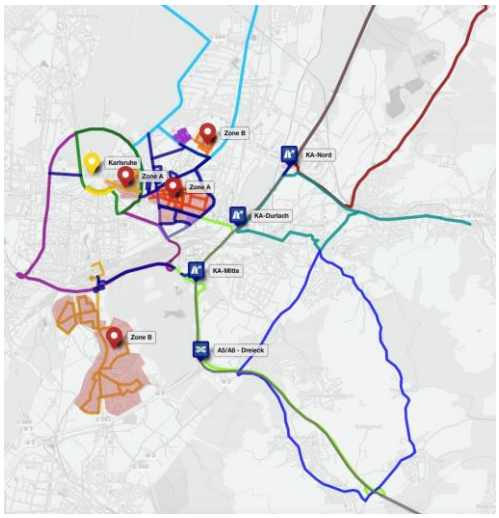
Karlsruhe Wants to Become Pioneer Region for Autonomous Driving

Consortium of Cities and Research Institutes Applies for Establishing "Test Field for Networked and Automatic Driving" / Municipal Council Agrees on Own Funds for Planned 4.6 Million EUR Project



In Karlsruhe and its surroundings, automatic and networked driving is planned to be tested under field conditions. (Map: FZI)

KIT Mobility Systems Center: Solutions for tomorrow's mobility

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Karlsruhe plans to assume a leading role in interconnecting mobility and digitization. A consortium of KIT and regional partners has decided to apply for state funding of a test field in the region. Here, companies and research institutions plan to test future-oriented technologies and services relating to networked and autonomous driving in everyday traffic. The Karlsruhe Municipal Council and the partners have agreed on the necessary own funding share for the project in the total amount of EUR 4.6 million.

The consortium partners are Karlsruhe Institute of Technology, the city of Karlsruhe, Karlsruhe University of Applied Sciences, the Fraunhofer Institute of Optronics, System Technologies, and Image Exploitation (IOSB), and the city of Bruchsal. The Consortium leader will be KIT's Research Center for Information Technology (FZI).

"Symbiosis of mobility and information technologies promises to solve challenges of society and to lead to entirely new mobility concepts," Professor Holger Hanselka, President of KIT, says. "Within

the framework of the test field, KIT will essentially contribute to interlinking research and application as well as automotive and ICT industries."

"Digitization opens up many opportunities to make mobility environmentally more compatible, quicker, and safer. This will be of decisive importance to the future of our cities. And we want to help find clever solutions," Dr. Frank Mentrup, Mayor of the City of Karlsruhe, adds. "Our proposal already is a success for the region of Karlsruhe, because six partners have drafted a very complex project within a very short period of time."

"The Karlsruhe Technology Region offers best conditions for a test field for networked and automatic driving: Here, both research and industry have vast competencies in information and communication technologies, we also have strong providers of mobility services, mobility systems, and technologies related to mobility, who want to be part of the development," Professor J. Marius Zöllner, Member of the Board of Executive Directors of FZI and professor of KIT, points out. "We want to contribute our experience gained in more than 30 years of interdisciplinary research into autonomous systems and push the test field together with our partners."

"For mastering the challenges in the mobility sector, we need extensive knowledge transfer from fundamental research to application," Professor Eric Sax, Head of the KIT Institute for Information Processing Technology and Scientific Director of FZI, emphasizes. "In Karlsruhe, we have companies and research institutes in the area of both information technologies and mobility to develop innovative technologies, services, and applications for use on the test field."

"Autonomous driving will move our society spatially, technically, and socially. The planned test field will profit from Karlsruhe as a location of science and industry and, vice versa, Karlsruhe will be strengthened by the development of concepts for future mobility," Professor Jürgen Beyerer, Head of the Fraunhofer Institute of Optronics, System Technologies, and Image Exploitation (IOSB) and Holder of the Chair for Interactive Real-time Systems of KIT, says. "In particular, our expertise in the area of productive image exploitation systems will be important to the success of the project."

"The development of highly automatic and autonomous vehicles will open up new chances to significantly increase traffic safety and transport quality in the future. Transport-induced environmental pollution will be further reduced," Professor Christian Holldorb of the Institute for Transport Planning and Infrastructure Management of

Karlsruhe University of Applied Sciences says. “For this purpose, it is necessary to systematically analyze interactions with the road infrastructure and road environment. For this, the envisaged test field will offer ideal framework conditions.”

Effective Testing of Solutions

The test field is planned to be used for testing and developing vehicle systems for automatic and networked driving under real road traffic conditions. Applications for future mobility will be tested, such as automatic driving of cars, buses or commercial vehicles used for road cleaning or delivery services. In addition, regulations and legal framework conditions are planned to be updated on this basis. The test field will contribute to effectively testing technical solutions to digitize mobility, such as smart services or data protection approaches. In particular, small and medium-sized companies will profit from a freely accessible test field. Establishment of new mobility and ICT companies will be fostered.

The funds applied for are planned to be used for preparing various types of traffic areas for automatic and networked driving. Highly precise 3D maps will be generated and sensors will be installed for the real-time measurement of traffic and the factors influencing it. Then, these data will be processed and made available to the users of the test field. In addition, the users will be given information on traffic light controls and bus, urban, and tram traffic flows. Radio links and new telecommunication systems are to be installed for robust data transmission from and to the vehicles.

The routes in the test field will cover urban areas with mixed bicycle, vehicle, and pedestrian traffic as well as innerurban zones, where speed is limited to 30 km/h or 50 km/h, municipal car parks, residential areas, regional and federal routes, and motorway sections.

In addition, the three campuses of KIT, the Karlsruhe Oststadt district, the central railway station, southern city districts, connecting roads, motorway sections to Stuttgart and Heilbronn, the Research Campus in Bruchsal, and test fields for automatic logistics and commercial vehicles in Bruchsal and Heilbronn will be included.

It is planned to use existing road infrastructure. For traffic participants and local population not involved in test operation, road use will not be changed or limited. Maybe, additional antennas for WLAN or radio transmission or sensors collecting data that are not of personal nature will be installed. Test operation will be coordinated and supervised by a control station. The test vehicles will be equipped

with sophisticated safety technology. When they will be tested for autonomous driving, there will always be a driver in the car for safety reasons. In addition, an internet portal will be established, via which citizens may inform themselves about the test fields and routes and can access selected data measured.

Implementing Sustainable Mobility

On April 26, 2016, the municipal council of the city of Karlsruhe agreed to make available a total amount of EUR 190,000 for the project. These funds are planned to be spent among others for the backfitting of traffic light systems and the extension of the KA-WLAN system required for the operation of the test field. In addition, the city of Karlsruhe has agreed to grant the legal permits required for the test field. The test field is to be operated by the Karlsruher Verkehrsverbund (Karlsruhe Transport Association). The Verkehrsbetriebe Karlsruhe (Karlsruhe Transport Services Company) plans to use a test field for research purposes and to test autonomous electric mini buses there. The city of Karlsruhe wishes to contribute to sustainable mobility becoming reality, for the protection of the environment and for the benefit of persons with restricted mobility.

The city of Bruchsal also intends to support the test field as a partner. It will carry out surveying and extension work along the test routes. The Institute for Energy-efficient Mobility of Karlsruhe University of Applied Sciences (IEEM) is located in Bruchsal. It possesses a high-performance test rig for the maintenance of vehicles. The campus there is also planned to be included in the test field.

Strengthening the Region

The region of Karlsruhe has many actors in the areas of information technologies and mobility, who already cooperate in a variety of networks, such as CyberForum, Karlsruhe Technology Region, Technology Park, Priority Region for Mobility Systems, Tech Center a-drive, Project House e-drive, RegioMove, and E-Mobility South-West Leading-Edge Cluster. The planned test field will consolidate and sustainably enhance technological development of the regional and supraregional partners in information technologies and mobility sectors.

The consortium of Karlsruhe Institute of Technology, the city of Karlsruhe, Karlsruhe University of Applied Sciences, the Fraunhofer Institute of Optronics, System Technologies, and Image Exploitation IOSB, and the city of Bruchsal, with the consortium leader FZI Re-

search Center for Information Technology, and other associated partners applies for funding of a “Test Field for Networked and Automatic Driving” by the state of Baden-Württemberg. The consortium plans to contribute an own share of EUR 1.1 million. Associated partners and industry partners have agreed to support the project with more than EUR 1 million. The consortium winning the competition will be granted EUR 2.5 million by the State Ministry of Finance and Economics for the conception, planning, and extension of the test field. Construction of the test field is planned to start this year, operation will begin in 2017. It is planned to establish a company-independent test field for networked and automatic driving in Baden-Württemberg, which will be open to all technologies.

More about the KIT Mobility Systems Center http://www.kit.edu/research/6720.php.

Karlsruhe Institute of Technology (KIT) pools its three core tasks of research, higher education, and innovation in a mission. With about 9,300 employees and 25,000 students, KIT is one of the big institutions of research and higher education in natural sciences and engineering in Europe.

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