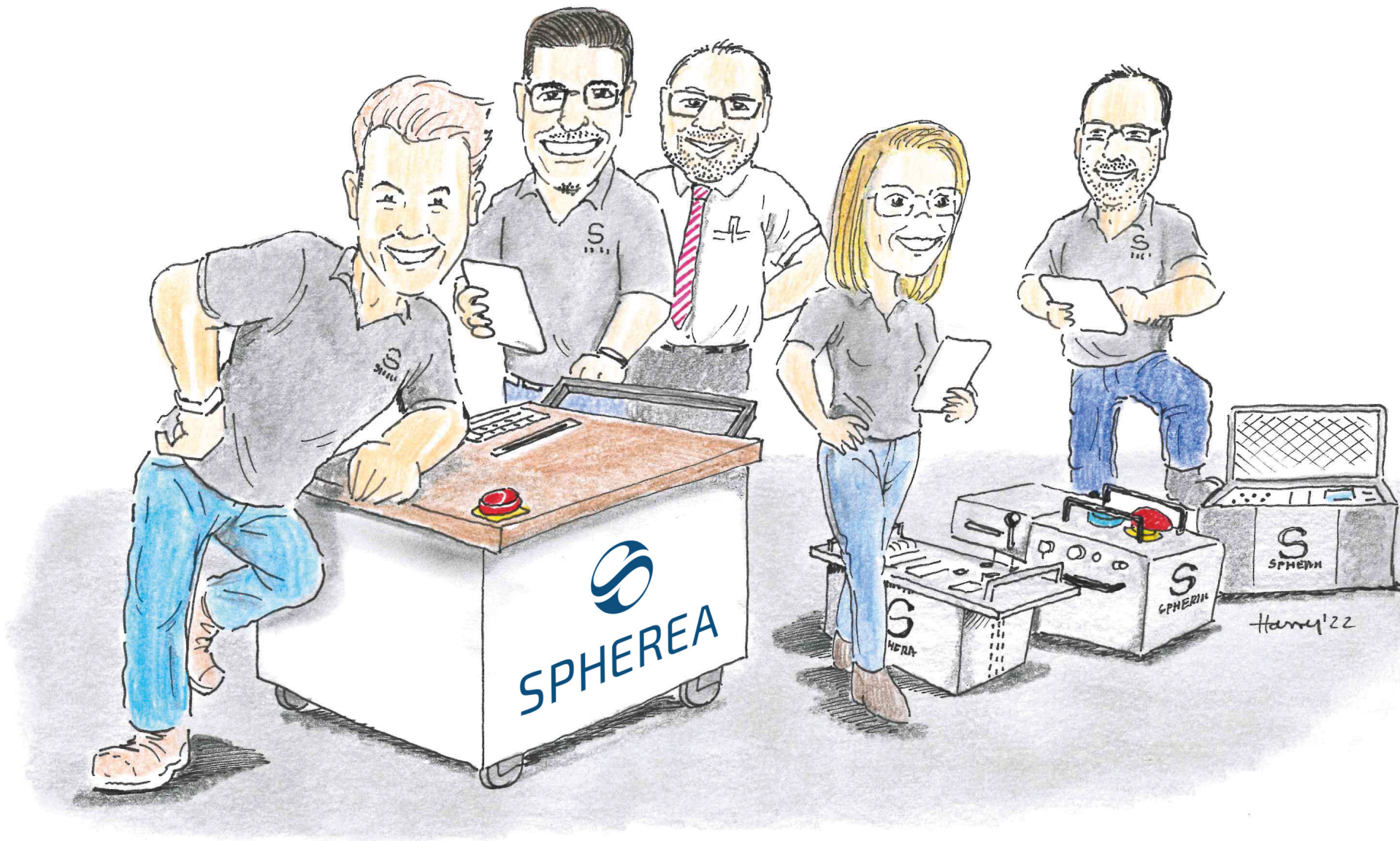


The TwinTrain-Family of SPHEREA



Preamble

Children love trains and picture books - so we do as the Spherea family: that's why we have put together our passion for building great test systems for trains of all kinds in a picture book. We hope you enjoy getting to know our TwinTrain-Family, which hopefully helps to increase efficiency in the production, commissioning and maintenance of rail vehicles.

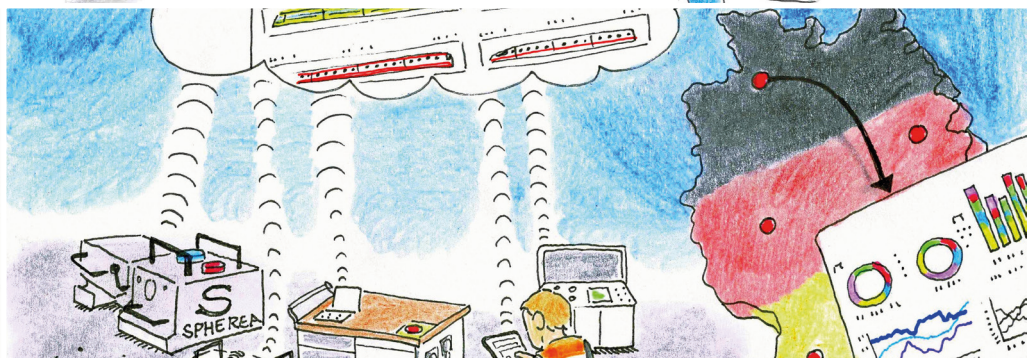
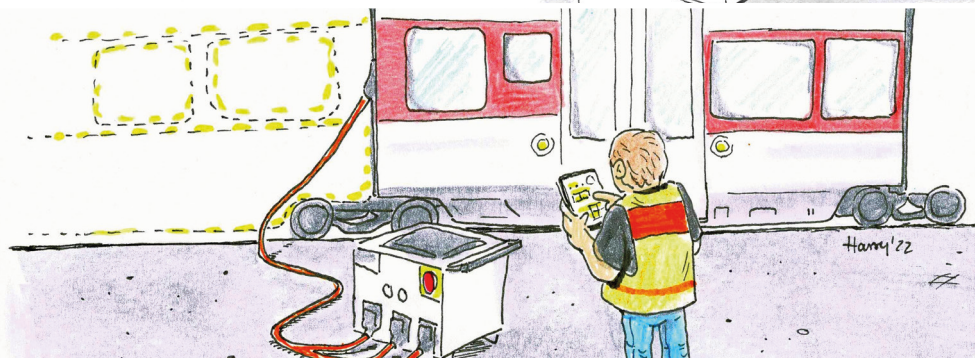
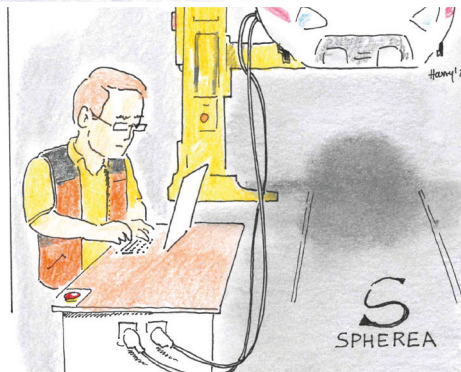
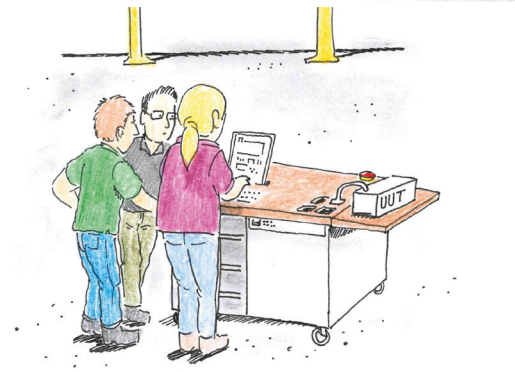
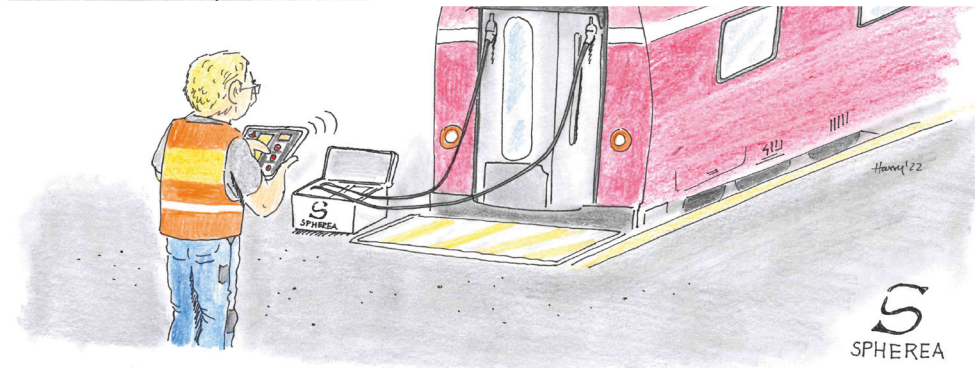
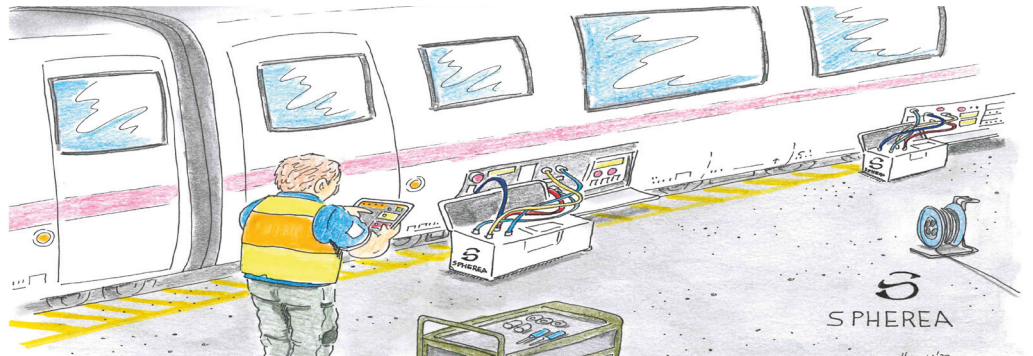
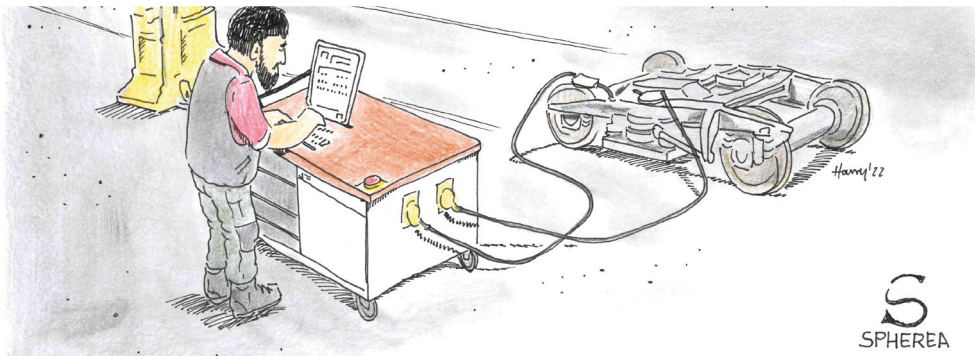
Our TwinTrain-Family allows you, among others:

- a train set check without a second vehicle based on simulations,
- early fault detection and troubleshooting support,
- the possibility of centralised operation,
- digital logging,
- reduced manpower requirements
- and much more.

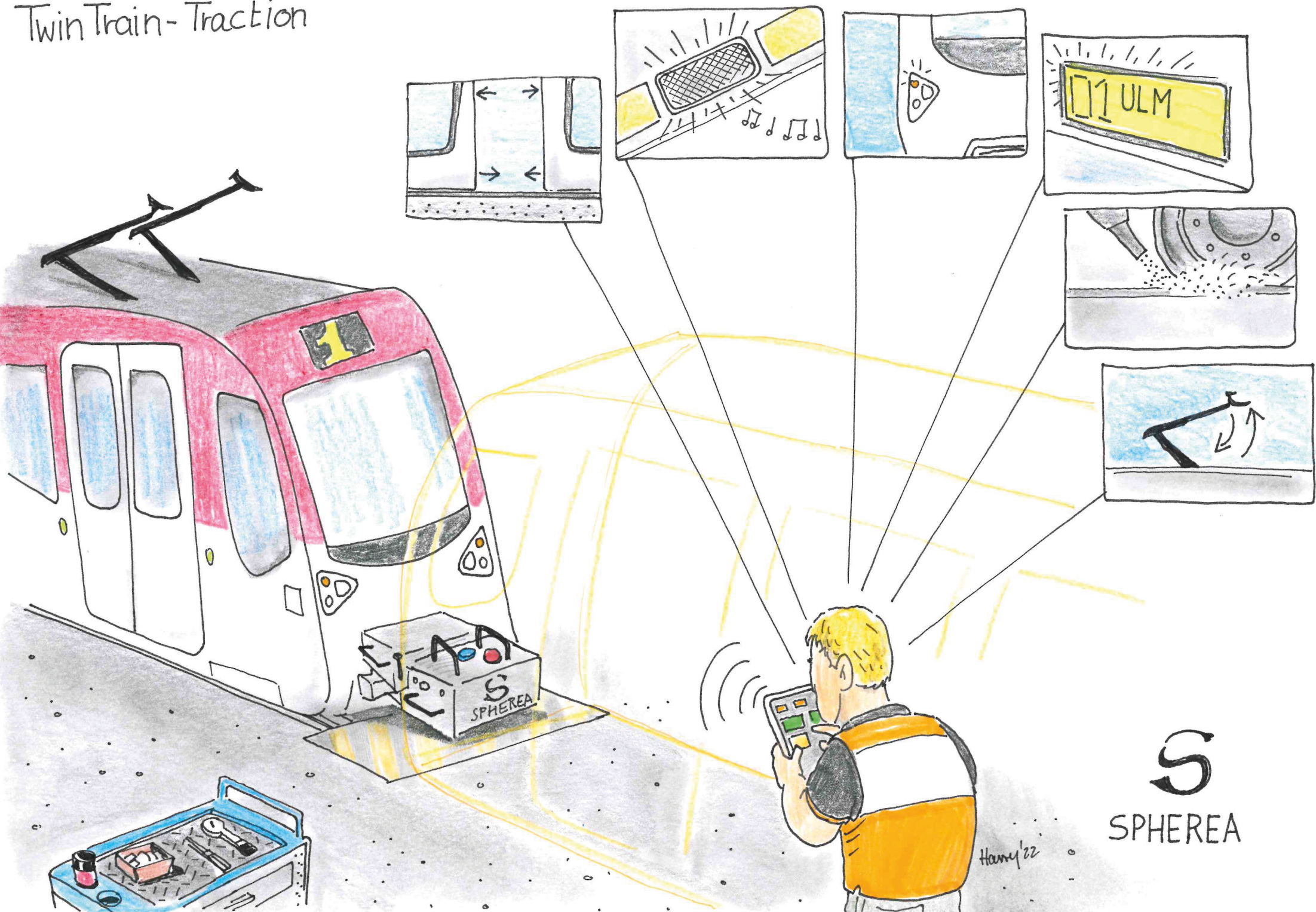
We are convinced, that the early, automated testing of electrical and electronic components leads to:

- a shortened duration of commissioning,
- a shortened duration of maintenance / servicing,
- a reduction in the amount of rework at train level,
- a reduction of test runs,
- and a reduced need of manpower.

To ensure that our TwinTrain-Family also understands each other, the TwinTrain-Cloud bundles data across locations and allows trends to be identified.



Twin Train - Traction



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TwinTrain-Traction

Functional test of multi-traction capability without a second vehicle and by only one operator.

The TwinTrain-Traction replaces an additional test vehicle by simulation. Directly connected to the electronic coupling, the TwinTrain-Traction is recognised as a coupled train and can take over the role of the leading or guided vehicle of a train set. All functions and signals transmitted via the coupling are tested and verified. The proper operational readiness of all safety and information systems of the rolling stock is guaranteed.

Advantages

- Robust design
- No need for separate test vehicles
- Shorter maintenance times thanks to automated, consistent and reproduceable testing process
- One-man operation by trained personnel
- Digital logging
- Self-test
- Expandable by additional functions

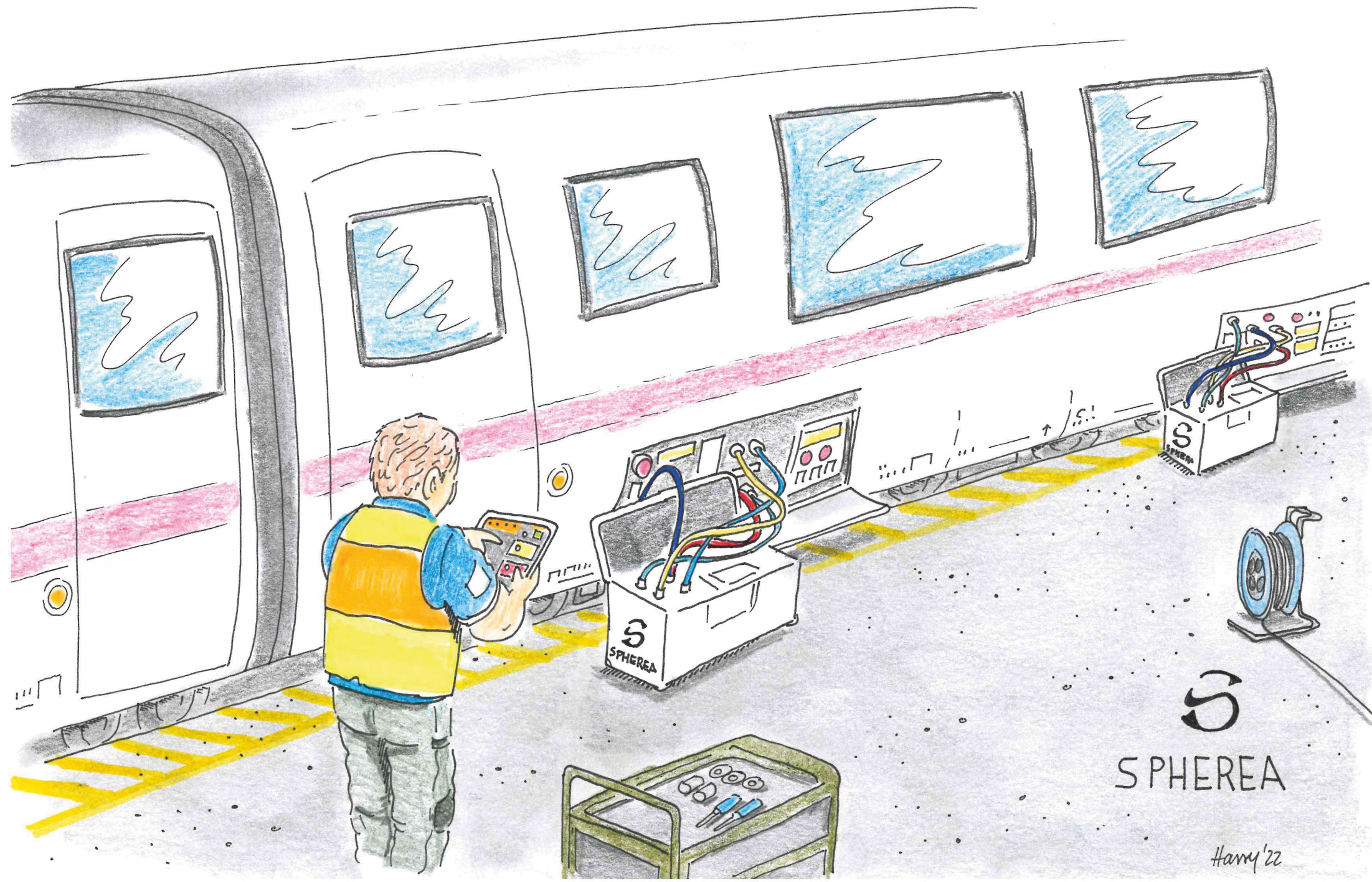
Field of application

- Maintenance and commissioning of tram and mainline systems.
- Multi-traction tests
- Functionality testing of e-coupling
- Maintenance



Product video

TwinTrain-Multi Brake



TwinTrain-MultiBrake

Efficient testing of the braking system with the acquisition of all relevant parameters on any number of brake units at the same time.

The battery-powered measuring modules of the TwinTrain-MultiBrake are installed directly on the devices under test (brake controllers). The direct connection to the vehicle's compressed air supply eliminates the need for an external supply of compressed air and the associated laying of long hose lines. Each measuring module can simulate a pressure, such as the loading pressure, and measure a variety of brake pressures. By recording the pressure values in real time, the times for the brake application and release processes can be checked automatically.

Advantages

- Accurate measurement directly at the brake controller
- Simulation of different loading pressures
- Simultaneous measurement of all brake pressures
- Automatic determination of application and release times
- Central operation via a robust tablet
- Simple and fast installation on the vehicle

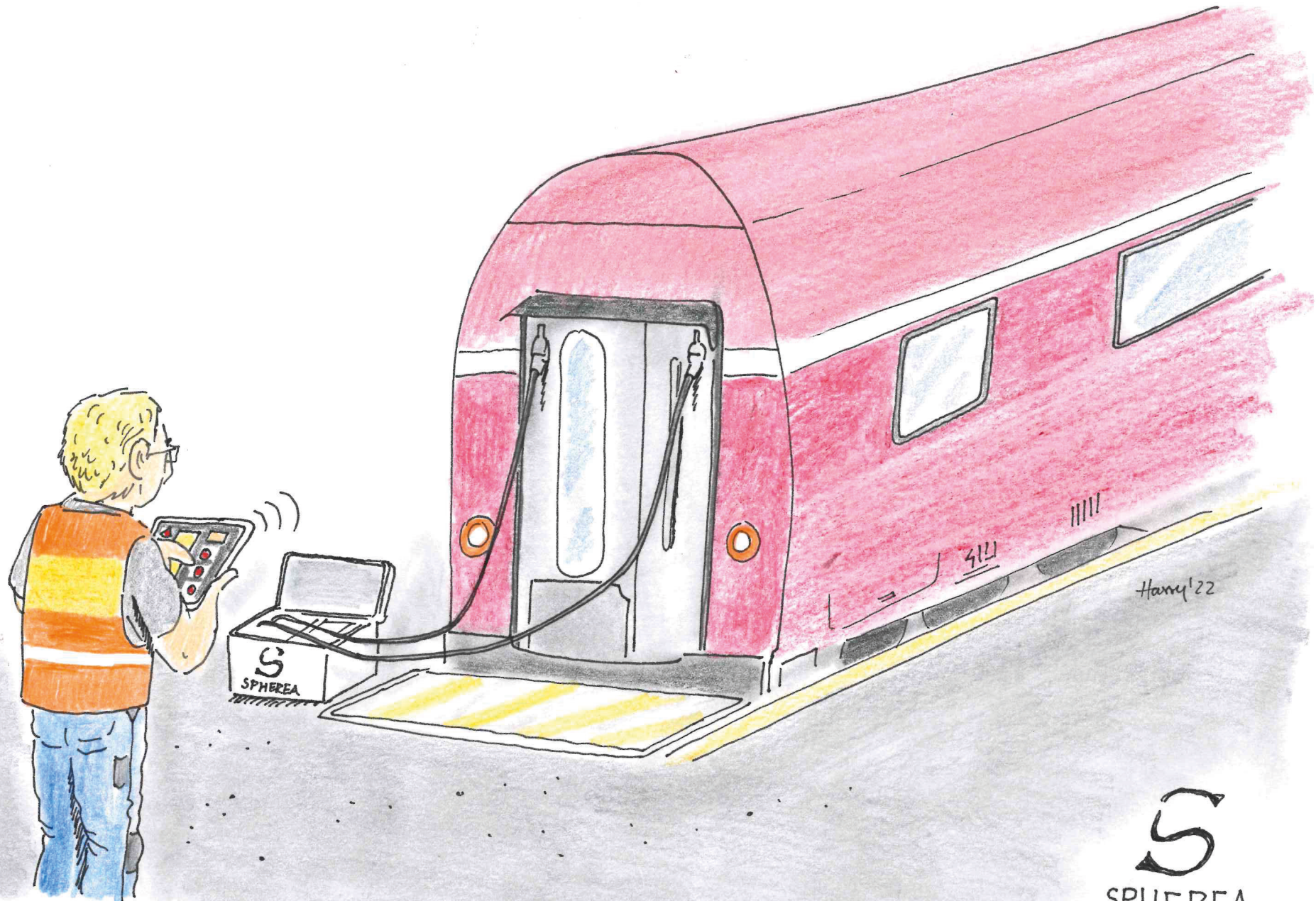
Field of application

- Commissioning
- Maintenance
- Expandability with measuring plates to test the mechanical force of the brake



Product video

Twin Train-Interface



TwinTrain - Interface

Detection of the condition of locomotives, wagons and train sets through automated testing of information and control lines.

The TwinTrain interface tests the conventional information and control lines between wagons and locomotives by simulating and reading the discrete signals as well as the communication buses. The system supports communication according to IRS-50558 specification. Via a graphical user interface, functions for door and light control as well as speakers and voice connections can be directly controlled. Depending on customer requirements, fixed test sequences including logging are possible. The TwinTrain interface can take over the leading and guided role in the train set.

Advantages

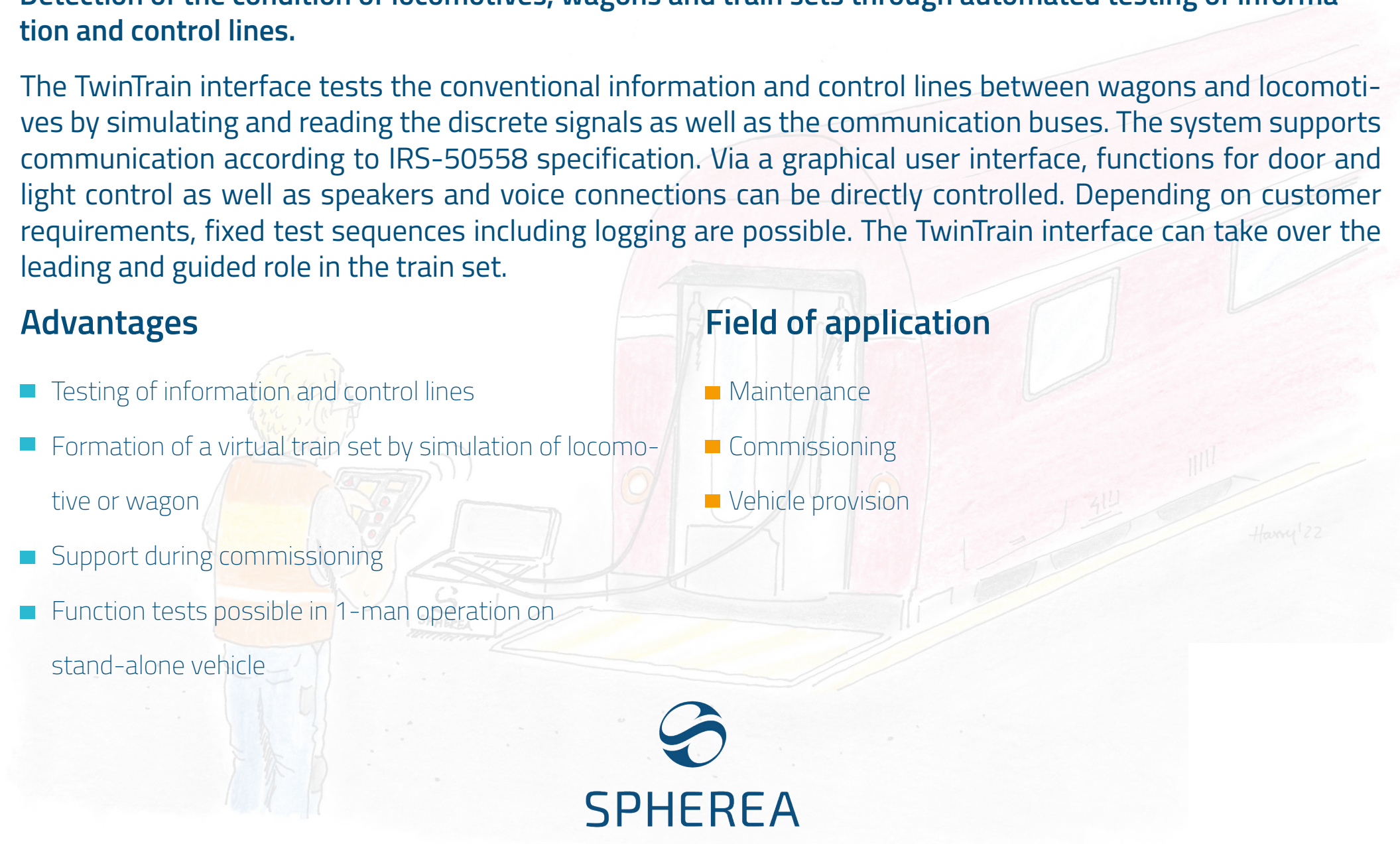
- Testing of information and control lines
- Formation of a virtual train set by simulation of locomotive or wagon
- Support during commissioning
- Function tests possible in 1-man operation on stand-alone vehicle

Field of application

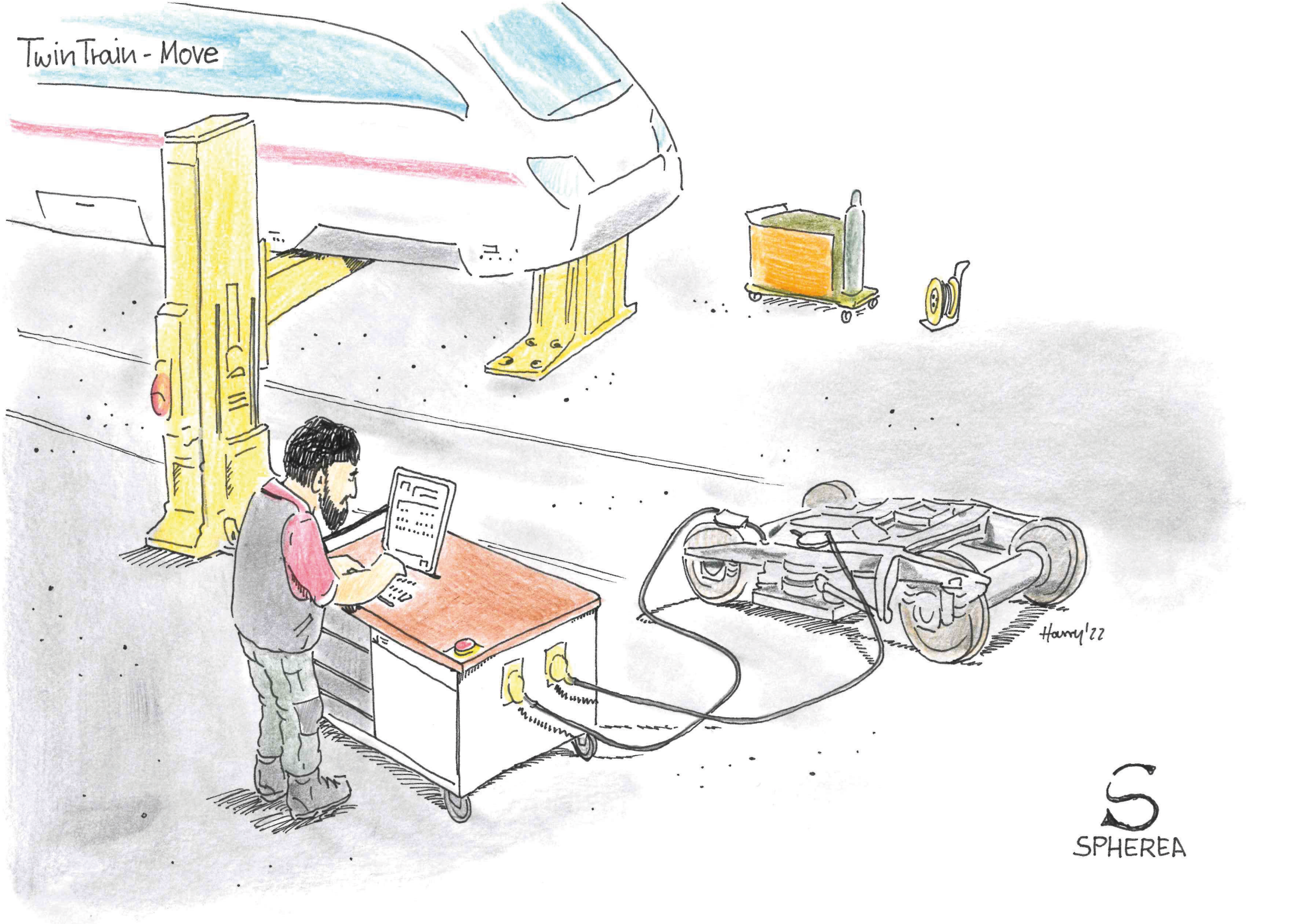
- Maintenance
- Commissioning
- Vehicle provision



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TwinTrain - Move



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TwinTrain – Move

Ensuring the function of electronic components in bogies as well as electrical safety through automated testing.

The TwinTrain-Move ensures that all integrated, electronic and electrical components function properly before the bogie is integrated in the wagon body. In addition, electrical safety tests can be carried out. Maintenance and assembly times as well as expenses for repairs, which can only be detected after the bogie has been installed due to uncovered faults, are reduced. The automated procedure can be carried out by one person. An optional roller test bench allows dynamic testing of the sensors installed in the bogie.

Advantages

- Testing of all electronic components
- Testing of antennas (e.g. for LZB, ETCS)
- Robust design for workshop use
- Digital logging
- Manual and automatic mode
- Significant reduction of rework at train level
- Significant reduction of test runs

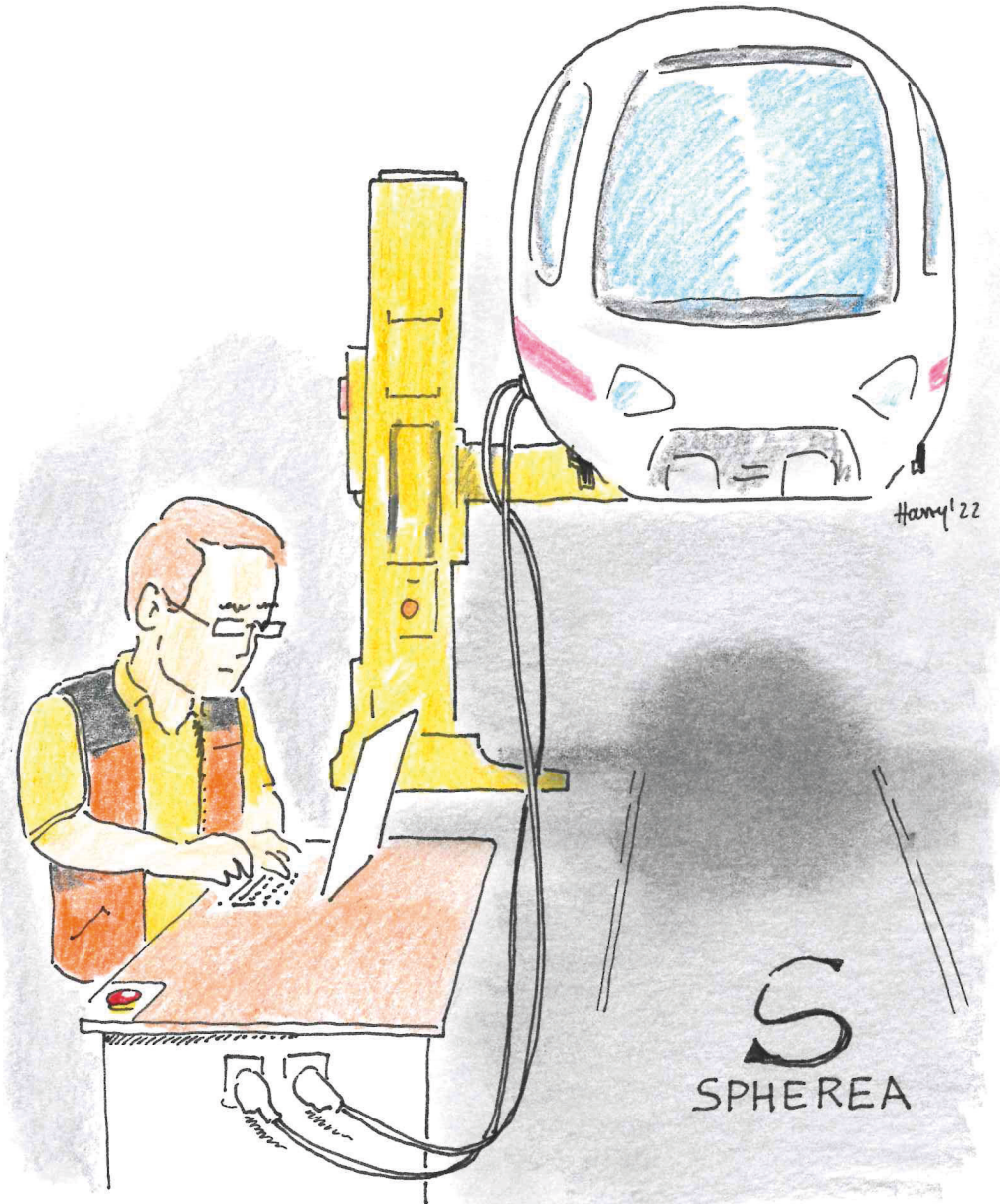
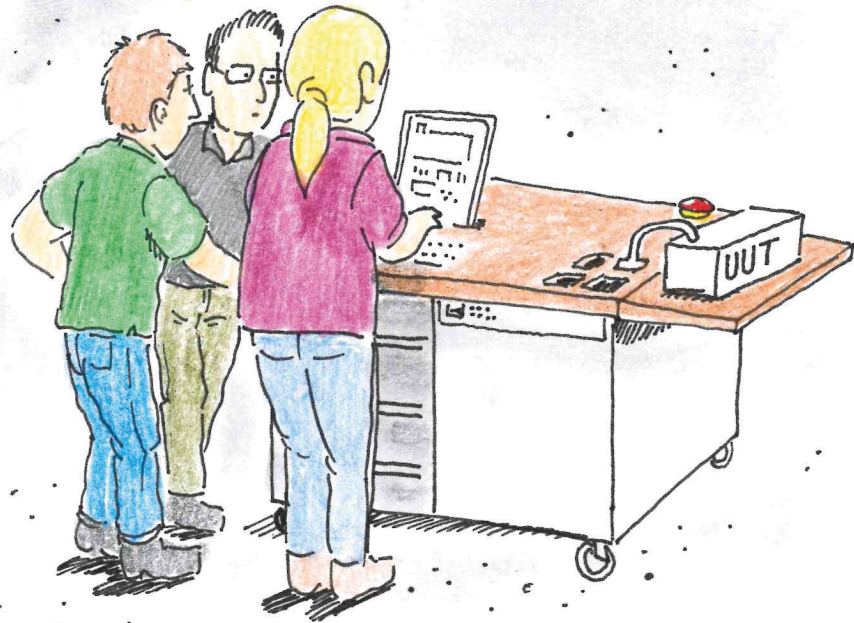
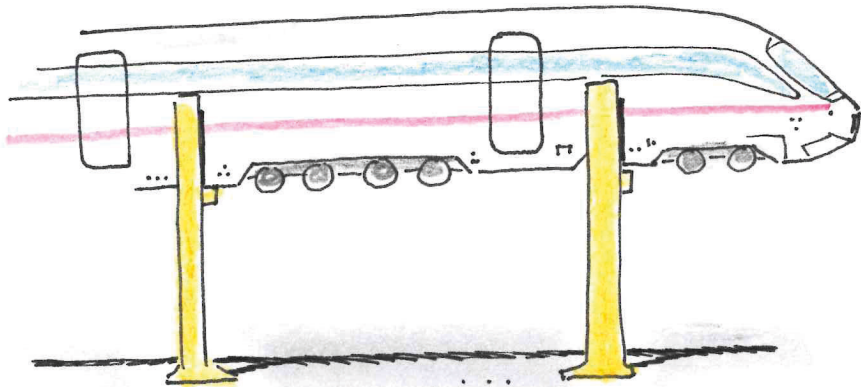
Field of application

- Incoming inspection/fault identification before maintenance and outgoing inspection
- Production



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TwinTrain-Work shop



TwinTrain – Workshop

Standardised and flexible test solution for all electronic train components and systems to reduce an extensive fleet of measuring equipment.

SPHEREA's TwinTrain Workshop is a standardised test solution for a wide electrical and electronic components of rolling stock. The TwinTrain-Workshop has generic measurement and stimulation electronic to test different DUTs (Device Under Test) on or off the vehicle. The user benefits from a standardised test environment that grows with future needs and ensures safety and quality through a variety of tests.

Advantages

- Testing of different components and systems with one test system
- Quality assurance through comprehensible tests
- Support in troubleshooting
- Reduction of the measuring equipment in the workshop
- Fast extension with new test programs
- Retrofitting of further signal types possible

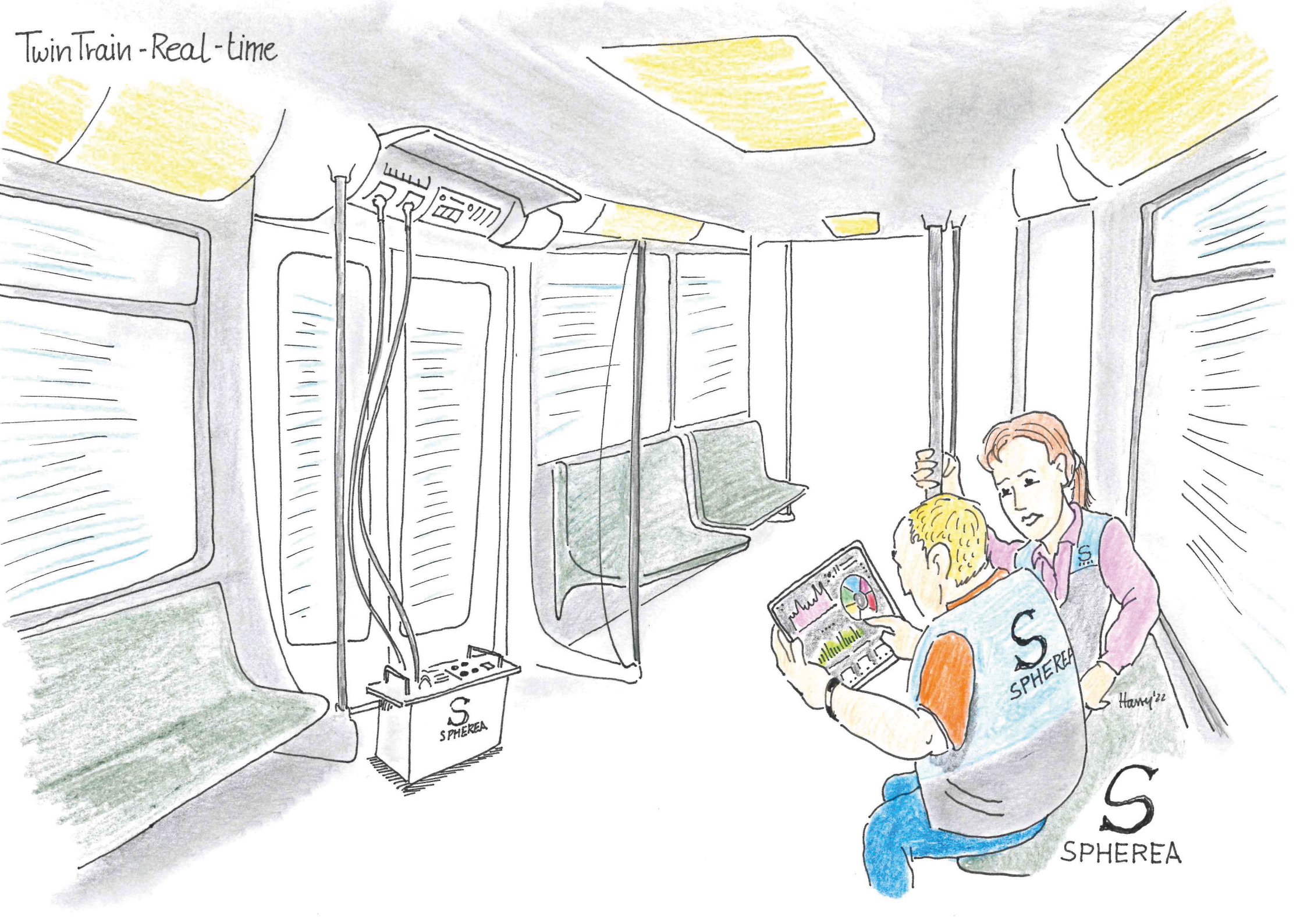
Field of application

- Diagnostics, quality assurance and troubleshooting in maintenance
- Commissioning
- Expandable with intelligent sensor technology for automatic recording of mechanical parameter



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TwinTrain - Real-time



TwinTrain - Real-Time

Analysis and solution of unresolved issues on the moving train as well as automated test drives.

If fault cases only occur in certain situations during operation, their recording and analysis can quickly become very complicated. Together with an expert from SPHEREA, a concept for data acquisition is developed. The TwinTrain-Real-Time records various electrical and electronic signals as well as bus communication in real time. The display of the recorded data can be adapted depending on the fault. The TwinTrain-Real-Time can detect previously defined fault patterns and inform the user in real time about the occurrence. As part of the troubleshooting process, the system can simulate various signals in a model-based manner. In addition, the TwinTrain-Real-Time can be used to automate test drive with fewer personnel.

Advantages

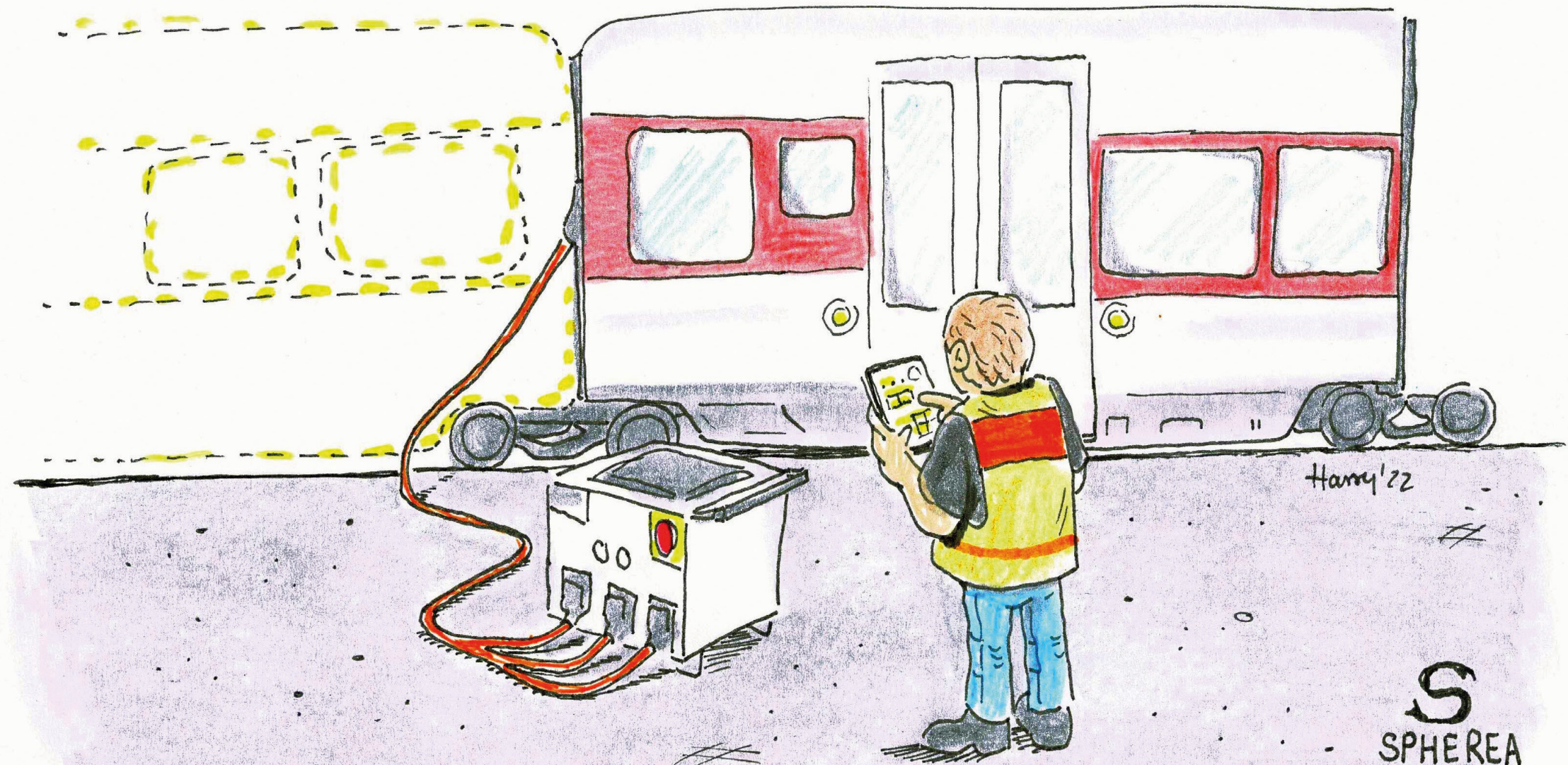
- More safety in troubleshooting/failure analysis/failure documentation through accurate measurements
- Exchange with experts for measurement and test concepts
- Reconstruction of (fault) situations
- Targeted modification of signal parameters to find solutions
- Use in the workshop environment as well as during test drives

Field of application

- Maintenance
- Commissioning
- System Verification



Twin Train - Single Car



TwinTrain-Single Car

Direct testing and commissioning of the vehicle part/single car after completion - independent of the availability of further vehicle parts or the complete train.

With the TwinTrain-Single Car, commissioning can be started directly after completion of a single car. The availability of the individual cars of the complete vehicle is irrelevant. Possible faults are detected early in the production or maintenance process and can be corrected directly. The duration of commissioning at vehicle level is thus shortened. For this purpose, the TwinTrain-Single Car is connected to the electrical and electronic interfaces of the single car and simulates the other railcar parts. With the TwinTrain-Single Car, functional tests can be carried out directly on single car level.

Advantages

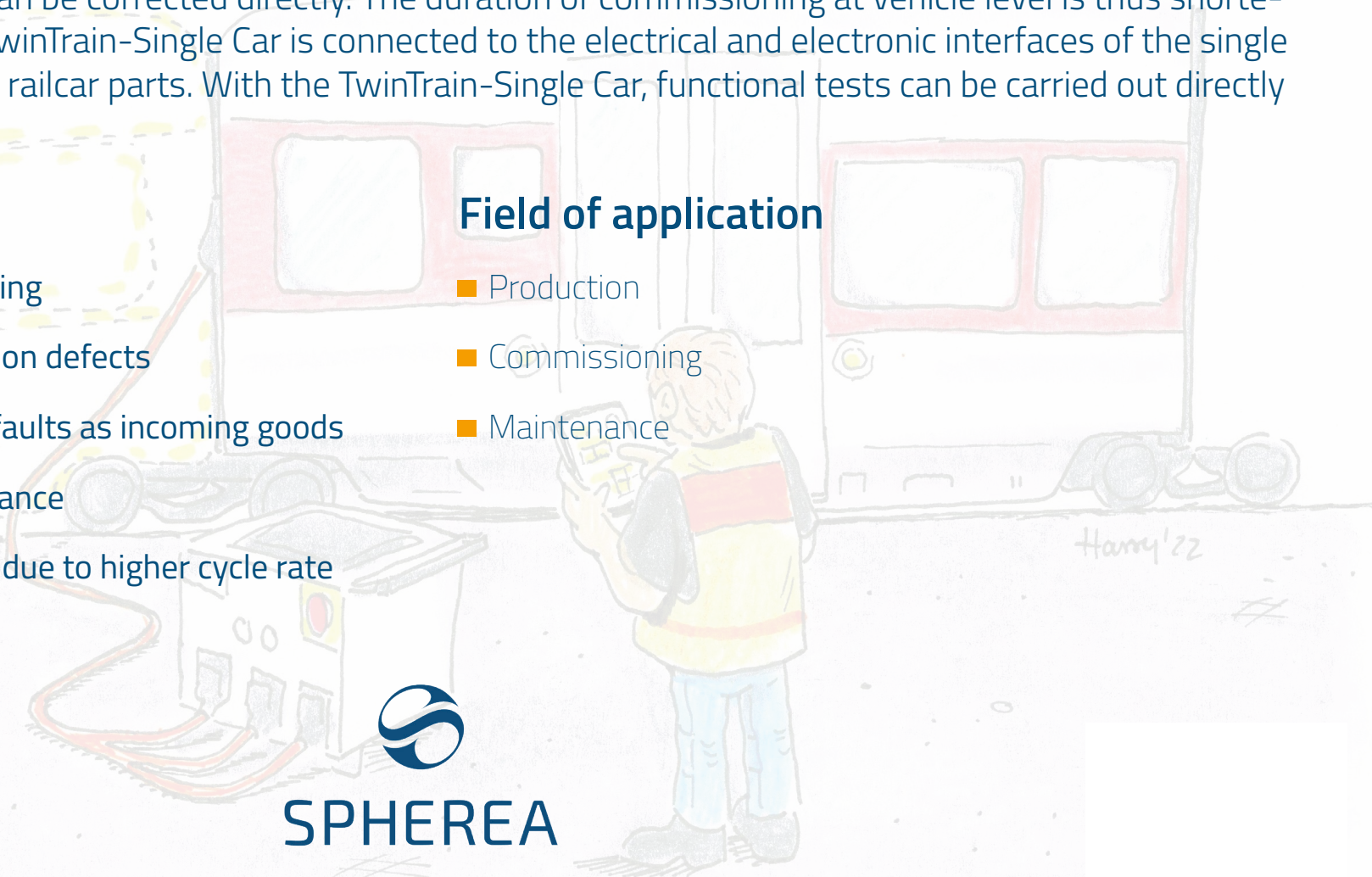
- Shortening of commissioning
- Early detection of production defects
- Early detection of vehicle faults as incoming goods inspection during maintenance
- Faster delivery of vehicles due to higher cycle rate

Field of application

- Production
- Commissioning
- Maintenance

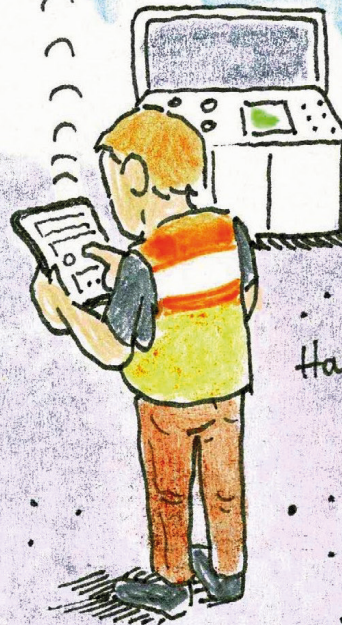
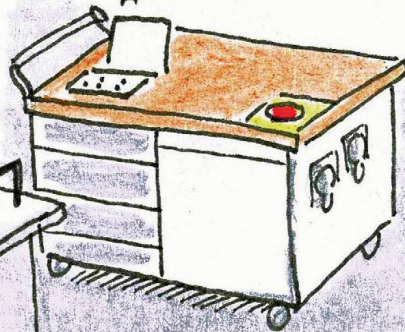
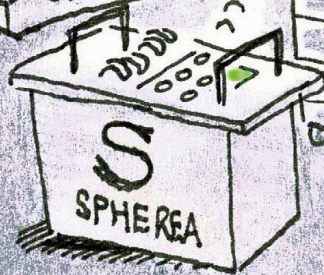
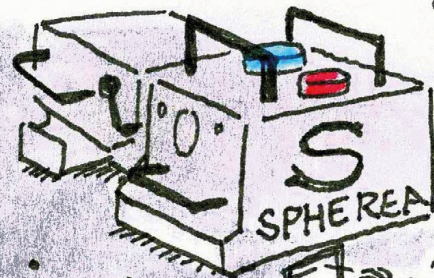


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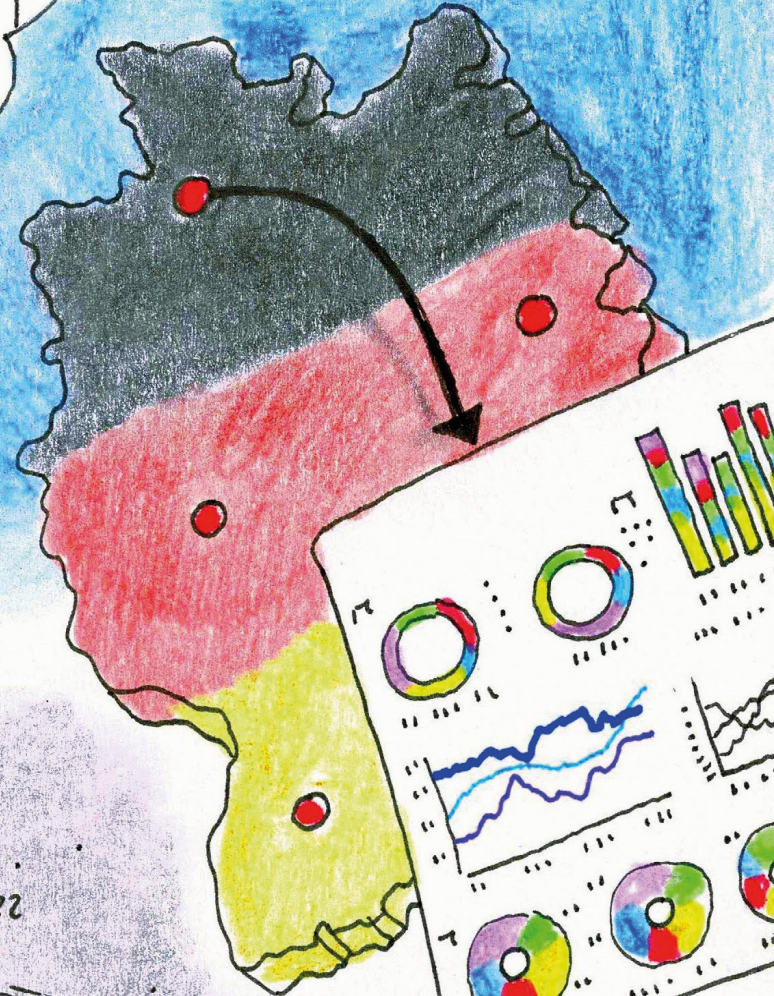


Twin Train-Cloud

CLOUD



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TwinTrain - Cloud

Central evaluation of test results, determination of fleet and component condition, test system management - a central element of the SPHEREAs digital offering.

The TwinTrain Cloud offers a central, cross-site overview: from test item management via test results to information about the test systems and live data. Based on the tests performed, the user receives an overview of the condition of the vehicles and their components. Test data are analysed and trends are identified. Software updates or test applications can be uploaded to the systems at different locations directly from the TwinTrain cloud. A connection to an ERP system or to a shop floor and workflow management system is possible.

Advantages

- Overview of tested vehicles and components
- Digital record of all tests performed on the vehicle
- Administration and overview of all test systems
- Linking and synchronization of individual TwinTrain-Test Systems
- Over-the-air updates
- Freely configurable and automated data evaluation
- Central overview and coordination across different sites

Field of application

- Global online solution for all test systems of the TwinTrain-Family
- Can be used for single or multiple systems
- Onsite or across sites
- Connection to ERP, shop floor and workflow management



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Are you interested?

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