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Press release

CarMaker Supports Automated Driving Project

IPG Automotive part of UNICARagil research project

Karlsruhe, June 5, 2023: The UNICARagil funding project, which IPG Automotive was a part of, finished at the end of May. The project used new approaches to automated vehicles and their architecture and culminated in the presentation of four driverless prototypes.

IPG Automotive contributed the CarMaker simulation and test platform to the project funded by the Federal Ministry of Education and Research (BMBF), which brought together leading universities in the field of automated driving with industry specialists. Based on the latest research on electromobility and on connected and automated driving, disruptive modular architectures in hardware and software for automated vehicle concepts were developed. The result was four fully automated prototypes for the shuttle, cab, bus and cargo sectors.

For the sub-project on configuration and setup of a SIL and HIL environment for modular validation, IPG Automotive worked closely with the Institute of Automotive Engineering at the Technical University of Darmstadt (FZD), whose focus is on modular validation, motion control and safe stopping.

At the beginning of the research project, CarMaker offered the partners an open integration platform to develop and test individual modules simultaneously. New concepts could be simulated in a test environment early on, thanks to customized interfaces. The developers for trajectory planning started off using conventional vehicle and steering concepts based on the driver model IPGDriver as a trajectory controller.

Forms of motion such as parallel parking or steady-state turning were integrated into the simulation by extending existing steering models with individually controllable wheels that can be steered up to 90 degrees. The electric drive, brake, single-wheel steering and suspension were also mapped in a parameterizable way.

Additional interfaces between CarMaker and the final ECU were provided for the change from purely software-based SIL to HIL tests. The simulation and test platform was connected to a middleware developed in the project, which enables modular updates. In addition, CarMaker transmitted synthetic navigation data to the ECU and provided a highly accurate time signal.

To support the development, a satellite display and the detailed 3D model of a prototype were added to the CarMaker visualization tool IPGMovie. Overall, CarMaker provided the UNICARagil project's more than 20 project partners with a comprehensive platform to support the development of novel vehicle concepts.

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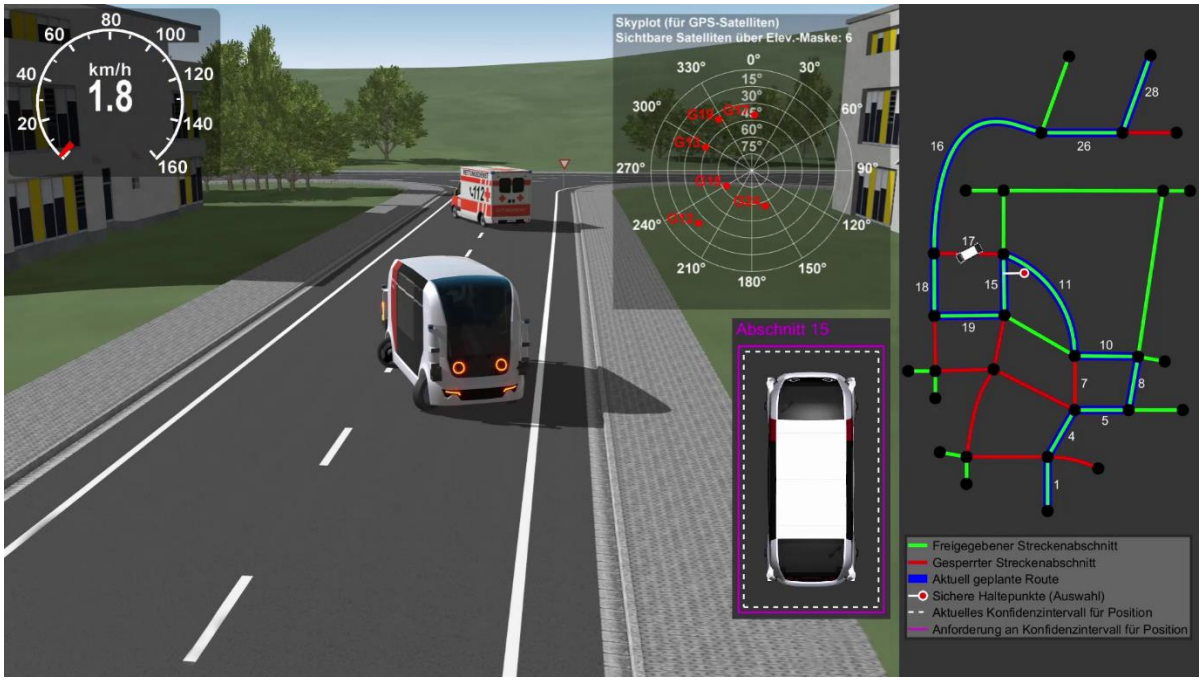
Images used
[PM_UNICARagil]



A driverless prototype from the UNICARagil project, which used CarMaker as an integration platform.
Image: TU Darmstadt

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, test and validate 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 Germany-based offices in Braunschweig, Frankfurt, Stuttgart and Munich as well as in China, France, Japan, Korea, Sweden, the UK and the USA.

Further information at www.ipg-automotive.com/en/press

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