronic Engineering and the Ph.D. degree in Computer Engineering from the University of Catania in 1994 and 1998, respectively. She was also Guest Professor at the University of Malardalen, Sweden (2014) and a Visiting Researcher with the Department of Computer Engineering, Seoul National University, Korea (2000-2001). Since 2004 she has been actively involved in standardization activities, relevant to wired and wireless industrial networks, at both national and international level. Her research interests include automotive communications, with a special focus on Automotive Ethernet, IEEE Audio Video Bridging and Time-Sensitive Networking, industrial networks, real-time embedded systems, and wireless sensor networks. She authored or coauthored more than 150 technical papers in these areas. She is responsible for several international and national projects in the area of real-time embedded systems and networks.

**Christopher Mash:** Senior Director Automotive Applications and Architecture - Marvell Semiconductor

Christopher Mash is the Senior Director of Automotive Applications and System Architecture at Marvell Semiconductor. He has been involved with Automotive Ethernet for the past 9 years and has been working in the Ethernet field for the last 21 years. During that time, he has taken over 300 designs from the concept phase through design, test and into high volume production. He has been active within the IEEE802.3ch Multi-Gig automotive task force, IEEE802.3bp 1000BASE-T1 task force, IEEE802.3bw 100BASE-T1 task force, IEEE802.1 AVB/TSN groups and AVNU. Mr Mash holds a BEng Honours degree in Electronic Engineering from Southampton University and holds Chartered Engineer status with the Institution of Engineering and Technology.

**Kirsten Matheus, PhD**: Engineer - BMW

Dr. Kirsten Matheus is an engineer and economist. She has been working in the automotive industry for the last 16 years; almost 10 of which for BMW. At BMW it is her responsibility to ensure that the in-vehicle network fulfills also future requirements by ensuring the availability of suitable in-vehicle networking technologies. In this context she successfully introduced Ethernet as a networking technology into the industry. She and her colleague Thomas Königseder described the background and technical concepts in a book titled “Automotive Ethernet”.

**Jörn Migge, PhD:** CTO - RealTime-at-Work

Jörn Migge is the CTO of RealTime-at-Work (RTaW), an SME specialized in simulation and timing analysis for automotive and aerospace systems. He has an extensive experience in network design and network configuration issues. In particular, he has lead the development of configuration algorithms for several TSN protocols including the Credit-Based Shaper and Time-Aware Shaper. Before joining RTaW in 2008, Jörn Migge worked for 8 years at the R&D department of PSA Peugeot-Citroën on methods and tools for the optimization and validation of embedded software architectures. He has contributed to the AEE, ITEA-EAST, AUTOSAR and TIMMO-2-USE automotive industry-wide projects. He received a PhD in applied mathematics from the University of Nice in 1999.

**Martin Miller:** Senior Manager – Microchip

Martin is Senior Manager in the Automotive Information Systems group of Microchip. He is participating in the development of automotive networking solutions for over 15 years including PHYs, Intelligent Network Interface Controllers and Audio/Video Companion ICs along with the required software stacks. He has worked in standardization efforts in IEEE, ISO and MOSTCO. Currently, Martin is working in IEEE's 10BASE-T1S task force.

**Nicolas Navet:** Professor - University of Luxembourg

Nicolas NAVET is a professor in Computer Science at the University of Luxembourg. His objective is to contribute to the techniques and the tools that will make it possible to build provably safe systems in a time and cost efficient manner. He has been working on embedded networks with automotive OEMs since the mid-90s, as an academic and for the company RealTime-at-Work that he created in 2007 and was the CTO of during 5 years.

**Fabian Nikolaus:** Project Manager - C&S Group

Fabian Nikolaus studied computer engineering at the University of Applied Sciences in Wolfenbuettel and has worked at C&S Group since 2009. From the very beginning he was involved in the area of automotive communication systems, developing test specifications and respective testing solutions. His responsibility as a Project Manager is focused on AUTOSAR and Automotive Ethernet. Fabian represents C&S Group in standardization bodies like ISO, AUTOSAR and various technical committees of the OPEN Alliance. Among others he lead the development of the TC11 Switch Semiconductor test specification within OPEN TC-11.

**Donald R. Pannell:** Fellow, Automotive Ethernet Solutions - NXP Semiconductors

Don Pannell joined NXP in 2017. Previously he was at Marvell for 17 years where he was the lead architect for their small port count Ethernet switches. He is currently an active contributor in both IEEE 802.3 and IEEE 802.1, where more recently he has worked on all the IEEE 802.1 AVB/TSN standards and is currently Secretary of the IEEE 1722 and IEEE 1722.1 working groups which standardize end node protocols for AVB/TSN. He worked on his 1st IEEE standard in 1980. He was Vice Chair of the Board of the VESA standards association in 1990. He has been a lead architect for over 30 years at companies including Sierra Semiconductor, I-Cube and Marvell. Don currently has over 70 patents granted with more in the works. Don received his BSEE degree from Loyola University in California.

**Alon Regev:** Engineer - Keysight Technologies

Alon is an engineer working in network communications for over 25 years. For the last 15 years Alon has worked for Ixia, the premier IP / network test company. Alon is a system architect fluent in both the hardware and software domains. Alon has founded 2 companies and has over 50 patents granted. Alon is the chair of the AVnu testability subgroup, and is a member of working groups in IEEE, SAE, and represent Ixia in AUTOSAR.BSCS, California State University, Northridge (USA).

**Dave Robins:** CEO – Intrepid Control Systems, Inc.

Dave Robins is the CEO and founder of Intrepid Control Systems, Inc., a provider of automotive related test products for over 24 years. Dave is also the original architect of the neoVI, ValueCAN, and Vehicle Spy products used by more than 20000 engineers worldwide.

**Usman Sarwar:** Validation Architect - Intel Corporation

Usman Sarwar is a technologist and a software validation architect working on IoT connectivity technologies in Intel's IoT group having fifteen years of R&D and software development experience. He has diverse technical background by working on areas related to IoT connectivity technologies and protocols, middleware protocol systems as well as applications. Currently, he is working on the time sensitive networking for industrial and automotive technologies. He is also contributing for test plans and certification in Avnu Alliance within Industrial domain. He is Liaison for Intel with ZigBee Alliance where Intel has presence of edge gateways. He has invented more than 23 patents, published 23 international papers and contributed to ITU-T resolutions.

**Rudi Schubert:** Director, New Initiatives - IEEE Standard Association

Rudi Schubert is the Director, New Initiatives for the IEEE Standards Association, focusing on incubation of emerging technology standards and the productive implementation of IEEE standards to accelerate technology adoption. He leads the IEEE Industry Connections program, operating consensus building interest groups across a portfolio of topics including augmented reality, ethics for autonomous systems, internet of things, big data, 3D body processing, artificial intelligence, digital identity, smart cities, next generation vehicle technologies and many others. Before joining the IEEE, Rudi was a principal engineer for EnerNex, providing technical expertise on technology standards and testing programs to the National Institute of Standards and Technology (NIST) for their Smart Grid initiatives. He also spent nearly 20 years in progressively expanding leadership roles with Telcordia Technologies (formerly Bellcore) establishing technical criteria and implementation methodologies that become a mandated compliance and certification standard used by US telecom carriers for technology deployment.

Rudi has a 25+ year record of leading, developing and implementing industry standards and testing programs, assuring expectations for functional performance, compatibility, product robustness and safety are achieved. He holds bachelor's and master's degrees in mechanical engineering from Stevens Institute of Technology, Hoboken, New Jersey.

**Ronnie Schultz:** Infineon Technologies

Ronny Schulze studied Communication and Telecommunications Technologies at the HTWK Leipzig. He started working for Infineon microcontroller in 2002 as an Application Engineer Microcontroller. From 2009 onwards he focused on Industrial Ethernet protocols and integrate EtherCAT into Infineon's ARM based MCUs. 2014 he returned to the automotive microcontroller department and became a team lead of a group of engineers focus on Automotive In-Vehicle Networks.

**Siddharth Shukla:** Product Manager - ESCRYPT

Siddharth is an experienced Embedded Systems Engineer and has expertise in Automotive Security and Real Time Systems for Multicore Architecture. He started at ESCRYPT as a Lead developer for Automotive Ethernet Firewall, where he worked with different Automotive Ethernet related areas and later took the responsibility of Product Manager on the ESCRYPT team at Robert Bosch AB, Sweden. He received his master's in Embedded Systems at Uppsala University, Sweden.

**Wonseon Sim:** Senior Research Engineer - Hyundai Motors

Wonseon Sim is a senior research engineer and vehicle architect at Hyundai Motors. He has been involved in designing architecture from system level to vehicle level for the past 9 years. Recently, he designed connected car H/W architecture for future mobility with automotive Ethernet, and his current focus is on designing S/W framework for connected cars based on automotive Ethernet and Service-Oriented Architecture.

**Giancarlo Vasta:** Autonomous Vehicle System Engineer - Magneti Marelli S.p.A.

Giancarlo is a Computer Engineer and has worked on Automated Driving since 2015. As a System Engineer, he managed the operational part of the Autonomous Vehicle project in Urban scenario. Since 2013, when he earned his M. Sc. Degree of Computer Engineer from the University of Catania, he approached to Automotive world and, in particularly, to introduction of Ethernet in Automotive. After studying different automotive communication protocols, he focused his interest on Time-Sensitive Networking and currently he collaborates with the University of Catania for research activities on automotive field. In 2017, to increase the training in the field of Technology Innovation, he achieved the Master Business Administration to study the topics of his interest from an economic point of view**.**

**Michael Ziehensack, PhD:** Managing Director – Elektrobit Austria

Dr. Michael Ziehensack studied Computer Technology and is working in the field of communication networks for more than 15 years. Since 2015 he is Managing Director of Elektrobit Austria in Vienna specializing on automotive communication software.

**George Zimmerman, PhD:** President - CME Consulting

Dr. George Zimmerman is an President of CME Consulting, a California-based consulting firm specializing in physical layer communications and associated powering technologies. He has been at the forefront in the development and standardization of wired technologies, starting with line-powered DSL in the 1990s. He initiated the IEEE 10GBASE-T standard, and since then has been active in the IEEE 802.3 Ethernet Working Group. He has been at the forefront of all BASE-T Ethernet faster than 1 Gb/s, single-pair Ethernet, Energy Efficient Ethernet, and Power over Ethernet. He was Chief Editor for IEEE 802.3bz 2.5G/5GBASE-T and IEEE 802.3bq 25G/40GBASE-T, and currently chairs the IEEE P802.3cg 10Mb/s Single Pair Ethernet Task Force and is active in the IEEE P802.3ch Multigig Automotive Ethernet PHY Task Force. He is also an active member of TIA TR42 and the NFPA (working on the US National Electrical Code, NEC®). He is on the board of the NBASE-T Alliance and is Technical Committee Chair for the Ethernet Alliance. He holds more than 20 patents, a Ph.D. in Electrical Engineering from Caltech, and a BSEE from Stanford.

**Harald Zweck:** Infineon Technologies

Harald studied Electronic Engineering at the Technical University in Munich from 1976 to 1982 and finished it successfully with a diploma. He started his career as a field application engineer working for more than 10 years in the field of industrial electronic control systems, with focus on microprocessor based systems. In the mid 1990's he joined the consumer electronic group of Siemens Semiconductors as a Technical Marketing engineer on digital consumer devices, and then on high speed memories. In this role he created the specification for the first commercial DDR DRAM. He has been working for over 13 years with the Infineon Automotive Microcontroller group as an expert in Automotive communication. He represented Infineon Technologies in the FlexRay consortium and has been focused for more than 6 years on Automotive Ethernet.