Industry Profile
Automotive

Konzept
Informationssysteme

Safety through highest quality

The automotive industry is facing ever new challenges. The dynamic development of the markets is characterized by continuously changing framework conditions. Enterprises can develop new opportunities by implementing changes and innovations. The same is also true for integrated software solutions used in the industry.

Software-based functions and their networking become more and more important in motor vehicles. The requirements regarding safety and reliability of the numerous electronic components used in vehicles are constantly increasing. We satisfy these high requirements by developing software in accordance with strict process standards.

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

Beyond limits

Motor vehicles are predestined for the application of embedded systems with different processes, micro controllers and bus systems. They are designed for demanding real-time requirements and extreme ambient conditions. We safeguard proper system behaviour together with our customers by applying sophisticated test processes comprising unit, integration and system tests.

Support from the very start

We develop suitable models based on a requirements analysis and use them to produce the software running on the predefined hardware. This process is supported by using development environments and tools complying entirely with 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

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

Standards

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

Tool Experience (synopsis)

- DOORS (i.a. NG), REQTIFIY, 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

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KIS-04.01-V3.0-230703-en