itk ENGINEERING

Smart Engineering

The digital, model-based line to certified solutions

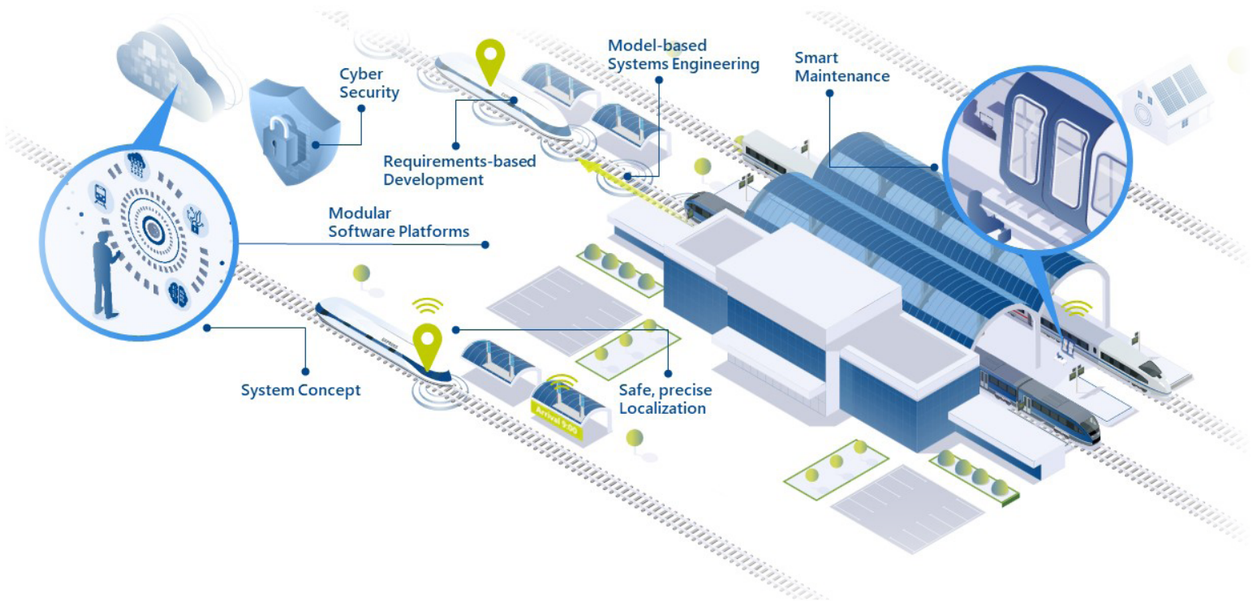
INNOVATION ON THE TRACK

www.itk-engineering.com

RAIL 4.0 POWERED BY SMART ENGINEERING

Tailored software and modular platforms

As digitalization picks up steam in the railway industry, that train is rolling in with boxcars full of complexity and new requirements in tow. Drawing on our expertise in state-of-the-art software and systems engineering, we develop digital solutions for rolling stock and infrastructure for railway operators, system manufacturers and component manufacturers. Much of our effort focuses on tomorrow's tech such as Rail 4.0. Our cross-industry skill-set and synergies underpin our smart engineering capabilities. We develop and deliver versatile, future-ready solutions tailored to your needs.



FUTURE-ORIENTED SOLUTIONS

Our building blocks for your innovative system and software development

With a firm grasp of methods and tools, we provide holistic solutions to support you throughout the development process. Drawing on a deep well of expertise to address safety-critical applications and tapping cross-sector synergies, we provide risk management, traceability and documentation services, all from a single source.

Compliant from the inceptive idea to the final product

- Concept
- System Definition
- Risk Analysis
- System Requirements
- System Architecture / Allocation of System Requirements
- Development / Implementation
- Manufacture
- Installation
- System Validation
- System Acceptance

EN 50126 EN 50129 EN 50128 EN 50657

APPLICABLE TO THE FOLLOWING STRATEGIC AREAS

- Requirements-based development
- Cyber security
- Modular software platforms
- Smart maintenance
- Model-based systems engineering
- System concept
- Safe, precise localization

PROVEN SERVICES

On track for your success

Benefit from our state-of-the-art solutions for railway software and systems engineering. Our comprehensive portfolio of services extends from consulting to training, and from individual software products through to system solutions. We draw on our deep knowledge of methods to support standards-compliant and safety-critical system development.

Our services cover the following applications:

ROLLING STOCK

- Requirements-based development
- Cyber security
- Modular software platforms

INFRASTRUCTURE

- Smart maintenance
- Model-based systems engineering
- System concept
- Safe, precise localization

SAFETY CRITICAL SYSTEM- AND SOFTWARE DEVELOPMENT

- Modular software platforms/ architecture
- System design/ analysis
- Safety management
- Standards-compliant software development
- Testing strategies
- Cyber security: analysis, concepts, consulting, and implementation

METHOD EXPERTISE

- Integrated development pipeline (CI/CD)
- Model-based development
- State-of-the-art requirements engineering
- Tool-assisted development
- Formal methods, e.g. formal verification
- Hierarchical testing methods and test automation
- Agile development
- Machine learning and artificial intelligence (AI)
- Big data and data mining with cloud solutions

DEVELOPMENT COMPLIANT TO CENELEC

- ITK CENELEC Reference Workflow (based on COTS tools)
- EN 50128/50657-compliant development process (up to SIL 4)
- Declaration of conformity by EBA assessor
- Everything from consulting to executing tasks in the various CENELEC phases

COMMITTEES

- Association of German Engineers (VDI), Standards Committee & Railway Workgroup
- German Railway Industry Association (VDB), member since 2014, SME & Command and Control, Communications and Information Technology Workgroups
- SafeTRANS (safety in transportation systems), member since 2013
- ACstyria Mobilitätscluster GmbH, Austria

DIE BAHNINDUSTRIE.
VDB VERBAND DER BAHNINDUSTRIE IN DEUTSCHLAND E.V.

SafeTRANS

AC STYRIA

IMPRESSIVE RAILWAY TECHNOLOGY

Fast-tracking the development of standard-compliant solutions with the ITK CENELEC reference workflow

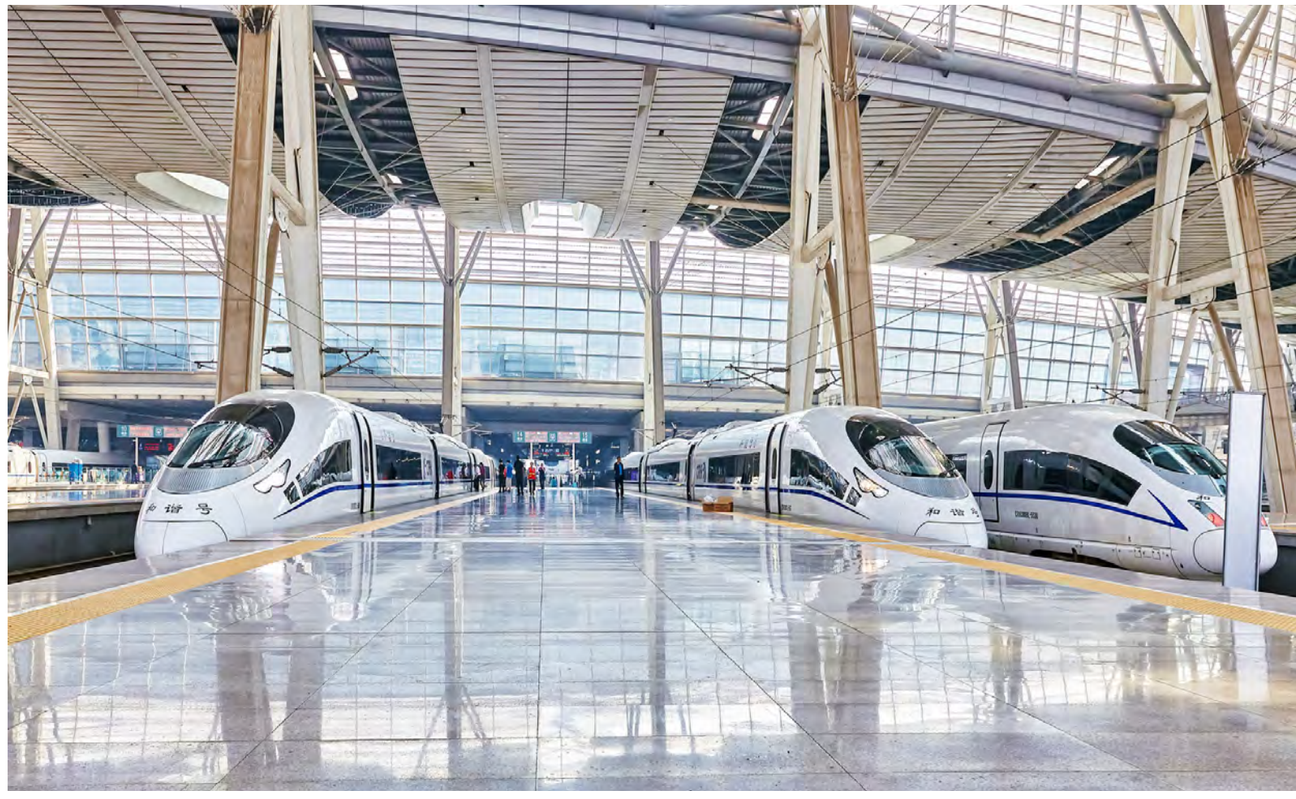
Developed by ITK, the CENELEC Reference Workflow enables engineers to develop modular, scalable and testable architectures and software. Process-driven and standards-compliant, it delivers solutions that you will find easy to maintain and extend. This workflow supports the entire lifecycle from requirements gathering to appraisal. It also offers you the benefits of a highly automated roadmap and a quick start to the project with no process planning effort.

Benefits of the ITK CENELEC Reference Workflow

Ready-made templates, prepared to comply with standards for innovative railway applications, benefit your business by:

- Wide-ranging cross-industry experience
- Mapping out a predefined development process
- Taking a tool-based approach that maximizes consistency
- Certification for the ITK CENELEC Reference Workflow

Learn more:



ITK ENGINEERING

Stability, reliability and methodological expertise – this is what we have stood for since our founding in 1994. At all times, our customers have benefitted from our dedicated multi-industry know-how, especially in the fields of control systems design and model-based design. Customers can count on us – from conception to deployment, we cover the entire development process.

Our areas of expertise include:

- Software development
- Hardware development
- Electrical & electronic systems
- System integration
- Software as a product
- Turnkey systems
- Customer specific development
- Technical consulting
- Seminars
- Quality assurance
- Safety & security

The satisfaction of each of our partners and mutually respectful cooperation shape our corporate philosophy, in which four values are firmly anchored: Read more about this on the web.

ITK. The Art of Digital Engineering.

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Founded in 1994 –
Branch offices throughout Germany – ITK companies worldwide.

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