

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

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Session: Session IV: Communication Concepts

Day of Presentation: Dec. 07, 2017

Time Slot: 09:00 – 10:30

Room: Conference Room 2

#### Abstracts:

##### **9:00-9:30 | 5G-enabled V2X communications for connected and automated driving**

*Dr. Norman Franchi, Senior Research Group Leader, 5G Lab Germany*

5G will be as important to make the vision of connected and autonomous driving become reality as 4G has been important to make phones/tablets smarter and to become as essential as they are today for our daily life. One of the main goals of 5G is to ensure real-time, low-latency and highly reliable communications for safety and cooperative driving. V2X (vehicle-to-everything) comprises several scenarios for short-range direct communications such as vehicle-to-vehicle (V2V), v-to-infrastructure (V2I), v-to-pedestrian (V2P) as well as v-to-network (V2N) for longer-range network-based communications. Several technical approaches are in the pipeline: IEEE 802.11p and 3GPP cellular V2X, and 5G V2X is in preparation. This talk will give an overview of the state of the art regarding available V2X radio access technologies and 5G V2X research results.

##### **9:30-10:00 | Robust vehicle self-localization for safety critical applications**

*Robin Streiter, Managing Director, Naventik GmbH*

Fahrerassistenzsysteme (ADAS) mit zunehmend sicherheitskritischen Assistenzfunktionen und In Vehicle Systeme (IVS) zur Nutzung von HD Karten erfordern zukünftig spezifische Daten aus der Satellitennavigation (GNSS), um eine hochgenaue und robuste Eigenlokalisierung des Fahrzeugs in Echtzeit sicherzustellen. Die Genauigkeit bislang verfügbarer GNSS Receiver sinkt jedoch rapide, sobald Fehlerquellen wie z.B. urbane Bebauung die Signalaufnahme vom Satelliten stören. NAVENTIK bietet mit der PATHFINDER Technologie erstmalig einen GNSS Receiver, der die spezifischen Lokalisierungsdaten für die Verwendung ADAS und IVS erzeugen kann. Durch die komplette Implementierung der bisher hardwarebasierten GNSS Receiver-Technologie in Software unterscheidet sich PATHFINDER deutlich von den Konkurrenzprodukten. Die NAVENTIK PATHFINDER Technologie bietet der Automobilindustrie die Möglichkeit zur Nutzung des vollen Potentials der Satellitennavigation unter massenmarkttauglichen Kosten. Mit der Implementierung von PATHFINDER in ADAS und IVS werden sicherheitskritische Fahrmanöver schneller zur Marktreife gebracht, da eine wesentliche technologische Hürde überwunden werden kann. NAVENTIK ist ein Spin Off der TU Chemnitz zur Vermarktung der PATHFINDER Technologie.

##### **10:00-10:30 | Joint test field for cloud based Smart City activities and c2x use cases in Darmstadt**

*Jürgen Mück, Product Manager & Senior Researcher, Urban Software Institute GmbH, Chemnitz*

The presentation will first introduce cloud based traffic data platform operated for the city Darmstadt, explaining the effort and solutions to deliver prediction data every second in a scalable way. The second part of the presentation will focus on the dilemma of a) operating traffic lights that serve public transport, vehicles and pedestrians in very flexible and unpredictable ways and b) providing signal predictions with a maximum accuracy as required by automotive companies. Finally, some notes are given on the possible benefit from merging c2x and Smart City activities as it is intended and fostered by the European Innovation Partnership - Smart Cities and Communities (EIP-SCC) and their Memorandum of Understanding "Towards Open Urban Platforms for Smart Cities and Communities".