

VDI

4th International VDI Conference

# Automotive Sensor Systems

Sensor Technologies on the Way to Autonomous Driving

July 20-21, 2022, Munich, Germany

- Innovation & Trends in ADAS Sensing
- Impact of AI on Vehicle Perception Technology
- Legal & Environmental Challenges
- Integration & Installation
- Testing, Simulation & Validation of Sensor Functions and ADAS Systems
- Functional Safety & Framework

+ **International Best Practices**

+ **Start-Up Session**

Meet international Experts from:



An event organized by VDI Wissensforum GmbH  
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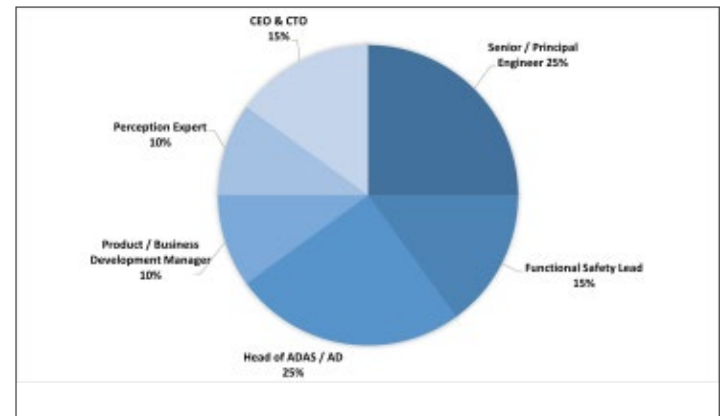


## About us

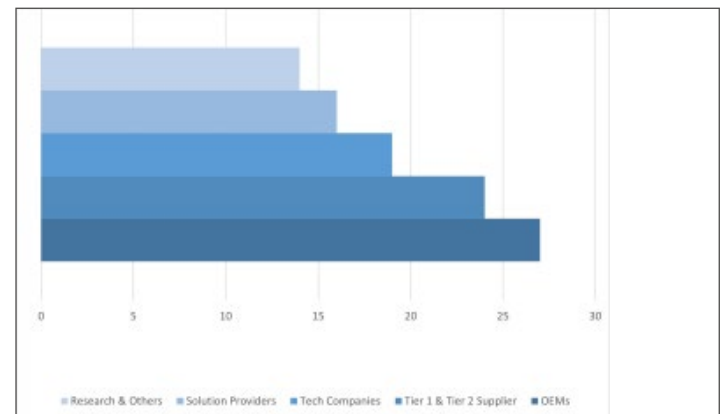
VDI

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.

## Expected Participants according to Functions



## Expected Participants according to Industries



## Reasons to attend

**Meet** experts from the ADAS sensors, functional safety and automated driving sector

**Discover** the latest developments in ADAS sensing and learn from key industry players

**Gain insights** about the role of sensors for functional safety

**Learn how** AI uses sensor data to make informed decisions

**Join** the evening reception to expand your network with speakers and participants

09:00 Registration, Networking & Welcome Coffee

10:00 Chair's Welcome and Opening Address

Dipl.-Ing. Holger Meinel, Independent Automotive Radar Expert, Germany

### I. Innovation & Trends

10:15 Legal & Regulatory Activities related to ADAS/ADS & Connectivity

- The United Nations sustainable development goal & the role of the UN with regards to vehicle performance and regulation
- The framework for ADS safety
- ADS example: ALKS – the first Level 3 regulation & ADAS example: AEBS
- Connected vehicles and cyber security
- Roadmap Display: What to expect from the regulatory side the next 2-3 years

Francois Guchiard, Mechanical Engineer, United Nations, Switzerland

Opening  
Keynote

11:00 Automotive Radar: Quo Vadis in Higher Automated Private Owned Cars

- Higher degrees of automated driving demand massive changes in development paradigms - Data driven development and sensor interface as one key word
- L3 and higher automation level require massive increase in sensor performance
- Private owned cars need technical solution that are affordable
- Sensor set up have to be reconsidered

Dr. Jürgen Dickmann, Head of Radar & Perception, Mercedes Benz, Germany

OEM  
Keynote

11:30 Impact of evolving E/E Architecture on Automotive Sensors and Electronics

- Changing vehicle electronic / electrical (E/E) architecture & impact on the electronics content in vehicles
- Impact of the current trend to domain controllers on ECUs
- Emerging architecture based for software-defined vehicles that uses combinations of domain controllers and zone control units
- Implications for ECU content, the suppliers and wire harness
- Trend to a fully centralized intelligence (high performance computer)

Dr. Richard Dixon, Senior Principal Analyst Sensors & Electronics, S&P Global Mobility, Germany

12:00 Inertial Sensors from Bosch - Making your Drive Safe and Comfortable

- Inertial sensors for safety and navigation, from level 2+ to autonomous vehicles
- Role of inertial sensors in ADAS systems
- Performance of inertial sensors in positioning applications

Dr. Peter Spoden, Product Manager of Inertial Sensors, Robert Bosch GmbH, Germany

12:30  Lunch

### II. Integration & Installation

14:00 Smart Headlight - A Novel Approach to Multi-Sensor Integrated Adaptive Headlights

- Automotive Radar & Automotive LiDAR
- Segmented Light Source
- Apertureless Micro-Optics
- Multispectral Combiner

Dr. Thomas Dallmann, Leader Research Group Aachen, Fraunhofer FHR, Germany

14:30 Using Lidar Data and AI based Object Detection for referencing ADAS Solutions

- Advantages of Lidar data for AI based object detection
- Setup of referencing projects and importance of customization
- Bringing the reference sensor into serial cars

Filip Geuens, CEO & Karsten Bronowski, Business Development Manager, both:- Xenomatix True Solid State Lidar, Belgium & Germany

15:00  Networking & Coffee Break

### III. Impact of AI

15:30 AI-in-Sensor for Automotive Applications

- Insight on the endless sensor opportunities in an expansive market
- Critical factors on the problems with current sensors
- An understanding of innovative AI-in-Sensor technology

David Schie, CEO, AIStorm, USA

16:00 Evolution of AV Systems from ADAS Systems

- Before and after machine learning
- The human brain versus the artificial brain
- The hardware architecture used to deploy the compute in the car

Gilberto Rodriguez, Director of product management, Imagination Technologies, United Kingdom

16:30 Remodeling of Super Wide-Angle Camera Design for improved ADAS and Autonomous Driving Applications

- How super wide-angle camera can be designed to optimized ADAS and Autonomous Driving applications
- How a camera system can be simulated (Distortion, MTF, defocus, SnR, etc.)
- Using automotive as a case study, we will determine acceptable ranges of variations for MTF and defocus to ensure optimized performances on YOLO for 2D object detection

Patrice Roulet, Co-Founder, Immervision, Canada

17:00 End of Conference Day One



Get-together

Relaxed and informal atmosphere for in-depth conversations

08:55 Chair's Welcome

#### IV. Legal & Environmental Challenges

##### 09:00 Autonomous & Connected Driving: Do we need better Laws or more Innovation for Take-off?

- Legal aspects and challenges for highly automated and self-driving cars
- Safety, security, liability
- Digitalization & AI (artificial intelligence)

**Dr. Andreas Eustacchio**, LL.M. (LSE London),  
Hon.Prof., Lawyer, AutomotiveLaw, Austria

Opening  
Keynote

##### 09:45 ADAS / AD Sensor Validation: Reproducible Indoor Testing vs. Real World Outdoor Testing with Ground Truth

- Sensor testing/validation in adverse weather conditions
- Data Driven Development with Ground Truth Reference System
- Automation of Sensor system calibration

**Dr.-Ing. Armin Engstle**, Main Department Manager, AVL Software and Functions GmbH, Germany

#### V. Testing, Simulation & Validation of Sensor Functions and ADAS Systems

##### 10:15 Challenges and Benefits of a LiDAR Target Emulator

- Combining existing sensor hardware with an emulated environment 24/7 testing with specific scenarios reduces efforts for real test drives
- Benefits for HiL testing and end-of-line testing of LiDAR sensors
- Technical implementation of generic and high-resolution LiDAR target emulators is challenging

**Dr. Jennifer Ruskowski**, Director Mobility, Fraunhofer Institute for Microelectronic Circuits and Systems IMS, Germany

10:45 ☕ Networking & Coffee Break

##### 11:15 Testing of Automotive Sensors – Challenges and Solutions along the Value Chain

- Radar, Camera, Lidar, Ultrasound
- Special focus on Radar
- Software- and Hardware-in-the-Loop testing
- Over-the-air testing
- ADAS/AD functions

**Dr. Andreas Himmler**, Senior Product Manager, Autonomous Driving Systems, dSPACE GmbH, Germany

##### 11:45 How can we better Streamline Test and Validation Processes?

- Challenges in how we record and consume automated drive data
- Inefficiencies in the process with incomplete or unknown data
- Learn how we can avoid increasing storage costs
- Discover which data orchestration platforms can help collaboration and data socialization for ADAS testers and algorithm developers

**Bastian Speth**, Senior Business Manager, EB Assist, Automated Driving, USA

12:15 🍴 Lunch

#### Start-Up Session

##### 13:45 Start-Up Presentations

###### Automotive Radars: How Companies are Shaping the Sensor of Tomorrow

- Automotive radar - a versatile sensor for everything
- Radar sensor architecture challenges and approaches
- State-of-the art hardware or hardware-agnostic?
- AI postprocessing as the next big thing

**Ivan Koshurinov**, Founder and CEO, Invisens, Italy

Other Start-Ups to be announced

14:45 ☕ Networking & Coffee Break

#### VI. Functional Safety & Framework

##### 15:15 Principles for Sensors and Perception to Enable Precautionary Driving

- Building safe ADS based on SEooC components
- Supporting DevOps/CI/CD
- The fundamental principles of safe ADS

**Hakan Sivencrona**, Chief Safety Manager, Zenseact, Sweden

##### 15:45 Dependable Chip Design

- Cybersecurity in semiconductor chip design – development flow optimized for safety & security
- Availability – Shift from fail safe to fail operational
- Role of quality in dependable electronics

**Dr. Shailesh More**, Automotive Microcontroller Safety & Security & **Jens Rosenbusch**, Automotive Microcontroller Safety Architect, both: Infineon Technologies, Germany

16:15 Conference Chair's Closing Remarks

16:30 End of Conference

## Exhibition / Sponsoring

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**Sandra Schreiner**  
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Please submit your topic to:  
**Annick Cathrin Pauwels**  
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# Registration

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