

## Using RailSys® for urban rail transport

RailSys® enables the handling of various tasks that are of particular interest when planning urban rail operation. In addition to the exact mimicking of the processes of general railway operation, such as extended dwell times due to passenger exchange or scheduled connections, RailSys® precisely replicates the specific characteristics of local and suburban mass transit systems, e.g. running on sight or obstructions through individual traffic and traffic lights.

### The following and other questions can be answered with the help of RailSys®:

#### Capacity evaluation

- How much spare capacity is available?
- What is the maximum capacity of the infrastructure (lines, stations and yards)?
- What is the impact on the punctuality if the number of services is increased or decreased?

#### Bottleneck analysis

- Where are the bottlenecks?
- Which infrastructural or operational changes can relieve the bottlenecks?
- How big is the impact of these changes ("Is it worthwhile?")?

#### Modification of line concepts

- How does the punctuality change compared to the existing punctuality?
- Do new bottlenecks arise and how can these be prevented?
- Does the new concept provide improvements?

#### Innovative signalling systems

- Do innovative signalling systems lead to an increased capacity?
- What impact does the introduction of a signalling system have on the existing timetable if the timetable was initially designed for running on sight?
- Can the implementation of additional signals at selected locations increase the punctuality?

#### Robustness check

- How is the network performance impacted by specific incidents, e.g. signal failure or vehicle breakdown?
- How long does it take for the network to recover after such an incident?
- Which measures can be applied to decrease the impact of incidents?

Already during the timetable construction, first answers about the existing capacity and excess capacity as well as bottlenecks can be found. The level of infrastructure utilisation is efficiently evaluated. Conflicts between competing trains are automatically and continuously identified and listed during the timetable design. Solutions for timetable conflicts can be achieved by interactively modifying the timetable or the infrastructure within RailSys®. Thus, it is possible to create and evaluate different scenarios for the timetable and/or the infrastructure.

Make the **perfect decisions** for your infrastructure.

Operational simulation allows for the investigation and evaluation of the operational quality and stability of different scenarios. Real world operation is modelled by superimposing stochastically distributed perturbations onto the scheduled timetable, both between stations (due to individual traffic or traffic lights) and within stations (due to extended passenger exchange, door failures etc.). The resulting operation is subsequently simulated in numerous iterations, each iteration representing an individual timetable day. The extent and propagation of additional delays, punctuality and achieved connections are obtained for the evaluation of operational quality and stability.



The results can be exported in different file formats and various forms of presentation, serving as an easy basis for discussions and further presentations.

RailSys® can not only be used for the planning of urban rail transport but also for larger rail networks and any type of railway studies. The software is based on the workflow that corresponds to the real planning steps. Therefore, every action in the system follows your actual processes and is constantly transparent to you.

We can advise you by answering questions regarding urban railway and support you in the use of our software RailSys®.

## Consulting projects (selection)

- Adelaide Tram
- Transdev, Auckland
- Suburban Rail (S-Bahn) Berlin
- Bielefeld Tram
- People Mover Frankfurt Airport
- Hamburg Underground
- Hanover Tram

## Software clients (selection)

- BOGESTRA, Bochum
- BVG, Berlin
- KVB, Cologne
- Metroviás, Buenos Aires
- Public Transport Victoria, Melbourne
- TfNSW, Sydney