

# RAIL TRAFFIC SIMULATOR



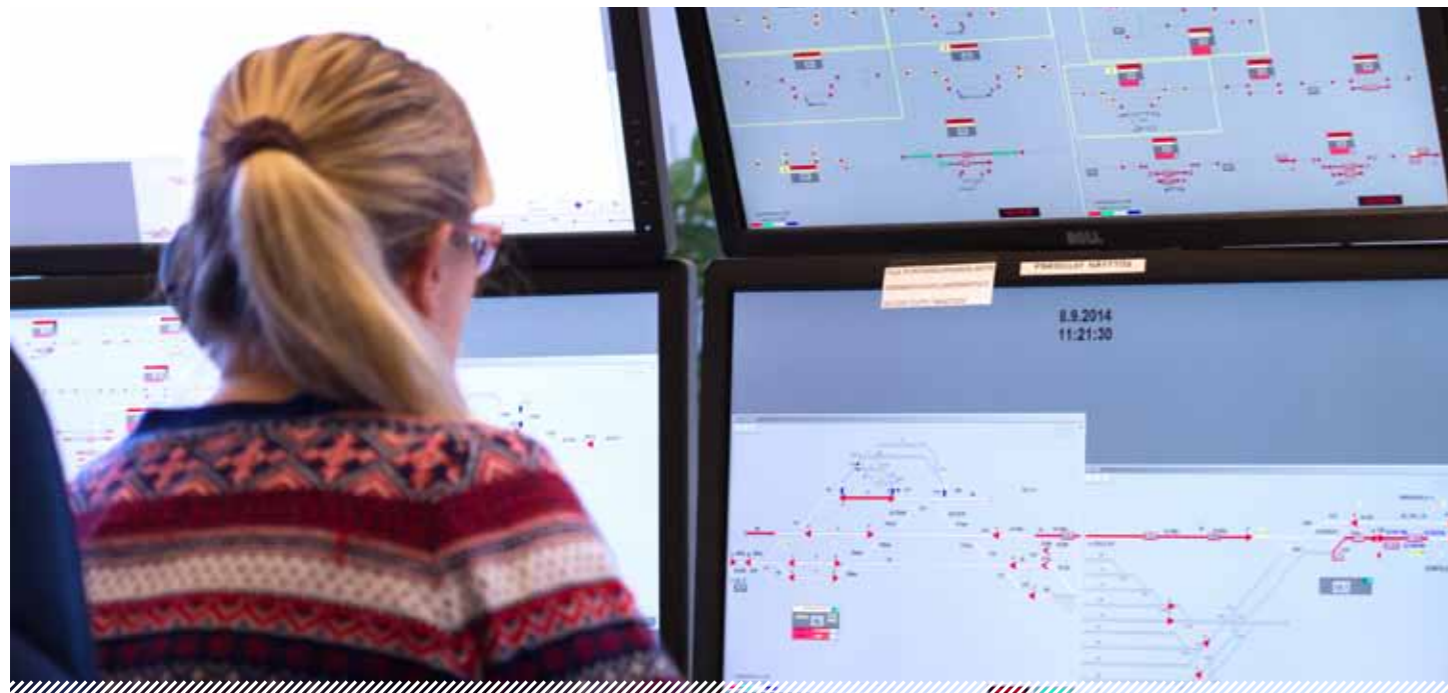
Mipro's rail traffic simulator is a complete simulation tool specially designed for training dispatchers and modelling signalling system functionalities - to ensure safe and smooth railway operations.

Training of simulated failure situations helps dispatchers manage unexpected conflict situations occurring in traffic or infrastructure. Modelling signalling system functionalities enables their accuracy and functionality to be tested in a real traffic control environment prior to commissioning.

## FEATURES:

- Modelling and visualisation of signalling functionalities
- Simulation of authentic traffic situations
- Training of dispatchers for special traffic and conflict situations
- Integration into the existing traffic control system and playback event recorder
- Application of national signalling system requirements

# SIMULATOR - FOR SAFE AND SMOOTH RAILWAY OPERATIONS



## A COMPREHENSIVE PRACTICE-ORIENTED SIMULATION TOOL

Mipro's rail traffic simulator is designed to simulate various signalling and interlocking systems. A key feature is its applicability in many different situations. It is a practice-oriented, reliable tool for dispatcher training, as well as for modelling, demonstrating, testing, and planning interlocking functionalities to ensure their correctness in advance.

Furthermore, the simulator provides predictive information that can be used to manage critical traffic situations, create time tables and thus enhance and optimise rail use and capacity.

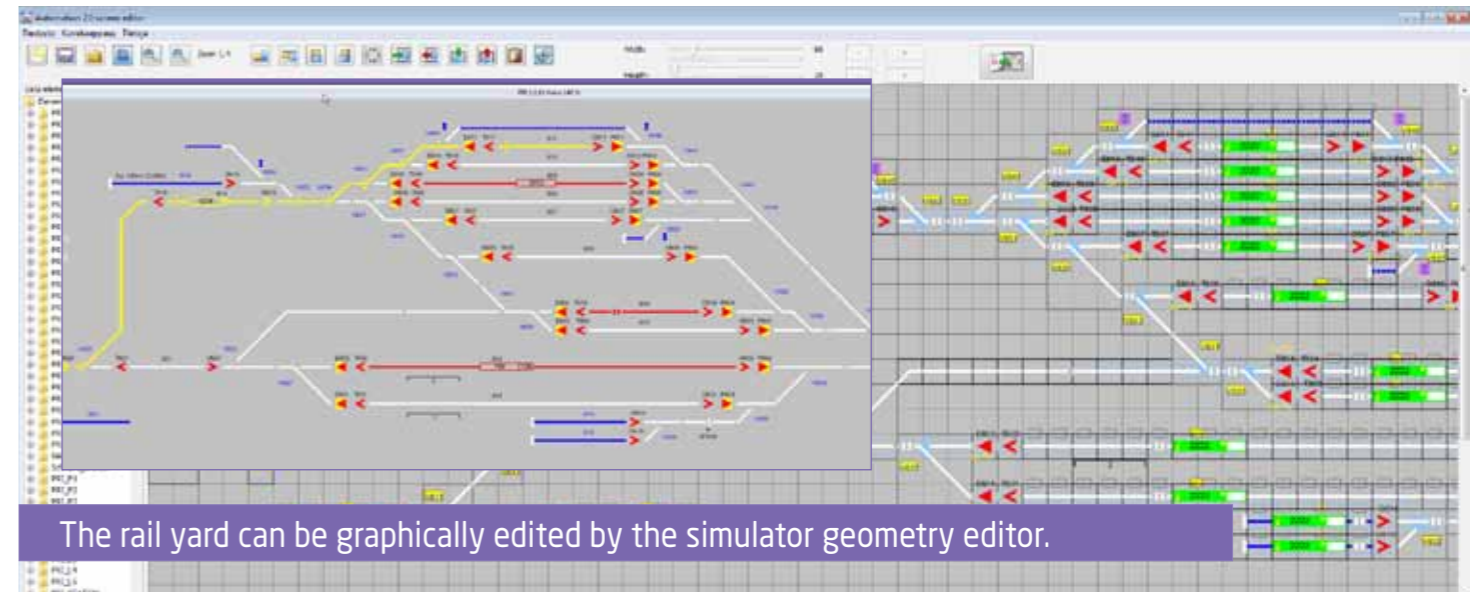
Mipro's simulator enhances the work of dispatchers and rail operators by assisting them in their day-to-day decision making.

## SIMULATION OF AUTHENTIC TRAFFIC SITUATIONS

The simulator enables the modelling of signalling system functionalities and track geometries of different types. The simulator is provided with a special geometry editor that applies existing interlocking system platforms or signalling system designs to create track geometries for simulation. In this way, interlocking system functionalities can be clearly visualised to facilitate their testing and analysis in the traffic control environment.

As signalling control schemes become more and more complex, it is vital to ensure that planned new or modified designs will deliver the desired system performance. With the simulator you can study and test how modifications made to the existing interlocking system work in real traffic situations or test a virtual interlocking system before the system is implemented and commissioned.

# SIMULATOR ELEMENTS



Moreover, if there are any bottle necks in the traffic, the simulator is an efficient tool to find alternative strategies and operation models to solve them and avoid their recurrence.

## TRAINING OF DISPATCHERS

Mipro's rail traffic simulator provides an efficient tool for safe and reliable dispatcher education and training. New dispatchers can be trained in basic control operations. Experienced dispatchers can be tested in simulated critical traffic situations relating to the infrastructure or traffic.

The simulator includes specific trainer tools to create faults and failure situations, and predefined scenarios with a sequence of events that might occur.

In the dispatcher training, the simulator is integrated into the traffic control system. This means that live traffic control situations can be transferred to the simulator, ensuring authentic training sessions.

A further benefit is that the simulator can be integrated into the playback event recorder, allowing recordings from the live environment to be used as basis for simulation. For example, the simulator can carry on the function from the point where playback recording stopped.

Mipro's rail traffic simulator software is scalable: configuration of the system can be defined according to the intended use.

## INTERLOCKING SIMULATOR

The interlocking simulator enables reliable modelling of most interlocking systems and complex control schemes. It supports the most common interlocking system features as well as failures.

Furthermore, it allows you to define, if desired, supplier-specific special functionalities to be simulated with the simulator. National requirements for functionalities, notifications and commands can be taken into account when configuring the simulator system.

The interlocking simulator models the most common failure situations that affect train traffic. You can set element failures related to, for example, points, track sections and signals, and block failures related to line blocks and communication breaks for the simulation. The failures can be programmed according to a timetable, allowing the trainer to plan the entire training session in advance.

## TRAFFIC SIMULATOR

The simulator provides a real simulation that demonstrates how trains can be run on tracks under the interlocking system. It simulates train movements and responds to the signal aspects of signals while moving on the track according to the routes and track geometry.

Simulated trains accelerate, decelerate and stop just like real trains. Furthermore, you can define various rules to move the trains on the track, and according to train types it is possible to define various parameters related to movements. The operator can, for example, change the behaviour - that is the speed or length - of the train.

Timetables can be tested to ensure they are workable and conflict-free. They can be downloaded from the traffic control system in use or from an external system in RailML format. The number of trains simulated simultaneously is unlimited; for example, by using the scheduling you can simulate the traffic according to the entire timetable.

## RAIL TRAFFIC SIMULATOR

Operators and dispatchers in traffic control centres must be capable of making decisions quickly and without hesitation: the traffic density is often high and unexpected situations related to traffic, infrastructure or technical devices may occur. Mipro's rail traffic simulator is an efficient means to ensure that operators are trained for all conceivable situations and are capable of handling them correctly, quickly and with confidence.

Interlocking system commissionings and modifications set high requirements even for experienced operators. By modelling interlocking system functionalities with all external installations, timetables, and all imaginable technical and operational malfunctions, they can ensure that commissioning runs smoothly and operations are completed perfectly from day one.

## BENEFITS

- Independent of the manufacturer and type of interlocking system.
- Modular simulator system structure is scalable to any use and target.
- The simulator editor tool can be used to graphically edit track or rail yard geometry.
- Authentic traffic situations can be used for simulation.
- The number of trains simulated simultaneously is unlimited.
- Timetables can be downloaded from the traffic control centre or from an external system in RailML format.

# MIPRO

## PROVEN RAILWAY SAFETY EXPERTISE

Mipro is a pioneer in and a leading supplier of railway systems in Finland. We are the only company based in the Nordic countries that provides rail safety related systems that meet the requirements of the highest Safety Integrity Level (SIL 4). Our systems are based on close co-operation with end users, and our expertise, reliability and flexibility is well proven by our over 25 years of experience and persistent work.

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Our operations are managed in accordance with an integrated management system certified according to ISO 9001 standard, and an environmental system certified according to ISO 14001.