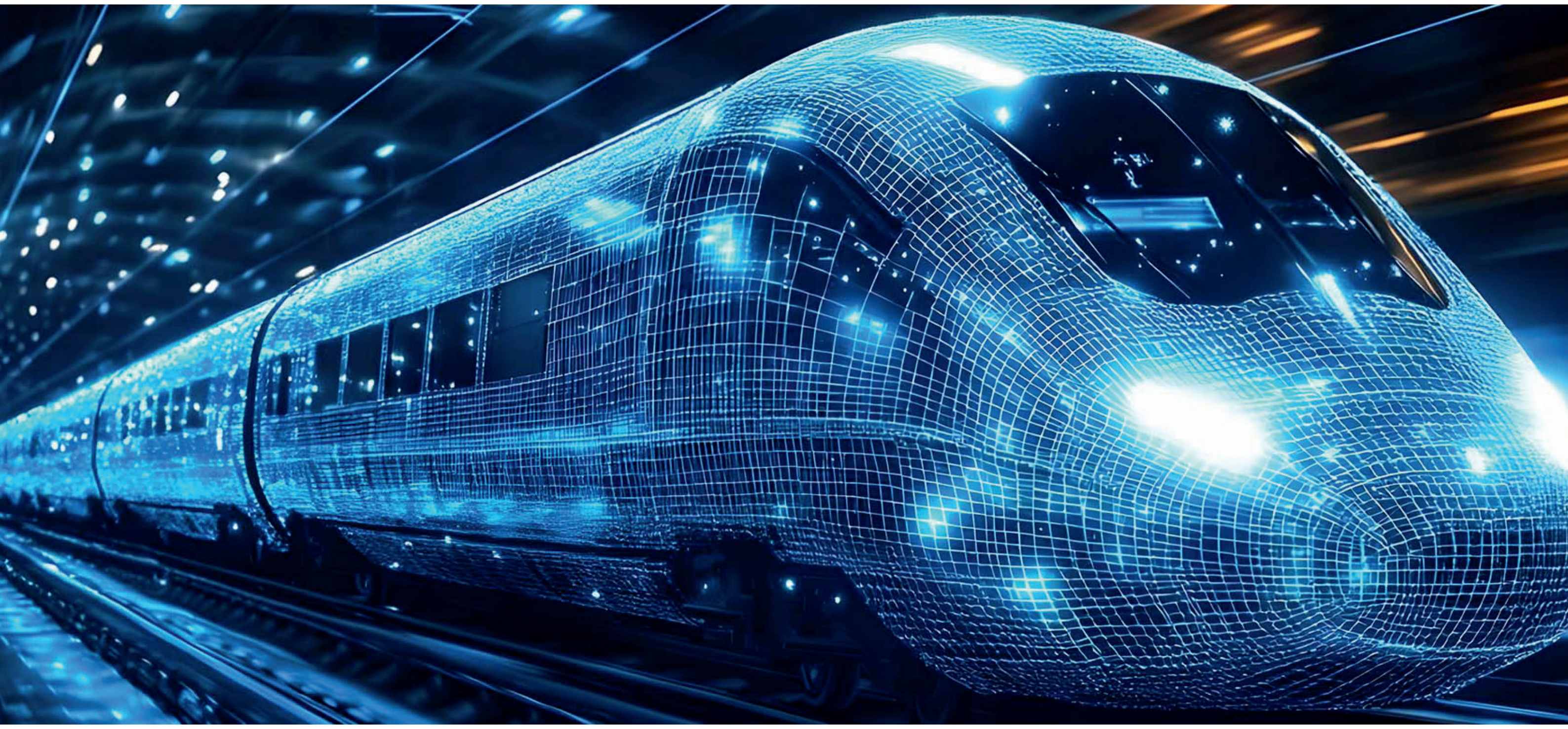
Industry Profile Railway Technology

Konzept
Informationssysteme GmbH



Safety at the highest level

Intelligent and innovative solutions in railway technology are essential to meet these requirements. Modern, high-performance and dynamic systems play a central role and are already well established in the industry. With advanced transport and vehicle concepts, the railway industry is facing global challenges and shaping the mobility of tomorrow.

Scope of Services

- System and software development according to EN 50126, 50657 and 50129
- Verification and Validation
- Safety certification
- Requirements engineering
- Integration and unit tests

Energy efficiency and environmental compatibility

Energy-efficient drive systems are becoming increasingly important in the context of sustainable mobility. In addition, rail technology and the entire rail industry are faced with the challenge of meeting strict emissions regulations. This requires the use of new technologies, such as innovative electronic engine control systems or advanced exhaust gas aftertreatment systems. New concepts, such as bi-fuel systems, also play a key role in meeting the growing requirements and developing sustainable mobility solutions.

Intelligent and safe automation solutions

The use of safety-critical systems in control and monitoring technology offers considerable advantages for railway automation. The safety aspect is always the top priority. In order to fulfil these requirements, the development and implementation of products and systems must be carried out in accordance with the highest quality and safety standards in railway technology. This is the only way to guarantee smooth and safe operation.

Specific Project Experience since 1996

- BR 612 and BR 628 series: Design and implementation of a driver's cab simulator including graphic representation of status data
- Re-design of an existing platform software for tilting train systems (according to IEC 61508 SIL2)
- Powerline for rolling stock: Documentation and software development
- Control unit development for exhaust gas aftertreatment systems
- Development of telematic systems (client and server)
- Safety certification according to SIRF 200
- Tailoring of railway-specific standards to company-specific standard development processes
- Creation of systematic risk analyses for railway production and newly designed safe systems and architectures
- Safety Manager support implementation with safety management requirements
- Design and implementation within automated system tests with RCPTT as part of a tool qualification class T3 for railway station planning
- Design of railway display systems

Systems Engineering

- Requirements engineering (system)
- System architecture and design

Software Development

- Requirements engineering (software)
- Software architecture design
- Modelling (SCADE, MATLAB, Simulink)
- Implementation

Standards	
• IRIS	• EN 50126 (RAMS)
• EN 50657	• EN 50129
• IEC 61508 (up to SIL 3)	

Support Processes

- Quality assurance
- Configuration management
- Process assistance and implementation

Tool Experience (synopsis)

- DOORS, Jira, Redmine, Hudson, Confluence
- Eclipse, OSGi, Tomcat, Apache Maven
- Git, SVN, Gitlab, Sonatype Nexus
- RCPTT, JUnit, Mockito, Xray
- Databases (MySQL, PostgreSQL, MSSQL)

Verification and Validation

- Validation of system requirements
- Validation of software requirements
- Validation of low-level software requirements (design review)
- Static code analysis (PCLint, QA-C)
- Code review
- Software testing
- Module test case definition
- Module test procedure definition
- HW/SW integration test
- Test case validation
- System / Unit testing
- Test case definition
- Test procedure definition
- Test case validation
- MC/DC coverage analysis (Cantata, VectorCast, Tessy)
- WCET analysis
- Object code analysis (OCA) / compiler analysis report (CAR)
- Compiler failure report (CFR)
- Tool qualification
- Floating point arithmetic analysis
- Formal verification

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