Automated Vehicle Technology, Public Policy, and BMW's Level 3 AV System

2:00-2:30pm ET

Speakers: Simon Fuerst and Armin Graeter
Moderator: Paul Lewis
AUTOMATED VEHICLE TECHNOLOGY, PUBLIC POLICY, AND BMW’S LEVEL 3 AV SYSTEM.

Webinar | Eno Center for Transportation | Simon Fürst, Armin Gräter
THE TRANSPORT OF TODAY AND TOMORROW WILL DIFFER CONSIDERABLY.

TODAY
Characterised by human driving behaviour.

OWNED & SHARED
ACCIDENT STATISTICS
STRICT REGULATIONS
TRAFFIC LIGHTS, SIGNS

TOMORROW
Characterised by automated driving behaviour.

OWNED & SHARED & AUTOMATED
AUTOMATIC TRAFFIC REGULATION
QUALITY OF LIFE
‘ZERO’ TARGET VISION

WHEN?
HOW SAFE MUST AN AUTOMATED DRIVING SYSTEM AT SAE LEVEL 3/4 BE?

Based on recommendation of the German Ethics Commission in 06/2017 (BMVI):
Maximizing the evidence of a POSITIVE RISK BALANCE of automated driving solutions compared to the average human driving performance which is different
- between Europe, US and China
- and between road types e.g. highway or urban road
- weather, age of driver

AVOIDANCE OF UNREASONABLE RISK is the second major measure to claim an acceptable level of safety. Its evidence is based on the application of a proactive and reactive driving behavior, avoidance of accidents as much as “practically possible.” These judgements are made on basis of a combination of qualitative and quantitative assessments, and also on an understanding of good engineering practice and existing standards.
THESE PRINCIPLES COMPRISE ALL ASPECTS NECESSARY TO ACHIEVE THE SAFETY GOALS AND REFLECT WORLDWIDE REGULATION APPROACHES.

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FUNCTIONAL SAFETY CONCEPT IS PREDICTIVE AND AGNOSTIC TO HARDWARE AND MAP. IT IS ADAPTABLE TO ANY SOFTWARE-STACK.
Regulatory concepts

UN ECE contracting parties: EU, Japan + many other markets

USA: NHTSA AV Guidelines (self-certification)

China: Oriented on UN ECE, develops various standards

Korea: Oriented on UN ECE, self-certification in addition

All others: Activities not perceptible or seen as relevant

Top BMW standardisation initiatives

ISO Technical Report 4804

Consumer protection

THE WHITE PAPER ‘SAFETY FIRST FOR AUTOMATED DRIVING’ DRIVES GLOBAL HARMONISATION AND CREATES A UNITED FOUNDATION.
REGULATION, STANDARDS AND RESEARCH RUN IN PARALLEL, ITERATIVELY.

**Strategy: Framework**

- BMW Level 3
- BMW Level 2
- BMW Level 1
- BMW Level 0 Basic Functions

**Support Regulatory Framework**

**UNECE Regulation bodies: Automatic Lane Keeping System**

- Level 3 for 60 kph without lane change, Extension to 130 kph including lane change
- 2020/21

**UNECE Regulation bodies VMAD (Validation Methods) and FRAV (Functional Requirements): Regulation for L3 und L4**
- 2023/2024

**EU Commission with Joint Research Center: European faster solution**
- 2020/21

**OPERATIONAL: Approval procedures**

- SOP: System Approval Procedure
- Total Vehicle Approval

**Basis for Product Safety:**

- Safety Guidelines, Whitepaper
- Arguments Multi-Pillar-Approach

**VDA Lead Initiative**

- Pegasus
- SetLevel4to5
- V&V Methods

**ERTRAC, EUCAR, ACEA**

- ARCADE
- L3 Pilot

**Customer Protection / Standards**

- EU NCAP – Safety functions
- US NCAP – Standards
- CN NCAP – Safety functions
- ISO – Standards → TR4804

**ADAC – Comparison Tests**

**SAE – Standards**

**CATARC – Standards and Regulation Drafts**

**Additional Topics**

- Data Handling
- Worldwide voluntary guidelines on secondary tasks while driving / being driven
- Test approvals
- Component approvals (Radar, Lidar)

**Tactic: Support Homologation / Self Certification / Traffic Rules**

**Traffic Rules**

- Ethical Considerations
- Driver Responsibility

**Adopt / Adapt Traffic Rules**

**ERTRAC, EUCAR, ACEA**

- ARCADE
- L3 Pilot

**50 States**

**Regions**

**Cities**

**ACEA?**

**DG Grow / JRC?**

**Many standards planned**

**SOP: System Approval Procedure**

**Total Vehicle Approval**
WHAT’S NEXT?

Consolidation of activities necessary to create global standards defining the state-of-the-art for automated driving systems.

The first publication of ISO TR 4804 “Safety and Cybersecurity for Automated Driving” contributes to the goal of a global standard and will continue to broaden its footing as an open platform.

Elaboration of multiple ISO Standards on various aspects of automated driving systems

Worldwide publication of White Paper Safety First

Kick-off for ISO Technical Report 4804

Planned 1st release of ISO TR 4804

Planned 2nd publication as ISO Technical Specification

2020

2021

2024
Q&A Session
What are your questions?