IVT

Institute for Transport Planning and Systems

Project Summary

Long-distance Train Stops in European Metropolitan Regions

Institute for Transport
Planning and Systems

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Long-distance Train Stops in European Metropolitan Regions

Goal and Procedure

The purpose of this thesis is to provide guidelines for choosing a service concept of long-distance train stops that is best suited for a given metropolitan region. After some general considerations, three less common concepts of long-distance train stops are investigated. The insights of the case studies and the general considerations help developing the selection methodology in the end. As a final step, it is applied to Zurich.

General Considerations

A definition for long-distance traffic specific to this thesis is developed independent of the various national definitions. It is applied to all further steps. The chosen approach systematises the large number of conceivable concepts to serve a metropolitan region with long-distance traffic. Brief investigations show that concepts containing one main station are most frequent, whereas all concepts with stops on a ring line (see Fig. 1) are rare. Three less common concepts are investigated in detail to gain more insight.

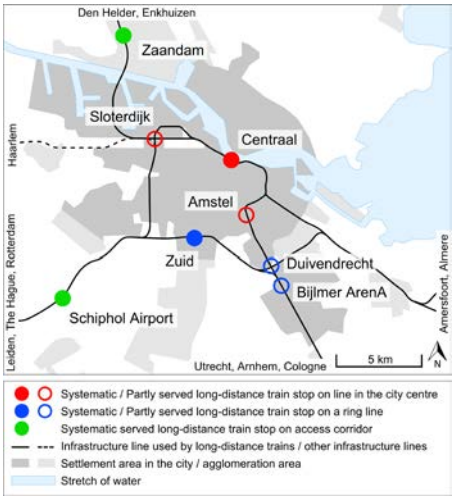

Fig. 1 Amsterdam, the only application of the Concept "Main Station and Incomplete Ring Line Combined"

Case Studies

Amsterdam is the only city in which there are both long-distance trains serving the main station and trains serving stations on a ring line. The integral concept to develop the southern flank causes more trains on the ring line in the future.

In Berlin, the area of the former wall was developed by establishing the new main station there, whereas the existing centres are made accessible by further stops.

Copenhagen has systematic long-distance train stops in its agglomeration area. Høje Taastrup is an important node, which was motivated by plans to develop the agglomeration area and to extend it westwards.

Selection Methodology

The insights of Amsterdam, Berlin and Copenhagen help developing the selection methodology for the most suitable service concept. This methodology is split in a part for the service concept for the city and a part for the agglomeration area. The city part is based on the coincidences between the characteristics of the given metropolitan region and the characteristics being most suitable for each concept. Finding the service concept for the agglomeration area relies on a scoring system using utility points that are distributed on the two options serving or not serving any station.

Based on applying the selection methodology to Zurich, it is recommended to develop a concept with stops in Altstetten and Oerlikon for all trains, and tangential trains from east to west without serving Zurich Main Station (see Fig. 2). Stops in the agglomeration area are not advisable. The suggested concept accommodates the increasing polycentralisation of Zurich and leads to shorter travel times for through travellers.

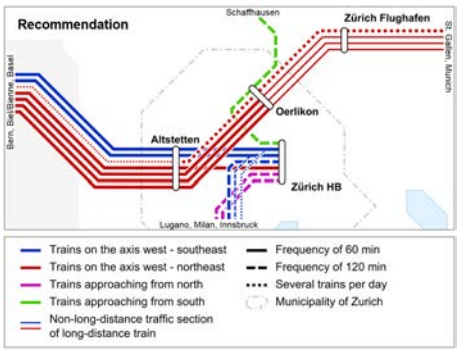

Fig. 2 Network showing the recommendation

Conclusion

The results confirm that most metropolitan regions apply a long-distance train service concept with only one served station. The three case studies provide valuable insights. In the end, the results of the investigations are assembled into a methodology of selecting the most suitable concept. This methodology does not provide elaborate solutions but guidelines for more in-depth investigations. Its application to Zurich indicates that a new service concept should be examined in more detail.

Master Thesis Spring Semester 2017
MSc Spatial Development and Infrastructure Systems

Lead
Prof Dr Ulrich Weidmann

Supervision
Pooya Khaligh, Marc Sinner

Contact
Lars Keller
larkelle@student.ethz.ch

Institut für Verkehrsplanung und Transportsysteme
Institute for Transport Planning and Systems