**Leiter der Arbeit:**  Prof. Dr. K.W. Axhausen  
**Titel der Arbeit:** MFDs with MATSim  
**Assistent/en:** A. Loder, P. Fourie  
**Kontakte:**  
http://www.ivt.ethz.ch/personen/person-detail.html?persid=192228  
http://www.ivt.ethz.ch/personen/person-detail.html?persid=177946  
**Anmeldung:**  
http://www.ivt.ethz.ch/studium/downloads/aufgabenstellungen#anmeldung  

### Beschrieb der Arbeit:

The macroscopic fundamental diagram describes the link between speed, flow and density of the network of a city, or of parts of it. It can be extended to an multi-modal mMFD showing the interaction between public transport and private traffic. The empirical work so far has used probe data of taxi fleets or simulation results. The challenge for simulation-based results is that detailed non-equilibrium approaches are computationally too slow for large networks, and that equilibrium approaches tend to remove congestion by endogenously changing the congestion-generating behaviour.

The next challenge is to test, if there are links between the overall characteristics of the city, the network and the parameters of its MFD or mMFD.

The task of the thesis is to review the literature, especially the literature on simulation based MFDs, to calculate multi-modal MFDs for a small set of cities or parts of a large city and finally to generalise the results.

The basis of the work is either the Switzerland or the Singapore implementation of MATSIM.

**Besonderes:** Can be team work. The student(s) can undertake the work in Singapore.  
**Mindestumfang:** 24 KP  
**Empfohlene Lernveranstaltungen:** Agent-based modelling in transportation