

Safe, efficient and autonomous driving in urban areas

The research project SET Level 4to5 develops a platform for simulation-based development and testing of automated vehicles with the simulation software CarMaker

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From possible uses as automated car sharing or pooling vehicles to fully automated people mover or delivery services, vehicles with automation levels 4 and 5 are to be developed in this project. The development and especially the testing of such vehicles pose a great challenge. The project SET Level 4to5 (simulation-based developing and testing of level 4 and 5 systems) lays the foundation for efficient testing in the course of development with simulation-based methods and tools. This enables a comprehensive evaluation of automated vehicles in complex traffic situations. CarMaker, the simulation software from IPG Automotive, supports the project with the integration of sensor models and driving functions.

The vehicle of the future carries its passengers safely, efficiently and comfortably to their destination. With its automated driving functions, the vehicle increases ride comfort and provides ever greater safety. The degree of automation in such functions can vary widely. Level 4 vehicles are able to drive by themselves for most of the journey, even in urban areas. The driver has the option to manually override, but does not have to do so. If the vehicle drives through traffic by itself at all times, without intervention through steering or pedals by the driver being possible, the vehicle is called a level 5 vehicle. In the past few years, the design and development of automated driving functions have made great strides, however, releasing and registering these vehicles requires an adequate legal framework and further extensive tests. Simulations are, in this context, an adequate tool to speed up the development process and control costs.

In this research project, partners from industry and science cooperate closely to find practical solutions and prepare standardization activities. The aim is to create an open, flexible and easily extendable platform that supports simulation-based analysis and simulation-based testing of level 4 and 5 vehicles in urban traffic situations. "The focal point of our work in this research project is to demonstrate the feasibility of a simulation-based development process, to participate in

standardization activities and to ensure models can be interchanged between suppliers and OEMs,” summarizes Marina Liebich, Junior Business Development Manager ADAS & Automated Driving at IPG Automotive.

The advancement of simulation-based methods and tools provides the groundwork for an effective testing in the course of development and creates a comprehensive, reliable evaluation of automated vehicles in complex traffic situations. The aim is to provide a crucial basis for verification and validation, as well as release and registration of automated level 4 and 5 vehicles.

The project SET Level 4to5 builds on the results of the PEGASUS research project, which focused on testing level 3 automated driving functions on highways.

Image



SET Level 4to5 is carrying the PEGASUS project, promoted by the German Federal Ministry of Economy Affairs and Energy (BMWi), forward, and builds on key results of the PEGASUS methodology.

About IPG Automotive GmbH

As a global leader in virtual test driving technology, IPG Automotive develops innovative simulation solutions for vehicle development. Designed for seamless use, the software and hardware products can be applied throughout the entire development process, from proof-of-concept to validation and release. The company's virtual prototyping technology facilitates the automotive systems engineering approach, allowing users to develop and test new systems in a virtual whole vehicle.

IPG Automotive is an expert in the field of virtual development methods for the application areas of Autonomous Vehicles, ADAS, Powertrain and Vehicle Dynamics, committed to providing support to master the growing complexity in these domains. Together with its international clients and partners, the company is pioneering simulation technology that is increasing the efficiency of development processes.

By taking real test driving into the virtual world as a complement to on-road testing, IPG Automotive contributes significantly to technical progress and shares in shaping the mobility of tomorrow with regard to comfort, safety, economic efficiency and environmental friendliness.

In addition to the company headquarters in Karlsruhe, Germany, IPG Automotive provides innovative development services to its customers and partners at the national offices in Braunschweig, Frankfurt and Munich as well as in China, France, Japan, Korea, Sweden, the UK and the USA.

Further information at www.ipg-automotive.com

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