

Autonomous Driving – Big Testing and Big Data as the Next Challenge

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Co-Abstract:

The initiative “Synchronized Mobility 2023” of the Free State of Saxony is setting the frame for R&D projects in the fields of development, testing and application of automated and connected driving functions in urban areas. Some of the vital players will present their most promising approaches to be applied in the Digital Testbed Dresden.

t.b.d.

David Rabe, Division Manager Navigation, Preh Car Connect GmbH

The fast-paced development towards autonomous driving is demanding a change of the overall in-vehicle system architecture and a stronger cooperation between vehicles and infrastructure elements. Within the scope of the SYNCAR project, PCC is developing an on-board-unit with focus on cooperative vehicle communication based on the 802.11p standard. New emerging challenges for autonomous driving is handled via a deep integration of the communication unit with the navigation unit. PCC is proposing a current state of the developed system with respect to a selected set of use cases.

Hybrid V2X Communication – Modular Communication Concept for Future Road Side Units

Fabian Berger, Board Member/Director, MUGLER AG

Which technology will be used for vehicular communication in the future? Will there be a technology swap in the subsequent years or are hybrid communication solutions the future? We can't reliably answer these questions at the moment. Therefore, the Road Side Units should be modular, to cover all eventualities. If we start with WLAN 802.11p with a follow-up technology swap to 5G, a period with hybrid communication is mandatory to reach all road users. Beyond that hybrid communication can enhance the reliability of connections between the road users and the infrastructure. In this talk we show a concept of a modular Smart Road Side Unit, which could integrate various communication technologies, ensure hybrid communication and provide virtual intelligence for running ITS applications at the edge of the road. Furthermore, we will show how this Smart Road Side Units can support the testing of new algorithms for autonomous driving.

Minimum requirements for automated vehicles through identification and evaluation of critical driving scenarios

Dietmar Bönninger, FSD Fahrzeugsystemdaten GmbH – Zentrale Stelle

Highly automated driving in urban areas is the next logical step after automated vehicles are being allowed on highways. To ensure the correct function of automated vehicles, the self-driving functionality needs to be evaluated during both the homologation process and during the periodical technical inspection. To achieve this we first propose the identification of critical driving scenarios for automated vehicles in urban areas based on past data of field operational tests (FOT), accident data and data derived from data loggers of test fleets. The most critical situations then need to be re-evaluated during FOTs. The result should be minimum requirements for the performance of automated vehicles.

Towards Cooperative Driving Functions in Urban Environments

*Mirko Taubenreuther, Head of Department Longitudinal and Lateral Assistance, IAV GmbH
Ingenieurgesellschaft Auto und Verkehr Chemnitz*

IAV currently participates in multiple projects within the scope of the Saxon initiative “Synchronized Mobility 2023”. One major focus is the development and prototypical realization of cooperative driving functions in urban environments. Cooperative driving functions allow for automated and anticipatory driving while

providing the foundation for automatically resolving more complex traffic situations. More concretely, cooperative driving functions facilitate active collaborations between multiple Highly Automated Driving (HAD) vehicles as well as HAD vehicles and infrastructure services. In 2016, a first real-world use case comprising a cooperative slowing-down process was successfully realized and demonstrated in the Testbed Dresden. Within this talk, we will introduce this use case in more detail. Furthermore, we will give a brief overview of additional urban use cases that are currently under investigation and planned to be demonstrated in the Testbed Dresden in the future.

Test procedure of automated-connected driving functions on public urban testbeds

Rico Auerswald, Fraunhofer Institute for Transportation and Infrastructure Systems IVI

Developing automated and connected technology targeting at a reliable and comfortable user experience of driving functions in urban environments requires an extensive amount of tests on public roads. Therefore, we present the opportunities for test drives on different V2X-corridors on the Digital Testbed Dresden. Furthermore, we give an inside view in the actual development of a new kind of resource management system providing a versatile toolchain to support testing activities as a whole from conceptualizing a test drive to the final realization on public roads.