

35th SafeTRANS Industrial Day Contract based Design für Software Defined Vehicles

The changing requirements of the automotive market—in particular the shift toward autonomous, electrified, connected, and service-oriented vehicles—place high demands on hardware and software. The proportion of functions implemented in software and the added value incurred as a result are growing rapidly, as are user expectations in terms of timeliness, constantly evolving functionality, and regular perfective and corrective updates. As a side effect (from the user's point of view), the latter allow OEMs and tiers to innovate their products all across their “lifetime” and thereby also enhance security and functional safety.

However, the shift to such **software-defined vehicles** (SDVs) intensifies competition for European OEMs, as it opens doors to US and Asian suppliers with strong software engineering expertise and, in some cases, less stringent regulatory frameworks. In response to this development, the European Commission first launched the “Software Defined Vehicle of the Future” (SDVoF) initiative, then the “European Connected and Autonomous Vehicle Alliance” (ECAVA), which bundle SDV-related activities and accompany future projects and funding programs. Supported by the FEDERATE support action, roadmaps have been developed that outline future automotive architectures and approaches to their implementation. A particular project ECLIPSE S-Core, which is creating a reference implementation for an SDV software stack.

Contract-based Design is a promising and proven approach for the modular and, where appropriate, distributed development of (software) components. So-called contracts describe the interfaces and behavior of the components in a way that, on the one hand, clarifies the division of responsibilities for the overall functionality and, on the other hand, enables the rigorous validation and verification of the implementation of the components as well as of possible later replacements (i.e. updates). Contract-based design is a paradigm that matches the building-block structure of software stacks for SDV.

The 35th SafeTRANS Industrial Day is designed as a project incubation workshop in which, unlike in the past, the topic will be outlined via short keynote speeches, after which ample time will be devoted to open dialogue between the participants to identify research and development potential. The aim of the workshop is to condense its findings together into a variety of project ideas, which will subsequently be developed into funded projects.

All industrial players and research institutions with an interest in CBD and SDV as well as joint project ideas in this context are very welcome to attend.