

Creating safety.  
With passion.

NewTec



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# NTTrainSolutions

Tools and Services for TRDP

[www.newtec.de](http://www.newtec.de)

## The course to the future is set. Come on board!

### TRDP: Uniform standard for network communication in trains

Nowadays, rail vehicles are using many interconnected components made by different manufacturers – and the requirements for band width and reliability of the interconnection of trains are further increasing.

This is the reason why IEC and UIC have set the course to the future: New standards for Train Communication Networks (TCNs) on the basis of IP technology (ethernet) shall guarantee the required performance, standardise communication between different components and provide for compatibility across manufacturers.

The IP based TCN protocol TRDP (Train Realtime Data Protocol), specified in the international standard IEC 61375-2-3, forms the standardised basis for network communication in trains. Due to its universal interconnectivity, TRDP offers a more dynamic train topology and a bigger diversity of compatible products and applications. In addition, TRDP creates a basis for future, TSN-based train networks (Time Sensitive Network).

As acknowledged experts for TRDP and train interconnection, NewTec offers component manufacturers and OEMs a broad portfolio of consultancy services and trainings, services and tools to provide support in the integration of IT technology and TRDP in their products.

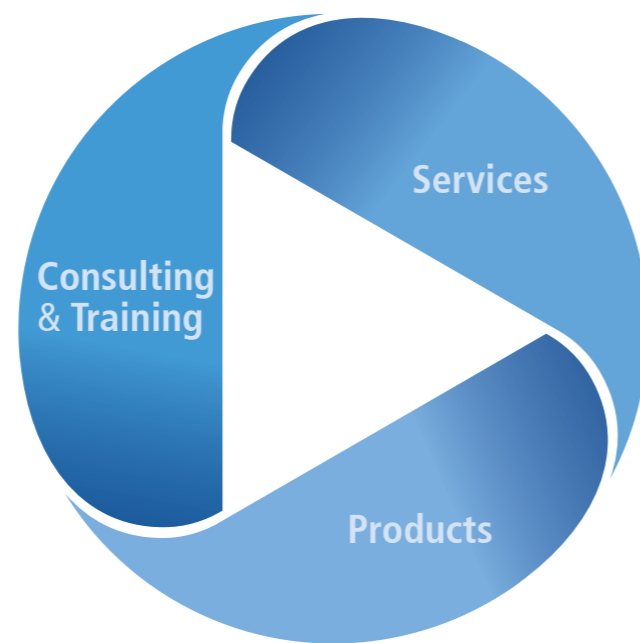
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Integration of IP technology and TRDP creates new challenges for manufacturers of train components. NTTrainSolutions by NewTec, the expert for safe train communication, is offering you support.

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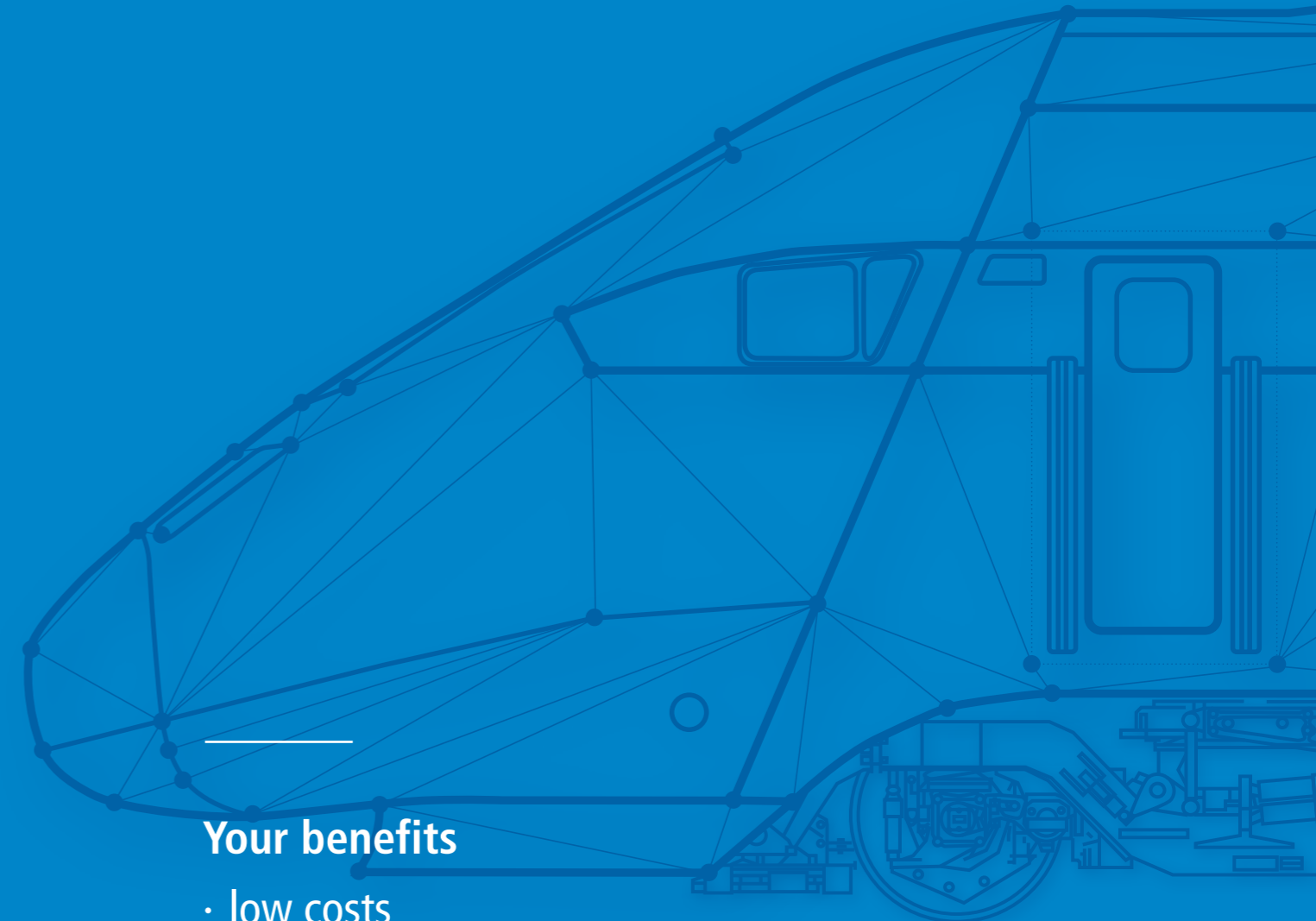
Powerful tools and comprehensive services help you to develop tailored TRDP solutions, implement interfaces and automatically test products for their interoperability, safety and robustness.

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### We are experts for train interconnection and TRDP

NewTec has extensive expert knowledge about TCN with special focus on functional safety and network security. In many projects, we work closely with leading manufacturers of rolling material. NewTec is a full member of the industry-wide TCNOpen initiative, engaged in the development of key components for new communication standards in the railway industry and the company played a leading role in the development of the Real Time Data Protocol.



### Your benefits

- low costs
- shorter development periods
- safe and secure systems
- simplified implementation of norms and standards
- future-proof due to TRDP expertise

## NTTrainSolutions – Your complete TRDP package from one source

### Consulting and project support

Make your TRDP project successful!

Train Communication Networks, ethernet, TRDP – the new standards offer many possibilities while they pose new challenges at the same time. Benefit from our expertise

- Project workshops
- Architecture reviews
- Assessments
- Requirements engineering (TRDP & SIL)
- Project management
- TRDP in the project

### Services for development and testing

Reliable and safe integration of TRDP

You want to go easy on your resources, you don't want to establish your own TRDP expertise yet, or you need support for your product development? We are here to help.

- Customized TRDP solutions incl. optional Safety (SDTv2) and Security assessment as well as implementation
- Customised system development
- Individual testing environment
- Independent validation
- Conformity test
- Residual bus simulation

### Trainings and coaching

Build your specific TRDP expertise!

Whether you prepare a new project, require expertise for specific issues or want your employees to become experts trained by TRDP developers – we assist you with a broad training portfolio.

- TRDP introduction seminars
- Expert workshops
- Technical One-on-One coaching
- Trainings about
  - Project / process analyses (assessments)
  - Software architecture reviews
  - Requirements engineering according to different safety integrity levels (SIL)



### Standards

Implement technical and safety requirements safely!

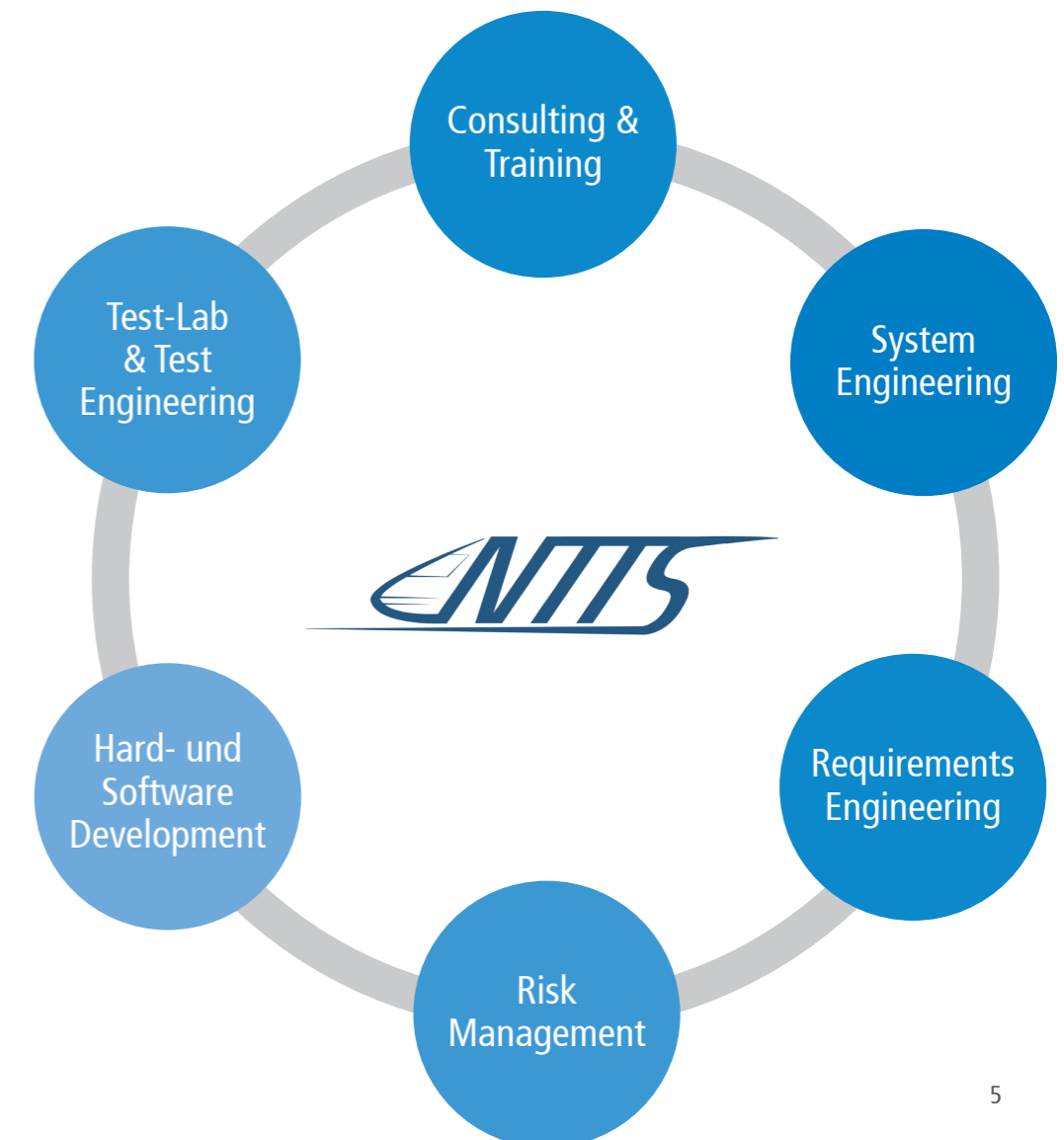
When it is necessary to implement a development according to relevant standards, we are the right partner for you. No matter whether it is RAMS, TRDP or other challenges – our experts will support you.

- DIN EN 50126, EN 50657, EN 50129
- IEC 61375-2-3, -5, -8
- IEC 62443

With NTTrainSolutions by NewTec, you will receive a complete package with powerful tools and extensive services for your TRDP projects from one source. Our offer will support you in developing tailored TRDP solutions quicker and with less effort, in implementing interfaces and when automatically testing products for their interoperability, safety and robustness.

NTTrainSolutions include

- consulting and project support
- extensive customerspecific development services
- Test-Lab und Test Engineering





## NTOnTrack Test Environment: Das flexible automatische Testsystem

### NTOnTrack TRDP Analyzer: Network protocol analyzer for TRDP



NTOnTrack Analyzer, the protocol analysis tool for TRDP and other Ethernet protocols, is focused on train manufacturers, component suppliers and testing facilities that want to efficiently develop and/or test TRDP based systems. Thanks to its highly performant hardware, minimally invasive in-line capturing of Ethernet frames up to 1000 Mbit/s becomes possible using tap-mode. Thus, each network segment of your train can easily be analyzed. Using single mode, traffic can be logged on two different ports.

#### Advantages

- Tap (inline) mode or single mode highly performant capturing
- Dataset dissection via XML file definitions
- Statistical analysis
- Scripting tool, dialog engine/GUI panels

### NTOnTrack TRDP High Layer: Comfort API for TCNOpen TRDP Stack

NTOnTrack TRDP High Layer simplifies the usage of the lower level C-API of the TRDP light stack and allows for a lean TCN application development. Functionality only rudimentarily supported by the TCNOpen TRDP Stack is fully available such as XML based configuration, train inauguration awareness and thread handling. It makes your system directly compatible to ECN requirements demanded for in the IEC 65375 2-3 standard.

#### Advantages

- A more compact and comprehensive TRDP API
- Communication setup via XML without intervention of the application.
- Available for Windows and Linux
- Easily portable to other OS/HW targets (e.g. freeRTOS) via VOS layer
- Part of the NTOnTrack TRDP Responder



### NTOnTrack TRDP Responder: End Device Simulator for TRDP

The NTOnTrack TRDP Responder is a communication software for Microsoft Windows and Linux that enables you to conveniently send and receive Process Data (PD) messages over a network using TRDP. TRDP telegrams and their datasets are configured via XML files. This allows you to simulate a TRDP enabled device on your PC and to communicate with and test your end devices under development.

#### Advantages

- Simple and fast testing of end devices
- Ready to use end device simulation with GUI
- Available for Windows and Linux
- Configuration via XML
- Interactive testing via Ctypes scripting libraries

#### Your benefits

- more safety due to repeatable test results
- more efficiency in the project due to automation
- better calculability
- quicker and more cost-efficient way to the final product
- simpler development of safety-relevant systems
- more reliable products
- reduced service effort in the field

### NTOnTrack TRDP Conformance Test: Test of End Device conformity to IEC 61375-2-8



The NTOnTrack Conformance Test is dedicated for End Devices using TRDP as a communication protocol within the Train Communication Network (TCN) according to IEC 61375-2-8.

#### Advantages

- Detailed Conformance Test specification including fault injection
- Conformance Test Report
- PICS proforma template
- 'C'-Source of Test Application for Device under Test (DuT)
- Test Execution with DuT in a test environment independent of the TCN Open TRDP Stack
- Support of test iterations



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