



Industry Profile Avionics



Konzept
Informationssysteme



Technology You can rely on

Superior technological standards and absolute reliability and precision are essential prerequisites for working on avionics systems. Complying with these requirements is crucial for safety-critical systems and processes. 100-percent safety is the alpha and omega in this domain.

Avionic systems are used for air-traffic control and aircraft engine control. They are also installed in cockpit, cabin and supply systems. Moreover, support systems exist that assist aeroplane and helicopter pilots in handling complex processes and manoeuvres in mission-specific applications.

Safety Considerations govern the System Architecture ...

Safety and reliability are core requirements for any avionic product in addition to the functional requirements. This is equally true for the mechanical and electronic equipment and the software. The system architecture is therefore characterized by redundant dissimilar hardware and software solutions that must meet very high standards and specifications. The most well-known currently valid standards are DO-254 and DO-178.

Scope of Services

- Software engineering in accordance with DO-178B and DO-178C (DAL A-E)
- Assist the creation of planning documents according to DO-278 (AL5)
- Support of the approval process
- Systems engineering
- Verification and validation
- Floating point error analysis
- Tool qualification

...and the Development Process

In our work with projects in these fields we combine superior technological know-how with absolute reliability and diligence in the development process. Our customers therefore appreciate both our technical qualification and our process know-how resulting for the most part from long-term project experience.



Specific Project Experience since 2000

- More than 50 employees with experience in avionics projects
- Most of these projects are at Design Assurance Level (DAL) A according to DO-178B
- Development of flight control systems and cabin systems
- Largest project completed under our own responsibility: Software development for digital map verification:
 - Contract period: 2006 - 2010
 - Design Assurance Level (DAL) C according to DO-178B
 - Development effort: 45,000 hours
 - Team size: up to 25 persons

Systems Engineering

- Creation and updates
 - System requirements (system and equipment level)
 - Architecture documents
 - Functional Hazard Assessments
 - Plans and standards (PCAC, PSAC, PHAC, CMP, QMP, etc.)

Software Development

- SRD creation and updates
 - Software requirements definition
- SDD creation and updates
 - Software architecture and low-level software requirements definition
- Software implementation
 - Coding
- Model-based software development (SCADE, MatLab, Simulink)

Verification and Validation

- Validation of system requirements, software requirements and low-level software requirements
- Static code analysis
- Code review
- Software tests, hardware / software integration tests, system and equipment tests
- Test case definition
- Test procedure creation
- Test execution
- Test case validation
- Test automation
- MC/DC coverage analysis
- WCET analysis
- Object code analysis (OCA) / compiler analysis report (CAR)
- Compiler failure report (CFR)
- Tool qualification
- Floating point arithmetic analysis

Standards

- DO-178B-C / 160 / 200 A / 278 / 254
- ABD 100
- ARP 4754
- ARINC 429
- ARINC 604 (BITE)
- ARINC 615-A, 665 (Data Loader)
- ARINC 624
- ARINC 653 (IMA)
- ARINC 664 (AFDX)
- MISRA

Tool Experience

- DOORS, DOORS NG, REQIFY, MKS/PTC, Polarion
- Rhapsody, Eclipse, Enterprise Architect, Magic Draw, Ameos
- Various compilers, debuggers, etc.
- PCLint, QA-C, Astrée, Polyspace
- RTRT, Cantata, VectorCast, ADS-2, TPM, Gamma V, Jenkins
- ClearCase, PVCS, Subversion, GIT, CVS
- ClearQuest, Bugzilla, TRAC, JIRA
- Databases (ORACLE, PGSQL, MySQL, SQLite, MS SQL Server)

Collaboration in following Programmes

- Various components in the areas of flight control, avionic platforms, data processing and cockpit systems
 - A320, A340, A350, A380 SFCC
 - A380 IMA
 - A350 cRDC
 - A320, A330, A350 VECB
 - A350, A380 FCU
 - B787 High Lift Application and ACE2
 - Volocopter FCC
- Cabin system prototype development
- Research projects
 - Redundancy management
 - Multicore processors
 - IDEA joint research project: Integrated Design and Engineering Environment for Aerospace
- Mission support systems for
 - A400M DASS, M-MMS (processing of digital map and elevation data)
 - EuroFighter, Tornado, NH90, Tiger (map display devices)
- Test system development for HIL systems