



## Strategic and tactical planning of metropolitan passenger networks

### General description

The strategic and tactical planning of public transport networks require advanced tools to model, analyse, quantify, optimize and evaluate current and alternative service provision designs. Challenges include the interactions between its infrastructure layer, service layer and passenger flows as well as the importance of behavioural and dynamic phenomena.

Master thesis projects in the domain of network analysis, service dynamics and service optimization can be performed at the rail group in Royal HaskoningDHV, an international engineering consultancy firm.

### Potential assignments

Topics of special interest for a master thesis topic include the following:

- Development a method for an automated generation of timetables using micro-simulation
- Analysis and mitigation of bunching effects on metro services
- Optimizing an integrated metropolitan train and metro network
- Estimating the impacts of comfort on public transport users' choices
- Analysis and measures for improving the robustness of urban rail networks

The objective of these projects is to develop methods to support decision makers in deciding on this and related topics. In all cases, system dynamics and passenger flows will be considered for real-world case studies.

### Candidate background

T&P or TIL Students who preferably have affinity with modelling such as simulation and optimization techniques. Basic knowledge of public transport operations is required and especially a willingness to learn in this field.

### Research group

Transport & Planning Department

Daily supervisor: Dr. Oded Cats, [o.cats@tudelft.nl](mailto:o.cats@tudelft.nl)

### External support

This project will be performed at Royal HaskoningDHV

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