20th International Congress and Exhibition

October 20 - 21, 2021 in Bonn, Germany
or via live stream

Top Speakers:

Dr. Karl Thomas Neumann, former Continental AG, Volkswagen China & Adam Opel AG
Dr. Rolf Zöller, Porsche AG & Porsche Digital
Cammal Thierry, Group Renault
Dr. Dirk Walliser, ZF Friedrichshafen AG
Werner Koestler, Continental Automotive
Maria Anhalt, Elektrobit Automotive
Igal Raichelgauz, AutoBrains

Main Topics:

- Software Technologies
- End-2-End Architecture
- Automated Driving
- AI -Self-Learning Vehicles
- E-Mobility & E-Vehicles
- Electronics Innovation
- Data Analytics
- Security

Panel discussion:

Operating Systems for Cars – Can OEMs regain Independence from IT-Giants?
Stephan Durach, BMW Group
Christoph Hartung, ETAS GmbH
Joachim Langenwalter, Stellantis NV
Anup Sable, KPIT Technologies
Dr. Riclef Schmidt-Clausen, CARIAD SE
William Wei, Foxconn Technology Group

Including up-to-date contributions from:

www.eliv-congress.com

#eliv
The must-attend event for all decision-makers and experts in the automotive electronics and software industry!

ELIV – Program Overview

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<td>The long Path of the Automotive Industry: From Hardware to Software, Cloud and Services</td>
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<td>Coffee break, Exhibition and Start-up Area visit</td>
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<td>18:45</td>
<td>End of the first Congress Day</td>
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<td>19:00</td>
<td>Night of Electronics</td>
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All congress participants are invited to the ELIV evening event with delicious food, great networking opportunities and a special evening keynote by John W. Kelly, Founder and CEO of Graphika on "Mapping Social Networks – A Blueprint for Automotive Innovation".

Register at: www.eliv-congress.com
2nd Congress Day
Thursday, October 21, 2021

08:30 Parallel Session

Session 1: New York (Ground Floor)
- **Data Analytics**
  - Moderation: Dipl.-Ing. Gilles Mabire, Continental Automotive, Villingen-Schwenningen

Session 2: Nairobi (Ground Floor)
- **Electronics Innovation**
  - Moderation: Dr. Peter Redlich, Ford, Cologne

Session 3: Wien (Ground Floor)
- **End-2-End Architecture**
  - Moderation: Dr. Thomas Hollmann, Volkswagen AG, Wolfsburg

Session 4: Bangkok (Basement)
- **E-Vehicle**
  - Moderation: Rémi Bastien, Groupe Renault, Guyancourt, France

08:30 Session 5: Start-Up Area (Basement)
- **Start-up Session**
  - Hosted by: The Mathworks

10:00 Flashlight on High Performance Computing
  - **Werner Koestler**, Head of VNI Key Projects within Vehicle Networking and Information Business Area, Continental, Continental Automotive, Regensburg

10:15 Flashlight on OS
  - **Maria Anhalt**, CEO, Elektrobit Automotive GmbH, Erlangen

10:30 Coffee break, Exhibition and Start-up Area visit

11:15 Parallel Session

- **AI – Self learning vehicles**
  - Moderation: Dipl.-Inf. Elmar Frickenstein, Elstein Consulting & former BMW AG, Munich

- **Software Technologies**
  - Moderation: Michael Jaeger, HELLA, Lippstadt

- **Electronics Innovation**
  - Moderation: Dipl.-Ing. Stefan Teuchert, MAN Truck & Bus, Munich

- **Security**
  - Moderation: Stephan Esch, Volkswagen AG, Wolfsburg

13:15 Lunch break, Exhibition and Start-up Area visit

14:30 Flashlight on E/E Architecture
  - **Cammal Thierry**, Alliance Global Vice President Software Factory & Director General Renault Software Labs, Groupe Renault, Tournefeuille, France

14:45 Flashlight on Software
  - **Dr. Dirk Walliser**, Senior Vice President Corporate Research & Development, ZF Friedrichshafen AG, Friedrichshafen

15:00 Flashlight on 5G
  - **Stefan Marxreiter**, Vice President, Qualcomm CDMA Technologies GmbH, Munich

15:15 Flashlight on AI
  - **Igal Raichelgauz**, CEO, AutoBrains, Tel Aviv, Israel

15:30 Conclusion and Discussion
  - By Members of the Program Committee

16:00 Award Ceremony “Auto Electronic Excellence Award 2021”, best Start-up and Closing of the Congress

16:15 End of the Congress
1st Congress Day

Wednesday, October 20, 2021

07:45 Registration

08:45 Opening of the Congress
   Opening Speech: Automotive defined Digitalization – Perspectives towards tomorrow
   Dr. Rolf Zöller, Director Smart Connected Vehicle Porsche AG and Managing Director Porsche Digital, Chairman of the Program Committee

09:15 The Long Path of the Automotive Industry: From Hardware to Software, Cloud and Services
   Dr. Karl-Thomas Neumann, former CEO of Continental AG, Volkswagen China and Adam Opel GmbH, Founder & Owner

09:45 Panel Discussion: Operating Systems for Cars – Can OEMs regain Independence from IT-Giants?
   • How to get on top of the software issue in automotive?
   • Connecting the automotive ecosystem to established IT-Ecosystems vs. OEMs regaining independence
   • Could a standardized, scalable middleware platform pave the way?
   Stephan Durach, Senior Vice President Connected Company Development, Technical Operations, BMW Group, Munich
   Christoph Hartung, CEO, ETAS GmbH, Stuttgart
   Joachim Langenwalter, Senior Vice President Software & Hardware, Stellantis NV, Paris, France
   Moderator: Ken Fouhy, Editor-in-Chief, VDI nachrichten, VDI Verlag GmbH, Düsseldorf

10:45 Coffee break, Exhibition and Start-up Area visit

Automated Driving
   Moderation: Kai-Uwe Balszuweit, BMW, Munich

Software Technologies
   Moderation: Dr. Riclef Schmidt-Clausen, CARIAD SE, Ingolstadt

End-to-End Architecture
   Moderation: Dipl.-Ing. Rüdiger Roppel, Porsche, Weissach

E-Mobility
   Moderation: Dipl.-Ing. Christof Kellerwessel, Ford, Cologne

11:30 Collaborative development of a test environment for Automated Driving
   • Highly complex simulation environments required by test platforms
   • Know-how from various expert parties/companies must be brought together
   • Joint feature backlogs and overarching project organizations as success factors
   • Facilitating technical set-ups and interface standards
   Dr.-Ing. Tim Fricke, Modeling and Simulation Specialist, Test Infrastructure, Conduct Hardware, BMW Group, Munich and Dr.-Ing. Dipl.-Math. Klaus Lamberg, Strategic Product Manager Real-Time Test and Development Systems, dSPACE GmbH, Paderborn, Co-Author: Dr.-Ing. Falko Schuck, BMW Group, Munich

Automotive Software Development – Is it different?
   • Usage of practically proven software development processes
   • Combination of safety and security
   • Handling the complexity of ADAS verification
   • CI/CT tool chains for the collaboration between OEM and suppliers
   Dr. Stefan Krauß, Managing Director, Vector Informatik GmbH, Stuttgart

Architecting for secure, safe and agile software defined vehicles
   • How can we enable a future of continuously evolving capabilities and use experience?
   • What are the analogies to modern OS design?
   • What are the characteristics of a flexible and extensible in-vehicle software architecture?
   • What changes are required in the development process to increase agility without compromising safety and cyber security?
   Sean Selitrennikoff, M. Sc., Principal Software Engineer, Azure IoT Mobility, Co-Author: Mario Ortegon-Cabrera, both: Microsoft Corporation, Redmond, WA, USA

Wireless charging for electric vehicles with its boundary conditions – A contribution for market breakthrough
   • Boundary condition in the automotive environment
   • Wireless power transfer for electric vehicles under boundary conditions
   • Interoperable wireless power transfer systems
   Dr.-Ing. Mike Böttigheimer, Project Manager, Corporate Advanced Engineering Thermal Management, Co-Authors: Timo Lämmlle, M. Sc., Dr. Christopher Lämmlle, all of MAHLE International GmbH, Stuttgart

Register at: www.eliv-congress.com
12:00 Reliable validation of Highly Automated Driving functions by increasing the virtualization level of high computing platforms and smart sensors
- Virtualization of Multi-Chip ADAS High Computing Platforms using Multi-Container Environments
- Transfer of Communication- and Middleware-Layer in the SiL Environment as Key Factor
- End-to-End-Communication and Vehicle Network in SiL Environments (e.g. CAN & Ethernet)
- Analysis of Technical State-of-the-Art in Virtualization with respect to Standardization Approaches

Dipl.-Inf. Stefan Wonneberger, Product Manager Simulation & SiL Testing for ADAS & AD, Data & Development Factory, Co-Author: Sinan Balci, M. Sc., both of CARIAD SE, Wolfsburg

12:30 Functional Safety is Critical to Commercially Viable Self-Driving Trucks
- Plus’s safety strategy and approach in developing autonomous trucks
- Development process and functional safety: processes and tools
- Safety standards and best practices

Robert Dingli, Director of Vehicle Engineering, Plus.AI, Cupertino, CA, USA

12:30 Agile development of safety-related automotive software
- Common misconceptions regarding the combination of agile methods and functional safety
- Recommendations from the ZVEI best-practice guideline „Introduction to the combined application of agile & safety in automotive software development“
- Examples from the combination of Scrum and ISO 26262

Dipl.-Ing. Steffen Kuhn, Head of Consulting, Elektrobit Automotive GmbH, Erlangen

12:30 Applying the SOVD Standard for future vehicle diagnostic and vehicle lifecycle management
- Diagnostics of HPC and complete vehicle using SOVD
- Unified remote diagnostics for different vehicle
- Proposed extensions for fully supporting development, production, and after sales

Dr. rer. nat. Oliver Meyer, Head of Department – Development Lifecycle Management & After Sales, Co-Author: Dr. rer. nat. Boris Böhlen, both of DSA Daten- und Systemtechnik GmbH, Aachen

12:30 Electric Systems – Simplified and standardized engineering for sophisticated automotive electric/electronics
- Success of future vehicle generations is closely linked to systematic focus on innovations, robust technologies and cost-optimized processes
- Basic principles of development using the example of electrical systems
- Scalability: Development of a modular system with cross-segment usability
- Automation: Implementation of robust data and energy distribution systems for cost-effective, automated production

Ralf Milke, Head of Electric Systems Development, Volkswagen AG, Wolfsburg

12:30 Electric Charge Lid – System components for future charge lid systems
- Generation of a charging experience through innovative components
- Simplification of the onboard charger through autonomous control unit
- Innovative lighting components for charging status display and other information

Thomas Valeiras Fernandes, Mechanical Design Actuation and Dr. Andrej Wagner, Innovation Car Body Lightning, HELLA GmbH & Co. KGaA, Lippstadt

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Ralf Milke, Head of Electric Systems Development, Volkswagen AG, Wolfsburg

13:00 Evaluation of a driver’s compatibility with electric, plug-in hybrid, and hybrid vehicles based on mobility patterns analytics
- Range anxiety, longer charging time, lack of charging infrastructure, and relatively high acquisition costs as a barrier to transition to BEV or PHEV
- Driving behavior and mobility patterns to evaluate suitability
- Trip augmentation and profiling models to optimize fleet compositions and reduce CO₂ emissions

Dr.-Ing. German Castignani, CEO & Co-Founder, Board of Directors, Co-Authors: Sasan Jafarnejad, Ph. D., François Chandelle, all of Motion-S S.A., Mondorf-les-Bains, Luxembourg
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<td>Removing blind spots: Infrastructure-assisted collective perception</td>
<td></td>
<td>Florian Schiegg, Research engineer, Corporate Research – Digital Mobile Communication and V2X Systems, Co-Authors: Dr. Frank Hofmann, Dr. Hugues Tchouankem, Dr. Ignacio Litasser, all of Robert Bosch GmbH, Hildesheim</td>
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<td>15:00</td>
<td>HERE HD Live Map – More than a sensor for Automated Driving</td>
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<td>Dipl.-Kfm. Carsten Hurasky, Vice President Industry Solutions, HERE Technologies, Schwalbach</td>
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<td>15:30</td>
<td>Transformation of the Software Integration Process – From Classic Software Integration to Co-Integration</td>
<td></td>
<td>Dipl.-Ing. Till Fuchs, Doctoral student, Co-Authors: Dr.-Ing. Oliver Manicke, Dipl.-Wirt.-Ing. (FH) Matthias Zirser, all of Dr.-Ing. h. c. F. Porsche AG, Weissach, Prof. Dr.-Ing. Bernard Bäker, Technical University Dresden</td>
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<td>Automated digital twin: An approach for isolating and virtual validating of software updates in end-to-end architectures based on customer vehicles</td>
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<td>Dipl.-Ing. Stefan Teuchert, Senior Vice President, Head of Electric/Electronic Systems (EE), MAN Truck &amp; Bus SE, Munich</td>
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<td>Rethinking Testing And Validation In An Environment Of Increased Connectivity</td>
<td></td>
<td>Zohar Fox, CEO &amp; Co-founder, Co-Author: Roger Ordman, both of Aurora Labs, Tel Aviv, Israel</td>
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<td>16:00</td>
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16:45 The Evolution of Automation in Parking: Assisted, Automated, Autonomous
- Parking has a high potential for Automation
- Supervised vs. unsupervised
- Sensor concepts and scalable architectures
- Fully "Automated Valet Parking" following different standards
- Insights about products and research activities
  Dr. Andree Hohm, Head of Autonomous Driving Program, Continental, Frankfurt am Main

17:15 Trajectory tracking using Neural Network for autonomous driving systems
- Vehicle path planning and tracking for autonomous driving decision making
- Neural network used to develop adaptive control system
- Model predictive control including linear and non-linear dynamics of vehicles to combat model mismatches
  Dr. Lee Gonzales Fuentes, ADAS Application Engineer, Automotive Microcontroller, Infineon Technologies AG, Neubiberg, Co-Authors: Manoj Harinar, Marco Cassol, both of Infineon Technologies AG, Munich

17:45 Real Time Physics Based Radar Simulation – An Enabler for Machine Learning in the Context of Autonomous Driving
- Real time physics-based radar simulation
- Machine learning in electromagnetic applications for autonomous driving
- Automatic generation and labeling of radar data sets for machine learning applications
- Tool-chain integration using the Open Simulation Interface (OSI)
  Dr. Kmeid Saad, Senior Principal Application Engineer, Pre-Sales Support, Ansys Germany GmbH, Otterfingen, Germany, Co-Authors: Arien Sligar, Ansys Inc, Beverton, OR, USA, Jeffrey Decker, Ansys Inc, Champaign, IL, USA

16:45 Next paradigm change in the car: Abandon proprietary solutions – embrace open standards
- VIRTIO is an open standard for device virtualization, that
- Moves guest OSs among different hypervisors
- Enables to break free from vendor lock-in
- Enables to re-use software platforms
- Enables to start the concept of a systems from the software perspective. The decision for hardware use follows after having designed the software architecture
  Isaac Trefz, Product Manager of COQOS Hypervisor SDK, OpenSynergy GmbH, Berlin

17:15 AUTOSAR Vehicle Operating System (AVOS): The Safe and Secure framework for Automotive SoC Architectures
- Current development status of both AUTOSAR platforms Classic (CP) as well as Adaptive Platform (AP)
- Discussion on proprietary OS solutions
- Potential answers by AUTOSAR AVOS
- Future Challenges for AUTOSAR
  Dr.-Ing. Günter Reichart, AUTOSAR Spokesperson, Aschheim, Co-Author: Rinal Asmus, AUTOSAR, BMW Group, Munich

17:45 The case for an open cross-domain and integrating OS and middleware specification and development approach
- Current approaches to architecture and OS design in the auto industry
- Multi-faceted, cross-domain, transparent and open approach as key for a unique competitive industry edge
- Participation in joint initiative “Automotive Software Interfaces & Middleware Initiative”
  Prof. Dr.-Ing. habil. Alois Knoll, Full Professor, Chair of Robotics, Artificial Intelligence and Real-Time Systems, Technical University of Munich, Co-Author: Dipl.-Ing. Gereon Hinz, STTech GmbH, Munich

16:45 Perceptive Advanced Car-driver Drowsiness Monitoring Neuro-Embedded System
- Physiological Assessment of the car driver through embedded car bio-sensing platform
- Photoplethysmography-driven car driver drowsiness monitoring system
- Embedded system with Photoplethysmography and Motion Magnification Systems
  Dr. Eng. Francesco Rundo, Ph. D., Senior Technical Staff Engineer, ADG Central R&D Division, STMmicroelectronics, Catania, Italy

17:15 Active Acoustics Innovations Supported by Tuning & Prediction Tools
- Use of Active Acoustics to enhance user experience and meet regulations
- Support all megatrends from electric to autonomous, connected and sharing driven by Active Acoustics Innovations
- Creating Personal Acoustic Zones using the Personal Sound Bubble TM
- CAD tool to support and reduce integration time of Active Acoustics Solutions
  Dr. Ziv Hermon, Chief Business Officer, Co-Author: Amir Slapak, Silentium, Ness-Ziona, Israel

17:45 Digital light for digital life
- Light based Car 2X Communication
- Light innovations for autonomous cars
- Driver-centric safety supported by light
- New car architecture supporting highly functional digital light
  Dr. rer. Nat. Michael Kruppua, Head of Light Innovations and Functions Development, AUDI AG, Ingolstadt

16:45 Power Electronics: High stake for the competitiveness of BEV
- New systems optimized for wide band gap components SiC and GaN
- Towards a new standard for the power modules
- Modular systems in order to address all the applications from mild HEV till BEV through HEV and PHEV
  Jean-Philippe Mercier, Expert Leader, Groupe Renault, Paris, France

17:15 How to solve the tradeoff between vehicle dynamics, traveling time and CO₂-emissions. The CO₂-Life Cycle Assessment for the Porsche Taycan
- Analysis of the mayor CO₂-contributions during the production, the operation and the recycling of the battery vehicle
- The presentation describes how the CO₂-emissions of BEV’s can be reduced
  Dipl.-Ing. Otmar Bitsche, EEE | Electrical/electronic engineering embology, Porsche AG, Weissach

17:45 Long distance e-mobility in the trade-off between battery capacity & charging power – Battery immersion cooling as enabler technology?
- Long distance e-mobility use case analysis
- High Power Charging (HPC) for short break times
- Battery Systems with high cell load (> high c-rates)
- Battery Thermal Management – Immersion Cooling
  Dennis Mehlig, M. Sc., Market & Technology Monitoring, Corporate & Sales Planning, Co-Authors: Joachim Treier, Andre Loges, Markus Muller, all of MAHLE International GmbH, Stuttgart
**18:15 The beauty of synthetical data for image processing AI tasks in automotive**
- Advantages due to flexibility of used camera (lens, imager) which can be adapted to any specific needs
- Datasets are well balanced and can be enhanced with additional corner cases on demand without losing it
- Automatically generated labels which are 100% precise and correct

**Dr. Axel Panning**, Area Sales Director Central Europe, Remote Sensing Solutions, Co-Authors: Alexander Jubner, Joseph Shain, all of Neonode SB, Stockholm, Sweden

**Paving the way for the “Software-defined vehicle”**
- Challenge of combining software lifecycle and automotive quality
- Software thinking: architecture, development methods, culture, and business models
- Building blocks for the software-defined vehicle: hardware, OS/middleware, cloud and toolchain
- Continental’s approach for the software-defined vehicle

**Dipl.-Inf. Martin Schleicher**, Head of Software Strategy, he[ a]t Architecture & Software, Continental Teves AG & Co. OHG, Frankfurt am Main

**SeatCentric Experiences for Tomorrow’s Vehicle Cabins**
- Whole-vehicle computing becoming the norm vs. past/current state of a multitude of purpose-specific processors
- New expectations from end users about in-vehicle experience and their extensibility over the lifetime vehicles
- SeatCentric or seat-based listening experiences being developed for the next generation of automobiles

**Peter Kosak**, Vice President, Automotive Systems, Bose Corporation Automotive Systems Division, Framingham, MA, USA

**18:45 End of the 1st Congress Day**

**19:00 Night of Electronics**
All congress participants are cordially invited to join our ELIV evening event at the end of the first congress day. Use this great networking opportunity to finally meet your peers again and make new contacts in a comfortable and stimulating atmosphere. We prepare delicious food, drinks, and entertainment for you. Do not miss out this year’s evening keynote by world’s leading expert on social network analysis John W. Kelly. In addition, we offer live music as well as calm lounge areas for in-depth conversations with partners, customers, and friends. Be part of this get-together and combine new business opportunities with pleasure. Enjoy a wonderful night at the ELIV in Bonn.

We are looking forward to meeting you at the Night of Electronics!

Note: We are continuously monitoring the situation during the Corona Pandemic and will consider appropriate concepts for the evening event.

**19:30 Mapping Social Networks – A Blueprint for Automotive Innovation**
Evening keynote by world’s leading expert on social network analysis **John W. Kelly**, Founder and CEO of Graphika, USA
### Thursday, October 21, 2021

#### 08:30 End-to-End Architecture and Methods for Chassis Health Management
- Value Drivers
- Digital Twin
- On-board/Off-board partitioning

Dipl.-Ing. Joe Klesing, Product Line Executive, PL, Co-Author: Peter Schmitt, both of Nexteer Automotive Corporation, Auburn Hills, MI, USA

#### 09:00 A new perspective for manufacturers: Cloud-based utilization of operational fleet data
- Interaction and information flow between fleets’ stakeholders
- Integration of real-world operational fleet data into the manufacturer’s processes
- Use case of Battery Electric Vehicles fleets

Friedrich von Bülow, M. Sc., Ph. D. Student Data Science, Co-Authors: Felix Heinrich, M. Sc., both of Volkswagen AG, Wolfsburg, Prof. Dr.-Ing. Tobias Meisen, Bergische Universität Wuppertal

#### 09:30 Graph-based Optimization of Vehicle Diagnostics using Machine Learning Methods
- Revealing causal relationships of fault causes and fault symptoms
- Processing of different fault information and fault propagation
- Automated fault classification via training on vehicle data

Melissa Gresser, M. Sc., Ph. D. Candidate, Co-Authors: Dipl.-Ing. Michael Mende, both of BMW Group, Munich, Prof. Dr.-Ing. Bernard Bäker, TU Dresden

#### 09:30 CAN XL: The third CAN protocol generation
- Data link layer with 2048-byte data field
- CAN XL protocol with layer-management information
- Data protection with cascaded CRC sequences
- Physical transmission with up to 10 Mbit/s and more

Holger Zeltwanger, Managing Director, CAN in Automotive e. V., Nuremberg

#### 09:30 How to improve the efficiency, peak power density and current density in an automotive SiC drive train inverter – Sensitivity analysis of design parameters
- Effect of Rds, on improvement on different losses
- Benefits of a better cooling
- Which parameters improve the WLTP-efficiency?
- Which parameters improve the peak-current?

Dr.-Ing. Stefan Hain, Head of core development semiconductors, ZF Friedrichshafen AG, Bayreuth

#### 10:00 Flashlight on High Performance Computing – Implementation experiences: Architecture, System Integration & Project Management
Werner Koeßler, Head of VNI Key Projects within Vehicle Networking and Information Business Area, Continental, Continental Automotive, Regensburg

#### 10:15 Flashlight on OS
Maria Anhalt, CEO, Elektrobit Automotive GmbH, Erlangen

#### 10:30 Coffee break, Exhibition and Start-up Area visit

### Key Sessions

#### China-specific requirements on E/E-technology in automotive industry
- Customer focus change in the future towards software driven products
- Market specific requirements in China towards data handling of German OEMs

Marcel Achnitz, M. Sc., Business Manager of Autonomous Mobility and Big data China, Co-Author: Marc-Fabio Wojis, M. Sc., both of P3 Group GmbH, Shanghai, China

#### A Safety-Certified Vehicle OS to Enable Software-Defined Vehicles
- Vehicle operating system enabling software-defined vehicles
- End-to-end operating system for mobility, smart machines and IoT
- End-to-end operating system addressing all mobility megatrends!
- Functional safety certification to ISO 26262
- Software Development Kit based on ROS-APIs

Dr. Jan Becker, CEO, Apex.AI, Inc., Palo Alto, CA, USA

#### State of Health and State of Charge Estimation method – A Machine Learning based hybrid approach
- “Hybrid Approach” an intelligent combination of Battery physics and Artificial intelligence
- Neural Network Architecture
- An implementation example in a Mild Hybrid BMS using PowerPC controller

Mahesh Ghivari, Senior Director and Debango Chakraborty, Senior Designer, RED, both of KPIT Technologies GmbH, Munich

#### Towards lead-acid free 12V power supply for electrified vehicles and highly automated driving functions
- 12V lithium-ion batteries as the new standard
- Electrification of the powerttrain will influence the design of the future 12V board net supply
- Redundant 12V supply for highly automated driving

Dipl.-Inf. André Hohenhövel, LV-BMS Product Manager, Co-Authors: Dr. Kay Klobedanz, Dr. Björn Kleinsteiber, all of HELLA GmbH & Co. KGaA, Lippsstadt

#### New E/E architectures and how TC4xx enables it
- Optimizing the in-vehicle network by a zonal approach
- Improve platform flexibility with new E/E architecture
- Automotive Security
- Zonal architecture in automotive E/E architecture

Dr. Karel Heurtefeux, Principal system architect, Co-Authors: Manoj Kumar, Marco Cassol, all of Infineon Technologies AG, Neubiberg

#### Safety Architectures for Automotive Cross Domain Servers – Challenges and Potentials
- Next generation vehicle E/E-architectures
- Safety aspects of future cross domain servers
- “Diversity and Redundancy” – basic safety principles applied in automotive servers
- Mixed-criticality – methods for handling in high performance controller


#### Towards lead-acid free 12V power supply for electrified vehicles and highly automated driving functions
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- Redundant 12V supply for highly automated driving

Dipl.-Inf. André Hohenhövel, LV-BMS Product Manager, Co-Authors: Dr. Kay Klobedanz, Dr. Björn Kleinsteiber, all of HELLA GmbH & Co. KGaA, Lippsstadt

#### A Battery Digital Twin framework for Predictive Maintenance and State of Health Estimation of Electric Vehicles
- Distributed cloud storage-based framework of battery digital twins
- Intelligent Predictive Maintenance
- Learning based State of health estimation

Krishna Priya Ganesh, Specialist-Transportation Business Unit, Co-Authors: Kiran Thomas, Dr. Anjana P Das, all of Tata Elxsi Ltd., India
11:15  AI-based Signal Integrity Monitoring for Integrated Vehicle Health Management (IVHM)
- Next generation VHM using deep learning at the edge
- Early detection of malfunctions and performance degradation
- Root cause insights to streamline maintenance
Hilük Stein, CTO and Co-Founder, SafeRide Technologies, Tel Aviv, Israel

11:45  Make AI Testing Meaningful: From Understanding to Mastering of AI Testing
- Testing of AI based systems needs an extension of existing best practices
- Testing AI includes testing what has not been learned
- We propose the Deep Regression Test scheme to make AI testing effective and meaningful
Hilük Stein, CTO and Co-Founder, SafeRide Technologies, Tel Aviv, Israel

12:15  Machine learning approach towards remote diagnostics and repair of electric vehicle charging processes
- (How) can electric vehicles learn to deal with faulty charging behaviour?
- Digital twins of electric vehicles and charging infrastructure for backend simulation of interaction
- Machine learning for automated parameterisation during function tests
Dipl.-Ing. Kevin Renatus, Research Assistant, Chair of Vehicle Mechatronics, Dresden Institute of Automobile Engineering, Co-Authors: Prof. Dr.-Ing. Bernhard Bäker, both of Dresden University of Technology, Dr.-Ing. Oliver Manicke, Dr.-Ing. h.c. F. Porsche AG, Weissach

Future collaboration ecosystem for automotive microelectronic innovation processes
- Model-based collaboration across the future automotive value networks
- Knowledge-based innovation roadmapping for future E/E
- Enabling comprehensive innovation roadmapping with Roadmap-Lifecycle-Management
Dr.-Ing. Christoph Heer, Product management Asia, IoT Group, Autonomous Transportation & Infrastructure, Intel Deutschland GmbH, Neubiberg, Co-Authors: Dipl.-Ing. Damun Mollahassani, Sven Forte, M. Sc., both of University Kaiserslautern

Software Security Strategies for Embedded Software
- Business and technical challenges of embedded systems
- Large and complex software supply chains increasing the complexity of software supply chain assurance
- Addressing major engineering challenges by binary scanning
Adam Boulton, CTO, BlackBerry Technology Solutions and Ian Todd, IoT Practice Lead, Security Services, both of BlackBerry, London, United Kingdom

Register at: www.eliv-congress.com
12:45  Safe-AI – A new approach to make Autonomous Driving safe
• Mathematical provable uncertainty determination within the AI
• Automatic edge case detection
• Enhancement of the safety case for ISO 26262
• Real-time monitoring of the autonomous driving stack
Dr. Ralph Meyfarth, Managing Director, Co-Authors: Sven Fülster, Sebastian Hempel, all of Deep Safety GmbH, c/o The Drivery GmbH, Berlin

Needs and challenges of the transformation towards software defined vehicle in China
• Fast adaption to market needs in China
• Time savings
• Reusing existing elements
• Software platform as a key to market
Dipl.-Ing. Francis Man, Vice President Global Operational Excellence, Elektrobit Automotive GmbH, Erlangen

Adaptive Driving Beam – The next mandatory Safety System?
• LEDs as headlamp light source enable low-cost glare free main beams
• Multi-Purpose Cameras are already standard equipment
• The safety benefit during night driving is extremely high
Dr.-Ing. Wolfgang Huhn, Senior Advisor, Driving Vision News, Neuilly-sur-Seine, France

Implementing adequate security for UN R 155 with AUTOSAR
• Impact of UN R 155 on E/E architectures and product roadmaps
• View and status of the automotive industry based on a global survey
• Systematic and traceable approach to identify and meet the UN R 155 requirements
• AUTOSAR’s security building blocks as core of implementations in the context of UN R 155 Annex 5
Dr. Moritz Minzlaff, Senior Manager Security Consulting, Professional Security Services, Co-Authors: Marcel Rücker, Dr. Michael Schneider, all of ESCRYPT GmbH, Bochum/Stuttgart/Berlin

13:15 Lunch break, Exhibition and Start-up Area visit

14:30 Flashlight on E/E Architecture
Vision on Future E/E Architectures framed by Service Oriented Architecture to maximize the Potential of the Software
Cammal Thierry, Alliance Global Vice President Software Factory & Director General Renault Software Labs, Groupe Renault, Tournefeuille, France

14:45 Flashlight on Software
How Software Solutions and High Performance Controllers enable Vehicle Intelligence
Dr. Dirk Walliser, Senior Vice President Corporate Research & Development, ZF Friedrichshafen AG, Friedrichshafen

15:00 Flashlight on 5G
Stefan Marxreiter, Vice President, Qualcomm CDMA Technologies GmbH, Munich

15:15 Flashlight on AI
Self-learning AI for Autonomous Vehicles
Igal Raichelgauz, CEO, AutoBrains, Tel Aviv, Israel

15:30 Conclusion and Discussion
By Members of the Program Committee

16:00 Award Ceremony “Auto Electronic Excellence Award 2021” and best Start-up
16:15 End of the Congress

Simply download the Event-App and register!
The App will be available for download at the Apple App Store and the Google Play Store for all participants as of October.
Areas of the app:
• Digital congress program: create your own agenda at once
• Networking: Use the “Offer” and “Search” function to find and contact other participants
• General event information
• Service information
Start-up Area

Again this year ELIV offers young companies the opportunity of presenting their latest developments and products in automotive electronics at the start-up area. Start-ups are invited to seize their opportunity and interact directly with an exclusive, international circle of participants, consisting of decision-makers and specialists from vehicle manufacturers, suppliers and service providers as well as representatives from universities. In addition to a full-service package with a 4 sqm booth space at the start-up area, a presentation slot on the start-up stage is also included.

Interested in taking part?
To apply request the registration documents for the start-up area!
We are happy to provide assistance and further information:

Corinna Ahlgrimm
Project Team Exhibitions & Sponsoring
Phone: +49 211 6214-8643
Email: ahlgrimm@vdi.de

Program Start-ups

Visit our start-up stage and learn about the latest innovations by young companies in the field of automotive electronics. Our start-up session takes place on both congress days.

Listen to the following presentations, among others:

“Speeding-up data-driven applications on the new Infineon AURIX™ TC4xx with ease” by Oliver Oey, Technical Product Manager; emmtrix Technologies GmbH
“Next generation vehicle positioning solution” by Dr. Nicolas Thorstensen, Founder and Managing Director; IVISO GmbH
“Training Aid - The fastest way reduce your training times by 50 % with AR” by Kerim Ispir, COO & Co-Founder; RE’FLEKT GmbH
“Automated MIL/SIL/HIL Testing in the Cloud”
Dr.-Ing. Florian Göbe, Head of Research & Development; Mindmotiv GmbH
“Take Control of the Battery Lifecycle – with Predictive Battery Analytics Software” by Lucas Reinfeld, Battery Solutions Specialist; TWAICE
“Robust LiDAR sensors for robust object detection”
Kris de Meester, VP Sales & Business Development, Xenomatix

You will find the revised program on the homepage and in the EventApp from August on.

Start-up Award
Vote for the best start-up at the ELIV!
“The Best Start-Up” award ceremony will take place at the end of the second congress day following the “Auto Electronic Excellence Award 2021”.

Start-ups already registered:

aSR advanced Simulated Reality GmbH
emmtrix Technologies GmbH
IVISO GmbH
Mindmotiv GmbH
Molabo GmbH
RealThingks Automotive Engineering GmbH
RE’FLEKT GmbH
WideSense
Xenomatix N. V.
Gold Sponsor

Brose is the world's fourth-largest family-owned automotive supplier. The company develops and produces mechatronic systems for vehicle doors and seats as well as electric motors, drives and electronics, among others for steering, brakes, transmissions and engine cooling. About 25,000 employees generated turnover of 5.1 billion euros in 2020.

Contact:
Brose Fahrzeugteile SE & Co. Kommanditgesellschaft, Bamberg
Berliner Ring 1 | 96052 Bamberg
Phone: +49 951 7474 4744
Email: christoph.maag@brose.com
Website: www.brose.com

Silver Sponsors

Brose

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Anzinger Str. 5, 81671 München, Germany
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Website: www.mathworks.de/automotive

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Contact:
KPIT Technologies GmbH | Frankfurter Ring 105b | 80807 Munich
Phone: +49 89 3229966-0
Email: info@kpit.com
Website: www.kpit.com
Exhibition & Sponsorship

We'll connect you – and your business.

Would you like to meet the key players at this congress and present your products and services to a selected circle of industry professionals? Then, participate in the event as an exhibitor or sponsor. If you are interested, get in touch with:

Contact: Martina Slominski, Project Consultant Exhibition & Sponsorship
Phone: +49 211 6214-385
Email: slominski@vdi.de

Register at: www.eliv-congress.com

Networks lounges

Participants have the opportunity of booking meeting rooms at the World Conference Center Bonn for about an hour. Additionally to gaining new insights and findings from the lectures, this is an excellent opportunity for sharing your thoughts with your business partners in a quiet room behind closed doors.

If you are interested, please contact:

Special exhibitions

The topic of highly automated driving is on everyone’s lips. Make the most of your visit to ELIV and take a look at the technology exhibition on this hot topic. OEMs and suppliers will show you important background conditions on the basis of vehicles, measurement systems, etc:

- High-precision maps
- Sensor technology (radar, camera, lidar, ...) and sensor fusion (IDC)
- Actuator technology (steering, brake, ESP, ...)
- Vehicle integration
- Human-machine interface and system understanding

In addition, there will be a special exhibition on the forecourt.
- Subject to change -

List of Exhibitors (July, 2021)

A2Mac1 Automotive Benchmarking
ANSYS Germany GmbH
Apex.AI GmbH
Ariou Cyber Security
aSR advanced Simulated Reality GmbH
AUTOSAR GbR
Bertrandt AG
Brose Fahrzeugteile SE & Co. KG, Bamberg
Brusa Elektronik (München) GmbH
Daimler AG
EDAG Engineering GmbH
Electronic Specifier
emtrix Technologies GmbH
ETAS GmbH
FEV Europe GmbH
Göpel electronic GmbH
Green Hills Software GmbH
Hailo Technologies LTD.
ICT Netherlands B.V.
Indie Semiconductor
Inova Semiconductors GmbH
IVISO GmbH
jambit GmbH
KIT Karlsruher Institut für Technologie
Knowledge Development for POF S.L
KPII Technologies GmbH
Kugler Maag CIE GmbH
MAGNA Steyr Fahrzeugtechnik AG & Co. KG
MAN Truck & Bus SE
Method Park Holding AG
Minimotiv GmbH
Molabo GmbH
MURATA Electronics Europe B.V.
NNG LLC
Prisma Sales Service GmbH
Prozesswerk GmbH
Qualcomm Europe Inc.
RealThingks Automotive Engineering GmbH
RE’FLEKT GmbH
SafeRide Technologies
Silentium
Silicon Mobility
Silver Atena GmbH
STAR COOPERATION
STMicroweletech N.V.
SYSTEMITE AB
TASKING Germany GmbH
TDK – Micronas GmbH
TDK Europe GmbH
The MathWorks GmbH
TraceTronic GmbH
TTTech Auto AG
um laut systems GmbH
Valens
Vector Informatik GmbH
VI GEM GmbH
WideSense
Xenomatix N. V.
Scientific Support

The VDI Society for Vehicle and Transport Technologies, VDI-FVT in short, has around 28,000 members that are affiliated to at least one of its 8 technical sections. This makes it the second biggest of the VDI’s dedicated societies. VDI-FVT is the community for engineers working in the vehicle industry, as well as for engineers dealing with transport and traffic outside manufacturing industries. Traditionally, a majority of members work in automotive. VDI-FVT is the German affiliate of the world federation of automotive engineers’ societies, FISITA, and it is the intellectual sponsor of many big conferences on automotive technology and thus fosters exchange and knowledge transfer both nationally and internationally. It also sponsors Formula Student Germany, awarding VDI membership to all German participants, and promotes other student competitions for transport engineers. VDI-FVT has recently reconstituted technical sections for rail and marine technologies, as well as space and aircraft. It is putting a strong focus on transport and traffic in general and aims to mediate between technology and society.

More information: www.vdi.de/fvt

General Information

Program Committee – The brains behind the congress

ELIV offers a host of networking opportunities, a large exhibition and above all a very topical program of presentations for participants to discover the very latest developments, current new trends and routes to future solutions. Putting together this world-class agenda requires decisions to be taken long before the call for papers is published. This job is the responsibility of ELIV’s program committee.

High-level representatives of OEMs and leading suppliers accurately identify the latest megatrends without ignoring the enablers or the classic topics.

Kai-Uwe Balczewski, Vice President Software & BMW Car IT GmbH, BMW Group, Munich, Germany

Rémi Bastien, Vice President Automotive Prospective, Groupe Renault, Guyancourt, France

Rob Csongor, Former Vice President Autonomous Machines, NVIDIA, Pleasanton, CA, USA

Dipl.-Ing. Harald Deiss, Vice President Electronic Systems, ZF Friedrichshafen AG, Auerbach, Germany

Dr.-Ing. Axel Heinrich, Head of Electrical/Electronic Development, Volkswagen AG, Wolfsburg, Germany

Dr. Thomas Hollmann, Electrics/Electronic Development, Volkswagen AG, Wolfsburg, Germany

Dipl.-Ing. Christof Kellerwessel, Director, Ford MEB Office, Ford-Werke GmbH, Cologne, Germany

Joachim Langenwalter, Senior Vice President Software & Hardware, Stellantis NV, Paris, France

Ralf Lenninger, Vehicle Networking and Information, Strategy and Future Solutions, Continental Automotive GmbH, Regensburg, Germany

Dipl.-Ing. Uwe Michael, mps, Frankfurt am Main, Germany

Dr. Burkhard Milke, Director Electric & Electronic Systems, Opel Automobile GmbH, Rüsselsheim, Germany

Dipl.-Ing. Bernd Münsterweg, Member of the Executive Board Business Division Electronics, HELLA GmbH & Co. KGaA, Lippstadt, Germany

Dr.-Ing. Dieter Rödder, Senior Vice President Advance Engineering Systems 1 – Future Automotive Systems, Robert Bosch GmbH, Stuttgart, Germany

Dr. Riclef Schmidt-Clausen, Senior Vice President Intelligent Cockpit & Body, CARIAD SE, Ingolstadt, Germany

Dipl.-Ing. Stefan Teuchert, Senior Vice President, Head of Electric/Electronic Systems (EE), MAN Truck & Bus SE, Munich, Germany

Dr. Rolf Zöller, Director Smart Connected Vehicle Porsche AG and Managing Director Porsche Digital, Weissach (Chair)

Information on Coronavirus Safety

The health and safety of our customers and employees is our top priority. We have therefore developed a safety concept to ensure protection against the risk of coronavirus. We will closely observe official national and regional regulations and will, of course, comply with current coronavirus protection measures. This may in some circumstances result in some restrictions for participants.

More information: www.vdi.de/fvt
I will participate as follows for the price per person plus VAT:

<table>
<thead>
<tr>
<th>Event Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELIV 2021</td>
<td>EUR 1,740.-</td>
</tr>
<tr>
<td>October 20 – 21, 2021 Bonn, Germany (01TA101021)</td>
<td></td>
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<tr>
<td>ELIV 2021 – Live-Stream</td>
<td>EUR 590.-</td>
</tr>
<tr>
<td>October 20 – 21, 2021 Online access to video recorded</td>
<td></td>
</tr>
<tr>
<td>lectures*1 until December 19, 2021 (01ST101021)</td>
<td></td>
</tr>
</tbody>
</table>

*1 subject to the consent of the authors recording the lecture

Additionally, to the onsite participation, I would like to get access to the video recorded lectures*1 until December 19, 2021 for an extra charge of EUR 150.-.

I'm interested in Sponsoring and/or Exhibition Participation Fee VDI-Members: Save 50 € for each Workshop Day. VDI membership no.*:

*1 For the price category 2, please state your VDI membership number

Participants with an invoice address outside of Austria, Germany and Switzerland are kindly requested to pay by credit card. Please don’t send your credit card details via email, fax or post. Please book your ticket at www.vdi-wissensforum.de. Transferring your credit card details via our website ensures your details are encrypted and security of your data is guaranteed.

Any more questions? Contact us!
Phone: +49 211 6214-201
Fax: +49 211 6214-154
Email: wissensforum@vdi.de
www.eliv-congress.de

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