Training and test facilities are more and more frequently required for the continuously increasing use of ETCS systems worldwide. Such facilities allow operational situations and functions / data to be tested under conditions which are as close as possible to real-life conditions.

In such tests, train runs with real system data are used to simulate a wide range of different operational situations.

### Basis: product and test environment
- Virtual running by emulation of original systems (on original hardware or in a software environment on the PC)
- Running of complete operational scenarios
- Entire subnetworks with several trains being run
- Parallel running of several trains on different sections of a network

### Flexible adjustment to projects
- Automatic or manual running of scenarios
- Automatic or manual control of trains
- Different line topologies
- Different signaling systems

### Versatile applicability
- Functional testing and data testing
- Usage for acquisition and rapid prototyping
- Training
- Acceptance support
The training and test system is adjusted to real-life conditions as far as possible:
- original software
- original engineering data
- real-time running

For this purpose, the ETCS system has to be embedded in the system environment (system levels) just like in the real-life system.

**System levels of training and test system**
- **ATS**: real-time optimization of operational schedules
- **ILS**: safe and high-performance interlocking system
- **ATO**: optimized and energy-efficient train operation
- **ATP**: safe and high-performance on-board operation

Within and between these system levels, the functions which are required for complete operational sequences are performed. All in all, the training and test system is based on the system levels’ existing product systems and enables real scenarios to be run in real time by means of 3D visualization with a driver’s console. For each train, the 3D view can create the exact impression when driving as experienced by the driver when looking along the line. At the same time, the original DMI provides the same information as on an ETCS-controlled vehicle.