2nd International VDI Conference

Automotive Data Communication

Seamless Networks, Smarter Mobility

July 01 and 02, 2025, Munich

- Future E/E architecure approaches
- Virtual development of communication solutions
- Evolution of In-Vehicle Networking Technologies
- Connected Vehicle Data Governance
- Cloud computing as the driver of SDV

+ International Best Practices
+ Panel Discussion
+ Keynotes

Meet international Experts from:

An event organized by VDI Wissensforum GmbH
www.vdi-international.com/ 01K0137025

About us

The Association of German Engineers (VDI) is one of the largest technical-scientific associations in Europe. Throughout the years, the VDI has successfully expanded its activities nationally and internationally to foster and impart knowledge about technology-related issues. As a financially independent, politically unaffiliated and non-profit organization the VDI is recognized as the key representative of engineers both within the profession and in public.

Supporting Experts

Oliver Bettgens, Head of Networking Technologies, CARIAD SE
Carsten Demuth, Region EMEA – Automotive Marketing & Application Director Digital Products and System Marketing, ST Microelectronics Application GmbH
Prof. Dr. Andreas Grzemba, Vice President Research and Knowledge Transfer, Deggendorf Insitute of Technology
Dr. Matthias Korte, Director Head of Ideation, Strategy & IP | Advanced Development, LEONI Bordnetz-Systeme GmbH
Mario Maul, Expert Architecture & Networks Vehicle Engineering Electronics, EDAG Engineering GmbH
Marcelino Varas, Manager Product Management, Vector Informatik GmbH

Reasons to attend

Meet the relevant experts in automotive data communication
Learn about the different technical approaches within the industry
Network with technical experts & decision makers from OEMs and major suppliers
Prepare for two days full of insights, contacts & discussions
Discuss current developments in one of Automotive's most important field

Tuesday, July 1, 2025 — 1st day

09:00 Registration & welcome coffee

10:00 Chair's welcome and opening address

I. SDV - Architecture & Development 1

10:15 Virtualization in Vehicle Development: Trends and technologies in the industry and the ecosystem changes

Keynote

- Change in supplier relationships towards development partners alongside the value creation chains
- Trend to insourcing of software IP from the OEMs to gain control
- The trend on latest open source developments for non-differentiating parts of the vehicle architecture

Steffen Krause, Head of Software Defined Vehicle, Capgemini Invent, Germany

10:45 The Ethernet Ring Approach

- A next-generation approach simplifying vehicle networking and cabling
- Reduced Complexity & Latency: Less wiring, lower weight, and improved response times for time-critical applications
- Built-in Redundancy & Reliability: Ensures stable operation even in case of failures
- Advanced Services & Future Potential: Supports time-sensitive networking for real-time and paves the way for new automotive product families

Jan Pistulka, Automotive MCU Marketing Manager, STMicroelectronics Applications GmbH, Germany

11:15 Networking & coffee break

11:45 Contextualizing SDV Levels in terms of In-Vehicle and Over the Air Communication

- 5 levels of software defined vehicles
- What does the different levels mean for in-vehicle communication
- What does the different levels mean for over the air communication
- What does achieving level 5 mean in terms of communication interface with the vehicle

Huzaifa Saadat, Senior Product Manager, Elektrobit Automotive GmbH, Germany

12:15 Enabling SDV in depth for the mechatronic layer

- Importance of the mechatronic layer for the SDV
- Challenges of existing approaches for the integration of the mechatronic layer
- Proposal for a flexible and seamless integration of the mechatronic layer using service-based communication

Marco Wierer, Manager Software Development Embedded Software, Vector Informatik GmbH, Germany

12:45 Lunch

II. Networking technologies

14:15 CAN XL and Radar application

- CAN XL offers advantage for radar application as high net bit rate and low cost
- The 3rd CAN standard offers up to 2048 byte and 20 Mbit/s
- Suitable for use in a multi-drop bus topology, not limited to point-to-point connections

Gregor Sunderdiek, ME-IC/PRM-IP, Productmanager CAN & GTM IP, Robert Bosch GmbH, Germany

14:45 A modern approach to Automotive Ethernet Switches

- Integration of Switches into ECUs
- Building blocks to ease and speed-up development
- Business models, standardization, open source
- More control by OEM leads to faster time to market and increased quality

Patrice Ancel, Head of In-Vehicle Networking Technologies, BMW Group, Germany & **Dr. Lars Völker**, Technical Fellow, Technica Engineering GmbH, Germany

15:15 Time-Sensitive Networking: Standardization vs. Adoption in Real Automotive Implementations

- TSN – Versatile but Unclear: Selection remains debated, with no clear market or standard consensus
- TSN in Automotive: Overview of deployed, supported, and upcoming mechanisms
- TSN for the Future: Solutions for emerging challenges in vehicle architectures

Dr. Christian Boiger, Principal Engineer, Infineon Technologies AG, Germany

15:45 Networking & coffee break

16:30 Validating TSN in Software-Defined Vehicle Network Architectures

- Ethernet-based infrastructure serves as the backbone for high-bandwidth and low-latency communication
- TSN applications and standards form a key component of SDV architectures
- Validating the implementation of TSN in such a dynamic and complex environment necessitates innovative testing approaches
- Proactive testability must be embedded in the system design from the earliest stages through to deployment

Robby Gurdan, CTO, TSN Systems GmbH, Germany

17:00 Panel Discussion

18:00 End of conference Day One

Get-together

At the end of the first conference day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers.

08:25 Chair's welcome

III. Data management, Security and Synchronization

08:30 The need for global time-synchronization in autonomous SDVs

- Automotive Ethernet (gPTP), PCIe (PTM) and ASA ML (PTB) enable precise but isolated synchronization
- Zonal E/E, autonomous systems, and SDVs need cross-network sync.
- Sensors and ECUs require a uniform time base across protocols
- Status, challenges, and test results of time sync. bridging

Christian Liebl, System Architect IVN & **Daniel Hopf**, Senior Expert High-Speed Data Networks, both: Continental Automotive Technologies GmbH, Germany

09:00 Resource allocation method for systems with heterogeneous delay intolerant traffic types

- Deterministic and Stochastic Network Calculus for in-vehicle network design
- Algorithms ensure quality-of-service with delay and queueing bounds
- Simplified Methods: Benefits for in-vehicle networking applications
- Illustration with real-world in-vehicle communication technology

Dr. Sami Akin, System Engineering Lead, CARIAD SE, Germany

09:30 Enhancing the security of automotive applications by utilizing an in-vehicle TPM as central trust anchor

- Growing complexity and criticality of vehicle functions increase the demand for cybersecurity
- Design of a TPM-based identity and access management concept for distinct vehicle functions
- Protection of on-vehicle assets using the tamper-resistant shielded location of a TPM
- Evaluation of the security architecture based on the two exemplary use cases Plug&Charge and Digital Key

Christian Plappert, Research Associate - Cyberphysical Systems Security, Fraunhofer SIT | ATHENE, Germany & **Antoaneta Kondeva**, Connected Secure Systems / System Architect Security, Infineon Technologies AG, Germany

10:00 Networking & coffee break

IV. Keynotes

10:45 E/E architecture evolution and impact on hardware and data networks

- Hardware Evolution for Software-Driven EVs: Analysis backed by S&P Global Mobility data
- Overview of hardware and software-driven trends and role of China OEMs
- E/E trends at major OEMs, fast leaders and followers
- Implication of zone ECUs, central computers and 48V systems for data networking and backbones
- Adoption of Ethernet with examples

Dr. Richard Dixon, Senior Principal Analyst, E/E & Semiconductor, S&P Global Mobility, Germany

11:15 The Future of Connected Vehicle Data Governance: Navigating Challenges and Opportunities

- Evolution of connected vehicle data architectures and new technologies (Data Mesh, Zonal IVNs, GenAI, Digital Twins etc.)
- Current challenges and opportunities (Governance, Data Lineage and Value generation at scale)
- Strategies to thrive in new data driven world

Varun Kumar, Senior Industry Product Architect, Amazon Web Services, Germany

V. SDV - Architecture & Development 2

11:45 LightOpen – a cloud-based lighting customization service for SDVs

- Cloud-based Lighting
- Functionality of sensor communication
- Personalization Service

Marc Peter, Project Manager, Hella GmbH & Co. KGaA, Germany

12:15 Lunch

13:15 Using Simulation in the Development of V2X Applications

- Closed-loop vehicle simulation tests
- Standardized V2X communication protocols
- Relevant applications for local hazard warnings

Dr. Viktor Lizenberg, Engineer Test Systems & Engineering, IPG Automotive GmbH, Germany; Co-authors: Jürgen Hauenstein & Matthias Mayer, both: CARIAD SE, Germany

13:45 Impact of the zonal wiring system architecture on automotive data lines

- The Requirements Puzzle: data transmission in adverse environments
- Solutions for low and high data rates
- Challenging Installation Spaces: customized cable designs

Dr. Johannes Nachtrab, Head of PM/PE Product Group Data Cables, LEONI Kabel GmbH, Germany

14:15 Where's the Bottleneck? Streamlining Automotive Data From µC to µP to Cloud and Back

- From µC to µP - Solving embedded data flow strategies
- From µP to Cloud - Addressing the bigger picture of SDV
- Fusing it together - How efficient bidirectional data transfer can solve software updates and data collection

Jannik Müller, Product Lead SDV Solutions, Vector Informatik GmbH, Germany

14:45 Closing Remarks

15:00 End of conference

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Jasmin Habel
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The conference package includes the conference documents (online), beverages during breaks, lunch and the get-together on July 1, 2025.

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Automotive Data Communication

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