

# INSIGHTS INTO THE TESTINSTANCE VEHICLE-IN-THE-LOOP AT THE TESTBED

## ADAS and AD validation on vehicle level

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### Motivation

The validation of complex advanced driver assistant systems (ADAS) and automated driving (AD) functions in all possible conditions and variations poses significant challenges. They require huge amounts of functional and non-functional validation to prove optimal behavior within the integrated vehicle in a variety of environmental scenarios and vehicle configurations. Securing approval presents a big challenge for market introduction due to the large number of different scenarios and environmental parameters. Conventional real-world testing with the new challenges is not feasible and leads to virtually assisted testing methods.

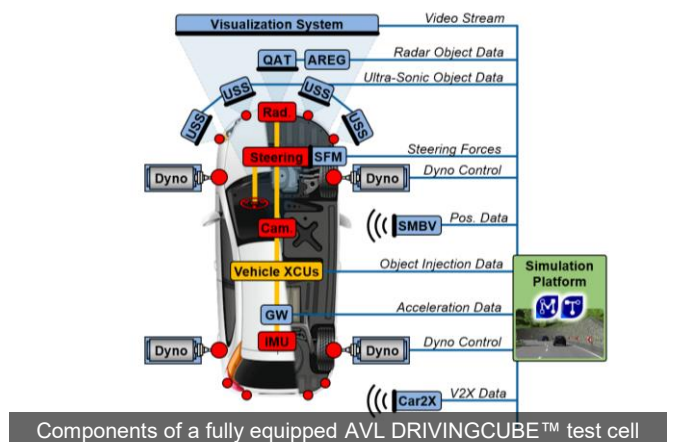
### Vehicle-in-the-Loop (ViL) at testbeds

ViL combines both simulation and ready-to-drive vehicle on a chassis dynamometer or powertrain testbed. With holistic sensor stimulation or injection for radar, camera and lidar, as

well as full range steering ability, it brings the proving ground to the testbed. The environment and traffic simulation enables the set up of any driving scenario up to the vehicle limits. This scenario-based testing can be fully automatized using Co-Simulation and Design of Experiments (DoE) to increase the test coverage whilst reducing time and cost effort. This approach paves a new way to speed up the validation and approval process of ADAS and AD functions and bridges the gap between proving ground and simulation.

### Benefits

- Increased ADAS and AD test coverage with reduced effort
- Highly reproducible testing
- Safe operation also during critical scenarios
- Efficient reproduction, repetition and variation of scenarios
- Easy upgrade of existing infrastructure



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### Projektpartner



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