



Industry Profile Automotive



Safety through highest quality

The automotive industry is facing forward-looking challenges that offer many opportunities for innovative automotive technologies. Software-based functions and their networking in particular are becoming increasingly important in modern vehicles. The highest safety and reliability requirements for electronic components are crucial here. With strict processes in software development, we ensure that these requirements are met and that the industry receives future-proof solutions - for the mobility of tomorrow!

Beyond limits

Vehicles are the ideal field of application for embedded systems with processors, microcontrollers and bus systems. These are designed for high real-time requirements and extreme conditions. Through comprehensive tests - from module to system tests - we work together with our customers to ensure reliable system behaviour and help ensure that vehicles meet the highest quality standards in the automotive industry.

Scope of Services

- Software engineering in accordance with ISO 26262 (ASIL A-D)
- Creation of system and software architectures
- Model-based software development
- Tool development
- Highly tool-based development processes
- Unit, integration and system testing
- Test automation

Support from the very start

Starting with the requirements analysis, we develop suitable models and use them to develop software that can run on the specified hardware. We utilise development environments and tools that fully meet the requirements and standards of the automotive industry.



Specific Project Experience

- Software development and verification in the driver assistance domain (brake assistant, parking aid, environment recognition, sensor fusion, etc.)
- Creating a customer-specific software development process to ISO 26262
- Development of an extended CAN-CAN-LIN gateway
- Software development and system testing for a variety of control units (e.g. gateway, tailgate control, etc.)
- Software development in a model-based Autosar project
- Algorithm development in the field of radar
- Requirements engineering at system and software level for a variety of control units
- Software testing for an electronic parking brake system
- Preparation of technical (TSC, TeSiKo) and functional (FSC, FuSiKo) safety concepts
- Development of driver assistance systems
- Preparation of hazard and risk analyses (HARA)
- Active chassis control management
- Platform design for synthetic vehicle sound

Systems Engineering

- Requirements management at system level
- Support in developing the item definition
- Creating the system architecture and the system design

Software Development

- Preparing the Software Development Plan (SDP)
- Software requirements specifications
- Creating the software architectural design specifications
- Software unit design and implementation

Functional safety (ISO 26262)

- Support for and preparation of hazard and risk analyses (HARA)
- Support for and preparation of functional and technical safety concepts (FSC, TSC)
- Gap analysis

Standards	
ISO 26262 (ASIL A-D)	Automotive SPICE
V-Modell XT	CAN-TP, CAN-UDS, CanOpen

Support Processes

- Quality management
- Configuration management
- Problem and change management
- Process assistance and implementation
- Tool development
- Development of simulation environments
- Development of test tools
- Tool qualification (to ISO 26262 ASIL A-D)

Verification and Validation

- Software unit testing
- Software integration and system testing
- Verification of software safety requirements
- Preparing the test documentation (unit, integration and system tests to ISO 26262 ASIL A-D)
- Creating automated test sequences (unit, integration and system tests)
- Analyses
- Static code analyses
- Code reviews
- Dynamic code analyses
- Object code analyses
- Compiler analysis reports
- Compiler failure reports
- Floating point arithmetic analyses
- Coverage analyses (MC/DC etc.)
- WCET analyses
- Validation
- System requirements
- Software requirements
- Software unit requirements

Tool Experience (synopsis)

- DOORS (i.a. NG), REQIFY, RequisitePro, PTC Integrity, Polarion
- Rhapsody, Rose, Enterprise Architect
- Various compilers, debuggers
- dSpace tools
- Autosar (vector tools)
- Matlab, ASCET, Simulink, Targetlink
- CANoe, GENy, CAN-Flash, Candela
- ClearCase, PVCS, SVN, GIT, CVS
- ClearQuest, Bugzilla, Trac, Jira, OpenProject
- RTRT, Cantata++, VectorCast, ADS-2, Tessy, TPT
- PC Lint, QA-C, MISRA