120 intelligent cars warn each other in the test

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One of the largest fleet tests in the world was launched today in Germany. 120 cars hit the road to test a system known as simTD, a technology that enables vehicles to communicate with each other and their environment. Cars can exchange information on traffic conditions and possible dangers. Researchers at Technische Universität München played a key role in designing the test scenarios. They will also be evaluating the data.

The "Safe Intelligent Mobility – Test Field Germany (simTD)" research project aims to help drivers select the best routes, detect obstacles before they see them and cut emissions through energy-efficient driving. To achieve these goals, researchers have electronically networked cars with each other and their infrastructure, known as car-to-car and car-to-x communication. Over the coming months, 120 cars will be testing the simTD consortium's system in real life – putting it through its paces on the highways, country roads and city streets in and around Frankfurt. This new system brought scientists together with private companies and public organizations.

The vehicles transmit information on the traffic conditions to the control station, which can then predict and manage traffic developments. A display provides drivers with recommendations on the best route. The system also assists drivers at intersections or traffic lights by providing a timely display of the right lane for the next turn, or the optimum speed to ride a "wave of green traffic lights."

The system also alerts drivers to imminent hazards. An emergency braking lamp in the display, for instance, warns the driver if a vehicle ahead brakes heavily – well before the driver is physically able to react to the situation. Where rescue services are responding to an incident, the system shows the direction and the lane taken by the emergency vehicles, enabling the driver to know precisely where they are. If obstacles, such as lost cargo, are blocking the road, drivers receive timely advice on alternative routes.

The simTD–System is using wireless technology that was specifically developed for this automotive field of application. The technology is based on the well-known WLAN standard. Information can either be transferred directly to other vehicles or to Roadside Stations installed along the road. If the communication partner is not located in close vicinity to the sender, other vehicles can transmit or store and forward information.

What kind of formations, at what times, and which routes do the individual vehicles in the test fleet have to take to produce reliable results? Scientists from the Technische Universität München have prepared the field test and will analyze the huge amounts of data produced. "We investigate how drivers adopt this technology in everyday scenarios and to what extent we can improve road safety and prevent congestion," as Prof. Fritz Busch, TUM Chair for Traffic Engineering and Control outlines. The scientists also simulate what impact the introduction of the technology would have on the entire traffic in the test area if a certain proportion of cars were fitted with this technology.

Provided by Technical University Munich