



Developing multimodal line network designs for beyond 2030

Problem description

ProRail expects increasing traffic on the dense rail network every year, but capacity limits will be reached within 10 years. Thus, they raise critical concerns that current infrastructure together with planned improvements may not be sufficient to fully satisfy forecasted demand from 2030 onwards. However, not enough funds are secured for railway infrastructure improvement projects, and thus it may be expected that in the future a single transport mode cannot take all expected demand. Therefore, it could be distributed over multiple modes such as regional railways, metro, tram and bus systems. In this project you will be able to develop models and algorithms for providing multimodal public transport services. Potentially, an interaction between the conventional modes and new hybrid transport modes such as shared, autonomous, and on-demand services like Lyft, Uber, ViaVan, can be addressed. This research will bring more coordinated services and seamless connections that leads to more synchronized traffic which uses infrastructure optimally and improves the quality of service to passengers.

Assignment

- Literature review of existing approaches
- Develop an approach for novel multimodal railway-based public transport network
- Quantify positive impacts of integrating multiple modes for public transport
- Write a report and a scientific paper

Background

A student will have an opportunity to further develop skills in mathematical optimization, data analysis and programming. The project can be conducted as final thesis project or research project. The research can be preformed within T&P or within a relevant company.

Information

Digital Rail Traffic Lab (DRTLlab) www.tudelft.nl/drtlab/

Thesis supervisors: Prof. dr. Rob Goverde, Dr. Nikola Bešinović

Contact: n.besinovic@tudelft.nl