
Abstract of the master-thesis

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Topic: Optimization of existing approaches for public transport prioritization
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With the growing traffic volume in road transport, the congestion increases in the road network in spite of various measures. To counteract this trend, it is attempted to increase the share of public transport (LPT), because the public transport provides higher transport efficiency than the motorized individual traffic and therefore reduce the number of active participants and can relieve the traffic capacity of road space. The conventional approaches focus primarily on ad hoc measures such as the preemption of light signal-controlled intersections. They act in specific situations only conditionally. Due to various factors, such as the current traffic situation, or unpredictable passenger transfer times, irregularities in the trips are caused. Despite the use of acceleration measures even more delays occur. In the thesis a detailed site- and time-specific analysis of the cause of interference is performed. The free tracks, stations and junctions along the courses will be considered as a whole. The existing approaches will be optimized.

The heavy loaded Dotzheimer Straße in Wiesbaden, on which many public transport lines operate, is set as the example corridor and studied in details. After a review of the status of research and the situation in the corridor, a statistical evaluation of the available data is undertaken systematically. The data from ESWE Verkehrsgesellschaft and the Civil Engineering Office in Wiesbaden are fused, processed and analyzed targeted in an appropriate form. Based on the data analysis and subsequent problem analysis recommendations for the optimization and the complement of the public transport acceleration in the corridor (Dotzheimer Straße) are derived. Finally, recommendations for the optimization of existing approaches to the acceleration of public transport will be elaborated in a general situation. Both operational and technical aspects are taken into account as well as planning and organizational aspects.

In the first step is the target system of public transport acceleration presented, based on the analysis of the literature search. Subsequently, possible causes and effects of disturbances in the operation of public transport and general measures for public transport acceleration are analyzed. Depending on their causes interference is attributed to the groups schedule and operations management, disturbances at bus stops, disturbances on the open road, as well as disturbances at intersections with and without traffic signals. Accordingly, station-based, distance-based and signal-program-related measures are discussed. They are complemented by measures based on signal-related special forms.

In the second step, an inventory and analysis of problems at the examples of Dotzheimer Straße is carried out. The situation in the corridor, the location and significance of the corridor in the network, the progress of the road and its surrounding area in an urban planning perspective are described, followed by the presentation of

additional background information, such as the use of groups in the corridor, signalized intersections and bus stops along the corridor. The core of the problem analysis is the targeted data analysis. Firstly, the relevant information such as the data sources, data bases and the acquisition systems and applied analysis programs are presented as the basis for evaluation. Then on the basis of data provided a transport time analysis, a time loss analysis, a residence time analysis stops and schedule variance analysis are sequentially carried out. From the result of data analysis, the areas worthy of investigation are identified. These may be road sections, intersections and bus stops with high fault probability. These routes or infrastructure elements are considered in a holistic way to analyze the PT-time elements superimposed. Another important component of data analysis is the analysis of interactions between MPT and PT. The MPT-time elements and PT volume in specific sections and nodes are linked together and correlated. The result showed that at MIT volume in the middle range arrives the correlation its largest values. The detailed data analysis is supplemented by on-site observation, so the problem analysis is completed. To conclude this chapter, the fault causes are determined on the basis of tests carried out and the survey of tutors from the agencies involved.

In the third step, concrete measures to solve the identified problems are developed. The operational and physical conditions are taken into account. Then based on the knowledge gained in the course of the work general recommendations can be derived. These relate not only to measures to be applied, but also on the requirements for the basic data, the approach to data analysis and collaboration of various agencies involved. In technical aspect, the recommendations will be determined in order to better utilize existing data, to complete the data base and to achieve the higher quality data acquisition and data processing. In the organizational and planning aspect, proposals for the creation of project organization to improve the quality of assessment are developed.

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