

# ***ANNUAL REPORT 2011***



# The IVT in the year 2011

**Prof. Dr.-Ing.**

**Kay W. Axhausen (1958)**

1984 University of Wisconsin,  
Madison (M.S.);  
1988, Universität Karlsruhe (Dr.-Ing.);  
Since 1999 Full Professor for  
transport planning at the ETH Zürich



**Dr. sc.**

**Balz R. Bodenmann NDS (1969)**

1998 ETH Zürich (Diplom); 2003 ETH  
Zürich (NDS); 2011 ETH Zürich (Dr.);  
firm location choice; land use  
models and simulations, spatial  
analyses



**Emanuel Barth MSc (1984)**

2006 Universität Basel (BSc);  
2007 Cardiff University (MSc);  
Public transport systems,  
Cross-border local public transport



**Harald Bollinger (1956)**

Laboratory



**Dipl. Bau-Ing.**

**Franziska Baumgartner (1980)**

2007 ETH Zürich (Diplom);  
Skid resistance and road texture,  
tunnel lighting, lateral stability  
behaviour of vehicles in curves



**Dipl. Ing.**

**Bernd Bopp (1977)**

2004 Universität Karlsruhe (Diplom);  
Infrastructures of public transporta-  
tion; goods traffic and logistics



**Dr. Ing.**

**Sonja-Lara Bepperling (1980)**

2005 TU Braunschweig (Diplom);  
2005 University of Rhode Island (MSc);  
2008 TU Braunschweig (Dr.-Ing.);  
Functional safety of railways



**Dr. Ing.**

**Dirk Bruckmann (1971)**

1999 Universität Duisburg-Essen  
(Diplom); 2006 (Dr.-Ing.); Logistics,  
rail freight and rail operations



**Ruth Bertschi (1951)**  
Secretariat



**Dipl. Ing.**

**Jin Cao MSc (1988)**

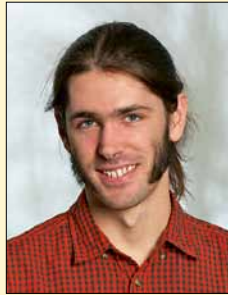
2011 Tongji University (MSc);  
Traffic engineering; effects of parking  
time limits on traffic performance



# The IVT in the year 2011



**Nelson Carrasco, MSc (1980)**  
2003 Pontificia Universidad Javeriana, Cali (MSc); 2008 ETH Zürich (MSc); High quality urban public transport systems, combined mobility



**Thibaut J. P. Dubernet, MSc (1988)**  
2011 Université de Technologie de Compiègne (MSc); Simulation of shared rides within agent-based micro-simulation



**Dr. sc. David Charypar (1978)**  
2003 ETH Zürich (Diplom); 2008 (Dr. sc.); Microsimulation of travel behaviour



**Dr. sc. Alexander Erath (1980)**  
2005 ETH Zürich (Diplom); 2011 (Dr. sc.); Transport planning, transport modelling, vulnerability of transport networks



**Ing. Francesco Ciari (1974)**  
2003 Università degli studi Firenze (MSc.); Modeling of innovative transport modes



**Dipl. Ing. oec. Olga Fink (1983)**  
2008 TU Hamburg-Harburg (Diplom); Reliability prognostics, predictive maintenance, neural networks; life cycle costing (LCC)



**Dipl. Ing. (FH) Christoph Dobler MSc (1982)**  
2005 Interstaatliche Hochschule für Technik Buchs NTB (Diplom FH); 2007 Technische Universität München (Msc); 2009 Hochschule Liechtenstein, Vaduz (Msc); Modeling of within-day replanning in agent-based micro-simulation



**Dipl. Ing. Patrick Frank (1983)**  
2007 Universität Stuttgart (Diplom); Operation and infrastructure of railway networks; Railway Operations Laboratory

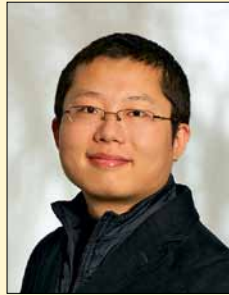


**Dipl. Math. Oec. Robert Dorbritz (1981)**  
2005 TU Kaiserslautern (Diplom); Analysis of capacity, timetable stability and resilience of transport systems, modelling and simulation in transport



**Tobias Fumasoli MSc (1983)**  
2010 ETH Zürich (MSc); Network access and governance, freight traffic and logistics

# The IVT in the year 2011



**Qiao Ge MSc (1983)**  
2008 Tsinghua University (BSc);  
2011 Technische Universität  
München (MSc); ITS;  
traffic simulation and control



**Martin Huber (1970)**  
Laboratory



**Dr. sc.**  
**Jeremy K. Hackney SM C. E. (1971)**  
1993 University of Colorado (BSc);  
1997 Massachusetts Institute of  
Technology (MSc); 2009 ETH Zürich  
(Dr. sc.); Social network; agent-based  
travel demand modelling



**Dipl. Ing.**  
**Dietlind Jacobs (1982)**  
2008 Bauhaus-Universität Weimar  
(Diplom); Maintenance management  
of road infrastructure; level of service  
and capacity of pedestrian traffic



**Ursi Hoerner (1951)**  
Secretariat



**Dipl. Bau-Ing.**  
**Boris Jäggi (1983)**  
2007 ETH Zürich (Diplom);  
Choice modelling



**Dipl. Ing.**  
**Silko Höppner (1981)**  
2008 TU Dresden (Diplom);  
Railway operating processes,  
railway operating laboratory hosting,  
passenger flow dynamics



**Dipl. Geogr.**  
**Veronika Killer (1978)**  
2006 Universität Zürich (Diplom);  
Spatial analyses of commuting



**Dipl. Inf.-Ing.**  
**Andreas Horni (1977)**  
2006 ETH Zürich (Diplom); Destination  
choice modeling for discretionary  
activities in agent-based travel demand  
micro-simulation



**Dipl. Ing. (FH)**  
**Uwe Kirsch (1981)**  
2007 Westsächsische Hochschule  
Zwickau (Diplom FH); Investigation  
of pedestrian behaviour,  
micro-simulation of pedestrian flows,  
dwell time analyses

# The IVT in the year 2011

**Dipl.-Soz.-Wiss.  
Matthias Kowald (1979)**  
2007 Universität Duisburg-Essen  
(Diplom); Social networks and  
travel decisions



**Eng. CCP  
Albert Mancera (1985)**  
2011 Universitat Politècnica de  
Catalunya (Eng. CCP);  
Traffic systems operations



**Dr. rer. nat.  
Nicolas Latuske (1973)**  
2001 Universität Hamburg  
(Diplom); ITS; traffic flow and  
speeds in gradients



**Fabian Märki MSc (1978)**  
2003 FHA Brugg-Windisch (Diplom FH);  
2007 Stanford University (MSc);  
Agent-based algorithms for the  
simulation of travel behaviour in large  
scenarios



**Dipl. Bau-Ing.  
Nicole Leemann (1983)**  
2007 ETH Zürich (Diplom);  
Traffic safety; traffic engineering



**Dr.  
Monica Menendez MSc (1976)**  
2002 University of Miami (BSc);  
2003 University of California Berkeley  
(MSc); 2006 University of California  
Berkeley (PhD); Traffic flow theory and  
operations



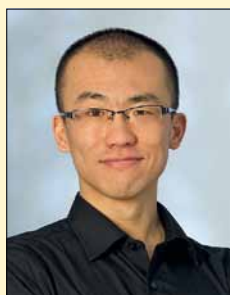
**Prof.  
Hans Peter Lindenmann (1946)**  
1971 ETH Zürich (Diplom); Highway  
construction and maintenance



**Dipl. Bau-Ing.  
Stephan Moll (1979)**  
2005 ETH Zürich (Diplom); Freight  
traffic; track access charging systems



**Ming Lu MSc (1982)**  
2009 Tongji University (MSc);  
Traffic safety; reliability impacts  
on travel demand



**Dipl. Bau-Ing.  
Lara Montini (1985)**  
2008 ETH Zürich (Diplom); GPS surveys,  
modelling of travel behaviour



# The IVT in the year 2011

**Dipl.-Inform.  
Kirill Müller (1979)**  
2006 Universität Karlsruhe (Diplom);  
Population synthesis



**Dipl. Ing. (FH)  
Enrico Puffe (1983)**  
2009 Westsächsische Hochschule  
Zwickau (Diplom FH); Quality  
and capacity of pedestrian traffic  
systems; pedestrian behaviour



**Lorenzo Nägeli MSc (1985)**  
2008 ETH Zürich (BSc); 2010 (MSc);  
Transport systems



**Lic. rer. publ.  
Markus Rieder MPA (1962)**  
2002 Universität St. Gallen (Licentiat);  
2007 Institut de hautes études  
en administration publique (MPA);  
Regional rail transport in Belgium,  
France and Switzerland



**Zainal Nur Arifin MSc (1963)**  
1988 Interkantonales Technikum  
Rapperswil (Diplom FH);  
2000 University of Indonesia (MSc);  
Transport planning; GPS survey  
and modelling of commuter behaviour



**Dr. rer. nat.  
Bernhard Riegel (1969)**  
1995 Universität Würzburg (Diplom);  
1998 (Dr. rer. Nat.); IT coordinator



**Hermann Orth MS (1985)**  
2007 Universität Karlsruhe TH  
(Vordiplom, Bauingenieurwesen);  
2009 Northwestern University,  
Evanston (MS); Intermodal and  
freight transport, passenger transport  
operations



**Edith Ringer (1952)**  
Secretariat



**Javier Ortigosa (1982)**  
2006 Chalmers University of  
Technology (BSc); 2007 Universitat  
Politècnica de Catalunya (MSc);  
Traffic flows and urban networks



**Dr. sc.  
Gerko Santel (1978)**  
2004 Universität Hannover (Diplom);  
2011 ETH Zürich (Dr. sc.); Lateral  
driving behaviour, range of lateral  
movement and additional space  
for oncoming and overtaking traffic  
for different road types



# The IVT in the year 2011

**Dipl. Bau-Ing.**

**Milena Scherer (1980)**

2005 ETH Zürich (Diplom); Level of service of public transportation and system-specific effects of public transportation on spatial development



**Dipl. Ing.**

**Steffen Schranil (1984)**

2009 TU Dresden (Diplom); rail engineering and rail power supply; rail traffic and public transport; mobility and sustainability



**Patrick Scherer (1978)**

Webmaster



**Dr. sc.**

**Nadine Schüssler (1979)**

2004 Universität Karlsruhe (Diplom); 2010 ETH Zürich (Dr. sc.); GPS surveys and analysis; behavioural modelling; agent-based travel demand modelling (GPS Erhebung, Verhaltensmodellierung)



**Dipl. Ing.**

**Frank Schiffmann (1975)**

2002 TU Dresden (Diplom); Infrastructure management; Road maintenance management; road construction



**Dipl.-Ing.**

**Michael Schwertner (1979)**

2004 TU Dresden (Diplom); Public transport; railway safety



**Dipl. Ing.**

**Patrick Schirmer (1979)**

2006 Universität Karlsruhe (Diplom); Shape grammars; Spatial analyses and urban simulation



**Prof.**

**Peter Spacek (1946)**

1974 ETH Zürich (Diplom); Highway design; traffic engineering



**Dipl. Ing.**

**Philipp Schmidt (1975)**

2004 Universität Karlsruhe (Diplom); Freight traffic; network access; railway noise



**Dipl. UWIS**

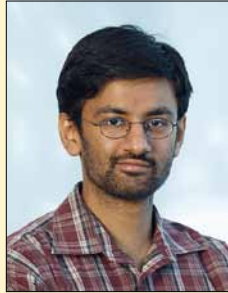
**Basil Vitins MSc (1980)**

2007 ETH Zürich (Diplom); Transport planning; network design and optimisation; shape grammars



# The IVT in the year 2011

**Dipl. Inf.-Ing.  
Rashid A. Waraich (1982)**  
2008 ETH Zürich (Diplom); Simulation  
framework for investigating  
the impact of (plug-in hybrid)  
electric vehicles



**Sabrina Wiedersheim MSc (1985)**  
2007 ETH Zürich (BSc);  
2009 (MSc); Operations research;  
automatic generation of periodic  
railway timetables



**Prof. Dr.  
Ulrich Weidmann (1963)**  
1988 ETH Zürich (Diplom); 1994 (Dr.sc.);  
since 2004 full professor of  
transport systems



**Valérie Willimann (1960)**  
Secretariat



**Dipl. Bau-Ing.  
Claude Weis (1981)**  
2006 ETH Zürich (Diplom);  
Travel behaviour modelling



**Dipl. Geogr.  
Adrian Zaugg (1971)**  
2004 Universität Zürich (Diplom);  
IT coordinator



**Dipl. Bau-Ing.  
Jost Wichser (1947)**  
1973 ETH Zürich (Diplom); Track-rolling  
stock interactions; public transport  
funding; logistics and freight transport



**Dipl. Ing.  
Christof Zöllig (1981)**  
2007 ETH Zürich (Diplom); Spatial  
development; land use modelling





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March 2012

### **ABSTRACT**

This annual report describes the activities of the year 2011 in the context of the review of the years since the last departmental peer review in 2004 (for reference, see: [http://www.ivt.ethz.ch/docs/reports/selfevaluation99\\_o3.pdf](http://www.ivt.ethz.ch/docs/reports/selfevaluation99_o3.pdf)).

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# ***ANNUAL REPORT 2011***

*Institut für Verkehrsplanung und Transportsysteme (IVT)*

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# 1 MISSION

The mission of the Institute for Transport Planning and Systems (IVT) is:

- To generate new knowledge for the planning, design, safety, operation and maintenance of transport systems
- To transfer this knowledge through teaching, further education and applied research

The three current groups have defined their missions as follows:

**Traffic Engineering** (since 2010):

- The mission of this research group is to carry out cutting-edge research in the area of traffic flow theory and operations. The ultimate goal is to improve transportation systems and move them towards a sustainable state. The group believes in a multi-modal perspective, greener mobility patterns, information sharing, a more rational use of resources, and better employment of technology to achieve this goal. From a process perspective, the group uses both empirical and theoretical studies as well as an interdisciplinary approach.

**Transport Systems** (since 2004):

- The mission of the Transport Systems chair is to teach and conduct research on the planning, design, realisation, operation and maintenance of public transport systems. The aim of our research is to improve the delivery of public transport services so that they optimally cover market needs while minimising costs. Natural resources and the urban context are considered in addition to economic aspects and political goals. The chair's system-oriented approach brings together generic knowledge of transportation science and neighbouring fields of knowledge.

**Transport Planning** (since 1999):

- The mission of this chair is to generate new knowledge about the structures of spatial and especially travel behaviour through the advancement of methods for their observation, measurement, description and modelling on a micro and macro scale. Furthermore, our aim is to transfer this knowledge through teaching, further education and applied research, particularly through work on large-scale networks and demand models as well as on the parameters of cost-benefit analysis.



Photo: Alex Erath

## 2 REVIEW: 2004–2011

The Institute for Transport Planning and Systems (IVT) was privileged to celebrate **125 years of Transportation Engineering** at the ETH Zürich in 2008 (Sandmeier and Axhausen 2008). Together with the Institute of Structural Engineering, the IVT shares the distinction of being the oldest institute of the Department of Civil, Environmental and Geomatic Engineering and of the ETH as a whole. In line with ongoing changes in the field, the IVT adjusted its focus when the opportunity arose with the retirement of Prof. Lindenmann and Prof. Spacek in 2011.

The department has for the last twenty years consistently **deemphasized transport and transport infrastructures** in its shift towards environmental engineering and geomatics. Instead of four full chairs as in 1991, the IVT currently has two chairs and a research group (see below). At the beginning of the review period, the institute still had the hope that the third chair in Road Transport could be filled again. The IVT proposed to redefine the chair and give it a focus on traffic safety with a special emphasis on new technological possibilities. This emphasis would have allowed the IVT to build a unique strength in the German-speaking world and respond to the policy drive both in this area of Europe and, more importantly, in emerging economies where the gap between car usage and the quality of the road system is widest. After a long decision process and in spite of strong outside support for our case, the department did not approve the chair and redirected the funds to a planned new chair of Urban Water Systems.

The department did, however, offer the IVT an alternative that is unusual at the ETH: We were allowed to retain and rebuild our **third research group** under the direction of a new member of staff, who was to be hired under “quasi-tenure track” conditions, i.e., with an initial six-year appointment followed by a permanent contract if successful. After a further successful 4–6 years, this person could then be appointed titular professor.

The advertisement for the post led to a very strong field of candidates which matched the quality of any assistant professorship recently offered by the department. The three short-listed candidates were interviewed by a panel of three non-IVT professors and two IVT professors. After the presentations and interviews, the panel chose Dr. Monica Menendez for her energy, enthusiasm and expertise in traffic engineering, especially traffic flow.

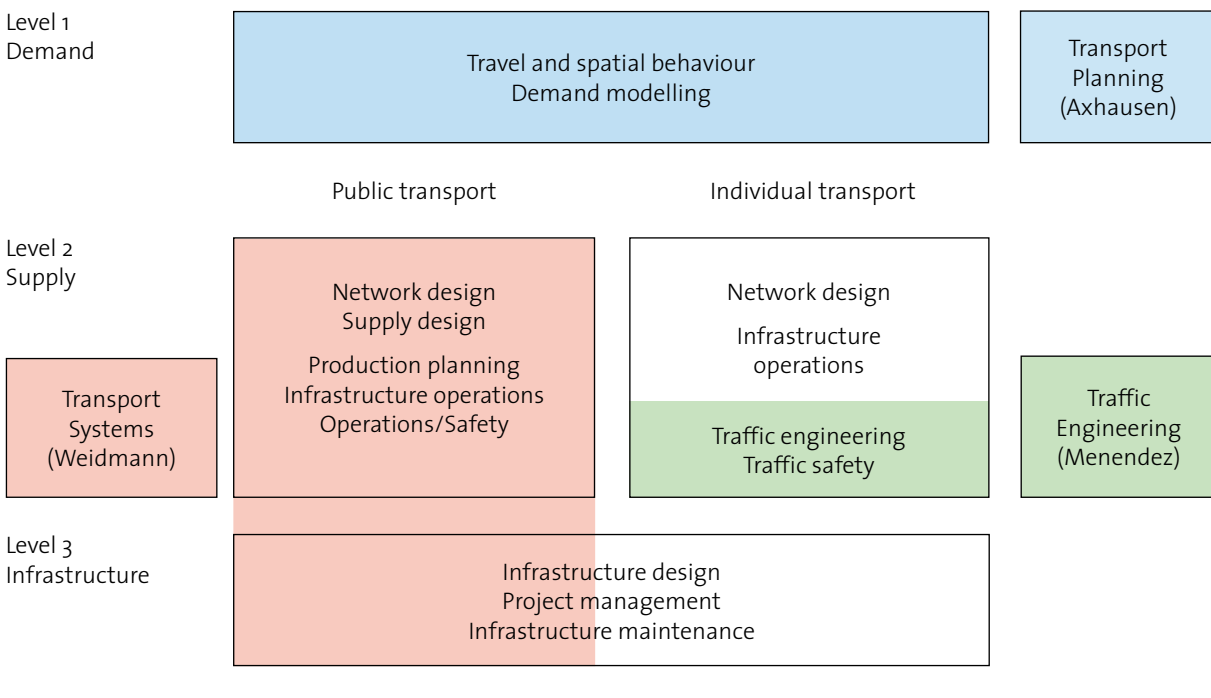
Traffic engineering is a field which the institute needs, and which Dr. Menendez should be able to cover with the reduced resources available to support her research. A chair would have needed a broader definition. We are very satisfied with her progress since her start in October 2010. The IVT will support her in all ways possible to enable her to obtain tenure.

This recent decision set the future **structure of the institute**. In addition to the two groups led by full professors, the IVT will continue to have a third research group:

- **Individual Transport**, which had been chaired by Prof. Hans-Peter Lindenmann and Prof. Peter Spacek, was dissolved at their retirement in the summer of 2011.
- The **Traffic Engineering Research Group** has been headed by Dr. Monica Menendez since October 2010. Dr. Menendez will be appointed to a permanent post if her performance during her first six years at the ETH convinces the department that she will be able to deliver the results required for an appointment as titular professor.
- **Transport Systems** has been chaired by Prof. Ulrich Weidmann since his appointment in 2004.
- **Transport Planning** has been chaired by Prof. Kay W. Axhausen since his appointment in 1999.

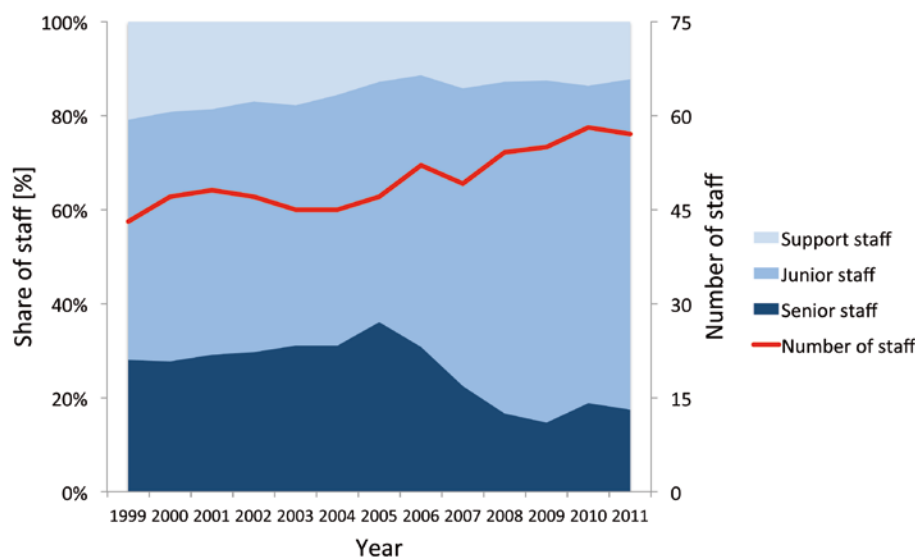


Table 1 Structure of the IVT



In spite of the uncertainty concerning the third chair, the IVT has been able to maintain and even increase its size, thus making it the largest coherent transport research group in Switzerland. The retirement of various senior non-professorial **staff** has led to a situation in which our management capacity is becoming dangerously thin. Recent appointments of senior assistants have reduced this pressure, but without a clear career path, this will not be a stable solution. These staff members need an early endorsement by the department and an acknowledgement of their status by the school as a whole, especially with regard to project acquisition, line management and thesis supervision. It seems obvious to the IVT that the opportunity given to Dr. Menendez should be offered to more candidates, with the same clear understanding of the necessary requirements on both sides.

Figure 1 Share of staff by category



The **organisation** of the institute matches the structure of the IVT. The head chairs the institute's board, which is composed of senior staff members. The board manages and plans the common affairs of the institute and especially co-ordinates the courses offered by the IVT. The three groups and the head are supported by a common secretary's office whose four staff members share an FTE of 2.8. The secretarial staff members have individual responsibilities, but they coordinate all tasks jointly.

A central IT administrator (0.8 FTE) is in charge of the central servers, disk storage and managing the normal office infrastructure of the institute. He manages the IT budget under the supervision of the institute's board. He supports, where needed, the groups' IT infrastructure, for example the large shared memory machines of the Transport Planning group.

The **publication record** is steady in terms of numbers per head, but there has been a distinct shift towards more peer-reviewed publications (see the attached full list of references). This trend will be reinforced by Dr. Menendez' strong academic orientation. However, our wish to report our results in German reduces our capacity to publish in English. The writing of official Swiss norms is a case in point, as this is a prime medium for making our results quickly available to practice. The care taken in writing norms in Switzerland is equal to that of any peer-reviewed publication, as it entails two independent rounds of about ten readers each and frequent repeats of those rounds. Equally, we need to be present in the local and national policy debate through talks to civic groups and interviews in newspapers and radio shows.

Figure 2 Share of publications by category

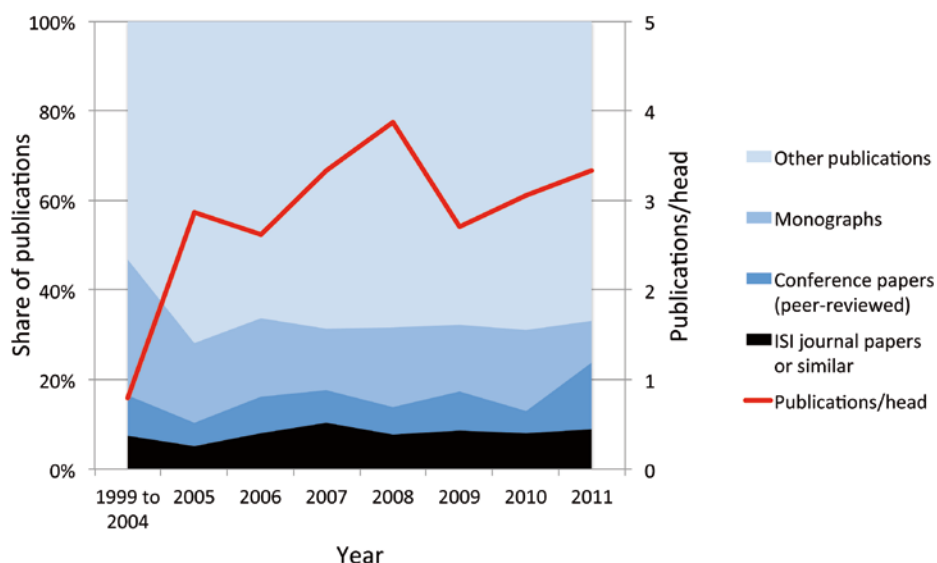


Table 2 Publications by type

Publications	2005	2006	2007	2008	2009	2010	2011
ISI journal or similar peer-reviewed papers	7	11	17	16	13	14	17
Peer-reviewed conference papers	7	11	12	13	13	9	28
Monographs	24	24	22	37	22	32	18
Other publications	97	90	112	143	101	122	127
<b>Sum</b>	<b>135</b>	<b>136</b>	<b>163</b>	<b>209</b>	<b>149</b>	<b>177</b>	<b>189</b>



## 3 STRENGTHS, WEAKNESSES AND STRATEGIES

### 3.1 THE INSTITUTE

The IVT in its current form and with its own style of operation is a cohesive academic institute offering a strong teaching programme to its students and well-informed counsel to policy makers based on outstanding research in its core areas. This link to policy and industry is a strength of the IVT, as it lends visibility to our research and garners feedback to keep the institute at the forefront of research and practice.

The institute's teaching programme, encompassing courses from across the school, is the largest transport engineering programme in Switzerland. While the IVT does not offer a formal lecture-based PhD programme as such, IVT doctoral students benefit from the range of skills and experiences of their colleagues throughout the institute.

The IVT is unusual in that its secretary's office, IT support and the administration of its ETH funds are jointly shared. This gives us the flexibility to deal with peaks in demand and ensures that the funds are properly used. The common IT budget is used to provide each member of staff with the computing power and facilities which she or he needs. Increasing our IT support would be desirable, but our current budget situation does not allow for it.

Coherence is also visible in a range of joint events throughout the year, including two meetings of all IVT members to inform and discuss current issues; an annual internal seminar offering a cross-section of presentations on current research projects; and a biannual field trip. The biannual Alumni Seminar with 150 attendees continues this approach and helps us maintain contact with our former students and colleagues.

The IVT offers an unusually large set of courses at the MSc level, thus enabling our students to obtain a comprehensive education in transport engineering. Due to the retirement of our last scientific permanent staff (Wichser, Lindenmann and Spacek) we have lost teaching capacity. The appointment of Dr. Menendez allows us to cover the crucial traffic engineering area, but for the remainder we will have to work with external lecturers and with some of our senior assistants. We have fortunately been able to find outstanding colleagues from the field, and in the case of Prof. Aday, a colleague from within the department.

The new Diploma of Advanced Studies (DAS) course in Transport Engineering and Transport Planning (as of 2011) fills an important gap in the German-speaking world. Its organisation and approval went smoothly, benefitting from the clear procedures established at the ETH. Collaboration with external colleagues allows us to offer the equivalent of a one-year Master's programme in Transport Engineering. We plan to teach it at that level, especially with regard to the students' homework and thesis topics.

The level and range of research at the IVT reflects the interests of the three group directors. In every case, research has benefitted from the strong links the institute maintains with professionals in the field, particularly in Switzerland, but also in Europe and the rest of the world. Fundamental research and more applied research are well balanced across the institute.

An obvious weakness of the IVT lies in its small number of permanent staff and its reduction to two chairs and one research group. We can bridge this gap through the appointment of senior assistants (Oberassistenten) and postdocs, but only to a certain extent, as such appointments are limited to six years. As described above, we are very pleased about the appointment of Dr. Menendez on a quasi-tenure track to a permanent post, and the IVT would welcome it if this approach were to be generalised and more widely adopted. That would give the department and the school a transparent mechanism to address research fields too small for a whole funded chair and to retain outstanding junior staff. It would also allow large chairs to divide their research programmes among multiple senior staff, thereby retaining the expertise they have built up.

In recent years, the department has focused on staff in its budget allocations. This has led to an imbalance with respect to running costs and IT costs, as many external funding sources have also reduced their support for running costs. We hope that the department will reconsider this bias.

The Master's course "Spatial Development and Infrastructure Systems", to which the IVT contributes heavily, has had a steady number of applicants and students and is well established. Nonetheless, the total number of students is unsatisfactory. Discussions are underway about merging this course with one of the other Master's courses in the department, but that might diminish its role as a gateway into the profession for students from outside the department. The IVT is open to these discussions but wants to retain the ability to integrate students from across disciplines and enable them to obtain the education needed for a career in transport engineering and planning. The IVT would like to increase the visibility of its teaching programme in any new format so that potential students can more easily recognise that they can cover the coursework required for a "Master in Transport Engineering" elsewhere at the ETH.

As part of these discussions, we will have to address the question of the teaching language. Since the other courses in the department are taught in English, we will have to adopt the language as well. The IVT is not averse to this, but notes that technical vocabulary will be a challenge, especially in railway engineering. It might be worthwhile to test if switching to English would allow us to attract enough students to make the course sustainable.

## 3.2 TRAFFIC ENGINEERING

The Traffic Engineering Research Group was created in October 2010. It is therefore still very new and is in the process of development. Over the next few years, our objectives are to increase the size of the group and to further strengthen its research and teaching curriculum.

We now offer one BSc course and contribute to five MSc courses. We engage both internal and external lecturers in order to guarantee the highest level of academic and practical expertise on each of the subjects. In addition, the Traffic Engineering group is involved in advising and supervising projects for the MSc programme Spatial Development & Infrastructure Systems, the Theme A project for the Master's thesis for the Chair of Architecture and Urban Design, and the new Diploma of Advanced Studies (DAS) course in Traffic Engineering and Transport Planning. We hope to continue enriching the teaching curriculum over the next few years by including a more global perspective (i.e., not unique to Switzerland) on transportation and showing how the latest advancements in research translate into practice worldwide.

Within the research arena, the priorities of the Traffic Engineering group include:

- Developing models to better replicate real traffic conditions
- Improving our understanding of traffic phenomena
- Contributing to a better definition of the role of cars in cities while assessing their external costs and impacts
- Understanding and quantifying how different technologies and management strategies influence the performance of transportation systems
- Developing innovative solutions to improve traffic performance and reduce congestion both on highways and in urban networks
- Identifying new and efficient methods for using in-vehicle and infrastructure technologies to improve traffic conditions
- Optimising the operation of transportation systems from a multi-modal perspective

The bulk of the work during this first year has focused on the conception and creation of the group. This has included recruiting researchers, building professional connections, establishing a reputation at the local level, obtaining research funding, securing different types of collaboration at the national and inter-

national levels, and starting a few lines of research according to the priorities detailed above. We hope to continue this work over the next few years, along with expanding into the remaining research areas that fall within the intended scope of the Traffic Engineering group.

That the Traffic Engineering Research Group is still quite new presents a number of challenges and advantages. The challenges include personnel recruitment and development, turn-around times for publications, setting up projects, etc. As explained above, a good portion of the work during this first year was devoted to addressing these issues. Nevertheless, many of the results are not immediate and the outcomes will take some time to realise. We won four of the five proposals that we submitted in the first six months (in the past six months we submitted two additional proposals, but are still waiting for the decisions). The projects associated with the accepted proposals have either already commenced or will start soon. Publications from those research projects and potential funding from project extensions, etc. will follow.

The advantages, on the other hand, include a highly flexible team with new perspectives and fresh ideas. The Traffic Engineering Research Group benefits from a multiplicity of backgrounds and different research interests and approaches. Moreover, we also benefit from international network connections as well as some expertise in the European, American and Asian transportation systems. We plan to leverage all those relationships and knowledge to foster collaboration and to tap into transportation problems that extend well beyond the borders of individual countries. The overall idea is to channel all the energy of a new team into work on the issues and challenges already discussed.

### 3.3 TRANSPORT SYSTEMS

The chair selects its research topics according to following criteria: (1) high research and innovation potential; (2) of international—or at least European—interest; (3) relevance for Switzerland and its public transport industry; (4) and the availability of real-world laboratories in Switzerland. This last point refers to the heavily used infrastructures, the high quality and the reliability of passenger services as well as the good market position of rail and intermodal freight services in Switzerland.

Based upon these criteria, the research activities of the chair focus on four areas:

1. Passenger transport system evaluation and decision support: Despite past efforts to analyse and evaluate public transport systems, experience has revealed a clear lack of holistic methods. The long-term research question is: How can public passenger transport systems be adequately evaluated in a holistic way, encompassing economic, technical, operational, social and environmental aspects?
2. Integration of rail freight transport systems in logistic chains: Many research groups deal with logistics, but little work has been done in the field of goods transport. The special competence of the chair is its understanding of the operation and technology of rail systems. The long-term research question is: How should rail freight systems be improved at the conceptual, operational, technical and organisational levels in order to achieve a higher market share?
3. System performance and stability: Recent developments in data capture and computing systems allow for new approaches. Three subtopics are of special interest: (1) operations analysis of rail and urban public transport systems, based on the real-time data of dispatching systems; (2) investigation of the stability and robustness of networks in case of minor or major incidents; and (3) the automatic generation of schedules for entire networks (work in collaboration with the ETH Operations Research chair). The long-term research question is: How can the performance of a public transport infrastructure network be further improved with regard to its reliability and stability?

4. Railway infrastructure management: This new topic is a response to the steadily increasing demand for infrastructure research in Switzerland for the following reasons: (1) Switzerland's railways are in a period of network extension, driven by increasing demand; (2) infrastructure maintenance is proving to be more and more difficult and costly, and current renewal activities will not suffice in the long term; and (3) the experience of the chair has revealed a lack of evaluation methods for new infrastructure on a conceptual level. The long-term research question is: How can the costs of Swiss railway infrastructure be minimised in all phases of the life cycle?

A special field of research associated with the four mentioned above is the performance and level of service of pedestrian traffic facilities. Deepening knowledge of pedestrian characteristics that are relevant to transportation has always been an emphasis of the chair. For instance, a major, recently initiated study deals with the characteristics and performance of facilities for human-powered land transport, i.e., pedestrian and bicycle traffic. The goal is to develop a Swiss standard for the design of such facilities. Several other research and consultancy projects have been carried out in this area over the past years.

Due to the diversity of these research fields, various appropriate and accepted methods are applied. In two fields, the chair has developed special approaches which will be deepened and formalised in the coming years:

- Process analysis in general, but also on a very detailed level; this has been applied to production as well as to management processes
- Modelling public transport systems and identifying the qualitative and quantitative connections between the subsystems or neighbouring systems

Most of the chair's funding comes from relatively small projects, and no single big project has been carried out in recent years. Instead, the chair groups smaller projects around a common subject, e.g.:

Passenger transport system evaluation and decision support:

- The perception of public transport: The chair investigated the perception of different public transport systems by users and non-users, especially in the urban context. It identified not only differences, but also the main factors influencing perception. Besides emotional aspects, the existence of a right of way was revealed as crucial.
- The employment of various means of transportation in agglomerations: Based on a research project, criteria for the deployment of different urban transport modes have been developed. By using these reference values, it is possible to identify a set of adequate transport modes in a specific context.
- A mobility plan for the University area of the City of Zürich: In cooperation with the other chairs of the IVT, an analysis of the transport needs of a large university and hospital area in a central business district was carried out, taking the University area of the City of Zürich as an example. This study led to deep insights into the mobility patterns of such facilities and the optimisation potential of the existing means of transport.

Integration of rail freight transport systems in logistic chains:

- A research programme on freight transport: Within the Swiss framework programme on freight transportation, the chair investigates the reaction of forwarders to the quality of service, related rail freight production concepts and the necessary information flows. In particular, the willingness to pay for environmentally friendly transportation has been identified. It could be shown that such a willingness does exist, but on a very restricted level. The closer products are to the end customers, the more these are willing to pay.
- Sustainable freight transport at the local level: In collaboration with the University of St. Gallen, we investigated what sustainable delivery systems should look like and how they can be achieved. The project findings were based upon a dynamic system simulation including all relevant influences. It

was shown that promoting combined transport and trading emission certificates are the best policy instruments.

- SPIN-ALP: The goal of the SPIN-ALP project was to develop procedures, methods and instruments to promote the shift from road freight transport to intermodal transport. The main results of SPIN-ALP were the development of software for intermodal door-to-door transport planning and an electronic handbook for intermodal transport planning. Test applications with market players and public authorities have proven their practicability.

System performance and stability:

- The operation of heavily loaded urban and suburban public transport services: The chair deepened its knowledge of boarding and alighting times, taking into consideration the ticket-selling process. It analysed in detail the running times of buses in mixed traffic lanes. In doing so, it acquired quantitative insights into the main influences on running time and punctuality. It was shown that the extent to which buses in mixed traffic lanes are disturbed by other means of transport makes it impossible to maintain even generous schedules fully.
- The stability and robustness of railway networks: Ongoing research deals with the stability and robustness of railway networks in case of large- and medium-sized events. Algorithms were developed to calculate network robustness as a function of architecture. It was shown that different network shapes may be efficiently evaluated, taking power supply and signalling systems into account as well.
- The optimal use of capacity: The chair has investigated the optimal use of capacity in railway networks with respect to both political and economic goals. It estimated the costs for providing capacity on the one hand, and the returns on the used capacity on the other hand in a multi-criteria system. It was shown that—under the circumstances and regulations given—the maximal number of trains was equal to the optimal number. In addition, slot allocation systems proved to be an ineffective means of providing incentives to train operating companies.

Rail infrastructure management:

- Slot pricing in railways: The chair developed a new system to calculate slot prices, including aspects of capacity shortage, capacity usage, environmental friendliness, track usage, timetable structure, etc. Special emphasis was placed on noise reduction. The principles of the chair's proposition were recently accepted by the Swiss government and will be partly implemented.
- The stability of narrow gauge tracks: Rail welding is a technology commonly applied to the standard gauge network. In contrast, welding is generally prohibited for narrow gauge tracks for safety reasons, under the assumption that stability is not guaranteed, especially in case of small radii. An ongoing research project measures track movement at different locations of the Swiss narrow gauge network and gives new insights into the behaviour of tracks in curves under different temperatures and trainloads.
- The interaction between different types of rolling stock and the wearing of tracks: A steadily increasing number of trains, but also higher axle loads and speeds are leading to more and more wearing of the tracks. It is well known that the negative effects differ by type of vehicle. In order to limit maintenance costs, network operators are looking for ways to stimulate the construction and use of track-friendly vehicles. One way to encourage this could be to incorporate wearing effects in track allocation charges. This research project developed a suitable ranking of vehicle technologies.

The research field of the chair fortunately enjoys high public awareness. In addition, Swiss public transport services are still expanding, leading to many projects and political debates. The chair has repeatedly been asked to judge solutions, give advice on critical projects and draft new concepts. It has not engaged in regular consultancy, which can be carried out more efficiently by engineering companies.



The chair was invited several times to evaluate large-scale infrastructure projects and budget estimates, including:

- A new public transport system in Liechtenstein (CHF 1 bn)
- Reconstruction of the central railway station in Bern (CHF 3 bn)
- A strategic extension plan of the Swiss railway network (CHF 12 bn–21 bn)
- The Swiss Federal Railways' new Chestenberg line (CHF 2 bn)
- A city tunnel and S-Bahn system in Basel (CHF 2 bn)
- Two extensions of the tramway network in Bern (CHF 200 m and CHF 550 m)

In each of these cases, the chair supported the decision process by making a holistic evaluation. Its knowledge of transport systems and their interdependencies contributed considerably to this achievement. However, evaluating projects of this size within deadlines of only several months also required sufficient and highly qualified staff.

Consultancy projects will remain valuable for the chair, being (1) a link between research and industry, (2) a laboratory for methods and insights developed at the chair, (3) part of the personal education of scientific assistants by providing them with practical experience, (4) service for projects of public interest, especially in cases involving difficult decision-making processes, and finally (5) opportunities to obtain additional means for cross-financing research projects. As in the past, consultancy projects should be linked to the focal points of research in order to profit from the scientific point of view as well.

General relations to the public transport industry such as public transport companies, railway and rolling stock undertakings, the government, universities of applied science, etc. have been strengthened within the past years. Members of the chair are in contact with industry and governmental representatives in the most important dedicated institutions. In addition, close-to-research consultancy projects were and are a good opportunity to exchange knowledge and experiences. Finally, the chair supported the design and introduction of the Bachelor's course "Transport Systems" at the Zürich University of Applied Sciences (ZHAW).

The chair supports the ETH Zürich in mobility questions. The transport situations of the two campus sites of the ETH at Science City (Hönggerberg) and Zürich Zentrum have been studied in detail. Long-term perspectives have been developed for both sites, and a short-term proposition for a 20-minute shuttle service between the two sites was implemented in 2010. It has proved to be very successful, carrying up to 3,500 passengers per day. Based upon studies by the chair, the parliament of the Canton of Zürich has decided to consider building a tramway link to ETH Hönggerberg in the long term.

In 2006 OpenTrack Railway Technology Ltd. was founded as a spin-off company of the chair. OpenTrack started in the mid-1990s as an IVT research project. OpenTrack Railway Technology Ltd. develops and markets simulation tools for public transport systems, provides consulting services with respect to railway information technology and develops data exchange formats for railway applications.

### **Strengths of the Transport Systems chair:**

- A comprehensive teaching programme covering the main areas of the field of public transportation
- Focused research activities in clearly defined areas
- Dr. Dirk Bruckmann, a new senior scientist who strongly supports freight transportation research and teaching and manages research projects
- Developing principles, planning and design processes on the subject of passenger and freight transport systems
- Conducting detailed process analyses of entire public transport systems
- An increased research focus on urban and bus transportation

- A high number of promising PhD candidates
- A high share of third-party funding
- Offering sought-after independent expertise on politically critical large-scale projects
- Being strongly embedded in the national context
- Active participation in public debates on public transport with the launch of new ideas and concepts
- Good visibility in the Swiss media and through presentations before political and industrial assemblies
- A Railway Operations Laboratory as a unique teaching tool with high visibility outside the ETH

#### **Weaknesses of the Transport Systems chair:**

- Insufficient publication activities, especially in scientific journals
- Absence at international conferences
- In contrast to the national level, insufficient visibility in the international academic world
- Insufficient visibility in the international professional community
- Not enough knowledge from consultancy projects transferred into research and teaching
- The lack of a suitable follow-up to several research topics

In 2004, the chair was repositioned with quite a different profile compared to its predecessor. Although formally succeeding an existing chair, the teaching and research activities had to be completely redefined. Therefore, it took time to settle on an appropriate research and PhD programme. In addition, developing and finalising the teaching programme have been more time-consuming than anticipated. Both strategic activities are now close to completion and the chair has already substantially intensified its publication of research results. Along with submissions to the few journals covering the topics, there are ongoing projects for scientific publications and textbooks. However, it should be noted that the citation tradition is not yet well established in the rail research community.

#### **Outlook**

In the coming years, the chair will further develop its strengths and work on the identified weaknesses by:

- Intensifying publication in international scientific journals and giving presentations at high-level conferences
- Strengthening the position of the chair in the international scientific and professional community
- Improving the transfer of new knowledge to teaching
- Speeding up the transfer of new scientific ideas and concepts to related projects

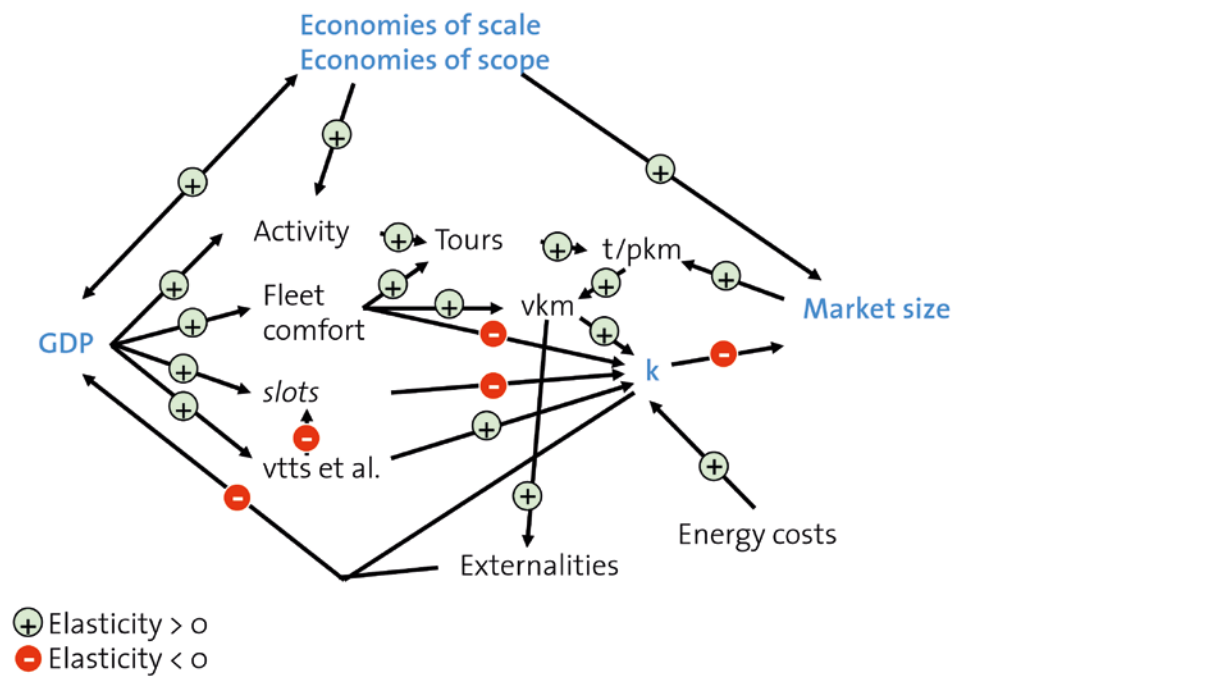
In parallel, research on rail infrastructure will be increased and the teaching programme will be consolidated. It should be noted in this context that the head of the chair is the designated head of department (D-BAUG) for the period from 2013 to 2017, which will inhibit an even stronger effort.

### **3.4 TRANSPORT PLANNING**

The chair pursues two research programmes that are linked by their reliance on an in-depth understanding of travel and spatial behaviour. In addition, it plans to develop a third pillar in the coming years.

The first research programme is driven by the abstract model of travel demand dynamics described in figure 3 below. This model of the goods market has a match in the market for personal travel.

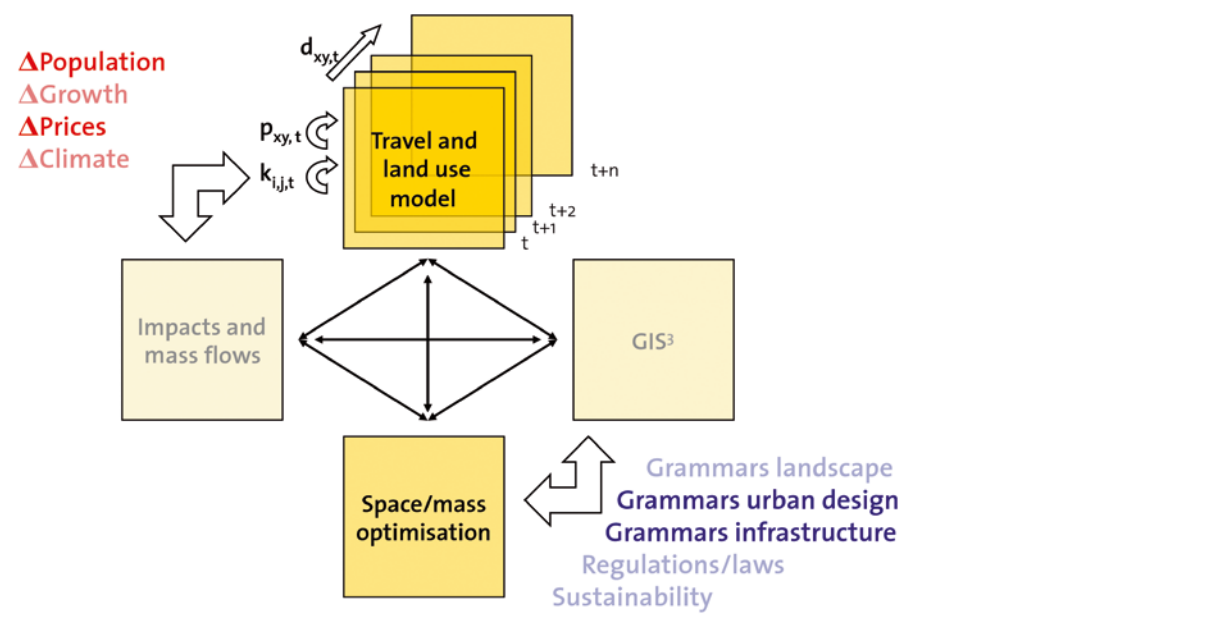
Figure 3 Dynamics of traffic growth in the goods and services market



The key question is to trace the link between the generalised costs of travel  $k$  with the overall productivity of society. The generalised costs in this abstract context are nothing but the accessibility that the transport system provides. The work of the past years has traced changes for the period from 1850 to the present at the municipal level. The intention is to continue our work on induced demand and complement it with work on the links between firm productivity and travellers' activity spaces.

The second research programme is on the integration of tools for space (capacity) and mass optimisation with agent-based models of travel behaviour and land use change.

Figure 4 Overall design of the Transport Planning toolkit



The focus of recent work has been to develop the agent-based travel demand toolkit MATSim ([www.matsim.org](http://www.matsim.org)), which is a joint undertaking with the TU Berlin and now involves colleagues from around the world. In addition, we have started to investigate network grammars and richer methods for designing motorway cross-sections and are commencing work on spatial regression models of travel demand/supply quality to reduce the massive computing times of joint equilibrium models of travel and land use.

Land-use modelling forms a necessary basis for our work, and we plan to continue with selected elements by integrating all of those capabilities needed to enable MATSim to make long-term forecasts of population development and distribution in space. Furthermore, our work on the grammars of urban design should enable us to give long-range forecasts a comprehensible form. Our existing collaboration with land-use modellers will be complemented by cooperation with computer graphics experts.

The third research programme will explore how much can be inferred solely from official statistical data, commercially available networks and points-of-interest information. We will formulate direct-demand models as geographically aware regression models to link network performance to the surrounding geographies of work, leisure and residences. The challenge will be to identify a range of policies that can be described in such an approach and to determine how well they are able to capture the elasticities of demand vis-à-vis infrastructure, services, price and quality changes.

The size of the chair provides it with the scope and the means to undertake the ambitious research programmes sketched above. Both MATSim and our work on the link between accessibility and induced demand define the state-of-the-art. The same holds for surveys that form the basis of modelling work to support large-scale model implementations such as MATSim in Switzerland and Singapore or the parcel-based UrbanSim in the Canton of Zürich.

The size of the chair is also its central weakness, as it removes the professor from many of the details of ongoing research. The increased number of senior assistants (Dr. Erath in Singapore, Dr. Schüssler on MATSim, Dr. Charypar on continuous demand simulation models, Dr. Bodenmann on land-use modelling, and as of 2012 [Dr.] Weis on survey methods and modelling) is the result of structural changes to keep the group manageable and productive. The lack of a senior scientist remains a weakness of the chair, and the current unwillingness of the ETH to define an open and competitive career path for senior scientists at the school level remains a hurdle for this chair and for chairs across the school.

Our focus on implementation and large-scale implementation has resulted in too little strictly methodological research. To fill this gap, we have integrated colleagues from around Europe who are making strong contributions in this respect and who could not otherwise demonstrate their methods on a large and politically relevant scale. The exception is our ongoing work on the equilibrium of agent-based networks and network design. Nevertheless, our research programmes are driven either by an explicitly theoretical model or by an overall design linking various elements into a coherent and testable or implementable whole.



Photo: Alex Erath

## **4 TEACHING**

### **4.1 DEGREE PROGRAMMES**

The IVT teaching is integral to a number of degree programmes of the Department of Civil, Environmental and Geomatic Engineering and across the school. In this section, we will introduce our main teaching commitments, but not the BSc in Environmental Science, the MSc in Applied Mathematics or the BSc in Geography of the University of Zürich, to which we also contribute.

The ETH has adopted the BSc/MSc system initiated by the Bologna Treaty. The six-semester BSc provides students with the foundations to continue their education at the ETH or elsewhere. The ETH does not consider this degree to be a full professional qualification.

#### **4.1.1 BACHELOR OF SCIENCE IN CIVIL ENGINEERING**

The BSc programme starts with a department-wide first year of foundation courses in mathematics, mechanics, geology, systems engineering, management and surveying. A small group project introduces students to professional questions and the challenges of teamwork. A comprehensive set of exams, which must all be passed, is scheduled for the summer of the first year and the other years as well.

The second and third years allow students to add depth to their understanding and to prepare for their later Master's degree. Courses in physics, hydraulics, structural mechanics, materials and computer science are complemented by civil engineering courses in structural engineering, geotechnics, hydraulic engineering and construction management. The IVT offers a set of three courses introducing transport planning, railway infrastructure and traffic engineering.

#### **4.1.2 BACHELOR OF SCIENCE IN GEOMATICS AND PLANNING**

This BSc programme offers the basis for a career in either geomatics or planning. It was revised in the academic year 2010/11 to better match these demands.

Students begin with the department-wide first year of foundation courses, but with fewer courses in mechanics. The second and third years allow students to add depth to their understanding and to prepare them for their later Master's degree. Depending on their preferences, the students can choose different paths, emphasising either geomatics or planning. The IVT offers the same set of three courses introducing transport planning, traffic engineering and railway infrastructure, of which only transport planning is compulsory for all students taking this degree.

#### **4.1.3 MASTER OF SCIENCE IN CIVIL ENGINEERING**

The MSc in Civil Engineering offers students the choice of two out of six specialisations:

- Construction management
- Structural engineering
- Geotechnics
- Transport systems
- Hydraulic engineering
- Materials and mechanics

A rich set of courses gives students the opportunity to define their projects. A major project in the third term trains independent professional work, while the four-month MSc thesis focuses on scientific aspects of their training.

#### 4.1.4 MASTER OF SCIENCE IN SPATIAL DEVELOPMENT AND INFRASTRUCTURE SYSTEMS

This specialised Master's programme is open to students from across the engineering and social sciences spectrum and aims to give them a common language and understanding of these two fields. The programme is comprised of three required courses and a joint professional team project in the third term, which is expected to address current large-scale planning issues.

The courses are offered in the main by the IVT and the Institute of Spatial Development, but the students may choose from a wide-ranging list of approved electives in the fields of architecture, economics, mathematics and statistics, and they are encouraged to do so.

The students can either focus on one area, spatial development or transport engineering, or mix the two to give themselves a unique profile.

#### 4.1.5 DIPLOMA OF ADVANCED STUDIES (DAS) IN TRANSPORT ENGINEERING

The DAS is an extension course worth 40 ECTS credits, comprising six five-credit modules and a ten-credit thesis. Each module requires five days in Zürich and a substantial amount of coursework. The course is intended for professionals who wish to expand their knowledge of and expertise in transport engineering. It entails a two-year commitment and is designed to allow students to combine it with their work schedules.

The modules are taught in German by members of the institute as well as by colleagues from the wider German-speaking area. Each module may also be taken separately by non-DAS students.

Table 3 DAS in Transport Engineering: Modules

Lecturer	Topic	Status
Axhausen and Friedrich, University of Stuttgart	Transport Planning	Required
Fellendorf, TU Graz	Traffic Engineering	Required
Weidmann	Public Transport Design and Operations	Required
Axhausen and Hess, ITS Leeds	Choice Modelling	Required
Friedrich, University of Stuttgart	Aggregate Demand Modelling	Elective
Lieb, ecoplan	Evaluation Methods	Elective
Menendez	Traffic Flow and Operations	Elective
Axhausen and Hess, ITS Leeds	Survey Methods	Elective
All	Thesis work	Required

## 4.2 APPROACH AND STRATEGY

The IVT had four chairs at the beginning of the 1990s, as mentioned above. Current IVT staffing clearly does not allow us to **teach transport and land-use planning** to the same extent as in previous years. Still, it is the ambition of the IVT to offer its students a broad and thorough education as they train to become system-aware and system-designing transport engineers. Our strong research base enables us to advance the field and its sub-fields, especially through the education of PhD-trained engineers and scientists.

**Table 4** Supervision of dissertations

Degrees awarded	Year									
	99-03	04	05	06	07	08	09	10	11	04-11
PhD dissertations	5	6	1	1	1	4	3	3	3	<b>22</b>
IVT members	2	6	1	1	1	4	3	2	3	<b>21</b>
External students	3	-	-	-	-	-	-	1	-	<b>1</b>
External examiner	6	3	7	6	-	2	6	6	7	<b>37</b>
MSc theses	65	14	8	13	12	7	4	10	13	<b>81</b>
D-BAUG students	34	6	6	8	11	5	3	10	12	<b>61</b>
Other ETH students	24	6	-	2	1	-	-	-	-	<b>9</b>
External students	7	2	2	3	-	2	1	-	1	<b>11</b>
MSc semester projects	65	30	9	12	15	19	34	29	5	<b>153</b>
D-BAUG students	61	20	9	12	15	19	34	29	5	<b>143</b>
Other ETH students	3	3								<b>3</b>
External students	1	7								<b>7</b>
D-BAUG Bachelor's degree theses		-	-	5	8	13	12	8	9	<b>55</b>

The overall goals of the IVT are: to further enhance its academic strengths and visibility both nationally and internationally based on the current thrusts of its groups; to maintain and extend its strong links and working relationships with policy makers and industry; and finally to make better known that the IVT offers a teaching programme that fulfils the requirements for a “Master of Science in Transport Engineering” degree within the department.

The IVT has always offered a strong selection of courses covering the core elements of transport engineering. The retirement of Prof. Lindenmann and Prof. Spacek gave us the opportunity to rethink our programme in light of any gaps and with regard to Dr. Menendez' interests and strengths. Prof. Aday, IBI, will henceforth teach road maintenance as it falls into his area of expertise, namely infrastructure management.



Starting in 2012, a set of additional courses jointly offered by IVT faculty and external lecturers will enrich the curriculum. A new course on walking and cycling will raise the profile of these important modes. The newly designed course on traffic safety will strengthen the teaching of safety statistics while maintaining engineering aspects in the tradition of the safety audit developed by Prof. Lindenmann.

Traffic engineering will be covered by four courses: an introductory BSc course followed by an advanced MSc course and parts of two jointly taught courses, "Transport Systems" and "Simulation of Transport Systems". A further course on agent-based simulation will give senior assistants a chance to develop their teaching skills and also reflects the institute's strong commitment to this topic. For the full list of courses see below:

**Table 5** Current and planned courses

Level	Term	ETCS	Title	Lecturer	Status
BSc	4	3	Transport planning	kwa	Ongoing
BSc	4	2	Laboratory "Space and Transport"	Fröhlich	Ongoing
BSc	5	3	Railway infrastructure	wei	Ongoing
BSc	6	3	Road traffic systems	mm	Updated
MSc	1	6	Transport systems	kwa, wei, mm	Ongoing
MSc	1	6	System and network design	wei	Ongoing
MSc	1	6	Transport planning methods	kwa	Ongoing
MSc	1	6	Traffic engineering and management systems	mm	New
MSc	2	6	System design and capacity	wei	Ongoing
MSc	2	6	Simulation of transport systems	Balmer, wei, mm	Ongoing
MSc	2	6	Measurement and modelling of travel behaviour	kwa	Ongoing
MSc	2	6	Road design and construction	Müller	Updated
MSc	2	6	Slow modes	wei, kwa	New
MSc	2	6	Logistics and freight transport	db	Updated
MSc	3	6	Agent-based simulation	dc, nr, kwa	New
MSc	3	6	Systems operation, marketing and quality	wei	Ongoing
MSc	3	6	Safety and reliability of railway operations	wei, Montigel	New
MSc	3	6	Railway infrastructure design	N.N.	New
MSc	3	6	Transport system concepts	kwa	Ongoing
MSc	3	6	Transport safety	Leemann, Simma	Updated
MSc	3	6	Environmental impacts of transport systems	N.N.	New

kwa: Axhausen, dc: Charypar, mm: Menendez, nr: Rieser, wei: Weidmann

We intend to maintain our current MSc course design, offering fewer but substantial courses. The experience of the past years has shown that this combination of classroom teaching with substantial course work enables students to acquire in-depth knowledge and practical experience. The equally positive experience with our co-taught courses "Transport Systems" and "Simulation" has encouraged us to offer new courses ("Slow Modes" and "Agent-Based Modelling") in the same style.

### 4.2.1 TRAFFIC ENGINEERING

Courses offered (or partially covered) by the Traffic Engineering Research Group teach students fundamental concepts of road traffic design, safety, operations, management and control. The existing courses were inherited from the Individual Transport group (led by Prof. Lindenmann and Prof. Spacek). We are now in the process of updating them to fit the specific teaching goals of the Traffic Engineering group while maintaining the same standards of quality as before.

Prof. Lindenmann and Prof. Spacek provided their own textbooks for the lectures (i.e., scripts). The scripts are completely in German and are still being used in some of the courses. New and supplementary presentations, articles and sets of exercises have been developed to support new content included in the classes.

Our objective, as explained above, is to continue enriching our teaching curriculum over the next few years. This includes providing a more global perspective, information on new technology and its use in traffic management and control, as well as examples of direct applications of the latest transportation research in the practical arena.

Other goals include the supervision of Master's projects and theses in the area of traffic engineering. These could support some of our current projects or expand the number of topics we currently cover. In addition, students' work could promote our research interests among ETH students, becoming in turn a potentially valuable recruiting tool for PhD candidates.

Dr. Menendez currently shares the task of supervising PhD dissertations with Prof. Axhausen due to the current legal limitations associated with her position. There are currently four PhD students enrolled and pursuing research in traffic engineering. Since the group is new, it will take time for the first dissertation to be finished.

**Table 6** Teaching: Traffic Engineering Research Group

Teaching	05	06	07	08	09	10	11
Courses ( <i>no.</i> )							4
Semester hours ( <i>SWS</i> )							9
Bachelor's thesis ( <i>no.</i> )							
Diploma/MSc semester projects ( <i>no.</i> )							
Diploma/Master's thesis ( <i>no.</i> )							
Dissertations ( <i>no.</i> )							

### 4.2.2 TRANSPORT SYSTEMS

Courses taught by the Transport Systems group provide students with the fundamental concepts of transportation systems, placing special emphases on rail- and road-borne public transport systems as well as on freight transport. The chair aims to foster a holistic and customer-oriented view of transportation. Therefore, our lectures follow the life cycle of transport systems including the main phases of (1) system design, (2) system dimensioning, (3) infrastructure planning and construction, and (4) operations and management. Strong attention is given to regulation, organisation and marketing.

The curriculum has been substantially expanded over the past years:

Table 7 Teaching: Transport Systems Chair

Teaching	05	06	07	08	09	10	11
Courses ( <i>no.</i> )	5	2	5	7	7	8	8
Semester hours ( <i>SWS</i> )	9	4	15	21	20	23	23
Student <i>SWS</i>							
Bachelor's thesis ( <i>no.</i> )		3	6	12	12	8	9
Diploma/MSc semester projects ( <i>no.</i> )	7	10	2	0	6	7	4
Diploma/Master's thesis ( <i>no.</i> )	5	5	7	3	3	8	9
Dissertations ( <i>no.</i> )	0	0	0	0	2	1	0

To deepen the students' knowledge of railway technology, an additional lecture in railway construction is being planned for the Master's level. Until now, the planning and construction of rail infrastructure have only been dealt with at the Bachelor's level. However, this has resulted in an unbalanced situation, as planning and operational matters are broadly discussed at the Master's level.

**Textbooks** (scripts) have been written for all lectures, now totalling 12 volumes of around 2,500 pages. These textbooks are essential because (1) standard textbooks cover only parts of the lecture content; (2) only local, customised textbooks allow us to thoroughly follow the key ideas of the syllabus; and (3) local textbooks can easily be adjusted to cover new knowledge and needs. The following table shows the structure of the textbooks and their main chapters:

Table 8 Content of the Transport Systems textbooks

Block	Volume	Content
1	1.1	Fundamentals of Public Transport, Public Transport Systems and the Planning Process
	1.2	Design of Public Transport Systems at the National, Regional and Urban Levels
	1.3	Freight Transport and Logistics; Intermodality
2	2.1	Fundamentals of Production Planning; Running and Stopping Times; Choice and Deployment of Vehicles and Staff
	2.2	Vehicle Strategies and Concepts; Traction; Energy Supply and Application; Running Time Calculation
	2.3	Fundamentals of Infrastructure Capacity; Capacity of Lines and Nodes
3	3.1	Fundamentals of Rail Infrastructure; Network Planning
	3.2	Design of Railway Lines and Nodes; Passenger Facilities
	3.3	Railway Construction; Track Technology, Putting Infrastructure into Operation; Maintenance
4	4.1	Management of Public Transport Companies; Regulation of the Sector
	4.2	Marketing and Quality Management
	4.3	Railway Safety; Dispatching; Automatic Operation of Trains and Infrastructure

As the lectures are given in German, all of the textbooks are in German. Even if the Master's courses should be changed to English, the textbooks would still be in German because a high-quality translation would be prohibitively time-consuming and expensive. German-speaking students would then be provided with the correct technical terms in their own language. We plan to publish at least some of the textbooks in a professional edition. The first book, on pedestrian transportation, should appear in 2012.

All of the lectures are additionally supported by comprehensive presentations, comprising around 5,000 slides. These presentations are also available to the students in order to provide them with additional information and to ease exam preparation. If the Master's courses change to English, all of the slides will be translated.

**Table 9** Topics of recent Transport Systems theses

Students theses	Course/term	General aims	Examples of topics
Project	CE / 2nd sem.	Introduction to Public Transport	Strengths and weaknesses of public transport from personal experience Reproduction of the transport chain for the ETH cafeteria
Bachelor's thesis	CE / 6th sem.	Design of a Complex Public Transport Infrastructure	New tramway line to the ETH Hönggerberg campus Planning/ Design of the transport node Zürich-Örlikon Design of MAGLEV Transrapid lines Zürich-Bern / -Basel Upgrading the Zürich – Meilen – Rapperswil S-Bahn line New railway line from Zug to Oberägeri
Semester thesis, Master's programme	CE / 2nd or 3rd sem.	Challenging planning project or complex topic out of production planning	Productivity advantages of longer and heavier freight trains Monorail link for Kriens Use of cable cars in urban transportation Detour routes for freight trains to release capacity Design of Lake Geneva commuter boat service between F–CH
Master's thesis	CE and SD&IS / 4th sem.	Scientific question with real-world applications	Potential of tilting trains on the Swiss railway network Rail-connected demand systems for regional and tourist infrastructure provision Productivity enhancements in Swiss wagonload transport Pedestrian ways in the public transport system and their optimisation Influence of the vehicle fleet on asset maintenance needs

CE: Civil Engineering; SD&IS: Spatial development and infrastructure systems

In the future, there will be even more presentations of external real-world projects by project staff, as well as more site visits. Given our numerous ongoing projects on the Swiss rail network and the close contact of the chair with the industry, there will be plenty of opportunities.

### 4.2.3 TRANSPORT PLANNING

Our teaching approach has stayed unchanged for the BSc/MSc programmes. We offer a cycle of four lecture courses covering transport planning methods (introductory and advanced), survey methods and choice modelling, and project evaluation. The cycle is supplemented by contributions to the institute's courses on transport systems, simulation, and slow modes, and by a lab class that focuses on the standard four-step process.

In recent years, we have increased the programming and quantitative elements of the coursework to better prepare the students for the demands of current practice. We hope that we can enrich this element further through collaboration with other interested colleagues.

The chair designed and is co-ordinating a new Diploma of Advanced Studies (DAS) course in traffic engineering and transport planning (see <http://www.ivt.ethz.ch/advancedstudies/das/index>). The further education modules offered by the chair are now integrated into a larger whole with contributions from the other IVT groups and colleagues from elsewhere in the German-speaking world. In 2011, the DAS started successfully with seven students in its first cycle, which we hope to increase to 12–15 students in future biannual cycles. The DAS will fill a gap in the German-speaking academic world, as further training in this area has never offered before.

Table 10 Teaching: Transport Planning

Teaching	05	06	07	08	09	10	11
Courses (no.)	5	5	5	6	6	7	7
Semester hours (SWS)							
Student ETC							
Bachelor's thesis (no.)				1			
Diploma/MSc semester projects (no.)	4	1	1	2	1	4	
Diploma/Master's thesis (no.)	3	5	2	2	1		5
Dissertations (no.)	1	1	2	4	2	5	3

#### 4.2.4 TRANSPORT SYSTEMS–MOTORIZED TRANSPORT

Table 11 Teaching: Transport Systems–Motorized Transport Group

Teaching	05	06	07	08	09	10	11
Courses (no.)	8	5	6	6	7	7	3
Semester hours (SWS)	13	10	19	19	21	21	7
Bachelor's thesis (no.)							
Diploma/MSc semester projects (no.)			2	2	21		
Diploma/Master's thesis (no.)				2			1
Dissertations (no.)							1

## 4.3 CURRENT COURSES

The IVT currently offers the following courses, in order of the semesters they are taught in:

101-0510-00L 3 ETCS Müller	<b>First year project: Multi-agent simulation in transportation planning</b> A transport planning project is designed, simulated and analysed using MATSim-T, focusing on interrelationships between infrastructure, mobility requirements and individual preferences.
101-0414-00L 2 ETCS Vrtic, Jäggi	<b>Transport planning</b> Basic theoretical links between transport, space and economic development; basic terminology; measurement and observation of travel behaviour; methods of the four-stage approach; cost-benefit analysis.
101-0478-00L 2 ETCS Fröhlich, Vitins	<b>Laboratory on transport and spatial planning</b> This laboratory is a supplement to the lectures of the associated module. Using a small-scale example, the students implement a four-stage travel demand model and test different policy scenarios.
101-0415-01L 3 ETCS Weidmann, Höppner, Orth, Schranil	<b>Railway infrastructure</b> Fundamentals of railroad technology and interactions between tracks and vehicles; network development and infrastructure planning; planning of rail infrastructure and public transport infrastructure in roadways; planning and design of railway stations; construction and design of tracks; approval and beginning service on complex infrastructure facilities; maintenance under operation.
101-0416-00L 6 ETCS Lindenmann, Spacek, Menendez	<b>Introduction to road transport systems</b> Understanding the basic principles of individual transport system network design, operations, capacity choice and construction, as well as the maintenance of infrastructure and systems.
101-0467-01L 6 ETCS Axhausen, Weidmann, Menendez, Vitins, Carrasco	<b>Transport systems</b> Introduction to the basic principles of the design and operation of transport systems (road, rail, air) and the essential pathways of their impacts (investment, generalised costs, accessibilities, external effects).
101-0417-00L 6 ETCS Axhausen, Charypar, Märki	<b>Transport planning methods</b> Traffic generation; trip distribution and methods of updating; assignment (shortest paths, data and applications, dynamic assignment); choices and risks; discrete choice methods; rule-based systems; applications; iterative procedures; equilibrium.
101-0427-01L 6 ETCS Weidmann, Barth	<b>System and network planning</b> Students will develop a basic knowledge of all stages of the public transport planning process from market demand to service planning; they will understand the most relevant planning methods and will be able to use them.
101-0437-00L 6 ETCS Menendez, Ortigosa	<b>Traffic engineering and management systems</b> Fundamentals of traffic flow theory and operations; traffic control systems and parking management; Intelligent Transportation Systems (ITS) and telematics.

101-0428-00L 6 ETCS Lindenmann, Spacek, Santel, Schiffmann	<b>Highway design and construction</b> Knowledge and application of the basics and connections of geometric highway design; identification of construction risks; road construction and cross-section choice, including drainage systems; principles and certification of safety and serviceability.
101-0509-00L 3 ETCS Adey, Schiffmann, Lethanh	<b>Infrastructure management II</b> Knowledge and application of the basics and connections of geometric highway design; identification of construction risks; road construction and cross-section choice, including drainage systems; principles and certification of safety and serviceability.
701-0966-00L 6 ETCS Axhausen, Hess, Kowald	<b>Measurement and modelling of travel behaviour</b> Behavioural modelling and measurement; travel diaries; design processes; hypothetical markets; discrete choice models; hazard models; parameter estimation; patterns of travel behaviour; market segments; simulation.
101-0418-02L 6 ETCS Weidmann, Frank	<b>System design and capacity</b> Students will develop an understanding of all resources needed to produce market-oriented public passenger transport services, both on the train side as well as on the infrastructure side. They will acquire a general understanding of the trade-offs between the different resources involved, and they will be able to make use of the dedicated methods of resource design. They will learn the basic principles of traction technology.
101-0438-00L 6 ETCS Weidmann, Balmer, Menendez, Höppner, Kirsch	<b>Simulation of transport systems</b> Developing a basic knowledge of transport simulation methods, including transport demand, service supply, modelling transport facilities, facility design, facility performance and simulation quality control. Recognising the appropriate type of simulation model to apply and understanding the limitations of current simulation tools.
101-0439-00L 6 ETCS Axhausen, Zöllig	<b>Transport systems evaluation</b> The course presents cost-benefit analysis and related evaluation methods in transport and introduces the survey methods used to derive the monetary values of non-market goods.
101-0459-00L 6 ETCS Weidmann, Fink	<b>Management, marketing, quality</b> Comprehension of transport and administrative policy as well as the regulation of public transport companies. Students develop a full understanding of the three important public transport system operations management processes: (1) business management; (2) marketing; (3) quality control. The course will teach essential work techniques in each of these processes.
101-0479-00G 6 ETCS Weidmann, Montigel, Fink	<b>Safety and reliability of railway systems</b> Students learn to comprehend the main principles of safety and reliability for railway systems and to understand the basic concepts of command and control technologies for railways.
101-0459-00L 6 ETCS Wichser, Moll	<b>Logistics and freight traffic</b> Students learn to recognise and understand the relationships between logistics, market demand, service offers and operating processes in freight traffic for all means of transport (road, rail, combined traffic, sea and air).
101-0469-00L 6 ETCS Simma, Leemann	<b>Road transport safety</b> Introduction to the basics of road traffic safety with respect to design and statistics; safety audits.

## 4.4 BSc AND MSc THESES 2011

Table 12

Name	First name	Title	Supervising tutors
<b>Projects 2nd sem.</b>			
Schlatter	Christian	Determination of an adequate infrastructure for the operation of museum railways on the example of the Steam Railway Association Zürcher Oberland (DVZO)	Weidmann/Bopp, Wichser
<b>Projects 3rd sem.</b>			
Bäritswyl	Vincent	Prospects of a connected narrow gauge net between Les Brenets and Delémont	Rieder/Bopp
<b>Bachelor's theses</b>			
Eckenstein	Daniel	Feasibility study for a road-independent public transport system Zug–Oberägeri (Machbarkeitsstudie für einen strassenunabhängigen öffentlichen Verkehr Zug–Oberägeri)	Weidmann / Barth, Nägeli, Rieder
Furter	Christine		
Iten	Alex		
Künzli	Olivia		
Kyburz	David		
Naef	Stefan		
Schmid	Matthias		
Sigrist	Manuel		
Waldis	Severin		
<b>Projects 8th sem.</b>			
Länzlinger	Daniel	Validation of a simplified approach to assess capacity of existing railway networks	Weidmann/Frank
Zündorf	Deborah	Einsatzbereiche von Bedarfsverkehrssystemen in der Schweiz	Weidmann/Dorbritz
<b>Projects 9th sem.</b>			
Haas	Rafael	Schedule systematisation, operations and infrastructure concept for the Tösstal line (Angebotssystematisierung auf der Tösstalstrecke sowie Betriebs- und Infrastrukturkonzept)	Weidmann/Schranil



Table 11 (continued)

Name	First name	Title	Supervising tutors
<b>Master's theses</b>			
Arnold	Tobias	Operational ability of different train concepts für commuter railway systems (Betriebliche Eignung unterschiedlicher Fahrzeugkonzepte in S-Bahn-Systemen – Untersuchung der Einflüsse auf die Streckenleistungsfähigkeit)	Weidmann/Frank, Kirsch
Birchmeier	Urs	Objectivisation supplements in the Swiss public transport tariff system (Objektivierung der Distanzzuschläge im Tarifsysteem des öffentlichen Verkehrs der Schweiz)	Weidmann/Barth, Rieder
Dubernet	Thibaut	Introducing joint trips in a multi-agent transport simulation: From agents to clique replanning	Axhausen/Ciari
Ganitta	Ulrich	Gemeinschaftliches Wohnen ohne eigenes Auto – Haushaltsbefragung der ersten autofreien Siedlung in Bern	Weidmann/Schirmer
Haas	Rafael	Dispatching concepts in case of rail operation disturbances (Dispositionskonzepte bei Bahnbetriebsstörungen)	Weidmann/Schranil
Hirzel	Daniel	Erschliessung der Tourismusdestination Andermatt	Weidmann/Nägeli
Lehner	Manuel	Modelling housing prices in Singapore applying spatial hedonic regression	Axhausen/van Eggermond, Erath
Mezdani	Youssef	Optimal tolls based on an agent-based model of travel demand	Axhausen/Bierlaire/Flötterod, Erath,
Podstransky	Pascal	Zusammenhänge der Textur und Griffigkeit von Bahnbahnen und Einflüsse auf die Belagslärmemission	Lindenmann, Spacek/Baumgartner, Leemann, Schiffmann
Rauchenstein	Armin	Erhebung von Leistungsdaten im Bereich der Reinigung und des Winterdienstes am Beispiel der Stadt Zürich	Girmscheid/Koller, Schiffmann
Schorer	Olivier	System optimisation of the projected high-speed line “High Speed 2” in Great Britain (Optimisation du système de la ligne à grande vitesse projetée “High Speed 2” en Grande-Bretagne)	Weidmann/Barth
Sorg	David	BRT systems and beyond: Exploring the limits of a popular and rapidly growing urban transport system	Weidmann/Carrasco
Steinle	Michael	Freizeitverkehr an Alpenpässen, Stated Preference-Befragung zu Steuerungsmöglichkeiten	Axhausen/Bodenmann
Wanner	Mathias	System analysis and improvement of urban bus services in Lucerne’s central district.	Weidmann/Carrasco
Zimmermann	Roman	Theoretical model for the estimation of the influence of a train run on the lateral track displacement in tight radii with continuously welded track	Weidmann/Bopp, Wicher





## 5 SELECTED RESEARCH PROJECTS

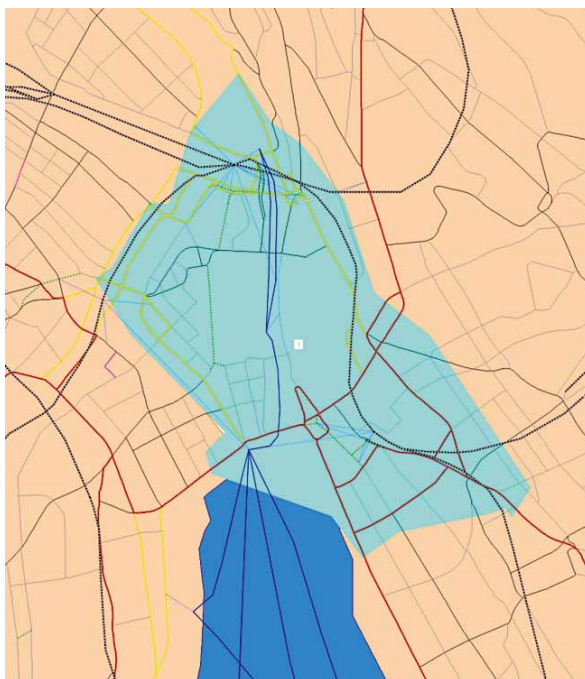
### 5.1 TRAFFIC ENGINEERING

#### 5.1.1 CALIBRATION STUDY FOR VISSIM

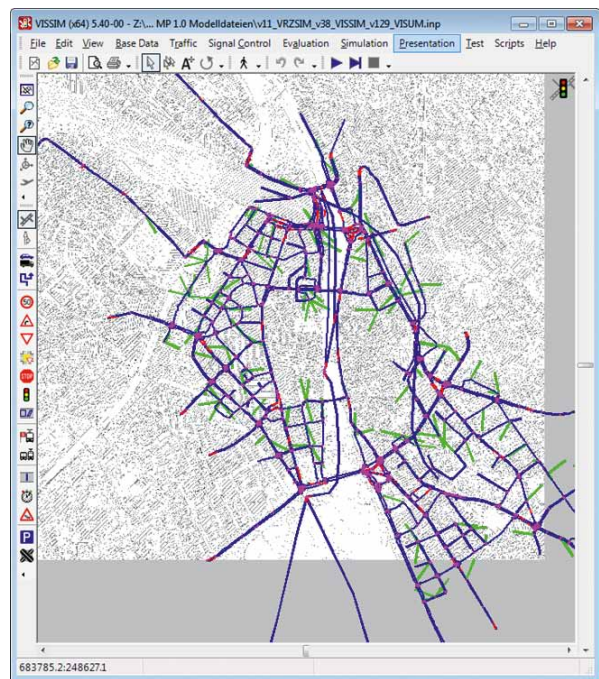
Since July 2011, we have been involved in the cooperative project “Calibration Study for VISSIM” together with the Modelling and Simulation group from the Division of Transport of the City of Zürich.

The City of Zürich recently acquired “Verkehr In Städten—SIMulationsmodell” (VISSIM), a microscopic multi-modal traffic-flow simulation software, to effectively model traffic within the city. VISSIM is a widely used simulation software with many applications and high potential. However, like other commercial microscopic traffic simulation software, VISSIM has a very large number of input parameters, which makes the process of calibration rather difficult. In addition, the spatial scope of the network to be modelled is quite large, as even the initial network encompasses the inner city of Zürich (a complex urban layout with narrow streets, hills, mixed transportation modes, a large number of pedestrians, an adaptive signal control system, etc.).

Figure 5 Study area



a) Study area of the CSV project  
Source: City of Zürich (2011)



b) Network of the study area in VISSIM

The object of this CSV project is to optimise the calibration process so that the City of Zürich can calibrate the VISSIM model in the most efficient way, tailored to its specific needs and requirements. The project has been divided into three phases:

Phase 1: Introduction. This phase includes familiarisation with and evaluation of software functions and capabilities, research and investigation of city characteristics for software implementation, and a review of different calibration procedures (advantages and drawbacks) from the literature.

Phase 2: Sensitivity analysis. This includes the selection of parameters for the subsequent calibration. It starts with the qualitative understanding and preliminary identification of the parameters relevant to

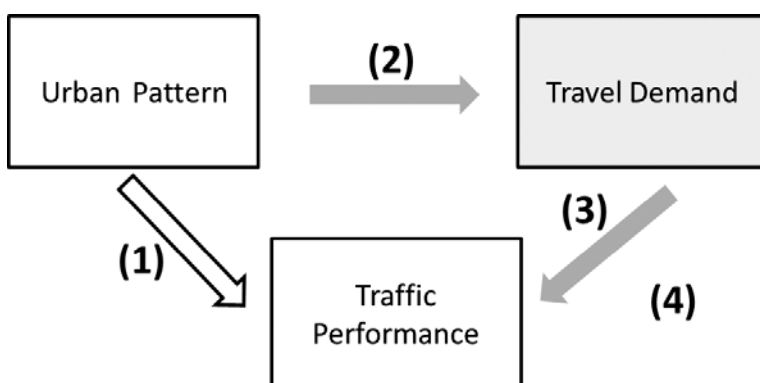
Zürich's inner-city traffic conditions and other characteristics. Further selection of the parameters is performed based on a review of the existing literature, common sense and our own experience. Quantitative analysis, including the evaluation and screening of selected parameters through sensitivity analysis (based on the Elementary Effects [EE] Method) is carried out in the final step. In order to improve the computational efficiency of the EE method, the Optimised Trajectories (OT) approach is used. Additional improvements have been obtained through a new modification, the quasi-OT approach (methodology developed within the context of this project) to further reduce the calculation time requirements. During this phase, the number of parameters for calibration has been reduced from 192 to five.

Phase 3: Calibration. This phase, performed in conjunction with personnel from the Division of Transport of the City of Zürich, uses real data to calibrate the model. Travel time measurement from GPS data and traffic volumes from loop detectors are employed in the calibration and validation of the model.

## 5.1.2 URBAN PATTERNS AND TRAFFIC PERFORMANCE (UNIFORM)

Many recent studies have linked the geometric properties of urban networks to travel magnitudes (e.g., distance travelled, number of trips). They support the idea that urban patterns affect travel demand (figure 6, interaction 2). We believe, however, that urban patterns influence not only demand, but also traffic performance (interaction 1). The set of interactions is rather complex, as higher travel demand evidently translates into more cars on the streets, which in turn affects traffic performance (interaction 3). The opposite direction is valid too; the level of traffic performance might encourage (or discourage) people to use cars (interaction 4).

Figure 6 General interactions between urban patterns, travel demand and traffic performance



Source: City of Zürich (2011)

The purpose of this research is to assess the ability of a city to cope with traffic based on its urban patterns (interaction 1). Strategies for designing a sustainable city vary greatly among traffic engineers, transport planners, urban planners and architects. The proposed research seeks to integrate these different views.

We aim to develop some analytical formulations and numerical examples linking the static properties of networks (urban pattern descriptors for abstract networks) to the dynamic properties of traffic (traffic performance indicators). The transferability of these results to real cities will be evaluated in at least one case study (the city of Zürich). The idea is to reduce the complexity of the real network to the point that it will be possible to quantify its properties using the analytical formulations and numerical methods mentioned above. The results of this research are expected to influence the design of new cities and to support traffic management strategies for existing ones.

## 5.2 TRANSPORT SYSTEMS

### 5.2.1 DIFFERENCES IN THE COGNITION OF PUBLIC TRANSPORT SYSTEMS: DOES PUBLIC IMAGE SHAPE PUBLIC BEHAVIOUR TOWARDS URBAN PUBLIC TRANSPORT?

Different types of public transport systems have differential effects on demand. Light rail and tram services especially are credited with attracting more passengers than other modes under equal service conditions. This claim, known as the “rail factor”, was the main impetus behind this research project. As there is hardly any evidence to support the existence of the rail factor in urban conditions and very little is known about factors leading to such an effect, this study is of special interest for transport policy.

To explain the assumed rail factor, our research question focused on the relationship between bus and tram system attributes and stakeholders’ related perception of and reaction to these attributes. Therefore, the following issues were addressed:

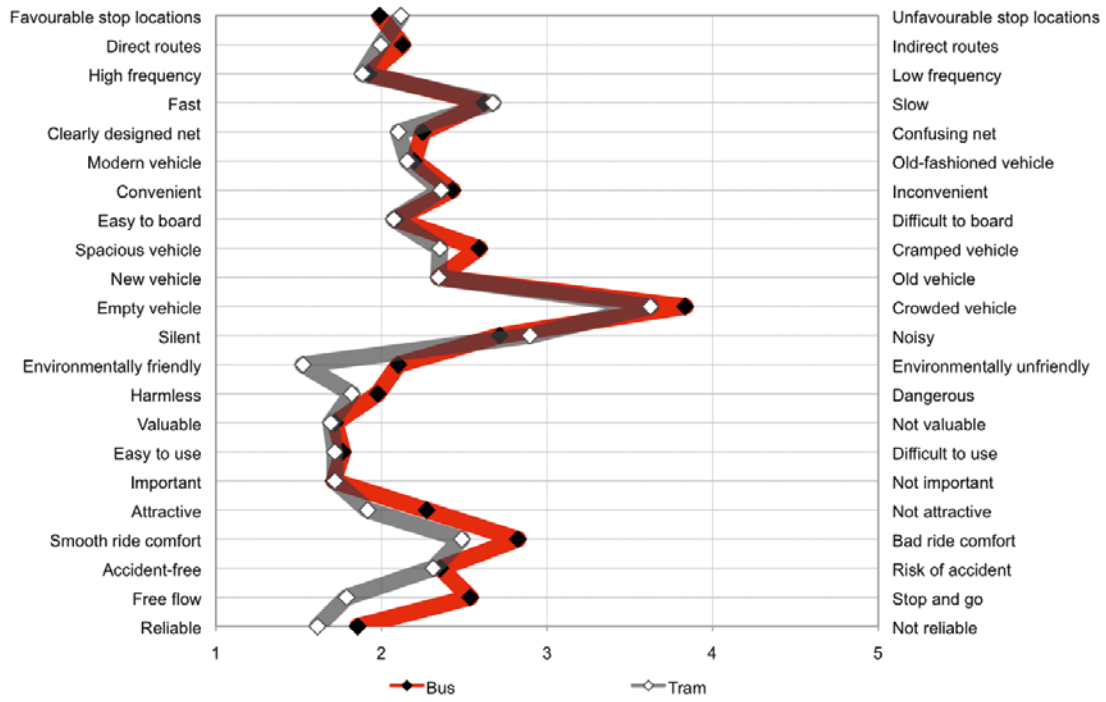
1. Bus and tram system attributes: The relevant system attributes were identified and differences between bus and tram attributes were quantified.
2. The perception of system attributes by various stakeholders: Stakeholders of interest were identified and their perception of public transport systems and individual system attributes were investigated. The stakeholders included active public transport users as well as potential users among residents who lived close to stops. Different economic and psychological concepts were analysed and discussed to determine appropriate methods of measuring the stakeholders’ perception of bus and tram services.
3. The mode choice behaviour of various stakeholders: Mode choice was analysed as a factor of public transport demand with reference to the availability of buses and trams.

Our in-depth analysis of the images of bus and tram services involved measuring the semantic differential to identify differences between ratings of bus and tram attributes. It was found that the general perceived images of buses and trams were surprisingly similar (compare figure 7). Differences increased with higher frequency of public transport use. To identify the impact of experience, images were compared according to the respondents’ place of residence. The image of bus service was consistent across all three samples interviewed in the cities of Bern, Lucerne and Zürich. In contrast, the image of tram service varied widely. Moreover, inhabitants of cities with trams had a more positive image of trams than of buses, whereas inhabitants of a city served only by buses showed better ratings for buses than for trams.

A comparison of revealed mode choice behaviour in bus and tram corridors with equal public transport service characteristics showed no significant differences for commuting trips. It is assumed that aspects other than the public transport system itself were more important for mode choice decisions.

The assumption that different public transport systems cause differential effects on public transport demand is not supported by this research in Switzerland. Under the precondition that buses and trams are treated equally by traffic laws, a bus system can theoretically attract the same ridership as trams given the same service conditions. Thus, ridership numbers are limited by the capacity of vehicles and by the frequency of service.

Figure 7 General image of bus and tram services: Overview



## 5.2.2 A METHOD FOR THE COMPARISON OF RAILWAY OPERATING PROCESSES

Railway network operations require comprehensive and precise rules, directives and guidelines. The operational framework of the Swiss railways is mostly given by the Operating Regulations (Fahrdienstvorschriften: FDV) issued by the Swiss Federal Office of Transport (FOT/BAV). These must be updated regularly, following the needs of railway production and amendments to the regulations. At present, the European Railway Agency is attempting to standardise the operational rules of all European railway networks through its Technical Specifications for Interoperability (TSIs). In accordance with transportation treaties between Switzerland and the EU, the TSIs must be integrated into pertinent Swiss rules, including the Operational Regulations.

Adapting Swiss rules to the European TSIs is not trivial, and TSI contents cannot simply be transferred directly. Barriers against this include the different languages, different meanings of terms, different ranges of regulation, diverging structures of the rules in general and, last but not least, different ways to run a railway. Therefore, it was necessary to develop a method by which directives could be compared and adapted in a structured and transparent way. In this project, the IVT framed a method that takes all of the above-mentioned barriers into consideration.

The method was produced iteratively together with the Swiss Federal Office of Transport and was redesigned several times over the course of its development. Although it was created specifically for the comparison of the TSIs and the Swiss Operating Regulations, it is also applicable to other purposes, even in non-railway sectors.

The method comprises five main steps (see figure 8): (1) clarifying the initial conditions; (2) determining the general structure, (3) working out the detailed structure; (4) adjusting each regulation as needed; and (5) the final check. The main features will be explained in brief:

The editors start by clarifying the initial conditions in order to examine their own state of knowledge, check each of the guidelines for consistency, fix the direction of transfer by defining the main document, and specify the glossaries.

After that, the general structure is determined. This entails defining the geographical framework and fixing both the time range of validity and the overall content for each guideline. The main work in this step consists of structuring the content according to general lists without analysing the texts in detail. The main aim here is to develop a new general structure as a foundation for content translation and adaptation.

Then the detailed structure is worked out by scrutinising every rule and its requirements. The result is a detailed overview of all the rules that must be considered in the adjustment process.

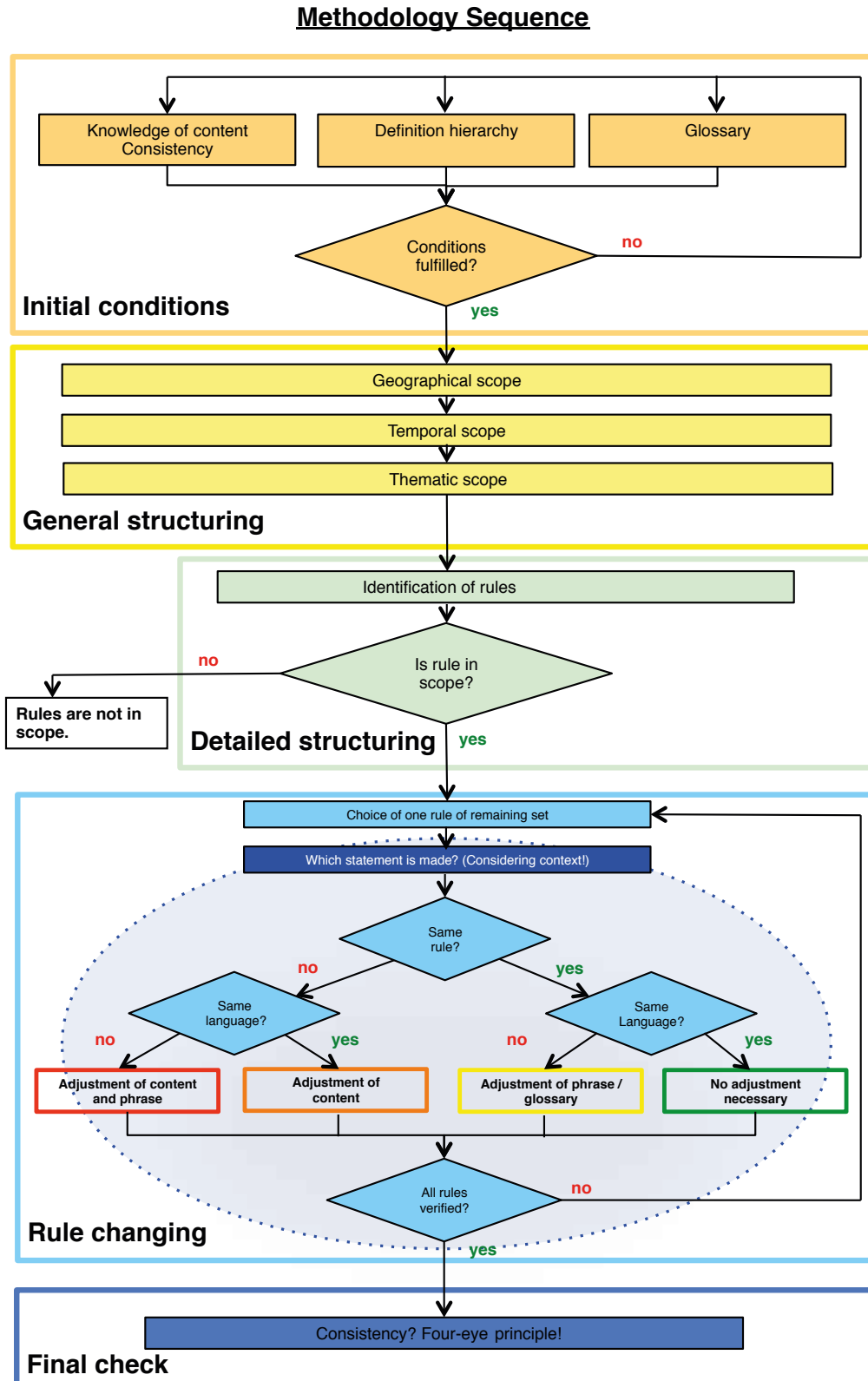
The next labour-intensive step involves rule changing. Every single group of rules defined in the previous detailed structuring step must be compared. Upon comparison, the editor will have four choices: (1) changing content and phrasing, (2) changing content only, (3) changing phrasing only or (4) doing nothing in the case of matching rules.

Finally, the revised guidelines must be read by a second person, who was not involved in the work before (following the four-eye principle) in order to examine the rules for correctness and consistency.

In summary, the method is a top-down approach that systematically enriches and deepens the content. By grouping the rules, editors are easily able to recognize differences between guidelines regarding content, language and message. This method helps to merge rules from directives and laws of mostly different structures, ranges of regulation and backgrounds.



Figure 8 Overview of the approach

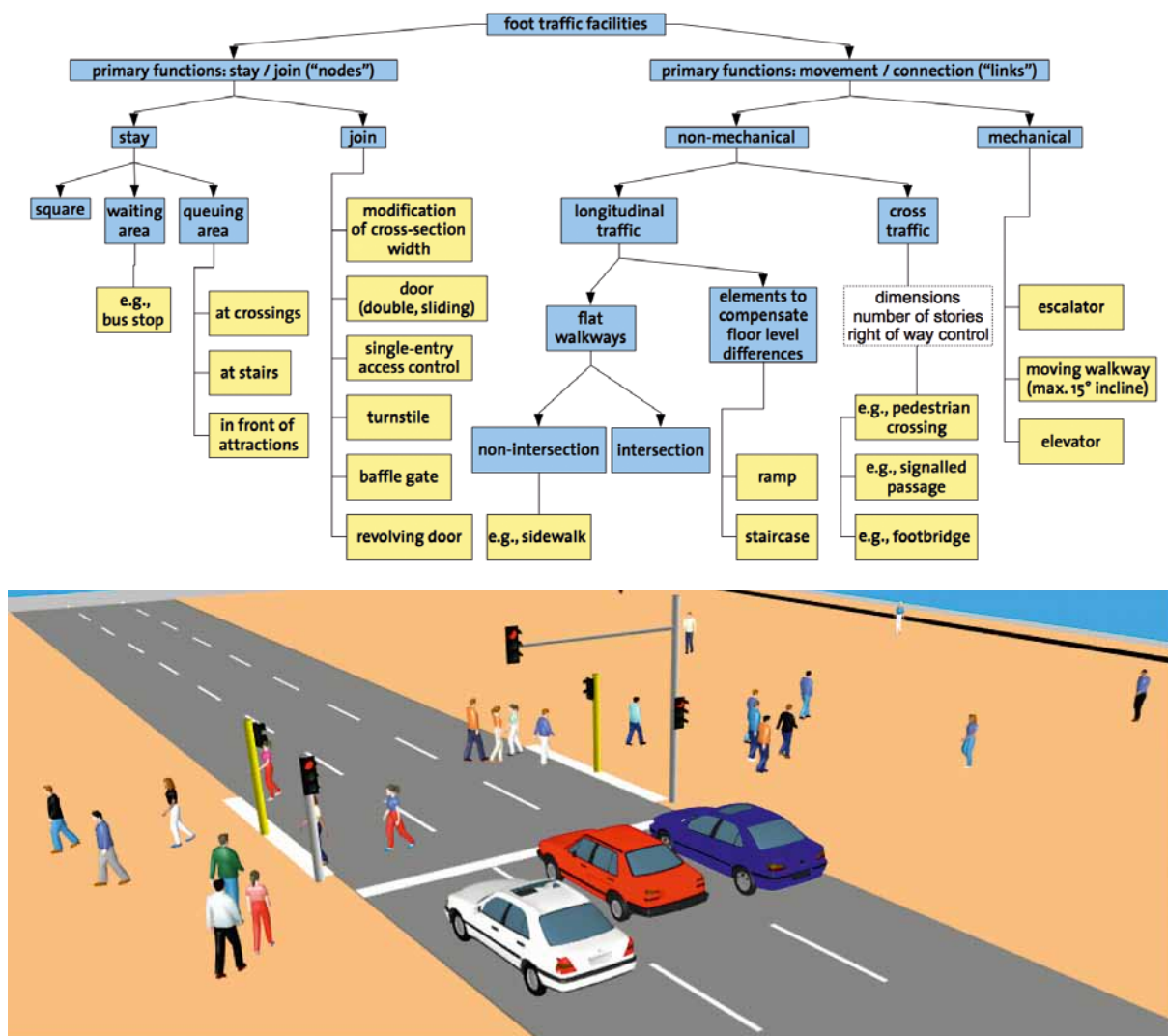


### 5.2.3 PERFORMANCE AND LEVEL OF SERVICE OF FACILITIES FOR HUMAN-POWERED LAND TRANSPORT

Until recently, Swiss industrial standards—in the sense of technical design guidelines—within the transport sector have only been used or introduced for motorised vehicles. Therefore, the Association of Swiss Highway Engineers (Vereinigung Schweizer Strassenfachleute: VSS) initiated a research project to address the need for corresponding technical guidelines dealing with facilities which are used only by pedestrians or cyclists or both.

We are currently carrying out this study in cooperation with an external project partner that specialises in cycle traffic. The goal of this project is to investigate the parameters and relevant factors for the level of service as well as the performance and capacity of such traffic facilities. Eventually, these investigations will support the development of an overall evaluation procedure which is capable of assessing the performance of traffic facilities such as road and street segments, crossroads, etc. The preparatory work for this final step involves identifying the relevant parameters for all design elements of the transport network, including public transit and motorised as well as non-motorised individual transport modes.

Figure 9 Foot traffic facilities (top) and a microsimulation of a signalised pedestrian crossing (bottom)



Developing a generic system overview of all pedestrian facilities has been the starting point of this project. Figure 9 (top) shows the categorisation of the basic design elements that form a pedestrian network. The main distinctions have been made based on the primary function of the corresponding elements, i.e., whether they are used as nodes or links. Squares play a bit of an ambiguous role in this system. Various methods are being employed to generate the data needed to prepare future Swiss standards documents on human-powered land transport.

Several facilities and their parameters have already been well documented in scientific literature in Switzerland, other European countries and elsewhere in the world, but these have not yet been translated into easily applicable standards. In those cases, the relevant information must be extracted and condensed to a standard-ready format after being double-checked for general correctness and suitability according to the system of basic network elements. Foreign data must be validated for traffic situations typically observed in Switzerland. To achieve this as well as to obtain data on design elements for which there is no, very little or uncertain information, real-world observations and microsimulation studies are being undertaken (figure 9, bottom). Pedestrian data has been collected on the movement of people on heavily used escalators (Zürich, main train station) and at strongly frequented signalised pedestrian crossings (downtown Zürich). Further observations will include high-performance elevator installations (Bern, main station). Later on, different load scenarios can be efficiently analysed using microsimulation tools for pedestrian flows. Compared to real-world observations, changes within the infrastructure environment can be modelled relatively easily and subsequently evaluated with respect to performance and level of service.

### 5.2.4 “STABIL MOBIL” CONFERENCE

In June 2011, the third interdisciplinary all-day symposium “Stabil Mobil—Stability of Public Transport Networks” took place at the ETH Science City campus. Like previous events in the “Society—Mobility—Technology” conference series, the conference was organised by an interdisciplinary committee of transport engineers from the Institute for Transport Planning and Systems (IVT, ETH Zürich) and historians from the Institute for Economic History (FSW, University of Zürich). The series started in 2007 and has included three events.

The first event, “Is There a Future for High-Speed Rail?”, took place in June 2007 and focused on challenges for and the history of high-speed railway operations. The programme attracted over 130 participants and took place at the ETH Zürich.

In June 2009, the second event, “Automation and Transport”, took place at the University of Zürich, analysing the history of transport automation as well as current and future conditions and how they relate to social, economic and technical conditions since the 1950s. About 110 persons attended.

For the third event, Urs B. Wili of Furrer+Frey AG joined the organisational committee. The organisers decided to focus on the stability of public transport systems, which is a matter of great recent importance. On the one hand, the development and availability of automation techniques and their integration into public transport operations increases systems’ ability to cope with increasing transport demands. On the other hand, the stability of transport systems is challenged by various events that could turn stable systems into unstable ones, threatening not only service quality but also its availability.

The conference started with a review of the history and characteristics of large-scale transport systems, with an emphasis on stability aspects. The second part analysed recent challenges in the field of complex public transport networks. The third part highlighted future developments and potential solutions for improving the stability of public transport networks in order to address future transport capacity problems. A final panel discussion included video input and gave the audience the opportunity to discuss with the speakers (see figure 10).

The event “Stabil Mobil—Stability of Public Transport Networks” attracted about 140 experts from politics, the transport engineering industry, government, universities and the media, who engaged in an interdisciplinary debate on transport issues. Attendees agreed that the conference series provides an excellent opportunity to exchange and discuss information on highly relevant topics and enables participants to think outside their normal specialities. Due to the positive feedback of the participants, the conference series will be continued in 2013.

Figure 10 Impression of the final discussion in the afternoon



Panellists (from left to right): Joos Bernhard (DAV Zürich), Renate Mayntz (Max Planck Institute for the Study of Societies), Gian-Mattia Schucan (SBB AG), Anita Schöbel (University of Göttingen), Fritz Busch (Technical University Munich)

## 5.3 TRANSPORT PLANNING

### 5.3.1 ASSESSMENT OF INDUCED TRAVEL DEMAND

Induced travel demand, a phenomenon that is here defined as additional demand for transport services as a result of improving travel conditions, has been a topic of research for many years. The focus has often been on assessing the side effects of measures that bring about such improvements.

The goal of our work was to analyse the effects that changing the generalised costs of travel had on the generation of travel demand, both on the aggregate and the disaggregate (individual) levels. The demand effects that were of interest were considered on an individual and on a cohort level. These effects included: the likelihood of participating in out-of-home activities, or being mobile, on a given day; the number of trips and journeys conducted; the resulting total time spent outside the home location; and the distances travelled.

Our research on the aggregate level tackled certain limitations of previous research on the topic by considering a substantially longer period and a larger spatial context than had previously been the case. Accessibility measures were used as a central predictor for demand changes, as political discussions about transport projects often centre on them. A *structural equation model (SEM)* was used to model the effects with a *pseudo panel* data set, which was constructed from historical data going back to 1974 and covering all of Switzerland.

The results obtained confirm the hypothesis that travel can be considered a normal good for which lower (generalised) costs bring about higher levels of demand. It was shown in particular that reductions in the generalised costs of travel induce a higher mobility of cohorts. The demand elasticities were substantial for the variables describing the generalised costs.

In the second part of the study, short-term effects of changes to the transport infrastructure and the resulting changes in travel times were assessed. A five-day travel diary survey was conducted, based on which the general conditions for carrying out a particular daily schedule were modified. Thus, new generalised costs for the schedule were implied. The respondents were then asked to adapt their schedules progressively to these new conditions in an interactive survey software environment (figure 11).

The respondents to this *stated adaptation survey* did adapt their behaviour in large part, but they proceeded very selectively in doing so. The predominant adaptations of their reported schedules were limited to the departure time from the home location (figure 12) to ensure timely arrival at their various destinations. Another popular means of compensating for the lost or gained time implied by the scenarios was to adapt the trip durations themselves by changing destinations and/or travel modes.

Overall, the second part of the study confirmed the results of the aggregated analysis in the first part, which showed substantial effects from changing generalised costs. However, it was demonstrated that the measures necessary to bring about those effects, that is, to increase general accessibility levels significantly, would be onerous in terms of budgets and political effort.

Figure 11 Screen shot of stated adaptation interview software

Einstellungen  
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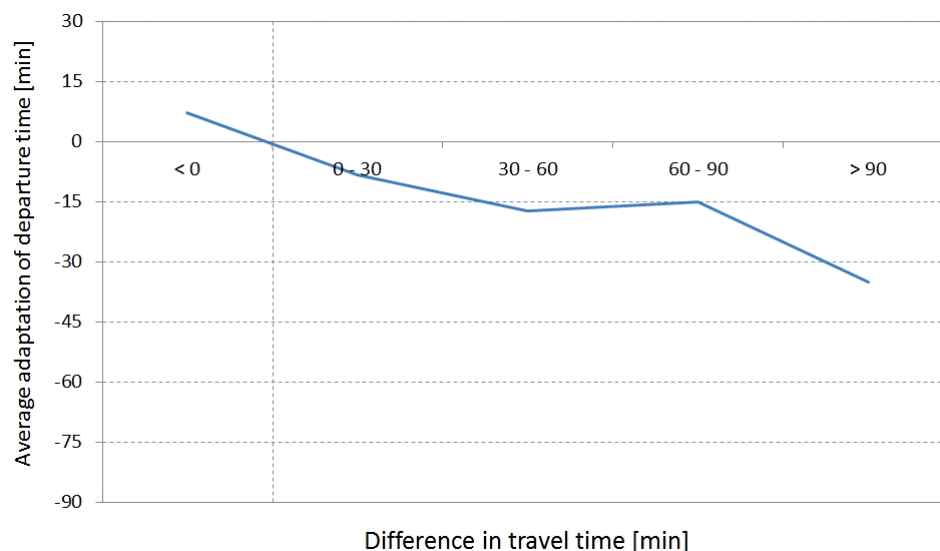
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Classe

Legende					
Zeitaufteilung					
Tätigkeit	Aufenthalt zuhause	Arbeit	Freiz...	Freizeit...	A...
Beschreibung der Tätigkeit	Ausgangsaktivität		Abendesse	Kino	
Ort der Tätigkeit	Hauptwohnsitz	ETH Hinggerberg	Rest...	Kino Ut...	H...
Abfahrtszeit	00:00	07:45	18:20	20:15	22:35
Zu Fuss	00:00	00:05	00:10	00:10	00:05
Fahrrad	00:00	00:00	00:00	00:00	00:00
Motorrad / Moped	00:00	00:00	00:00	00:00	00:00
Auto	00:00	00:00	00:00	00:00	00:00
Bus	00:00	00:10	00:10	00:00	00:00
Tram	00:00	00:05	00:10	00:00	00:25
Bahn	00:00	00:00	00:00	00:00	00:00
Flugzeug	00:00	00:00	00:00	00:00	00:00
Schiff	00:00	00:00	00:00	00:00	00:00
Andere	00:00	00:00	00:00	00:00	00:00
Wartezeit	00:00	00:05	00:05	00:00	00:05
Fahrzeit gesamt	00:00	00:25	00:35	00:10	00:35
Aktivitätsdauer	07:45	10:10	01:20	02:10	00:50
entfernen	entfernen	entfernen	entf...	entfer...	...

Neuen Weg & Aktivität einfügen  
Alten Weg & Aktivität einfügen

Figure 12 Average change in departure times as a function of travel time changes



### 5.3.2 MATSIM SINGAPORE

The Future Cities Laboratory (FCL) started in 2010 as the first research programme of the Singapore ETH Centre. The research project on mobility and transportation, one of nine modules of the Future Cities Laboratory, is being carried out by a core team comprised of one senior researcher and six PhD students (four from the ETH Zürich and two from the National University of Singapore: NUS), all based in Singapore. The demands of this research project derive from managing, planning and optimising the flow of people and goods at different time scales and from its interaction with all elements of the future city. The project is presented from two perspectives, medium- and long-term, and is built on agent-based transport demand modelling. The basis of this research project is a full implementation of the multi-agent-based travel demand simulation program (MATSim) for Singapore, the development of which was the focus of the work in 2011.

In line with the activity-based approach, MATSim is founded on the idea of the 24h daily activity schedule of an individual as a basic behavioural unit. MATSim employs fully integrated traffic flow simulations of both individual motorised and public transport to calculate the generalised costs of travel implied by the schedule. In addition, MATSim is designed for speed and scale, which allows it to address large-scale and finely detailed scenarios (for example Singapore, a city of about 5 million agents, 80 thousand links, 70 thousand destinations and 310 public transport service lines), and to find a stochastic user equilibrium with acceptable computing effort. Moreover, MATSim can fully integrate Singapore's time-based Electronic Road Pricing (ERP) system, since it simulates daily activity plans and explicitly accounts for the times of day and ERP gantry locations.

Our central aim in developing the MATSim implementation for Singapore is to achieve a fully integrated, modular design of the demand modelling process that allows the seamless integration of new data and further sub-models later in the project as well as thorough validation. Special attention has been given to creating additional sub-models, which became necessary due to the limited availability of key data required for agent-based transport demand modelling.

In absence of a full population census, the agent population was generated by using hierarchical iterative proportional fitting (IPF), including both the household and the individual levels. In lieu of a publicly accessible microdata sample with matching marginal sums, data from a national travel diary survey (Household Interview Travel Survey, HITS) which constituted of a 1% sample of Singapore's permanent population was combined with publicly available breakdowns of Singapore's most recent census. Due to the inconsistency of the scope of the two data sources, the modular framework of the population synthesis was highlighted and a thorough cross-validation with independent data was performed.

Then the agent population was enriched by adding driving license and car ownership models, both based on HITS data. The first was applied at the individual level while the latter included information from the first, but was based on the household level. These sub-models were again cross-validated with independent data originating from the driving license and car registry.

In absence of a central building register, various web sources, commercially available information on points of interest and building footprints as well as web-based services for geo-referencing were exploited to build a comprehensive facility database. This database was then used to distribute the population among residential buildings, detect work locations and define potential places for shopping and leisure activities. Based on a gravity model, each agent's home location was linked to a work/education location depending on the agent's sociodemographic profile. The destination choices for shopping and leisure activities were based on a sampling of alternatives from within a time-space prism that spans home and work activities and allows us to account for heterogeneous taste preferences among the agent population.

Mode choice was modelled on a sub-tour level and includes the options of public transport, using a car, walking and taking a taxi which, given its price and availability, is a relevant transport mode in Singapore. Results from a recent stated preference survey on mode and route choice were incorporated, including the valuation of ERP. A highly detailed road network and public transport schedule was used for time-dynamic routing. Taking advantage of the highly detailed yet high-performing MATSim public transport simulation, interactions between cars and buses sharing the same road and interactions between buses (i.e., bus bunching) were considered. The transport network model combines data from two different networks and includes schedule information that was accessible in the General Transit Feed Specification (GTFS). The process of merging these different data sets into a single network will be outlined in an upcoming detailed report.

To include traffic that is not endogenously modelled, such as light goods vehicles, freight and border crossing traffic, information from existing and available aggregate transport models was integrated via additional agents. Finally, the model was validated against traffic counts both for cars and for public transport.

Furthermore, the ability of the model to forecast demand reactions induced by a substantial public transport infrastructure extension, namely the opening of the final stage of a new mass rapid transit line, was tested by comparing simulated and observed ridership data.

Figure 13: Video still of the MATSim Singapore simulation



### 5.3.3 WITHIN-DAY REPLANNING FOR EVACUATION MODELLING

After events like the terrorist attacks on September 11, 2001, the disastrous tsunami that hit coastal regions around the Indian Ocean in December 2004, or the devastating earthquake and subsequent tsunami in Japan in March 2011, interest in large-scale evacuation simulations has grown enormously. In transport planning and traffic management, this creates the necessity of simulating scenarios in which unforeseeable, exceptional events occur. This requirement conflicts with traditional simulation approaches that equilibrate traffic demand using an iterative approach. They work under the assumption that a typical situation is simulated in which agents can rely on their experience from comparable situations, like previous iterations.

A best-case analysis was performed using an unrealistic user equilibrium approach to modelling evacuations. This absolute lower bound on the time needed to evacuate an area has to be low enough so that an evacuation request is a feasible path for the authorities at all. After a suitable test with a large-scale example, the project was continued to see if an evacuation request was still a feasible option under more realistic conditions.

Applying an iterative solution approach to a scenario with unexpected events results in problems like illogical agent behaviour, producing false and misleading results. The current goal of the ongoing research is to develop an approach that allows scenarios containing such events to be simulated in a logically consistent way and implemented into MATSim, a multi-agent traffic-flow simulation framework.

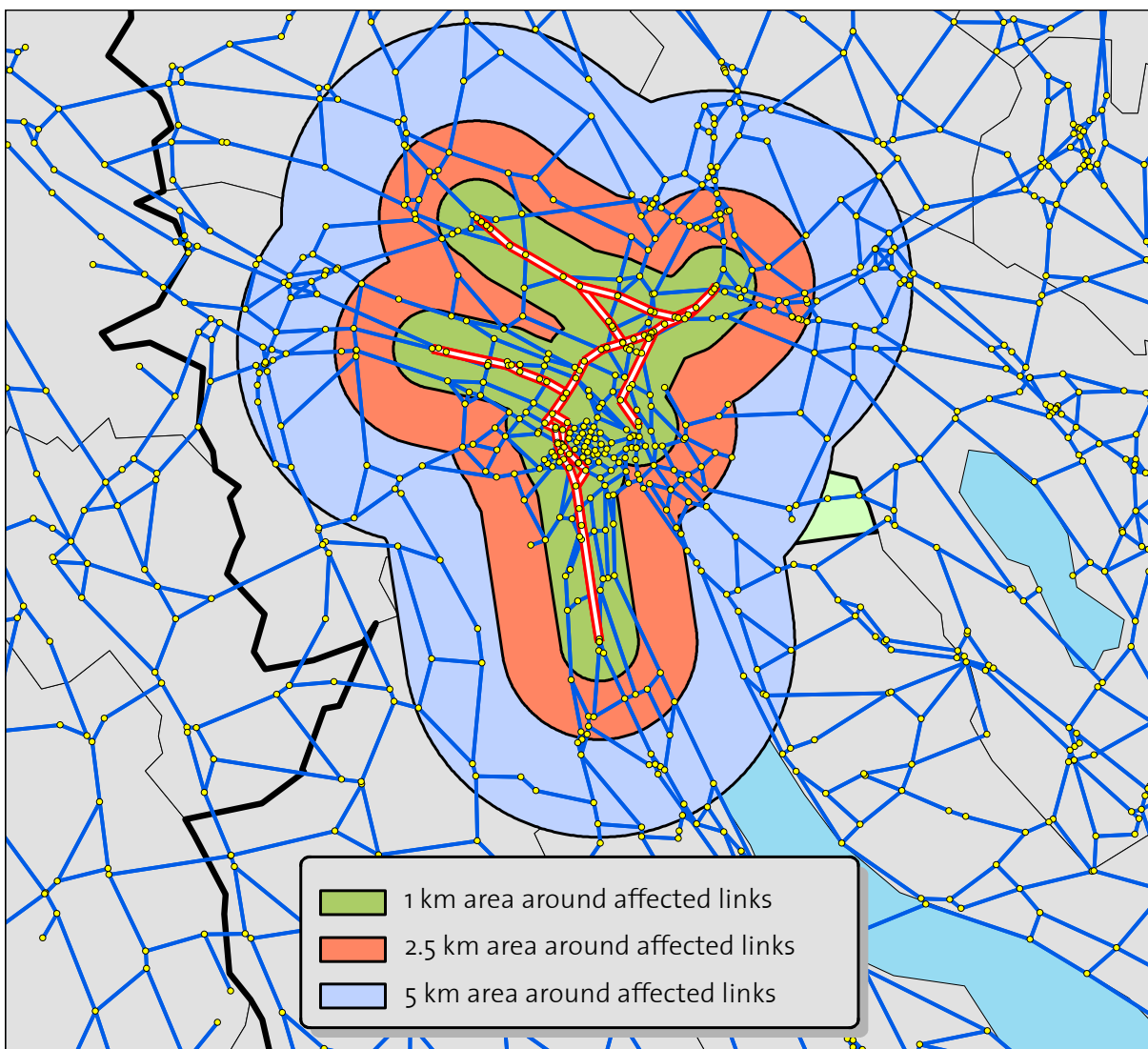
In the second step of the project, a suitable within-day replanning approach was developed. This approach simulates only a single iteration, which avoids problems resulting from an iterative simulation process but also requires a more detailed behavioural model for the simulated agents, since the agents cannot learn from iteration to iteration to optimise their behaviour. The implementation of this approach and its application to a sample scenario was described by Dobler et al. (2012).



An aim of the current project phase is to add a flexible behavioural model to the simulation framework. First, studies on large-scale evacuations were reviewed to get familiar with evacuations and related behavioural patterns (Kowald et al. 2011). Second, findings from that review were validated by conducting expert interviews. A last step is to conduct a nationally representative study for Switzerland, which is currently underway. On the one hand, findings from all three steps will be used to identify and define the behavioural model's requirements. On the other hand, they will be used to calibrate and validate the model.

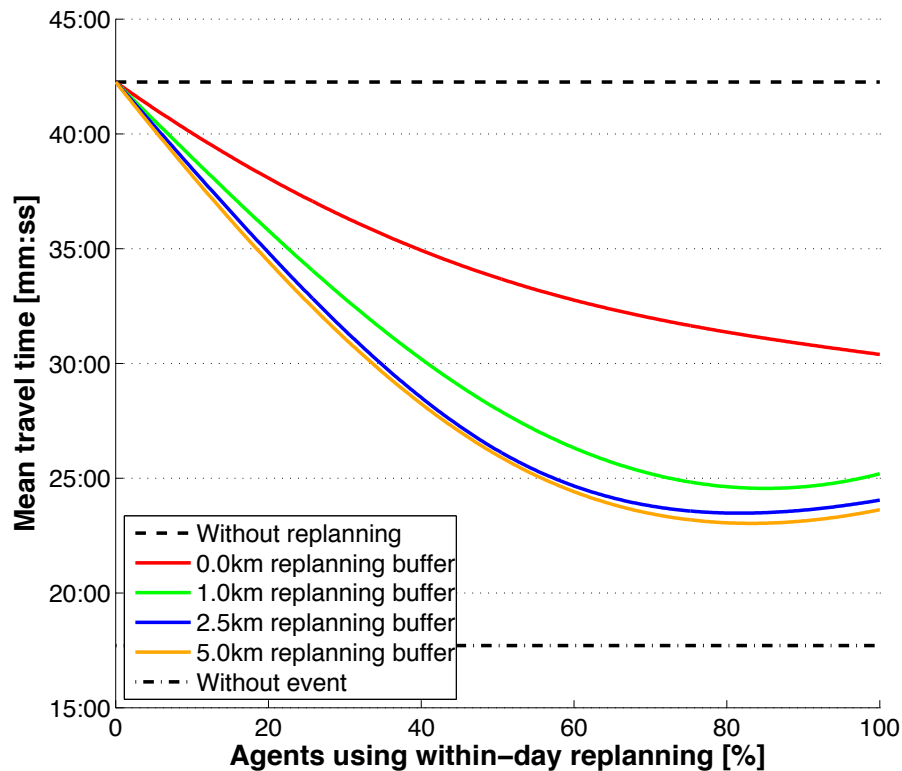
Finally, the model has been used to simulate a fictional incident in the city centre of Zürich and will be applied elsewhere in Switzerland where an evacuation of an affected area may be required. Figure 14 shows the study area and blocked links, while figure 15 illustrates how replanning reduces the travel times as expected, but also that they depend on the size of the area informed and the share of drivers with access to the information.

Figure 14 Study area and blocked links in the replanning validation experiment



Source: Dobler and Axhausen (2011)

Figure 15 Interaction between replanning, average travel times and information provision to the drivers



Source: Dobler and Axhausen (2011)

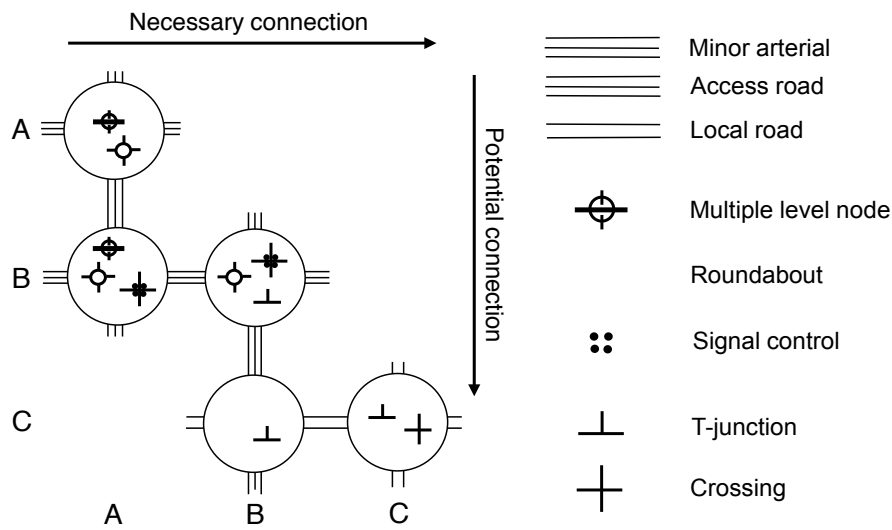
### 5.3.4 SHAPE GRAMMARS FOR NETWORK DESIGN

Transportation network design remains ubiquitous. New development sites must be accessed and existing infrastructure needs to be improved, renewed and redesigned due to demand changes. Worldwide, the population in urban systems is expected to double between 2005 and 2050 (UN 2009). New and renewed urban systems require sound transport infrastructure and corresponding technical standards.

However, when we looked at various technical handbooks on network design, no preferred suggestions for network layouts could be found. For instance, the street layout standard in Switzerland (VSS 1994) recommends strong hierarchical network element distribution. Other standards, e.g., in Germany, favour an adaptive hierarchical network design. In the USA, after 1950 a transition took place from gridded layouts to increasingly more dendritic networks, as recommended by the authorities of the time (Southworth and Ben-Joseph 2003). Overall, the investigated handbooks and standards lack a fundamental research basis with which to identify the benefits and costs of their rules and suggestions.

Our work aims to provide such a research basis, and it relies on the idea of shape grammars, which can be advanced for standards and other applications. Shape grammars in the form of rules describe how different types of network elements are added to each other, e.g., if a highway can be crossed by an arterial road or if local roads can be joined to larger intersections of high capacity (figure 16). The rules depict how an existing state can be extended and modified into a more desirable state. Additionally, shape grammars may include land use issues (see Marshall 2005) and therefore cover many urban planning applications. Shape grammars already play an increasing role in current urban planning and urban simulation software.

Figure 16 Hierarchical link and intersection shape grammars



Source: after Marshall (2005)

This research has evaluated shape grammars for hierarchical network design (Vitins, Schüssler and Axhausen 2012). Virtual networks were designed on featureless planes so as not to bias the outcome and evaluation. The virtual networks were evaluated according to the generalised costs of travel, and the infrastructure costs were assessed within a budget constraint. A sample of networks was statistically analysed.

The results show significant differences between the shape grammars applied in the optimal network design. Network designs with strong hierarchical link alignment reduced network performance compared to network designs where no rules were applied in the design process. This finding was expected, since less flexibility in design should lead to a decrease in network efficiency. However, the impact of hierarchical link alignment was remarkably low. Therefore, network performance was only slightly affected by the application of strong hierarchical link alignment rules.

Moreover, the distribution of intersection types considerably affected network performance. Strong rules on the allocation of intersection types decreased the average network performance significantly. The findings show that the distribution of intersection types is essential. Therefore, shape grammars for intersection allocation are of major importance. This finding is especially relevant because investments in new intersection types are less often discussed than investments in new roads.

Our current research focuses on intersections and their role in urban design. Future studies will incorporate land use and parcel distribution as well as network growth and land use development.



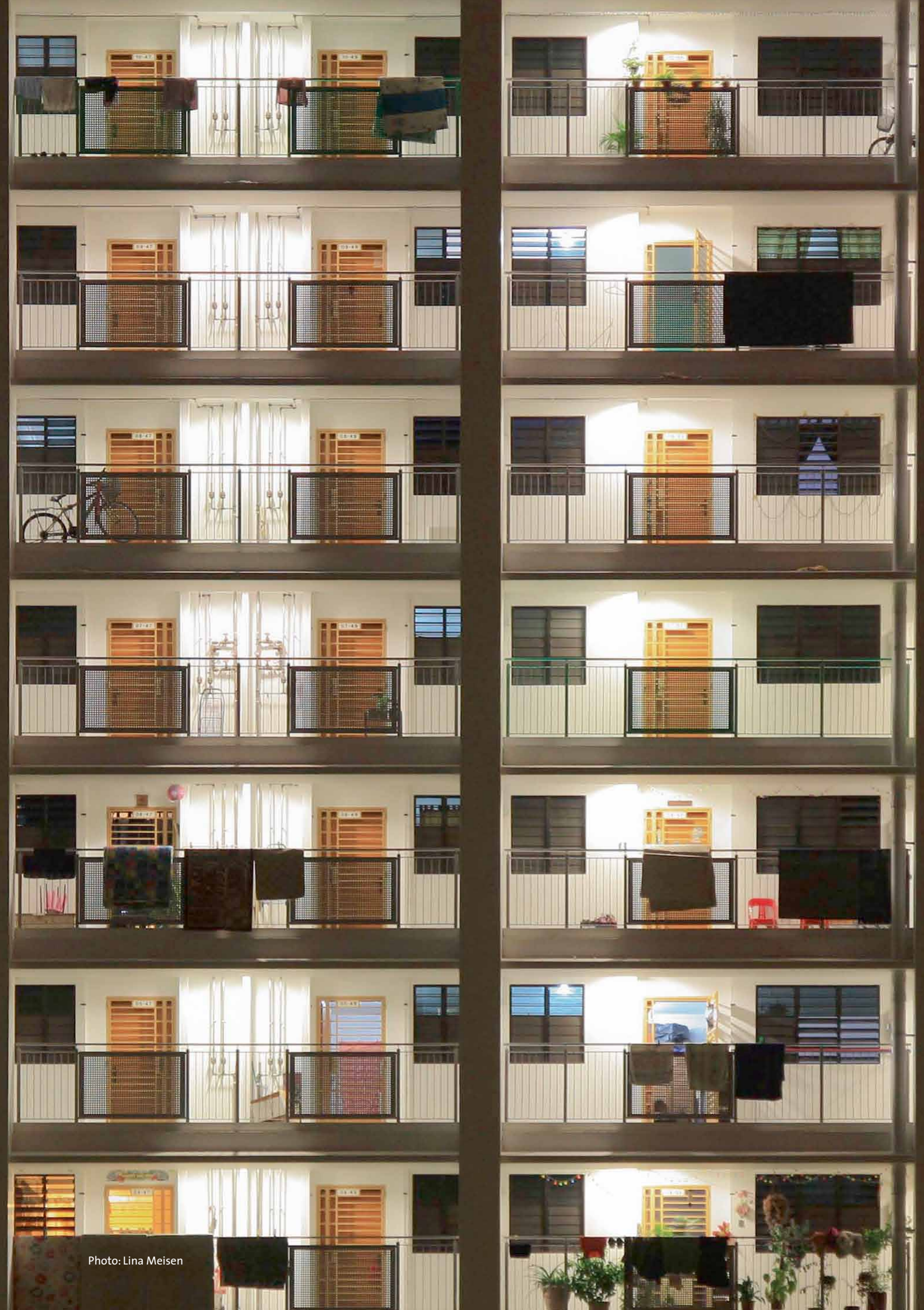


Photo: Lina Meisen

## 6 DOCTORAL DISSERTATIONS

### 6.1 ONGOING DISSERTATIONS

Barth, Emanuel

#### **Local public transport in cross-border agglomerations**

Supervisor: U. Weidmann; external examiner: R. Juchelka (University of Duisburg-Essen)

This PhD thesis explores the structural differences that render the development of cross-border local public transport more difficult as compared to domestic local public transport. Systematic approaches to tackling these difficulties are formulated. The spatial focus of the work lies on densely populated cross-border agglomerations in Europe.

Baumgartner, Franziska

#### **Lateral stability behaviour of vehicles in curves**

Supervisors: P. Spacek, U. Weidmann; external examiner: J.S. Bald (TU Darmstadt)

By analysing the lateral stability behaviour of vehicles, correlations between trajectory types and accidents are developed. Thresholds derived from the frequency of the trajectory types can be used to point out reconstruction requirements of potential accident black spots in curves.

Bopp, Bernd

#### **Stability of continuous welded tracks (in narrow gauge railways)**

Supervisors: U. Weidmann, J. Wichser; external examiner: P. Veit (TU Graz)

This work aims to improve knowledge of the components of lateral track resistance and their interaction. The focus is on the measurement and explanation of rail behaviour (respiratory behaviour) in tight curves.

Cao, Jin

#### **Effects of parking time limits on traffic performance**

Supervisor: M. Menendez; external advisor: to be appointed

Parking pricing and time limitations are two of the most widely used parking control strategies. Depending on the context, they can influence car usage, parking turnover and other travel behaviour patterns. On-street parking time controls in particular may also influence traffic performance. This research project looks into that question with the use of dimensional analysis, probability theory and conventional kinematic wave theory. The object is to provide a foundation for developing and implementing new strategies and/or policies that aim to modify not only travel behaviour, but also traffic performance at the local level.

Carrasco, Nelson

#### **The improvement potential of public transport systems' reliability under different urban and cultural conditions**

Supervisor: U. Weidmann; external examiner: P. Furth (Northeastern University)

Reliability measures the degree to which a planned service adheres to service delivery. It is a critical system attribute for both service providers and users. This work seeks to increase service reliability at the tactical and operational levels within systems and relate those improvements to the systems' unique contextual situation.

Ciari, Francesco

**Extensive use of flexible transport systems as a means of rescaling the usage of privately owned cars: Concepts, solutions and a simulation for the Zürich area**

Supervisor: K.W. Axhausen; external examiner: K. Hironori (Tokyo University)

In this dissertation, a new concept is proposed: A Flexible Transport (FT) system which could replace a substantial part of private car travel. The work focuses on car sharing and Demand Responsive Transport (DRT) and includes a simulation of such a system for the Zürich metropolitan area.

Dobler, Christoph

**Travel behaviour modelling for scenarios with unpredictable events: Methods and implementation**

Supervisor: K.W. Axhausen; external examiner: K. Nagel (TU Berlin)

The object of this dissertation is to develop concepts and methods that allow scenarios with unpredictable events to be simulated. Based on this model, various use cases like road accidents and car sharing are analysed.

Dorbritz, Robert

**Railway network stability and the spreading dynamics of disastrous events which cause system-wide blockades**

Supervisor: U. Weidmann; external examiner: M. Haag (TU Kaiserslautern)

This study shows how structural and operational consequences of large disturbances can be measured and that the two kinds of consequences significantly differ. Hence, operational aspects have to be considered when analysing the resilience of railway transport. A newly implemented approach measures and visualises these impacts.

Fink, Olga

**Applying artificial neural networks in reliability prediction and analysis for railway rolling stock**

Supervisor: U. Weidmann; external examiner: J. Andrews (University of Nottingham)

This dissertation analyses and evaluates the potential scope of applying artificial neural networks to reliability prediction for railway rolling stock and its subsystems. The application potential is theoretically evaluated based on selected practical case studies in different application fields with several types of neural networks.

Frank, Patrick

**A method of estimating the efficiency of capacity-increasing activities**

Supervisor: U. Weidmann; external examiner: to be appointed

This dissertation will show that a consistent assessment of capacity and an estimation of efficiency are possible at an early stage of planning, and it will explain how these can be made. Conflicting aims stemming from the requirements of network users and optimal network utilisation will be analysed in depth.

Ge, Qiao

**The value of information on road merges**

Supervisor: M. Menendez; external examiner: to be appointed

The development of communication technologies has brought great benefits to vehicle and road users. This dissertation will investigate the value of information on different types of highway merges. It will include qualitative and quantitative analyses of empirical traffic data as well as microscopic traffic simulations.

Höppner, Silko

**A generic description of railway operation processes**

Supervisor: U. Weidmann; external examiner: J. Pachl (TU Braunschweig)

This thesis will provide a generic description of railway operating processes based on a newly developed set of universal rules. The purpose of these rules is to develop a harmonised code to improve international rail traffic.

Horni, Andreas

**Destination choice modelling for discretionary activities in agent-based micro simulations of travel demand**

Supervisor: K.W. Axhausen; external examiner: D. Scott (McMaster University, Hamilton)

In this dissertation, a facility-fine destination choice module for discretionary activities (i.e., shopping and leisure) is generically developed and implemented into the existing MATSim system. Methodological advances presented in this work encompass implementation issues for large-scale scenarios as well as conceptual improvements to discrete destination choice models, for instance with regard to the specification of destination choice sets.

Jäggi, Boris

**Short- and long-term choice modelling approaches for household budget allocation**

Supervisor: K.W. Axhausen; external examiner: to be appointed

In this thesis, several household budget allocation models are developed. Short-term models describe trade-offs between consumer goods and travel costs, while long-term models treat investments in car fleets and private housing. The models are based on household budget surveys.

Killer, Veronika

**Spatial modelling of commuting linkage**

Supervisor: K.W. Axhausen; external examiners: C. Rozenblat (University of Lausanne), C. Holz-Rau (TU Dortmund)

The increasing numbers of commuting linkages are the focus of this thesis. Nation-wide commuting effects are analysed with regard to different levels of aggregate and individual behaviour, and the resulting adaptation of existing models with explicit spatial representations is explored.

Kowald, Matthias

**The link between spatial mobility, leisure acquaintances and social interaction in leisure travel**

Supervisor: K.W. Axhausen; external examiner: A. Diekmann (ETH Zürich)

This thesis is based on a unique snowball survey that collected data on the link between social networks and leisure travel. By employing an ascending sampling strategy, the author aims to obtain a detailed picture of the spatial spread of social contacts in personal and population-wide networks.

Lu, Ming

**Predicting dynamic adaptations of travellers' mode-based choices**

Supervisor: K.W. Axhausen; external examiner: M.G.H. Bell (Imperial College, London)

This dissertation investigates the effects of travel-related variables on trips and then predicts mode choices by using artificial neural networks to compare different series of choice variables. Mode choices are regarded as a classification problem in which different combinations of variables lead to different mode choices. Based on the structure of the neural network, the goal is to identify typical variables that capture unobserved factors better and thus explain travel behaviour.



Märki, Fabian

**Continuous travel behaviour simulation**

Supervisor: K.W. Axhausen; external examiner: T.A. Arentze (TU Eindhoven)

The aim of this thesis is to show how it is possible to generate and schedule activities continuously (i.e., on the fly and with an open time horizon) under the constraints of behavioural realism and algorithmic efficiency.

Moll, Stephan

**Productivity improvements for freight railways through collaborative transport planning**

Supervisor: U. Weidmann; external examiner: W. Stölzle (University of St. Gallen)

The main objects of this thesis are to identify and explain the information available to rail freight customers, to analyse its potential to improve the productivity of operational rail freight processes, and finally to investigate the feasibility and mutual profitability of closer collaboration.

Montini, Lara

**Automated trip purpose imputation from GPS data**

Supervisor: K.W. Axhausen; external examiner: to be appointed

The goal of this dissertation is to develop post-processing routines for longitudinal GPS data. The methodology will consider travel patterns and activity locations to identify trip purposes.

Müller, Kirill

**A generalised approach to population synthesis**

Supervisor: K.W. Axhausen; external examiner: to be appointed

Transport planning uses agent-based micro-simulation for traffic flow and demand simulation models. Ideally, the agent population is a large sample with multi-level structures and many attributes. This thesis aims to develop an appropriate methodology and to implement it as an open-source toolkit for population synthesis based on known and novel approaches.

Nur Arifin, Zainal

**A commuter route choice model based on GPS tracking data**

Supervisor: K.W. Axhausen; external examiner: K. Mohammadian (University of Illinois, Chicago)

This dissertation will analyse commuter behaviour in Jakarta, Indonesia based on GPS data. It includes the identification of commuter trip patterns, route patterns and route choice patterns. Algorithms for handling huge GPS datasets and deriving information on commuter behaviour will be explored. Finally, a commuter route choice model will be developed.

Ortigosa, Javier

**Urban patterns and traffic performance**

Supervisor: M. Menendez; external examiner: to be appointed

This dissertation studies the ability of a city to cope with traffic based on its urban pattern. The results could be used to improve the design of new cities as well as to manage existing ones in order to use them more efficiently (from an urban and traffic perspective). The planned work involves the creation of several models of urban patterns which, although abstract, represent real cities (in terms of their structure as well as their demand features). In these models, numerical and traffic analysis tools will be employed to find the relationship between urban pattern descriptors and traffic performance indicators.

Scherer, Milena

**System-specific effects of urban public transport systems on spatial development and the perceived quality of service**

Supervisor: U. Weidmann; external examiner: C. Ahrend (TU Berlin)

System-specific effects of urban public transportation on travel demand and spatial development are investigated based on a new survey. Public perception of various system-related attributes that form images of buses and trams and how this perception affects demand is of particular interest.

Schiffmann, Frank

**The planning and optimisation of highway work zones**

Supervisors: H.P. Lindenmann, G. Girmscheid (IBB ETH Zürich); external advisor: R. Hajdin (IMC GmbH Zürich)

The aim of this research is to analyse and evaluate methods for planning highway work zones to minimise their impacts on road users, both on the motorway and on the secondary road network. The evaluation will be based on real-life case studies.

Schirmer, Patrick

**Using variables of shapes and spaces in urban simulation processes**

Supervisor: K.W. Axhausen; external examiner: M. Batty (University College, London)

This dissertation focuses on deriving variables from geometries to represent spatial qualities of the urban landscape (buildings, parcels, networks, etc.) inside integrated land use transport simulations. The variables are extracted from vector maps using GIS tools and will be tested in discrete choice models of agents and objects.

Schranil, Steffen

**Forecasting the duration of rail operation disturbances; dispatching and incident communications**

Supervisor: U. Weidmann; external examiner: A. Stephan (TU Dresden)

This dissertation aims to improve the management of rail operation disturbances and support the return to the scheduled timetable. For this purpose, correlations and circumstances of rail operation disturbances are analysed. The results are made available to dispatching operations, and a forecasting process is constructed. These ideas could just as well be employed for adapted incident communications.

Vitins, Basil

**Shape grammars for transport network design**

Supervisor: K.W. Axhausen; external examiner: D. Levinson (University of Minnesota)

First, shape grammars are generated and evaluated for the design and optimisation of public and private transportation networks. Second, shape grammars are developed for land use interactions and network growth. Third, shape grammar recommendations are derived for design standards.

Waraich, Rashid

**Simulation framework for investigating the impact of (plug-in hybrid) electric vehicles**

Supervisor: K.W. Axhausen, external examiner: T.A. Arentze (TU Eindhoven)

This thesis focuses on simulating potential future electricity consumption by electric and plug-in hybrid electric vehicles as well as their spatial and temporal distribution. The use of digital technologies such as smart/controlled charging and vehicle-to-grid (V2G) charging are also part of the research.

Weis, Claude

**Activity-oriented modelling of the short- and long-term dynamics of travel behaviour**

Supervisor: K.W. Axhausen; external examiner: H.J.P. Timmermans (TU Eindhoven)

Various hypotheses about travellers' reactions to changing generalised costs of travel are tested in this thesis. As in all activity-based studies, travel is considered a demand that is directly derived from individuals' need to participate in activities. The effects are modelled in the context of whole days, or activity schedules. The thesis is based in part on a new stated-adaptation survey.

Wiedersheim, Sabrina

**Algorithms and methods for the construction of conflict-free macroscopic railway timetables**

Supervisors: U. Weidmann, H.J. Lüthi (ETH Zürich); external examiner: K. Nachtigall (TU Dresden)

This dissertation addresses the development of algorithms and methods to support operating processes for timetabling preparation and infrastructure planning. A conflict-free, macroscopic timetable will be computed and optimised out of functional requirements and infrastructure restrictions.

Zöllig, Christof

**Urban transformation: Focusing on real estate developers**

Supervisor: K.W. Axhausen; external examiner: P. Waddell (University of California, Berkeley)

In this dissertation, the behaviour of real estate developers as central players in the process of spatial development is examined. Qualitative and quantitative analyses are combined to improve existing models that capture the interaction between land use and transport.

## 6.2 FINISHED DISSERTATIONS

Bodenmann, Balz R.

**Location choice of firms with special emphasis on spatial accessibility**

Supervisor: K.W. Axhausen; external examiners: T.A. Arentze (TU Eindhoven), F. Schweitzer (ETH Zürich)

Exam: 06/11

Land use models play a decisive role in different domains: They allow demographic trends to be estimated, enable comparisons between spatially relevant projects, facilitate the dimensioning of public infrastructure, and help to answer various other questions regarding the future development of our built environment. Due to the tight interdependence between resident populations and economic activities, location choices of firms play an important role in land use models. However, there has been little research on this topic, especially regarding the destination decisions of relocating firms. Based on data from the commercial registers of the Swiss cantons of St. Gallen and Appenzell, the aim of this thesis is to fill this gap. First, firmographic events such as business establishments, closures and migrations were analysed. Complementary analyses focused on the destination choices of relocating firms. The effects of variables such as local taxes, business friendliness and accessibilities were quantified. Finally, scenarios with different options for public authorities were tested in simulations. The aim was not only to show the effects of the authorities' interventions, but also to detect potentially negative side effects.

Erath, Alex

**Vulnerability assessment of road transport infrastructure**

Supervisor: K.W. Axhausen; external examiner: M.G.H. Bell (Imperial College, London);

Exam: 04/11

The overall aim of this dissertation was to develop a methodology that allows the assessment of indirect consequences of road network failures. On the one hand, the notion of network vulnerability should be used to enhance the infrastructure management system; on the other hand, the methodology should be performed with reasonable computational effort. To this end, the dissertation focuses on three different issues:

First, a meaningful typology of links with respect to their potential to induce failure was obtained based on a cluster analysis for the links of the Swiss National Transport Model. For each cluster, a separate strategy for assessing failure consequences was developed. This substantially decreased the computational effort required for network-wide assessment.

Second, a statistical model to evaluate failure consequences was developed based on the variables' shortest detour, link type, network density and volume.

Since the assumption of single link failures is rather restrictive and is especially challenged by threats that are caused by one extreme natural event, the third aim was to address the potential for joint link failure. By applying a gradual approach to evaluating the impact of single link protection measures, it was demonstrated that the prioritisation of failure protection measures generally differed very little from solutions obtained by considering only single link failures.

Meister, Konrad

**Contribution to agent-based demand optimisation in a multi-agent transport simulation**

Supervisor: K.W. Axhausen; external examiners: P. Waddell (University of California, Berkeley); M. Balmer (Senozon AG, Zürich);

Exam: 06/11

In this thesis, for the first time a criterion for measuring the identification of an agent-based stochastic user equilibrium was defined. It was subsequently demonstrated and analysed in a series of case studies employing MATSim.

The second part of the thesis describes the design of a mode and departure time optimiser for an agent-based travel demand model, which was founded on a subtour definition of the daily activity chain. The implementation was tested with the Zürich scenario of MATSim.

Finally, the thesis reports on the application of MATSim for the population of Switzerland. This is the largest known application of agent-based models in transport, both in terms of agents as well as in terms of the resolution of the network and the destinations.

Santel, Gerko

**Lateral driving behaviour**

Supervisors: P. Spacek, K.W. Axhausen; external examiner: C. Lippold (TU Dresden);

Exam: 07/11

The speed dependence of the range of lateral movement and the additional space for oncoming or overtaking traffic, as contained in the existing Swiss standard, could in principle be confirmed through new empirical measurements. Some considerable differences between the measurement results and the reference values of the standard were found. Moreover, the results show that it is necessary to distinguish between the categories "passenger cars" and "heavy goods vehicles" for the derivation of the range of lateral movement and the additional space for oncoming or overtaking traffic. It was found that the equality of the additional space for oncoming traffic and the additional space for overtaking, as it is contained in the existing standard, is not correct.

Table 13 List of completed doctoral theses (2004–2011)

Year	Name	Title	Supervisor(s)	External examiner(s)
11/04	Jermann, J.	Konzept zur Modellierung von Einzugsbereichen auf Bahnhaltestellen	Brändli	Axhausen (IVT, ETH Zürich), Giger (IPG, ETH Zürich)
11/04	König, A.	Messung und Modellierung der Verlässlichkeit des Verkehrsangebots: Experimente mit Schweizer Befragten	Axhausen	Zumkeller, University of Karlsruhe
09/04	Schäffeler, U.	Netzgestaltungsgrundsätze für den öffentlichen Personennahverkehr in Verdichtungsräumen	Brändli, Weidmann	Bovy, TU Delft
04/04	Schlich, R.	Verhaltenshomogene Gruppen in Längsschnitterhebungen	Axhausen	Timmermans, TU Eindhoven
09/04	Ullius, M.	Verwendung von Eisenbahnbetriebsdaten für die Schwachstellen und Risikoanalyse zur Verbesserung der Angebots- und Betriebsqualität	Brändli	Zehnder, Widmayer (ITI, ETH Zürich)
10/05	Heimgartner, C.	Systemdynamische Simulation von Verkehr und Flächennutzungen – Evaluation nachhaltigkeitsfördernder Massnahmen	Axhausen	Scholl, University of Karlsruhe
12/06	Schönfelder, S.	Urban rhythms: Modelling the rhythms of individual travel behaviour	Axhausen	Bhat, University of Texas, Austin
04/07	Balmer, M.	Travel demand modelling for multi-agent traffic simulations: Algorithms and systems	Axhausen	Nagel, TU Berlin
02/08	Beige, S.	Long-term and mid-term mobility decisions over the life course	Axhausen	Maggi, USI, Lugano; Wegener, Spiekermann & Wegener, Dortmund
07/08	Bernard, M.	Entwicklung eines Bemessungskonzepts von Verkehrsnetzen unter Berücksichtigung der Zufallsgrössen Verkehrsstärke und Kapazität	Axhausen	Brilon, University of Bochum
10/08	Charypar, D.	Efficient algorithms for the travel behaviour microsimulation of very large scenarios	Axhausen	Nagel, TU Berlin; Mahmassani, Northwestern University, Evanston
07/08	Fröhlich, P.	Änderungen der Intensitäten im Arbeitspendelverkehr von 1970 bis 2000	Axhausen	Bell, Imperial College, London
10/09	Fries, N.	Market potential and value of sustainable freight transport chains	Weidmann	Jong, ITS Leeds; Hellweg, IfU, ETH Zürich
11/09	Hackney, J.K.	Integration of social networks in a large-scale travel behaviour micro-simulation	Axhausen	Miller, University of Toronto
09/09	Lüthi, M.	Improving the efficiency of heavily used railway networks through integrated real-time rescheduling	Weidmann	Hansen, TU Delft
06/10	Alt, B.	Investigation of space–time structures in public transport: Networks and their optimisation	Weidmann	Friedrich, University of Stuttgart
11/10	Löchl, M.	Application of spatial analysis methods for understanding geographic variation of prices, demand and market success	Axhausen	Miller, University of Toronto

Year	Name	Title	Supervisor(s)	External examiner(s)
06/10	Schüssler, N.	Accounting for similarities between alternatives in discrete choice models based on high-resolution observations of transport behaviour	Axhausen	Bierlaire, EPFL; Hess, University of Leeds
06/11	Bodenmann, B.R.	Location choice of firms with special emphasis on spatial accessibility	Axhausen	Arentze, TU Eindhoven
04/11	Erath, A.	Vulnerability assessment of road transport infrastructure	Axhausen	Bell, Imperial College, London
06/11	Meister, K.	Contribution to agent-based demand optimisation in a multi-agent transport simulation	Axhausen	Waddell, University of California, Berkeley; Balmer, senozon, Zürich
07/11	Santel, G.	Lateral driving behaviour	Spacek, Axhausen	Lippold, TU Dresden

Table 14 List of external examinations (2011)

Name	Title	External examiner	Supervisor
Bosse, G.	Grundlagen für ein generisches Referenzsystem für die Betriebsverfahren spurgeführter Verkehrssysteme	Weidmann	Pachl, TU Braunschweig
Dessemontet, P.	Changes in employment and accessibility: The case of Switzerland between 1939 and 2008	Axhausen	Schuler, EPF Lausanne
Ishaq, R.	Development of flexible model structures for discrete choice models	Axhausen	Shiftan, Technion, Haifa
Le Vine, S.	Strategies for personal mobility: A study of consumer acceptance of subscription drive-it-yourself car services	Axhausen	Polak, Imperial College, London
Winkler, C.	Ein integriertes Verkehrsnachfrage- und Bewertungsmodell	Axhausen	Lohse, TU Dresden
Zemp, S.	Nachhaltige Positionierung von Bahnhöfen	Weidmann	Scholz, ETH Zürich



Photo: Alex Erath

## 7 PROJECTS

### 7.1 FINISHED PROJECTS

#### **Activity-oriented analysis of induced travel demand (SVI 2004/012)**

Weis, Axhausen

Sponsor: SVI;

10/2007 to 08/2011

Induced travel demand, a phenomenon that is here defined as additional demand for transport services caused by improving travel conditions, has been a topic of research for many years. In contrast to previous studies on the topic that focused on specific and localised changes such as the construction of new roads or rail lines in given corridors and the assessment of their side effects, the research described in this thesis chooses a different approach.

Aggregate effects on traffic generation produced by changing the generalised costs of travel were assessed in this project. The dimensions of demand that were of interest were the generation of travel on both the individual and the cohort levels, including: the propensity for participating in out-of-home activities, or being mobile, on a given day; the number of trips and journeys conducted; the resulting total times spent outside the home location; and distances travelled.

It was shown that decreasing generalised costs induced a higher mobility of travellers in general. This was demonstrated by the model results and especially by the significant effects of increased accessibility levels that were used as a proxy for generalised costs. The substantially induced demand effect on these upper levels of demand generation is certainly an interesting finding which, to the authors' best knowledge, has not been shown before in this form.

The increases of general accessibility levels that can be expected from local projects are quite small. Thus, although a significant induced demand effect was shown in the model's results, it was found that the measures that would be necessary to bring about changes to the transport system substantial enough to trigger the aforementioned effects in a broad spatial extent would be onerous. The effects might very well be visible in a local context, however.

#### **Advancement of ErZu—Requirements for Deviation Management**

Schranil, Weidmann

Client: SBB Infrastruktur;

02/2011 to 08/2011

In spite of best efforts, it has never been possible to operate a rail system without delays or disturbances. The management of smaller schedule deviations is therefore important. From this consideration, it is essential to know who needs what information at what time and in which granularity. Concerning the needs of the final customers (passengers or freight agents), there are three important aspects to consider:

- just-in-time information in case of an action demand
- reliable information in case of an estimated action demand
- no unessential information

These aspects are reflected in the following approach to the aims of deviation management:

- continuing rail operation management
- providing customer information
- improving (intermediate-term) operations planning
- analysis and statistics (mentioned as an application rather than a discrete aim)

Therefore, it is important to analyse the technical and operational impacts of schedule deviations.



### **Advisory opinion for the “Tram Region Bern” project**

Nägeli, Scherer, Schranil, Weidmann

Project partner: ewp Verkehrsplanung

Client: Canton of Bern, Administrative Office for Public Transport;

01/2011 to 05/2011

In the “Tram Region Bern” project, bus line 10 (Ostermundigen–Köniz) is to be converted to tram operation. The preliminary project has shown that the costs will be considerably higher than previously thought. For this reason, an intermediate phase was initiated so that the project could be evaluated by external experts.

### **Alternatives for freight traffic in the Canton of Aargau**

Moll, Wichser

Client: Traffic Department of the Canton of Aargau;

11/2010 to 02/2011

Aargau is geographically attractive for logistics, production and distribution companies. This leads to high transport volumes on both roads and rails, which is further increased by significant transit volumes. The consideration of freight traffic is therefore a relevant political issue in Aargau. In view of this, the Traffic Department of the Canton of Aargau asked us to identify and evaluate their general scope of activities in the field of freight traffic.

The analysis has clearly shown that freight-relevant transport infrastructure rests mostly in the competence of the federal government. The decision-making power of cantons primarily lies in spatial planning, the operation of cantonal roads and in consultative participation in national traffic infrastructure projects. The analysis revealed that the Canton of Aargau has already done a lot within its range of possibilities. This particularly applies to cantonal spatial planning and legislation. The canton’s specification of industrial development areas pays close attention to ensuring rail access, and the canton encourages or even obliges companies to invest in feeder tracks whenever possible. Further, inter-cantonal collaboration in spatial planning has been pursued for several years, enabling the coordination of freight traffic measures. Untapped potential still exists in conversions of industrial areas. The canton should work towards ensuring that areas well suited to activities generating high freight traffic volumes are not used for other purposes, and that existing feeder tracks remain in use. Furthermore, the canton can apply efficient procedures for approving new feeder tracks and provide supportive information to industry and local communities so that the strengths of rails and roads are exploited as efficiently as possible.

### **Application areas of various means of transportation in agglomerations**

Dorbritz, Orth, Scherer, Weidmann

Project partner: Spacek, ETH Zürich

Sponsor: ASTRA;

08/2005 to 05/2011

The development of agglomeration transport systems in Switzerland has led to today’s high-quality and high-capacity systems, contributing significantly to the attractiveness of the agglomerations and cities. As society and the economy are in a constant, dynamic flux, transport systems need to be constantly improved as well. In this improvement process, it is critical to be aware of the individual strengths and weaknesses of different modes of transportation. This creates both the opportunity and the need to re-evaluate transport in the agglomerations before new situations are literally cemented for the next decades.

The underlying hypothesis for this work is that the current state of transport systems and the deployment of transport modes in Switzerland are the result of an evolutionary process, meaning that unsuitable uses of transport systems have been discontinued while highly suitable ones have found widespread application. While this view is a momentary one, it displays exactly those options that are applicable for current planning horizons.

In line with the stated hypothesis, an inventory of transport systems in Swiss agglomerations was compiled. At the same time, a number of agglomeration characteristics were studied, especially with respect to their connection to transport mode deployment. Furthermore, key transport mode characteristics were assessed in terms of capacity and impacts.

The interactions between these key characteristics were studied. Suitable areas of deployment for the various transport modes were then determined, and ways to link the modes to achieve an efficient and attractive overall system were put forward. Moreover, numerical thresholds of a number of characteristics that may be used for quick assessment in the initial phases of planning were developed.

### **A second opinion on the further development of supply and on further railway infrastructure extensions (Bahn 2030)**

Barth, Frank, Wichser, Weidmann

Clients: Bau und Verkehrsdepartement Basel-Stadt, Bau- und Umweltschutzdirektion Basel-Landschaft;  
10/2010 to 11/2011

On 1 September 2009, a new federal act on the future development of railway infrastructure (ZEBG; SR 742.140.2) came into effect. Apart from the intended extensions of railway infrastructure, amounting to CHF 5.4 billion (1999 prices), the Federal Council was commissioned by the Federal Parliament to submit a legislative proposal on the further development of the offer and of railway infrastructure extensions (Bahn 2030). The Federal Council decided in December 2008 that two railway concepts of different sizes with investment volumes of CHF 12 bn. and 21 bn. should be detailed.

Based on the forecast by the Federal Department of the Environment, Transport, Energy and Communications (UVEK) for Swiss passenger and goods transport until 2030, the development of regional and national demand was estimated by means of transport models. With this data, it was determined which transport offer would be required to satisfy demand. The transport demand was projected onto the railway network in order to reveal future bottlenecks and to deduce extension requirements.

The task of the Institute for Transport Planning and Systems (IVT) was to provide an external second opinion examining the SBB's and BAV's approach to the further development of the offer and to extending railway infrastructure (Bahn 2030). The defined regional modules and national concepts were to be included in the assessment. Due to successive amendments of the basic information that was to be examined by the IVT, it was determined that the detailed analysis of the regional modules should be abandoned. The IVT's input therefore focused on the national transport market and on infrastructure development.

### **Assessment of vehicle door configurations and luggage storage**

Höppner, Kirsch, Weidmann

Client: Rhätische Bahn;  
06/2011 to 08/2011

This project answered questions about enhancing travel comfort and creating a better luggage storage situation in passenger cars of a metre-gauge railway. The railway operator, Rhätische Bahn, plans to order a new set of passenger cars for regional transport and for the popular "Glacier Express". In both cases, cars with an adequate door width and well-arranged entry areas are required. The passengers must have a clear overview of the interior and must be able to recognise the luggage storage areas quickly. These areas must have different attributes for summer and winter travel. In the summer season, space is needed for suitcases, bicycles and water-sport equipment. In the wintertime, the main season of Alpine tourism, additional room is needed not only for suitcases, but also for winter sports gear like skis, snowboards and sledges. These characteristics are offered by multi-modal luggage racks that are visible from the travellers' seats. The panorama cars of the Glacier Express constitute a special situation. Because of the glass roof, there is no possibility for overhead storage. The results of the study will help to create optimal requirement specifications with a focus on passenger comfort.

### **Augmentation of the SBB long-distance travel load factor to optimise general economic efficiency**

Weidmann, Baudys, Moll, Schranil

Client: SBB Personenverkehr;

07/2010 to 02/2011

The load factor is one of SBB's key corporate management metrics. Its improvement may not degrade other metrics. One of the project aims was to determine and evaluate useful metrics for passenger rail companies and to study their interactions. Five metrics were proposed, among them the load factor. These metrics were discussed and compared to those of a number of other large European railways, especially with regard to their interaction with schedules, the ticket system and ticket fares.

The SBB's IC service from Romanshorn to Brig via Zürich was evaluated for reference. This service exhibits a broad load factor range caused by the line section Zürich—Bern during the week and the large number of tourists at the weekends. In Switzerland, there are integrated synchronised timetables and an open fare system. Under these circumstances, it becomes very difficult to obtain consistently loaded trains over the whole day. However, some ways to increase the Swiss load factors were proposed.

### **Comparison methodology for railway operating processes**

Höppner, Weidmann

Client: Federal Office of Transport (BAV), Bern;

03/2011 to 10/2011

The IVT developed a methodology for comparing directives in case of rule adjustment. The background for this was the adoption of EU interoperability guidelines for railway operations and the subsequent changes to existing Swiss national directives. The methodology provides suggestions for a structured identification and comparison of rules. The main difficulty consists of variations in text structure, term definition, scope and the meaning of content. This methodology was developed for the Federal Office of Transport in Bern and may be used for different types of guidelines, not only within the transport sector.

### **Feasibility study for the implementation of a generic process for managing the life cycle costs of railway rolling stock**

Fink, Schranil, Weidmann

Project partners: Cideon Schweiz AG, Siemens Schweiz AG, SBB AG

Sponsor: Commission for Technology and Innovation;

06/2010 to 11/2011

The feasibility and practical implementation of a generic process for managing the life cycle costs (LCC) of railway rolling stock were investigated in this project. Within the generic process, the focus of the study was on knowledge management and monitoring reliability, availability and life cycle costs.

In the first step, the hierarchical goal system of the main stakeholders in the individual life cycle phases was determined and evaluated. For this purpose, a life cycle phase model adapted to the interests of the individual stakeholders was developed. In addition, specific essential requirements and characteristics of a life cycle costing model were derived.

The process steps prioritised for further investigation include knowledge management and monitoring reliability, availability and life cycle costs. The hypothesis was tested in a case study, and it was found that it is possible to identify patterns between diagnostic data and failure events and use them to predict further technical failures. The case study was conducted using data from SBB double-decker trains (RABe 514) for the Zürich S-Bahn, supplied by Siemens. The case study was performed on the subsystem of the entrance doors of the rail vehicles. Data mining methods, especially in the field of classification, were applied. The established working hypothesis could be confirmed and the functional specification of the IT application was derived.

### **Integrated modelling and the analysis of energy and transport systems**

Waraich, Axhausen

Project partners: PSL, ETH Zürich

Sponsor: ETH Zürich;

06/2008 to 06/2011

In this project, the possible future influence of electric and plug-in hybrid electric vehicles on power systems was researched. This was performed by integrating agent-based traffic simulation and vehicle charging with a power systems simulation. As part of this work, three different charging schemes, including smart grid charging and vehicle-to-grid (V2G) charging, were investigated based on test scenarios. The outcome of the project is now being applied to real-world scenarios in other projects, such as the ARTEMIS project, in which the possible impact of plug-in hybrid electric and electric vehicles on the electric grid of the City of Zürich is being investigated.

### **Modernisation of the IVT Railway Operations Laboratory**

Frank, Fries, Höppner, Weidmann

Project partners: SBB, Siemens Schweiz AG

Client: SBB, Siemens Schweiz AG;

09/2008 to 08/2011

After 20 years of use without any investments in signalling or in its model railway, the IVT Railway Operations Laboratory needed improvements to make it fit for the next decades. Furthermore, the requirements for training SBB staff as well as ETH students have changed over the past years, especially since the launch of new signalling systems and modern interlockings, including those run by remote control. A new train control system that realistically shows the driving characteristics of the trains has been installed.

### **National Stated Preference survey on travel behaviour**

Weis, Erath, Axhausen

Project partner: IG Modus

Client: Federal Office for Spatial Development (ARE), Bern;

03/2010 to 04/2011

To improve the appraisal of travel behaviour reactions to changes in transport supply, including travel times, fuel prices, toll costs, public transport ticket prices, connection frequency and reliability, comfort, and other attributes describing private and public transport mode and route alternatives, the Swiss Federal Office for Spatial Development (ARE) commissioned a Stated Preference (SP) survey with the support of a number of cantons and the Swiss Federal Railways. With SP surveys, possible travel behaviour changes of the respondents are analysed by presenting them with different choice scenarios of varying attributes. Every five years the Swiss Federal Offices for Statistics (BFS) and Spatial Development (ARE) carry out the mobility and transportation Microcensus, a survey that is representative of the Swiss population in terms of trip characteristics and of the persons sampled. In 2010, the possibility arose for the first time to combine the Microcensus with a Stated Preference (SP) survey in which data on mode and route choice behaviour were collected.

The respondents to the SP survey were recruited from among the participants in the Microcensus. The SP surveys, which were designed as Stated Choice (SC) experiments, were based on trips reported by the respondents during Microcensus Computer-Assisted Telephone Interviews (CATI). Discrete choice models estimated from data from the Microcensus (Revealed Preference, or RP, data) as well as data from the SP survey will be used to develop the national individual transport model further as well as to establish and extend cantonal models. Test models based on just the SP data were estimated to assess the validity of the data. They yielded the expected results, both in terms of model quality and in terms of the modelled effects. The results will have to be consolidated using a joint RP/SP approach before being used in forecasting models.

**Operational options of an intra-train communication system: A study in the context of the agreement between SBB Cargo AG and the Federal Office of Transport about compensations for single-wagonload traffic**

Bruckmann, Fumasoli

Client: SBB Cargo;

07/2011 to 11/2011

The SBB Cargo AG was given the task to examine innovations for single-wagonload transport (SWL) and especially possible applications of an intra-train communication system as part of the compensation agreement for single-wagonload traffic that it made with the Federal Office of Transport (BAV) in 2011. The BAV initiated the study with the goal of investigating technical innovations that would lead to more economical and qualitatively better single-wagonload traffic. The BAV wants to avoid problems of past technology migrations like the planned introduction of automatic couplers in Europe, which had to be performed within a few days. SBB Cargo expanded the remit to include further points such as the potential for technical, organisational and regulative innovations for rail freight and their suitability for the SWL network in Switzerland. Furthermore, the innovation process for SWL as a whole was examined.

**Optimal network utilisation and the effectiveness of instruments to steer usage**

Frank, Fumasoli, Moll, Weidmann

Client: SBB;

04/2010 to 10/2011

The SBB expects strong growth in demand over the next twenty years. By contrast, investment funds are getting more and more limited. Therefore, economic and regulatory steering instruments were analysed to enable the full utilisation of existing capacities and to further optimal network usage. Consequences regarding capacity and investment allocation were derived.

**Railway landscapes of Switzerland**

Orth, Schmidt, Wichser, Weidmann;

09/2009 to 05/2011

The 1999 Swiss railway regulation reform produced the current situation that is somewhere between the classic fully integrated state railway system and a fully liberalised railway market. This situation has a number of drawbacks, including putting the federal government into a position of conflicting interests, as it has the dual role of being a railway regulator and a railway owner. Furthermore, this situation does not comply with the legislative environment in the European Union and may particularly threaten the smaller private railways of Switzerland.

An analysis of the current situation shows that neither a rollback to the classic state railway model nor the present railway regulations have a long-term perspective, and that neither can satisfy political and legislative requirements. This leads to the conclusion that another, more fundamental reform of the railway sector is to be expected within the next decade. Therefore, possible future regulative and organisational models for the Swiss railway infrastructure must be evaluated and their opportunities and risks assessed. The evaluation conducted during the course of this study first built a system of goals based on the different parties involved in, or affected by, the organisation of railway infrastructure. Then a number of organisational models fulfilling the critical requirements were developed. These models cover a wide gamut of viable options, ranging from separate regional infrastructure operators to a single unified national infrastructure operator, and from giving infrastructure operators almost full individual responsibility and decision-making powers to highly regulated models in which they merely execute decisions made by regulative bodies.

The models were then evaluated in the system of goals to assess the different parties' respective gains or losses. The aim of this analysis was to identify models that are not only beneficial overall, but that also favour the different parties evenly to avoid disproportionate benefits or disadvantages.

**SPIN-ALP: Scanning the potential for intermodal transport on Alpine corridors**

Moll, Wichser

Project partners: Rapp Trans, PTV, ECONSULT, ATL

Client: ASTRA;

06/2008 to 01/2011

The main goal of the SPIN-ALP project was to develop procedures, methods and instruments to help estimate the potential shift of road freight transport to intermodal transport. The project was carried out on behalf of the European research initiative EUREKA and within an international consortium composed of partners from Germany, Austria and Switzerland. SPIN-ALP's concept offers a comprehensive model that consists of the following products:

- SPIN-ALP Manual: An electronic handbook for planning intermodal transport and for developing strategic decisions, with basic information on intermodal transport. It contains both methodical basics and concrete examples that were collected through an international exchange of experience.
- SPIN-ALP Planner: Software for intermodal transportation planning. It calculates time- and cost-optimised intermodal routes from door to door, based on available offers and timetables in Europe.
- SPIN-ALP Trainer: A supporting handbook for users to implement and apply the SPIN-ALP software.

With the aid of these SPIN-ALP products, modal shift analysis can be carried out in a target-oriented and efficient way on both the macro and the micro levels. Test applications with market players and public authorities have shown their practicability. A widespread use of SPIN-ALP products should lead to a sensitisation of concerned market players for intermodal traffic, and thus to an increased shift from road haulage towards intermodal transport.

**STEP study about HSL Chestenberg**

Bruckmann, Frank, Höppner, Weidmann

Client: BAV;

07/2011 to 11/2011

The Institute for Transport Planning and Systems (IVT) conducted a study on behalf of the Federal Office of Transport (BAV) on the NBS Chestenberg rail infrastructure upgrading project. The study is an external second opinion on a request by the Swiss Federal Railways (SBB) that the government build the Chestenberg tunnel between Rapperswil and Gruemet (Canton of Aargau) as part of the next railway network expansion step by 2025. The IVT concludes that there is no compelling need for this tunnel before 2030, particularly because the SBB's forecast for passenger traffic on the Zürich–Aargau corridor is at the upper end of the expected development scale, and also because substantial travel-time savings cannot be realised with the new line. Instead of constructing the Chestenberg tunnel, the IVT recommends investments of around 100 million francs in various technical measures to ensure the stability and flexibility of the timetable in the Zürich–Aargau corridor while using the existing line. Then there would be enough time to review various options for major expansion in the Zürich–Olten railway corridor. The institute proposes a new line between Zürich and Olten south of the existing corridor with a first stage between Zürich and Gexi (Lenzburg) as an alternative to the Chestenberg tunnel.

**Strategic network planning for tramways in the region of Basel for 2020: Phase II**

Barth, Wichser, Weidmann

Clients: Bau und Verkehrsdepartement Basel-Stadt, Bau- und Umweltschutzdirektion Basel-Landschaft;

10/2010 to 11/2011

The tramway network of Basel, consisting of infrastructure belonging to different owners and operated by two transport companies, has—apart from a few exceptions—neither been considerably extended nor reduced for a considerable amount of time. Recently, a new desire for network expansion has arisen. For example, an extension to Weil am Rhein is already under construction and several further extensions are

planned or at least under political discussion. Therefore, a strategic plan of the tramway network taking account of these circumstances and offering an overview has become essential.

The task of the Institute for Transport Planning and Systems (IVT) was to accompany and facilitate this planning process by offering professional advice. This notably included setting up guidelines, jointly defining an evaluation methodology, as well as verifying an evaluation of different approaches for further development that had been carried out by the offices of the cantons involved.

### **Study of passenger flow at the line m1 station “EPFL”**

Höppner, Kirsch, Weidmann

Client: Transports publics de la région lausannoise;

01/2011 to 05/2011

Transports publics de la région lausannoise, the local transport provider of the City of Lausanne, plans to modify the “EPFL” light rail station. The reason is the planned construction of a congress centre for concerts, fairs and various major events, together with a number of residential units. Today the station is mainly frequented by students and staff members of the Swiss Federal Institute of Technology in Lausanne. It follows that the walkways and platforms could become overcrowded during peak hours. The IVT analysed different scenarios using the commercial microsimulation software SIMWALK to determine the best solution for designing the surrounding area.

### **Support for developing a preliminary maintenance programme plan and a logistical model**

Fink, Weidmann

Client: Siemens Schweiz AG;

02/2011 to 04/2011

To prepare a tender for an ETCS equipment supply project, several predictions and preliminary concepts were required. The IVT provided scientific support for the development of a preliminary maintenance programme plan. Furthermore, the IVT developed a logistical model for the spare parts supply and made calculations for the planned required stock size for spare parts based on the history shortages, lead times and the availability of the required spare parts.

### **TESS—Intermodal Solutions for Trans-European Temperature-Sensitive Shipments**

Orth, Schmidt, Wichser, Weidmann

Project partners: KTH Stockholm, TFK Borlänge, HERRY Consult, HGU Gothenburg

Client: Swiss Federal Office of Energy (SFOE);

04/2007 to 05/2011

The work conducted and reported on is part of a transnational project bringing together research institutions from Austria, Sweden and Switzerland. The goal was to study rail as a solution to ever-increasing transport volumes of temperature-sensitive goods. In order to achieve full competitiveness in this market, rail transport will have to overcome a number of challenges. In addition to speed, flexibility and cost-efficiency, perishable cargo requires special procedures and equipment. On the other hand, rail can provide significant benefits with regard to the sustainability of transport, and road transport costs are on the rise, creating a viable perspective for a modal shift.

The IVT’s task within this project was to evaluate different transport corridors from northern Italy, a typical starting point for fresh produce transports, to Scandinavia, a major region of consumption. The routes considered included a number of rail and road corridors through Switzerland, Austria, Germany and Poland including ferry links to Scandinavia where needed. After a number of viable options were determined, they were evaluated in detail with respect to transport time and cost, based on transport units and processes suitable to handling temperature-sensitive goods. The evaluation of the rail routes included, among other factors, grades, maximum train lengths, traction demand and track path fees, and it was based on a standardised intermodal train for the transports studied.

Not surprisingly, a major factor for rail competitiveness is the long travel distance of a large and reasonably stable transport volume. This also means that any additional trans-shipment processes, e.g., those needed for ferry passages, decrease rail competitiveness considerably. Consequently, it was found that transporting intermodal units by rail is a viable solution if the transport covers the whole distance between production and distribution hubs in a single leg, offering very competitive costs and travel times that are well within the range of fast road transport.

### Tram evaluation 2020, BVB

Höppner, Kirsch, Weidmann

Client: Basler Verkehrsbetriebe (BVB);

04/2011 to 06/2011

The urban public transport provider Basler Verkehrsbetriebe released a call for tenders on new tram vehicles. The company received various offers from different rolling stock manufacturers. The IVT supported the BVB in its evaluation with a focus on dwell time. Calculations were made for different situations of crowded trains and platforms using analytic methods. The IVT developed a ranking based on passenger dwell time aspects and pedestrian flow usability.

## 7.2 Ongoing projects

Table 15 Ongoing projects (2011)

Title	Group	PI	Researcher	Start	Client, Sponsor
A calibration study for VISSIM	SVT	Menendez	Ge	07/2011	City of Zürich
A second opinion on the Heitersberg slab track	VS	Weidmann	Nägeli	03/2011	Swiss Federal Office of Transports
An analysis of mode choice effects in different scenarios simulated with MATSim	VP	Axhausen	Dubernet, Horni, Schüssler, Vitins	03/2011	Volkswagen AG
An assessment for the development of public transport around Winterthur	VS	Weidmann	Nägeli, Schwertner, Wachter	08/2011	Regional Planning Body of Winterthur
An investigation of strategies leading to a 2000W city using a bottom-up model of urban metabolism	VP	Axhausen	Dobler, Jäggi	03/2009	SNF
Artemis (plug-in hybrid electric and electric vehicles)	VP	Axhausen	Waraich	11/2008	City of Zürich
City centre public transport attractiveness and influences thereon	VS	Weidmann	Nägeli, Orth, Schwertner	09/2011	Public Transports of Zurich
Continuous need-based planning for efficient agent-behaviour modelling	VP	Charypar	Märki, Charypar	10/2009	SNF
Destination choice modelling for discretionary activities: Fundamentals of choice set formation and impacts of spatial competition	VP	Horni	Horni	10/2010	SNF
EcoNav—Ecologically Aware Navigation: A viable, persuasive trip advisor for reducing CO <sub>2</sub> -consumption	VP	Schüssler	Montini, Schüssler	10/2011	EU
Evacuating Swiss cities: An agent-based analysis	VP	Axhausen	Dobler, Kowald	01/10	BABS



Title	Group	PI	Researcher	Start	Client, Sponsor
Information technologies in the freight transport market of the future	VS	Weidmann	Bruckmann, Moll, Orth	10/2009	VSS
Intersection safety and its relation to signal plans in China	SVT	Menendez	Li, Shu	09/2011	China's National Road Traffic Research Center
Large terminals for combined transport: Evaluation of the gateway terminal projects Limmattal and Basel-Nord	VS	Bruckmann	Fumasoli	08/2011	Swiss Federal Office of Transports
Operational stability and the reliability of urban bus routes in Zürich	VS	Weidmann	Carrasco	10/2009	COST
Planning and optimising highway work zones	IV	Lindenmann	Schiffmann	06/2007	ASTRA 2006/007
Process- and effect-oriented management for operational street maintenance: An intra-municipal street maintenance model	IV	Lindenmann	Schiffmann	03/2010	ASTRA 2008/004
Requirements of freight transport logistics concerning network infrastructure and long-term network development in Switzerland	VS	Wichser	Frank, Fumasoli	10/2010	SVI 2009/008
Route choice in urban public transport systems	VP	Schüssler	Dobler, Montini, Schüssler	10/2010	COST TU0603
Segmenting road sections for pavement management	IV	Lindenmann	Schiffmann	05/2010	VSS 2009/705
Short-term prediction	SVT	Menendez	Mancera	09/2011	ERA-NET ROAD
Spatial accessibility and the dynamics of commuting in Germany and Switzerland from 1970 to 2005	VP	Axhausen	Killer	03/2008	SNF
SustainCity	VP	Axhausen	Bodenmann, Müller, Schirmer, Zöllig	01/2010	EU
The capacity and quality of public transport on streets	VS	Weidmann	Carrasco, Dorbritz, Orth, Schwertner	04/2011	VSS
The conversion of Klybeckquai and Westquai to residential zones: Ways to connect them to the public transport network and to optimise affected rail-transport infrastructure	VS	Weidmann	Barth, Bruckmann, Orth	07/2011	Harbour of Basel Authority / Urban Planning Department of Basel
The correlation between road texture and the skid resistance of pavement and their influence on noise	IV	Lindenmann	Baumgartner, Schiffmann	01/2010	VSS
The development of public transport between Marly and Fribourg	VS	Weidmann	Nägeli, Schwertner, Wachter	09/2011	Public Transports of Fribourg
The impacts of market liberalisation on the sustainability of network industries: A comparative analysis of the railways and civil aviation in Switzerland	VS	Weidmann	Weidmann, Rieder	01/2008	SNF
The influence of parking on travel behaviour and energy consumption	VP	Axhausen	Montini, Schüssler, Waraich, Weis	12/2010	SVI 2008/001

Title	Group	PI	Researcher	Start	Client, Sponsor
The level of service and the performance of facilities for human-powered land transport	VS	Weidmann	Kirsch, Puffe	01/2010	VSS
The potential of carpooling	VP	Axhausen	Ciari	07/2009	ASTRA 2008/017
The realisation and implementation of road maintenance techniques in management practice	IV	Lindemann	Schiffmann	02/2010	VSS 2009/706
THELMA: Technology-Centred Electric Mobility Assessment	VP	Axhausen	Jäggi, Waraich	01/2010	Ongoing
Traffic flow at uncontrolled urban intersections with attention to different modes of traffic	SVT	Menendez	Mancera	10/2011	VSS 2011/308
Transferable development rights for reducing land consumption and sprawl in Switzerland	VP	Axhausen	Killer	02/2011	SNF
Travel impacts of social networks and networking tools	VP	Axhausen	Hackney, Kowald	01/2008	IVT
Use of Sensitivity Analysis in the calibration of microscopic traffic models	SVT	Menendez	Ge	08/2011	COST TU0903
Verification of the stability of continuous welded rail tracks for narrow gauge railways in tight radii; Part 3: Field experiment	VS	Weidmann	Bopp	10/2011	Rhätische Bahn



Photo: Lijun Sun

## 8 Events and outreach

The IVT is involved in a wide range of academic and professional events to facilitate the transfer of knowledge and professional interaction. The tables below list major events for the period from 2005 to 2011, including a complete list of events for the year 2011 to give an idea of the range and number of activities of the institute.

**Table 16** Selected major ongoing educational events and courses of the IVT (2005–2011)

Date	Title	Participants
2011–13	DAS Traffic Engineering	7 engineers and planners
2009–11	CAS Risk and Safety	25 engineers and scientists
2011–13	CAS Risk and Safety	Was not offered due to reorganisation
September 2008	Short course: Safety audits of roads (with bfu and VSS)	30 road safety experts
September 2009	Short course: Safety audits of roads (with bfu and VSS)	20 road safety experts
August 2010	Short course: Safety audits of roads (with bfu and VSS)	25 road safety experts
May 2010	Short course: RAMS/LCC for railway projects (with eduRail)	60 railway experts
May 2011	Short course: RAMS/LCC for railway projects (with eduRail)	60 railway experts
September 2006	Short course: Travel demand modelling	25 engineers and planners
October 2008	Short course: Travel demand modelling	20 engineers and planners
November 2009	Short course: Modelling decisions	20 engineers and planners
October 2010	Short course: Travel demand modelling	20 engineers and planners
October 2011	Short course: Transport planning	15 engineers and planners

**Table 17** Selected international conferences, workshops and seminars (2005–2011)

Date	Title	Participants
March 2005	RailML	60 European experts
March 2006	1st IVT Alumni Day	150 former IVT students and staff
April 2007	Future of the urbanised landscape	50 German-speaking experts
June 2007	High speed conference: The future of the railway	110 German-speaking experts
November 2007	City and transport: Innovations and visions—125 years of transport engineering at the ETH Zürich	150 international experts
January 2008	ITo8.Rail	300 international experts
March 2008	1st European UrbanSim users' meeting, 2008	25 international experts
March 2008	2nd IVT Alumni Day	150 former IVT students and staff
April 2008	Workshop: Peripheral traffic—Wrong periphery (with SVI)	110 Swiss experts
November 2008	New directions for Swiss road maintenance (with VSS)	70 Swiss experts
February 2009	3rd international seminar on railway operations modelling and analysis	150 international experts
April 2009	D-A-CH EMS Days (with VSS, FVS and FGSV)	60 German-speaking experts

Date	Title	Participants
June 2009	Revolution of automation: Traffic automation and society in the 20th and 21st century	110 German-speaking experts
March 2010	3rd IVT Alumni Day	150 former IVT students and staff
May 2010	2nd European UrbanSim users' meeting, 2008	25 international experts
January 2010	IVT10.rail	330 international experts
June 2011	Interdisciplinary seminar: Constantly mobile—Complex transport systems as a challenge of our societies	120 German-speaking experts
August 2011	Sustainable cities: ERSA special session	30 academic experts
March 2011	City and transport: Coexistence and competition in urban transport—The conflict about the scarce resources space and time	110 Swiss experts
May 2011	International conference on railway informatics	220 European experts

Table 18 Conferences and seminars (2011)

Event	Location	Organiser(s)
COST TU 603—Buses with a high level of service: Fundamental characteristics and recommendations for decision-making and research	ETH-Hönggerberg, 9–11 May 2011	Weidmann, Carrasco
ERSA 2011 special session: SustainCity seminar on land use and transport	University of Barcelona, 30 Aug.–3 Sept. 2011	Axhausen, Bodenmann
Interdisciplinary symposium: Stabil Mobil—Stability of public transport networks	ETH-Hönggerberg, 23 June 2011	Weidmann; University of Zürich
IVT-Kolloquium: Dezentrale Aufladeentscheidungen für das intelligente elektrische Netz	ETH-Hönggerberg, 26 July 2011	Axhausen
IVT-Kolloquium: Studentische Arbeiten HS 2010	ETH-Hönggerberg, 28 January 2011	Axhausen
6th international conference on pedestrian and evacuation dynamics—PED 2012	ETH-Hönggerberg, 6–8 June 2011	Weidmann
IVT-Seminar: A rethinking of street networks and their role in making safer and more sustainable American cities	ETH-Hönggerberg, 11 October 2011	Axhausen
IVT-Seminar: Macroscopic modelling of traffic in congested cities	ETH-Hönggerberg, 11 October 2011	Menendez
IVT-Seminar: Neue Ansätze in der Umlegung	ETH-Hönggerberg, 29 July 2011	Axhausen
IVT-Seminar: Optimale Busangebote	ETH-Hönggerberg, 26 July 2011	Axhausen
IVT-Seminar: ÖV und Flächennutzung in London	ETH-Hönggerberg, 30 June 2011	Axhausen
IVT-Seminar: Some interesting questions on parking systems	ETH-Hönggerberg, 10 November 2011	Menendez
IVT-Seminar: Strassengebühren und ÖV	ETH-Hönggerberg, 20 April 2011	Axhausen
IVT-Seminar: Web 2.0 für den ÖV?	ETH-Hönggerberg, 12 December 2011	Axhausen
IVT-Seminar: Optimal tolls based on an agent-based model of travel demand	ETH-Hönggerberg, 26 July 2011	Axhausen

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Event	Location	Organiser(s)
RAMS/LCC bei Bahnprojekten: Grundlagenkurs in Kooperation mit eduRail	Congress Hotel, Olten, 19–20 May; 16–17 and 30 June 2011	Weidmann, Fink, eduRail
Stadt und Verkehr - Koexistenz und Kooperation im Stadtverkehr: Kampf um die knappen Ressourcen Raum und Zeit	Museum für Gestaltung, Zürich, 16/17 March 2011	Weidmann, Hoepfner; VBZ
UrbanSim Workshop	Athens, 4–6 July 2011	Bodenmann; NTUA/UCB
Weiterbildungsdiplom (DAS) Verkehrsingenieurwesen: Verkehr -und Verkehrsplanung	ETH-Hönggerberg, 31 October–2 November; 8–9 December 2011	Axhausen, Weis
Weiterbildungsdiplom (DAS) Verkehrsingenieurwesen: Verkehrssteuerung	ETH-Hönggerberg, 3/4 November; 5–7 December 2011	Axhausen, Weis

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Photo: Michael van Eggermond

## 9 University and professional services

The staff of the institute is heavily involved in running the department, the school and the profession. The lists below give a complete overview of staff engagements in 2011 as well as major completed engagements from previous years.

**Table 19** Ongoing service at the ETH (2011)

Organisation	Institution	Function	Name
AVETH	Board		Schüssler
D-BAUG		Deputy head of department	Weidmann
D-BAUG	Admissions committee, Master of Civil Engineering		Weidmann
D-BAUG	Admissions committee, Master of Spatial Development and Infrastructure Systems		Weidmann
D-BAUG	Advisory board, Baubetriebs-Förderpreis		Weidmann
D-BAUG	Master of Spatial Development and Infrastructure Systems	Deputy dean of studies	Weidmann
D-BAUG	Search committee, Geosensors and engineering geodesy		Weidmann
D-BAUG	Teaching committee		Scherer
ETH Zürich	CAS Risk & Safety (ETH Zürich / HSG / PSI / SLF)	Dean of studies	Weidmann
ETH Zürich	Disciplinary committee	Deputy member	Schüssler
ETH Zürich	Excellence scholarship commission		Schüssler
ETH Zürich	Future Cities laboratory	Module Coordinator	Erath
ETH Zürich	Hochschulversammlung	Vice president	Schüssler
ETH Zürich	Doctoral studies mediation board		Schüssler
ETH Zürich	Netzwerk Stadt und Landschaft	Deputy director	Axhausen
ETH Zürich	Netzwerk Stadt und Landschaft	Newsletter editor	Zöllig
ETH Zürich	Netzwerk Stadt und Landschaft	Board member	Menendez
ETH Zürich	Netzwerk Stadt und Landschaft	Board member	Weidmann
ETH Zürich	Netzwerk Stadt und Landschaft	Board member	Axhausen
ETH Zürich	Search committee Department of Management, Technology and Economics (MTEC)		Weidmann

**Table 20** Completed major service engagements at ETH (2005–2011)

Organisation	Committee	Function	Name	Years
AVETH	Board	Co-chair	Schüssler	2007–09
AVETH	University senate	Vice chair	Schüssler	2007–10
AVETH	Doctoral studies mediation board		Schüssler	2009–10
D-BAUG	Departmental senate		Wichser	2004–10
D-BAUG	MSc in Spatial Development and Infrastructure Systems	Dean of studies	Axhausen	2004–08
D-BAUG	Scholarship committee	Chair	Weidmann	2007–09
ETH Zürich	Netzwerk Stadt und Landschaft	Deputy chair	Axhausen	2005–10



Table 21 Ongoing academic and professional service (2011)

Organisation	Committee	Function	Name
Alp Transit Gotthard	Mediation committee, railway technology	Mediator	Weidmann
ASTRA	MISTRA		Baumgartner
BAV	Organisational committee, railway infrastructure	Expert	Weidmann
BAV	Expert term Alp Transit	Railway technology expert	Weidmann
CEC 7th Framework Programme for Research	Transport advisory group		Weidmann
Chambre de Commerce et de l'Industrie Nord de France	Groupe logistique		Rieder
Competition and Regulation in Network Industries	Management committee		Weidmann
COST Action 8o4, Shanti	Management committee	Workgroup co-leader	Schüssler
COST TU o6o3, Buses with a High Level of Service	Management committee		Carrasco Weidmann
COST TU 11o3, Operation and Safety of Tramways in Interaction with Public Space	Management committee		Carrasco Weidmann
disP		Editor	Axhausen
DVWG, Sachsen	"Junges Forum" board		Schranil
ETR	Advisory board		Weidmann
ETR	Supplement ETR SWISS	Editor	Weidmann
GDI	Board, Regional Association of Central Switzerland, North West Switzerland, Tessin		Bruckmann
Geoinformatik 2012	Programme committee, Transportation		Weidmann
Hochschule Luzern	Examination committee, Public transport	Manager	Weidmann
HSG	"Logistikmarkt Schweiz" board	Expert	Weidmann
HSR	Civil engineering advisory board	Chair	Weidmann
IATBR	Board		Axhausen
ifmo	Advisory board		Axhausen
InnoZ	Advisory board		Weidmann
IT 13th RAIL–International Conference on Railway Informatics	Organising committee		Weidmann
JOCM	Editorial advisory board		Axhausen
JTLU	Editorial advisory board		Axhausen
LITRA	Board		Weidmann
Mathematisch-Naturwissenschaftliches Gymnasium Rämibühl	School board		Weidmann
Ministry of the Interior of Baden-Württemberg	Innovation advisory board, public transport	Expert	Weidmann
Network for Mobility	Scientific Committee		Weidmann
PED 2012, 6th International Conference on Pedestrian and Evacuation Dynamics	Co-organiser		Weidmann

Organisation	Committee	Function	Name
SATW	Programme committee, Transportation		Weidmann
Savannah Simulations	SimWalk, scientific advisory board		Weidmann
SBB	Advisory board, "Traffic Management" research fund		Weidmann
SBB	Infrastructure division	Expert	Weidmann
SBF	FP 7 support group, Transport	Expert	Weidmann
SCONRAIL	Board	Chair	Weidmann
SLG	"Tunnels and Underpasses" committee		Baumgartner
SLG	FLUX prize jury		Weidmann
SNF	Division IV	Research councillor	Axhausen
SVI	Advisory committee, SVI 2004/014 "Data mining"	Chair	Axhausen
Symposium, "Verkehrslandschaft Gotthard"	Advisory board		Weidmann
SYSTRANSIS	Board		Weidmann
TR-A	Editorial advisory board		Axhausen
Transportation		Editor	Axhausen
TRB	Committee ABJ40 "Survey methods"		Axhausen
TRB	Committee ADB10 "Traveller Behaviour and Values"		Axhausen
TRB	Committee AHB45 "Traffic Flow Theory and Characteristics"		Menendez
University of Stuttgart	Advisory board, Institute of Transportation Research		Weidmann
VBG	Advisory board		Weidmann
VKB	Zürich chapter	Chair	Weidmann
VÖV	Steering committee, Standards of Swiss Railway Technology		Weidmann
VÖVZH	Board		Weidmann
VSS	EK 1.02 Transport planning		Axhausen
VSS	EK 1.04 Supply planning		Axhausen
VSS	EK 2.06 Intersections		Baumgartner
VSS	EK 5.04 Roadway maintenance		Schiffmann
VSS	EK 7.01 Goals and strategy of road maintenance	Chair	Schiffmann
VSS	EK 7.05 Roadways		Baumgartner
VSS	EK 8.04 Freight facilities		Bruckmann
VSS	EK 8.04 Intermodality		Moll
VSS	EK1.01 Transport planning data and parking		Axhausen
VSS	FK 7 Management of road maintenance		Schiffmann
ZHAW	Advisory committee, BSc in Transportation		Weidmann
ZHAW	Advisory committee, Transport Systems Research		Weidmann

Table 22 Completed major academic and professional service (2005–2011)

Organisation	Committee	Function	Name	Years
AIPCR	National Committee Switzerland		Doerfel	2005–08
ASTRA	Platform Intelligent Transport Systems		Spacek	2004–11
ASTRA	Project management board MISTRA		Lindenmann	2004–10
CEC	7th Framework Programme for Research, Transport Advisory Group		Weidmann	2009
FERRMED	Advisory Council		Wichser	2008–09
FGSV	AA 1.11 Measurement and forecasting of travel demand		Axhausen	2004–07
FVS	Advisory board		Lindenmann	2004–11
IATBR	Board	Chair	Axhausen	2004
its–ch	National Programme Committee for its–Europe (Geneva)		Spacek	2006–08
ÖAMTC Akademie	Advisory board		Axhausen	2004–07
SVI	Board		Weidmann	2004–09
SVI	Peer review committee SVI 2002/002 Measurement and valuation of transport reliability	Chair	Weidmann	2004–07
SVI	Peer review committee SVI 2004/004 Political decision-making in transport planning	Chair	Weidmann	2006–07
SVI	Peer review committee SVI 2004/014 “Data mining”	Chair	Axhausen	2009–10
SVI	Working group “Mobility in the Periphery”	Chair	Weidmann	2005–06
SVWG	Board		Axhausen	2004–08
TRB	A1Co2 Passenger travel demand forecasting		Axhausen	2004–05
DfT	Peer review committee “National Transport Research Centre”		Axhausen	2007–08
VöV	Working group “Construction”		Wichser	2004–10
VöV	Working group “Light railways”		Wichser	2004–10
VSS	Co-ordination committee		Lindenmann	2004–07
VSS	EK 1.02 Transport planning	Chair	Axhausen	2004–09
VSS	EK 2.05 Road alignment		Spacek	2004–9
VSS	EK 2.06 Intersections		Spacek	2004–09
VSS	EK 3.04 Traffic safety		Doerfel	2004–09
VSS	EK 3.04 Traffic safety		Leemann	2007–09
VSS	EK 3.04 Traffic safety		Lindenmann	2004–09
VSS	EK 3.06 Road safety		Laube	2004–07
VSS	EK 3.08 Capacity	Chair	Koy	2004–05
VSS	EK 3.08 Capacity		Spacek	2004–09
VSS	EK 8.02 Foundations		Wichser	2004–10
VSS	FK 7 Infrastructure management	Chair	Lindenmann	2004–07
VSS	FK 8 Public transport	Chair	Wichser	2008–10
VSS	Research quality assurance	Chair	Lindenmann	2007–10
WCTR	Scientific advisory board		Axhausen	2004–09





NO TRAIN SERVICE at the PLATFORM. Towards ROTTERDAM, please proceed to PLATFORM A. Towards DHOOF, please proceed to PLATFORM B.

Platform 1  
Rotterdam

Photo: Michael van Eggermond

## 10 PERSONNEL AND FINANCES

### 10.1 STAFF DEVELOPMENT OF THE GROUPS (2005–2011)

The three groups had different trajectories in the reporting period. While the two established chairs increased their staff numbers, the new third group began from scratch and the fourth group was wound up. The support staff remained roughly constant.

**Table 23** Staff numbers: IVT (2005–2011)

Staff ( <i>in capita</i> )	2005	2006	2007	2008	2009	2010	2011
Full / Associate professorships	2	2	2	2	2	2	2
Assistant professorships							
Senior scientists (FS ffl1)	3	3	3	3	3	4	1
Senior research fellows	12	11	6	4	2	3	5
Postdoctoral research fellows					1	2	2
Doctoral (PhD) students	21	25	25	33	38	37	38
T&R assistants	3	5	6	5	2	2	2
Technical and ICT staff	3	3	3	3	3	4	3
Administrative staff	3	3	4	4	4	4	4
<b>Total (<i>in capita</i>)</b>	<b>47</b>	<b>52</b>	<b>49</b>	<b>54</b>	<b>55</b>	<b>58</b>	<b>57</b>
<b>Total (<i>in FTE</i>)</b>	<b>40.1</b>	<b>46.9</b>	<b>44.2</b>	<b>49.6</b>	<b>50.1</b>	<b>51.8</b>	<b>51.9</b>

**Table 24** Staff numbers: Transport Systems—Motorised Transport (2005–2011)

Staff ( <i>in capita</i> )	2005	2006	2007	2008	2009	2010	2011
Senior Scientists, Titular Prof. (FS>10)	2	2	2	2	2	2	
Senior Research Fellows (FS 9-10)	5	5	3	3			
Postdoctoral Research Fellows							
Doctoral (PhD) Students	2	2	3	4	5	5	3
T&R Assistants	1	1	3	2	2	2	
Technical + ICT Staff	2	2	2	2	2	2	
Administrative Staff							
<b>Total (<i>in capita</i>)</b>	<b>12</b>	<b>12</b>	<b>13</b>	<b>13</b>	<b>11</b>	<b>11</b>	<b>3</b>
<b>Total (<i>in FTE</i>)</b>	<b>10.4</b>	<b>10.2</b>	<b>11.8</b>	<b>11.8</b>	<b>11.0</b>	<b>11.0</b>	<b>2.5</b>

Table 25 Staff numbers: Traffic Engineering (2005–2011)

Staff ( <i>in capita</i> )	2005	2006	2007	2008	2009	2010	2011
Senior scientists, Titular professors (FS>10)						1	
Senior research fellows (FS 9–10)							1
Postdoctoral research fellows							
Doctoral (PhD) students							4
T&R assistants							
Technical + ICT staff							
Administrative staff							
Total ( <i>in capita</i> )						1	5
Total ( <i>in FTE</i> )						1.0	4.0

Table 26 Staff numbers: Transport Systems (2005–2011)

Staff ( <i>in capita</i> )	2005	2006	2007	2008	2009	2010	2011
Senior scientists, Titular professors (FS>10)	1	1	1	1	1	1	
Senior research fellows (FS 9–10)	4	3	1	1	1	1	2
Postdoctoral research fellows					1	1	
Doctoral (PhD) students	4	6	7	11	14	13	13
T&R assistants	2	4	3	3			2
Technical + ICT staff							2
Administrative staff							
Total ( <i>in capita</i> )	11	14	12	16	17	16	19
Total ( <i>in FTE</i> )	10.0	13.0	11.5	15.0	16.0	14.5	18.5

Table 27 Staff numbers: Transport Planning (2005–2011)

Staff ( <i>in capita</i> )	2005	2006	2007	2008	2009	2010	2011
Senior scientists, Titular professors (FS>10)							
Senior research fellows (FS 9–10)	1	1	2	1	2	3	4
Postdoctoral research fellows	1						
Doctoral (PhD) students	17	17	17	15	17	17	18
T&R assistants							
Technical + ICT staff							
Administrative staff							
Total ( <i>in capita</i> )	19	18	19	16	19	01	22
Total ( <i>in FTE</i> )	15.8	17.1	15.4	13.6	15.2	15.0	21.1

## 10.2 STAFF CHANGES IN 2011

The following members of staff went into retirement: Prof. H.P. Lindenmann, Prof. P. Spacek and J. Wichser. A sad event for us, but hopefully a happy one for them, which the IVT and lots of their colleagues and guests celebrated with them last summer.

New challenges were found by Dr. S. Bepperling, D. Jacobs, N. Grau-Leemann, M. Scherer, B. Garcia de Soto Lastra, Dr. N. Latuske, G. Santel, Ph. Schmidt and A. Zaugg.

New arrivals to our institute included J. Cao, L. Montini, S. Wiedersheim, Dr. D. Bruckmann, Th. Dubernet, T. Fumasoli, B. Garcia de Soto Lastra, Q. Ge, A. Mancera, L. Nägeli and J. Ortigoso.

At the beginning of the year 2011, the institute had 56 employees, which indicates the strength of our research programme and of our level of activity.

**Table 28** List of student assistants (2011)

Name	Appointment	Name	Appointment
Ackle, Lukas	Autumn 11	Jochum, Johanna	Spring and Autumn 11
Ahmad, Sumaira	Spring 11	Kleinbrod, Ulrike	Spring and Autumn 11
Ambühl, Lukas	Autumn 11	Länzlinger, Daniel	Autumn 11
Baeriswyl, Vincent	Spring and Autumn 11	Leemann, Michèle	Spring and Autumn 11
Beutler, Eveline	Spring 11	Mächler, Jonas	Spring and Autumn 11
Eckstein, Daniel	Spring and Autumn 11	Mächler, Evelyn	Spring and Autumn 11
Fahrni, Reto	Autumn 11	Merz, Erika	Spring 11
Fjodorova, Vera Nika	Spring 11	Neubrand, Stefanie	Spring 11
Flütsch, Franziska	Spring and Autumn 11	Otter, Nina	Spring and Autumn 11
Frei, Patrice	Autumn 11	Podransky, Pascal	Spring 11
Galimova, Raisa	Spring and Autumn 11	Roeck, Martin Vincenzo	Spring and Autumn 11
Häfliger, Stefan	Spring 11	Santani, Darshan	Spring 11
Hartung-Hoffmann, Fritzi	Spring and Autumn 11	Schenk, Nathalie	Spring and Autumn 11
Hug, Rolf	Spring 11	Scherler, Fabian	Spring 11
Hüssler, Michael	Autumn 11	Schlatter, Christian	Spring and Autumn 11
Imoberdorf, Ilona	Autumn 11		

**Table 29** List of visitors (2011)

Title	Name	Home university	Period of stay
Trainee	de Vries, Nicolaas	TU Delft, the Netherlands	06/09/10–31/01/11
Dr.	Drábek, Michal	TU Prag, Czech Republic	01/10/10–30/09/11
Trainee	Dubernet, Thibaut	UT Compiègne, France	01/02/11–15/07/11
Trainee	Karan, Virani	IIT Guwahati, India	11/05/11–21/07/11
Trainee	Wang, Jia Mei	Tongji University, Shanghai	01/06/11–31/05/12
Trainee	Wachter, Markus	ETH Zürich	01/09/11–31/08/12
Dr.	Li, Pingfang	TMRI, Jiangsu Province, China	02/09/11–20/11/11
Trainee	Shu, Aibing	TMRI, Jiangsu Province, China	07/09/11–20/11/11
Ass/ Prof.	Garrik, Norman	University of Connecticut, USA	07/09/11–30/4/2012



## 10.3 SPECIAL EQUIPMENT

The **Railway Operations Laboratory** of the Transport Systems chair is a unique educational facility. It was built in the 1970s and was modernised from 2009 to 2011 with the help of our partners Siemens and SBB to meet state-of-the-art standards. It is one of the most sophisticated educational facilities of its kind in Europe. Seven stations replete with all generations of interlockings and a distance control system allow users to simulate the main production processes accurately. The acceleration, deceleration and speed profiles of the trains are scaled close to reality. The railway laboratory is heavily used by the SBB and the IVT, and it receives 2–3 visitor groups per month.

Figure 17 Railway Operations Laboratory

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Source: Jahresbericht 2009

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### Laser Measurement System

This system that was developed and used by the Traffic Engineering group detects moving vehicles. It both localises vehicles and identifies their dimensions. A detected vehicle can be tracked in the sensor range, whereby speeds and trajectories can be registered. Moreover, the laser measurement system distinguishes several traffic directions and is able to measure the distance between vehicles traveling in parallel lanes.

Figure 18 Laser measurement system

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Source: Jahresbericht 2009

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### Measuring posts

Twelve measuring posts are used by the Traffic Engineering Group to track the trajectories of vehicles along a road segment. Each post is equipped with an ultrasonic sensor that detects the vehicles that cross the section and registers their dimensions, speeds and distance from the post. With this system, it is possible to register longitudinal and transversal vehicle trajectories.

Figure 19 Measuring posts



Source: Jahresbericht 2009

## 10.4 FUNDING

The institute finances its operations both with funding provided by the ETH as well as through support from a wide range of outside sources.

The annual budget is about 5,500 kCHF, about half of which comes from outside sources. The funding profiles of the groups differ according to their style of operation: Some draw more on competitive academic sources, while others draw on equally competitive and selective commercial and administrative funds. The mix of sources gives the IVT its independence. The high share of third-party funds enables us to offer an educational breadth that would otherwise have to be sacrificed. The main sources are (in alphabetic order):

- CTI: Commission for Technology and Innovation, the Swiss technology transfer funding source
- The EU: European Union Framework programmes promote academic and policy research
- Foundations such as the Volkswagen Foundation support academic research
- Industry
- SBT (Road, Bridge, Tunnel) funds administered by the Federal Roads Office (ASTRA), partly through VSS and SVI, to advance practice-relevant research, state-of-the-art standards and guidelines
- SNF: Swiss National Funds for academic research and some programme funding
- The Swiss Government

Table 30 Funds by source: IVT (2004–2011)

	2004	2005	2006	2007	2008	2009	2010	2011	2005–2011
ETH funds									
Staff	76%	73%	60%	46%	62%	62%	52%	56%	59%
Operating	4%	4%	3%	3%	4%	4%	3%	3%	3%
IT	2%	2%	1%	1%	2%	2%	2%	1%	2%
Third party funds	18%	22%	35%	50%	32%	33%	43%	40%	37%
Total [kCHF]	3,436	4,330	5,331	6,501	4,972	5,215	6,560	5,476	5,484

Figure 20 Third-party funds raised by type: IVT (2005–2011)

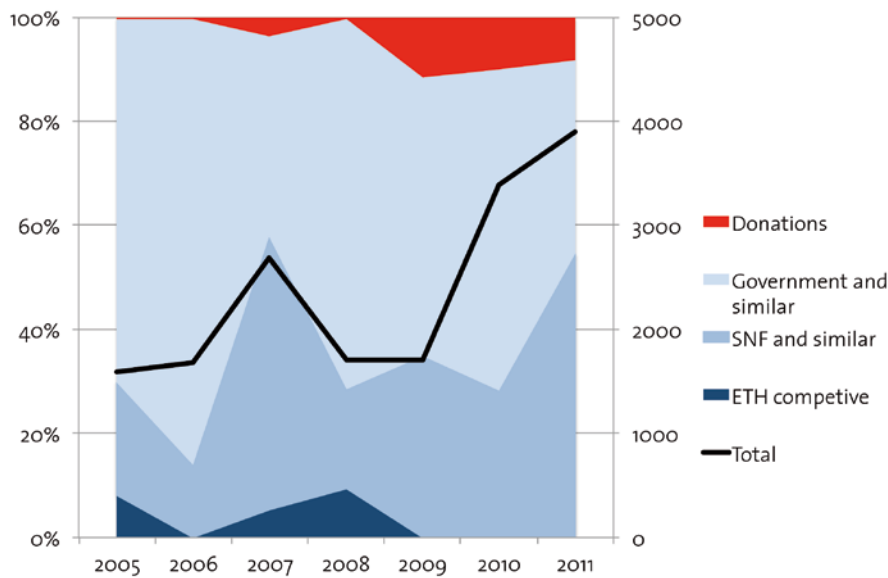


Figure 21 Third-party funds raised by group: IVT (2005–2011)

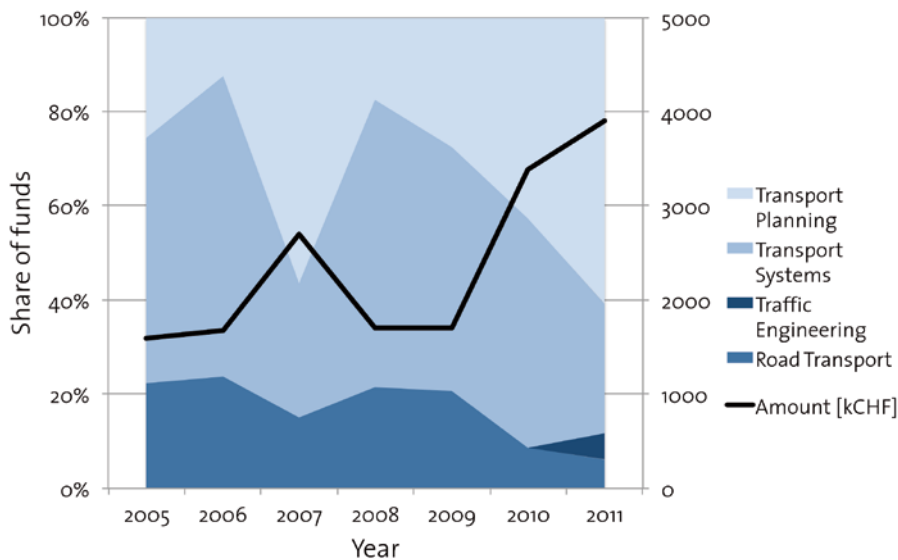


Table 31 Funds raised by type: Traffic Engineering (2005–2011)

Type	Funds raised (kCHF)						
	2005	2006	2007	2008	2009	2010	2011
ETH competitive research grants							
SNF, KTI, EU funding							22
Government, industry, private							190
Donations (estimated value)							
Total <sup>1)</sup>							212

Table 32 Funds raised by type: Transport Systems (2005–2011)

Type	Funds raised (kCHF)						
	2005	2006	2007	2008	2009	2010	2011
ETH competitive research grants							
SNF, KTI, EU funding	90	140	104	212	170	145	
Government, industry, private	731	928	566	822	517	1,167	752
Donations (estimated value)	7	7	97	7	198	341	325
Total	828	1,075	767	1,041	885	1,653	1,077

Table 33 Funds raised by type: Transport Planning (2005–2011)

Type	Funds raised (kCHF)						
	2005	2006	2007	2008	2009	2010	2011
ETH competitive research grants	130		142	160			
SNF, KTI, EU funding	135	80	1,148	70	340	812	2,099
Government, industry, private	144	127	229	70	128	628	269
Donations (estimated value)							
Total	409	207	1,519	300	468	1,440	2,368



## APPENDIX A: ABBREVIATIONS

Table 34 List of organisations

Abbreviation	Original name	English name	Location
AIPCR	Association Mondiale de la Route	World Road Congress	Paris
Alp Transit Gotthard			Luzern
ASTRA	Bundesamt für Strassen	Federal Roads Office	Bern
AVETH	Akademische Vereinigung des Mittelbaus der ETH	Academic Association of Scientific Staff	
BAV	Bundesamt für Verkehr	Federal Office of Transport	Bern
CEC		Commission of the European Communities	Brussels
COST		European Cooperation in Science and Technology	Strasbourg
D-BAUG	Departement Bau, Umwelt und Geomatik	Department of Civil, Environmental and Geomatic Engineering	Zürich
DfT		Department for Transport	London
disP	disP – The Planning Review		Zürich
DVWG, Sachsen	Deutsche Verkehrswissenschaftliche Gesellschaft	German Association of Transport Sciences	Berlin
ETH Zürich	Eidgenössische Technische Hochschule	Swiss Federal Institute of Technology	Zürich
ETR	Eisenbahntechnische Rundschau		Hamburg
Fachpreis FLUX		FLUX Prize	Bern
FERRMED	Promotion du Axe Ferroviaire de Marchandises		Brussels
FGSV	Forschungsgesellschaft für Strassen- und Verkehrswesen	German Association for Road and Transport Research	Berlin
Fonds für Verkehrssicherheit	Fonds für Verkehrssicherheit	Funds for Road Safety	Bern
GDI	Gesellschaft der Ingenieure des öffentlichen Verkehrs	Association of Public Transport Engineers	Bern
Hochschule Luzern		University of Applied Sciences	Luzern
HSG	Universität St. Gallen	University of St. Gallen	St. Gallen
HSR	Hochschule für Technik	University of Applied Sciences	Rapperswil
IATBR		International Association for Travel Behaviour Research	
ifmo	Institut für Mobilitätsforschung	Institute for Mobility Research	Munich
Innenministerium Baden-Württemberg	Innenministerium Baden-Württemberg	Ministry of the Interior of Baden-Württemberg	Stuttgart
InnoZ	Innovationszentrum für Mobilität und gesellschaftlichen Wandel	Innovation Centre for Mobility and Social Change	Berlin
its-ch		its Switzerland	Bern
IVT	Institut für Verkehrsplanung und Transportsysteme	The Institute for Transport Planning and Systems	Zürich

Abbreviation	Original name	English name	Location
JOCM		Journal of Choice Modelling	Leeds
JTLU		Journal of Transportation and Land Use	Minneapolis
LITRA	Informationsdienst für den öffentlichen Verkehr	Information Service for Public Transport	Bern
ÖAMTC Akademie	Österreichische Automobil-, Motorrad- und Touring Club Akademie	Austrian Car, Motorcycle and Touring Club Academy	Wien
SATW	Schweizerische Akademie der Technischen Wissenschaften	Swiss Academy of Technical Sciences	Bern
SBB	Schweizerische Bundesbahnen	Swiss Federal Railways	Bern
SBF	Staatssekretariat Bildung und Forschung	State Secretariat for Education and Research	Bern
SCONRAIL	Schweizerische Konformitätsbewertungsstelle	Swiss Office of Conformity and Accreditation	Winterthur
SLG	Schweizer Licht Gesellschaft	Swiss Light Association	Bern
SLG	Schweizer Licht Gesellschaft		Bern
SNF	Schweizer Nationalfonds	Swiss National Science Foundation	Bern
SVI	Schweizerische Vereinigung der Verkehrsingenieure und Verkehrsexperten	Swiss Association of Transportation Engineers and Experts	St. Gallen
SVWG	Schweizerische Verkehrswissenschaftliche Gesellschaft	Swiss Association for Transportation Science	Bern
TR-A	Transportation Research A		Amsterdam
Transportation			Heidelberg
TRB		Transportation Research Board	Washington, D.C.
Universität Stuttgart		University of Stuttgart	Stuttgart
VBG	Verkehrsbetriebe Glattal	Transport Executive of Glattal	Glattbrugg
VKB	Vereinigung der Kader des Bundes	Association of Swiss Federal Management Employees	Bern
VÖV	Verband öffentlicher Verkehr	Public Transport Association	Bern
VÖVZH	Vereinigung zur Förderung des öffentlichen Verkehrs Zürich	Association for the Advancement of Public Transport, Zürich	Zürich
VSS	Schweizerische Verband der Strassen- und Verkehrsfachleute	Swiss Association of Road and Transport Experts	Zürich
WCTR		World Conference of Transportation Research	Lyon
ZHAW	Zürcher Hochschule für Angewandte Wissenschaften Winterthur	University of Applied Sciences, Winterthur	Winterthur

**APPENDIX B: REFERENCES**

- AASHTO (2004) *A policy on geometric design of highways and streets*, American Association of State Highway and Transportation Officials, Washington.
- Dobler, C., M. Kowald, N. Schüssler and K.W. Axhausen (2012) Within-Day Replanning of Exceptional Events, paper presented at the *91st Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Jacobs, A.B. (1993) *Great Streets*, MIT Press, Cambridge.
- Kowald, M., C. Dobler und K.W. Axhausen (2011) Der Einfluss sozialer Kontakte in grossräumigen Evakuierungsereignissen, *Arbeitsberichte Verkehrs- und Raumplanung*, **683**, IVT, ETH Zürich, Zürich.
- Marshall, S. (2005) *Streets & Patterns*, Spon Press, London.
- Southworth, M. and E. Ben-Joseph (2003) *Streets and the Shaping of Towns and Cities*, Island Press, Washington, D.C.
- UN (2009) *Planning sustainable cities*, Technical Report, United Nations, London.
- Vitins, B.J., N. Schüssler and K.W. Axhausen (2012) Comparison of Hierarchical Network Design Shape Grammars for Roads and Intersections, paper presented at the *91st Annual Meeting of the Transport Research Board*, Washington, D.C., January 2012.
- VSS (1994) SN 640 040b Projektierung, Grundlage, Vereinigung Schweizer Strassenfachleute, Zürich.





# ***PUBLICATIONS AND PRESENTATIONS 2004–2011***

# 1 REFEREED PAPERS

## 1.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Hajdin, R. and H.P. Lindenmann (2007) Algorithm for the planning of optimum highway work zones, *Journal of Infrastructure Systems*, **13** (3) 202–214.
- Lindenmann, H.P. (2006) New findings regarding the significance of pavement skid resistance for road safety on Swiss freeways, *Journal of Safety Research*, **37** (10) 395–400.
- Lindenmann, H.P. (2007) Capacity of small roundabouts with two-lane entries, *Transportation Research Record*, **1988**, 119–126.
- Lindenmann, H.P. (2008) The design of roads and of the road environment in small rural communities *Transportation Research Record*, **2025**, 53–62.
- Lindenmann, H.P., H.M. Burger, M. Laube and M. Partl (2006) HMB reflectors: A new horizontal retro-reflecting system to improve safety at Pedestrian crossings, *Transport Reviews*, **26** (3) 351–363.
- Spacek, P. (2004) The basis of the Swiss design standard for roundabouts, *Transportation Research Record*, **1881**, 19–26.
- Spacek, P. (2004) The influence of speeds on the design standards in Switzerland, *Transportation Research Record*, **1881**, 27–35.
- Spacek, P. (2005) Track behavior in curve areas: Attempt at typology, *Journal of Transportation Engineering*, **131** (9) 669–677.

## 1.2 TRANSPORT SYSTEMS

- Carle, C., A. Wokaun and K.W. Axhausen (2006) Market potential of compressed natural gas cars in the Swiss passenger car sector, *World Transport Policy & Practice*, **12** (2) 6–21.
- Carle, G., P. Keller, A. Wokaun and K.W. Axhausen (2005) Fuel cells for cars – a competitive analysis, *Transport Reviews*, **25** (6) 739–760.
- Dorbritz, R., M. Lüthi and U. Weidmann (2009) Effects of onboard ticketing strategies on public transport's service reliability, *Transportation Research Record*, **2110**, 112–119.
- Fries, N., G. de Jong, Z. Patterson and U. Weidman (2010) Shipper willingness to pay to increase environmental performance in freight transportation, *Transportation Research Record*, **2168**, 33–42.
- Lüthi M. (2009) Structure and simulation evaluation of an integrated real-time rescheduling system for railway networks, *Journal of Networks and Spatial Economics*, **9** (1) 103–121.
- Lüthi M., B. Kisseleff and A. Nash (2009) De-peaking strategies for improving airport ground operations productivity at mid-sized hubs, *Transportation Research Record*, **2106**, 57–65.
- Nash, A., U. Weidmann and M. Lüthi (2009) Can information technology help rail play a greater role in preventing climate change?, *Transportation Research Record*, **2139**, 133–141.
- Nash, A., U. Weidmann, S. Bollinger, M. Lüthi and S. Buchmüller (2006) Increasing schedule reliability on the S-Bahn in Zurich, Switzerland, *Transportation Research Record*, **1955**, 17–25.
- Nash, A., U. Weidmann, S. Buchmüller and M. Rieder (2007) Assessing feasibility of transport megaprojects. Swissmetro European market study, *Transportation Research Record*, **1995**, 17–26.
- Scherer, M. (2010) Is light rail more attractive to users than bus transit? Arguments based on cognition and rational choice, *Transportation Research Record*, **2144**, 11–19.
- Scherer, M. and K. Dziekan (Forthcoming) Bus or rail: An approach to explain the psychological rail factor, *Journal of Public Transportation*.
- Scherer, M. and U. Weidmann (Forthcoming) Differences in travel behavior and demand potential of rail- and bus-based neighborhoods: Evidence from a cluster analysis, *Transportation Research Record*, **2217**, 1–10.
- Schneebeili, H., A. Nash and M. Scherer (2010) Glattalbahn – Innovative transport solution for suburban areas, *Transportation Research Record*, **2146**, 1–9.

### 1.3 TRANSPORT PLANNING

- Axhausen, K.W. (2008) Social networks, mobility biographies and travel: The survey challenges, *Environment and Planning B*, **35** (6) 981–996.
- Axhausen, K.W. (2007) Activity spaces, biographies, social networks and their welfare gains and externalities: Some hypotheses and empirical results, *Mobilities*, **2** (1) 15–36.
- Axhausen, K.W., C. Dolci, P. Fröhlich, M. Scherer and A. Carosio (2008) Constructing time scaled maps: Switzerland 1950–2000, *Transport Reviews*, **28** (3) 391–413.
- Axhausen, K.W., M. Löchl, R. Schlich, T. Buhl and P. Widmer (2007) Fatigue in long duration surveys, *Transportation*, **34** (2) 143–160.
- Axhausen, K.W., P. Fröhlich and M. Tschopp (2011) Changes in Swiss accessibility since 1850, *Research in Transport Economics*, **31**, 72–80.
- Axhausen, K.W., S. Hess, A. König, G. Abay, J.J. Bates and M. Bierlaire (2008) Income and distance elasticities of values of travel time savings: New Swiss results, *Transport Policy*, **15** (3) 173–185.
- Balmer, M., K.W. Axhausen and K. Nagel (2007) A demand generation framework for large scale micro-simulations, *Transportation Research Record*, **1985**, 125–134.
- Beige, S. and K.W. Axhausen (2008) Long-term and mid-term mobility decisions during the life course: Experiences with a retrospective survey, *IATSS Research*, **32** (2) 16–33.
- Bekhor, S., C. Dobler and K.W. Axhausen (2011) Integration of activity-based with agent-based models: An example from the Tel Aviv model and MATSim, *Transportation Research Record*, **225**, 38–47.
- Bernard, M. and K.W. Axhausen (2010) Ein neuer Ansatz für standardisierte Ganglinien, *Strassenverkehrstechnik*, **54** (11) 689–696.
- Bhat, C.R., T. Frusti, H. Zhao, S. Schönfelder and K.W. Axhausen (2004) Intersopping duration: An analysis using multi-week data, *Transportation Research*, **38B** (1) 39–60.
- Bierlaire, M., M. Themans and K.W. Axhausen (2006) Analysis of driver's response to real-time information in Switzerland, *European Transport*, **34**, 21–41.
- Bodenmann, B.R. and K.W. Axhausen (2011) Destination choice of relocating firms – A discrete choice model for the region of St. Gallen, Switzerland, *Papers in Regional Science*.
- Bodenmann, B.R. and K.W. Axhausen (2011) Effects and side effects – A micro-simulation study of firm location choice, *disP – The Planning Review*.
- Bodenmann, B.R. and K.W. Axhausen (2008) Schweizer Unternehmen – quo vaditis? Firmendemographische Trends am Beispiel des Wirtschaftsraums St. Gallen, *Raumforschung und Raumordnung*, **66** (4) 318–332.
- Chalasani, V.S., J.M. Denstali, Ø. Engebretsen and K.W. Axhausen (2005) Precision of geocoded locations and network distance estimates, *Journal of Transportation and Statistics*, **8** (2) 1–15.
- Charypar D. and K. Nagel (2005) Generating complete all-day activity plans with genetic algorithms in *Transportation*, **32** (4) 369–397.
- Charypar, D., K. Nagel and K.W. Axhausen (2007) An event-driven queue-based microsimulation of traffic flow, *Transportation Research Record*, **2003**, 35–40.
- Chikaraishi, M., A. Fujiwara, J. Zhang and K.W. Axhausen (2009) Exploring variation properties of departure time choice behavior using a multilevel analysis approach, *Transportation Research Record*, **2021**, 55–63.
- Chikaraishi, M., A. Fujiwara, J. Zhang, K.W. Axhausen and D. Zumkeller (2011) Changes in variations of travel time expenditure: Some methodological considerations and empirical results from German mobility panel, *Transportation Research Record*, **2230**, 121–131.
- Chikaraishi, M., J. Zhang, A. Fujiwara and K.W. Axhausen (2011) Identifying variations and co-variations in discrete choice models, *Transportation*, **38** (6) 993–1016.
- Chikaraishi, M., J. Zhang, A. Fujiwara and K.W. Axhausen (2010) Exploring variation properties of time use behavior based on a Multilevel Multiple Discrete-Continuous Extreme Value model, *Transportation Research Record*, **2156**, 101–110.
- Cirillo, C. and K.W. Axhausen (2010) Dynamic model of activity type choice and scheduling, *Transportation*, **37** (1) 15–38.
- Cirillo, C. and K.W. Axhausen (2006) Evidence on the distribution of values of travel time savings from a six-week diary, *Transportation Research*, **40A** (5) 444–457.

- De Lapparent, M., A. Frei and K.W. Axhausen (2011) Choice of mode for long distance travel: current SP-based models from three European countries, *European Transport*.
- Eluru, N., I.N. Sener, C.R. Bhat, R. Pendyala and K.W. Axhausen (2009) Understanding residential mobility: A joint model of the reason for residential relocation and stay duration, *Transportation Research Record*, **2133**, 64–74.
- Erath, A., J. Birdsall, K.W. Axhausen and R. Hajdin (2009) Vulnerability assessment of the Swiss road network, *Transportation Research Record*, **2137**, 118–126.
- Erath, A., M. Löchl and K.W. Axhausen (2009) Graph-theoretical analysis of the Swiss Road and rail networks over time, *Journal of Networks and Spatial Economics*, **9** (3) 379–400.
- Frick, M., G. Carle, A. Wokaun and K.W. Axhausen (2007) Optimization of the compressed natural gas (CNG) refueling station distribution: Swiss case studies, *Transportation Research D*, **12** (1) 10–22.
- Fröhlich, P. (2008) Travel behavior changes of commuters from 1970–2000, *Transportation Research Record*, **2082**, 35–42.
- Fröhlich, P., M. Tschopp and K.W. Axhausen (2005) Entwicklung der Erreichbarkeit der Schweizer Gemeinden: 1950 bis 2000, *Raumforschung und Raumordnung*, **63** (6) 385–399.
- Gao, W., E. Miller and M. Balmer (2010) Comparisons between MATSim and EMME/2 on the Greater Toronto and Hamilton Area Network, Canada, *Transportation Research Record*, **2197**, 118–128.
- Guth, D., C. Holz-Rau, V. Killer and K.W. Axhausen (2011) Räumliche Dynamik des Pendelverhaltens in Deutschland und der Schweiz, *disp*, **184**, 12–28.
- Habib, K.M.N., E. Miller and K.W. Axhausen (2008) Weekly rhythm in joint time expenditure to all at-home and out-of-home activities: application of Kuhn-Tucker demand system model using a multi-week travel diary data, *Transportation Research Record*, **2054**, 64–73.
- Hackney, J.K., M. Bernard, S. Bindra and K.W. Axhausen (2007) Predicting road system speeds using spatial structure variables and network characteristics, *Journal of Geographical Systems*, **9** (4) 397–417.
- Hess, S. (2007) Posterior analysis of random taste coefficients in air travel choice behaviour modelling, *Journal of Air Transport Management*, **13**, 203–212.
- Hess, S., A. Erath and K.W. Axhausen (2008) Estimated value of savings in travel time in Switzerland: Analysis of pooled data, *Transportation Research Record*, **2082**, 43–55.
- Horni, A., D.M. Scott, M. Balmer and K.W. Axhausen (2009) Location choice modeling for shopping and leisure activities with MATSim: Combining micro-simulation and time geography, *Transportation Research Record*, **2135**, 87–95.
- Illenberger, J., M. Kowald, K.W. Axhausen and K. Nagel (2011) Insights into a spatially embedded social network from a larger-scale snowball sample, *European Physical Journal B*, **84** (4) 549–561.
- Jäggi, B., A. Erath, C. Dobler and K.W. Axhausen (2011) Modeling household fleet choice as a function of fuel price using a multiple discrete-continuous choice model, *Transportation Research Record*.
- Jara-Diaz, S.R., M.A. Munizaga, P. Greeven, R. Guerra and K.W. Axhausen (2008) Estimating the value of leisure from a time allocation model, *Transportation Research B*, **42** (12) 946–957.
- Joubert, J., P.J. Fourie and K.W. Axhausen (2010) A large scale combined private car and commercial vehicle agent-based traffic simulation, *Transportation Research Record*, **2168**, 24–32.
- Joubert, J.W. and K.W. Axhausen (2011) Inferring commercial vehicle activities in Southern Africa, *Journal of Transport Geography*, **19** (2) 115–124.
- Killer, V. and K.W. Axhausen (2010) Mapping overlapping commuting areas, *Journal of Maps*, **6**, 186–198.
- Kitamura, R., T. Yamamoto, Y.O. Susilo and K.W. Axhausen (2006) On the day-to-day variability of prism vertex location, *Transportation Research*, **40A** (3) 259–279.
- Köll, H., M. Bader and K.W. Axhausen (2004) Driver behaviour during flashing green before amber: A comparative study, *Accident Analysis and Prevention*, **36** (2) 273–280.
- Kowald, M. and K.W. Axhausen (2011) Focussing on connected personal networks: Selected results from a snowball sample, *Environment and Planning A*.
- Larsen, J., J. Urry and K.W. Axhausen (2008) Coordinating face-to-face meetings in mobile network societies, *Information, Communication & Society*, **11** (5) 640–658.
- Larsen, J., J. Urry and K.W. Axhausen (2007) Networks and tourism: Mobile social life, *Annals of Tourism Research*, **34** (1) 244–262.

- Larsen, J., K.W. Axhausen and J. Urry (2006) Geographies of social networks: meetings, travel and communication amongst youngish people, *Mobilities*, **1** (2) 261–283.
- Löchl, M. and K.W. Axhausen (2010) Modelling hedonic residential rents for land use and transport simulation while considering spatial effects, *Journal of Transport and Land Use*, **3** (2) 39–63.
- Löchl, M., M. Bürgle and K.W. Axhausen (2007) Implementierung des integrierten Flächennutzungsmodells UrbanSim für den Grossraum Zürich – ein Erfahrungsbericht, *DISP*, **168**, 13–25.
- Lohse, D., C. Schiller, H. Teichert, M. Vrtic, P. Fröhlich, N. Schüssler and K.W. Axhausen (2006) Ein zweiseitig gekoppeltes Modell zur simultanen Berechnung der Verkehrserzeugung, Verkehrsverteilung und Verkehrsaufteilung: Theoretischer Hintergrund und praktische Anwendung für ein nationales Modell der Schweiz, *Verkehrsforschung Online*, **3**, 1–28.
- Madre, J.-L., K.W. Axhausen and W. Brög (2007) Immobility in travel diary surveys, *Transportation*, **34** (1) 107–128.
- Marchal, F., J.K. Hackney and K.W. Axhausen (2006) Efficient map-matching of large GPS data sets – Tests on a speed monitoring experiment in Zurich, *Transportation Research Record*, **1935**, 93–100.
- Märki, F., D. Charypar and K.W. Axhausen (2011) Continuous activity planning for continuous traffic simulation, *Transportation Research Record*, **2230**, 29–37.
- Meister, K., M. Frick and K.W. Axhausen (2005) A GA-based household scheduler, *Transportation*, **32** (5) 473–494.
- Meister, K., M. Rieser, F. Ciari, A. Horni, M. Balmer and K.W. Axhausen (2009) Anwendung eines agentenbasierten Modells der Verkehrsnachfrage auf die Schweiz, *Strassenverkehrstechnik*, **53** (5) 269–280.
- Menghini, G., N. Carrasco, N. Schüssler and K.W. Axhausen (2010) Route choice of cyclists in Zurich, *Transportation Research A*, **44** (9) 754–765.
- Nagel, K., D. Grether, U. Beuck, M. Rieser, Y. Chen and K.W. Axhausen (2008) Multi-agent transport simulations and economic evaluation, *Journal of Economics and Statistics*, **228** (2+3) 173–194.
- Ohnmacht, T. and M. Scherer (2010) More comfort, shorter travel time, or low fares? Comparing rail transit preferences of commuters, holiday and leisure travelers, business travelers and shoppers in Switzerland, *Transportation Research Record*, **2143**, 100–107.
- Ohnmacht, T., A. Frei and K.W. Axhausen (2008) Mobilitätsbiografie und Netzwerkgeografie: Wessen soziale Beziehungen sind räumlich dispers?, *Schweizerische Zeitschrift für Soziologie*, **34** (1) 131–164.
- Portnov, B.A., K.W. Axhausen, M. Tschopp and M. Schwartz (2011) Diminishing effects of location? Some evidence from Swiss municipalities, 1950–2000, *Journal of Transport Geography*, doi:10.1016/j.jtrangeo.2011.07.017
- Rai, R.K., M. Balmer, M. Rieser, V.S. Vaze, S. Schönfelder and K.W. Axhausen (2007) Capturing human activity spaces: New geometries, *Transportation Research Record*, **2021**, 70–80.
- Rieser, M. and K. Nagel (2008) Network breakdown “at the edge of chaos” in multi-agent traffic simulations, *European Physics Journal B*, **63** (3) 321–327.
- Rieser, M., K. Nagel, U. Beuck, M. Balmer and J. Rumenapp (2007) Agent-oriented coupling of activity-based demand generation with multi-agent traffic simulation, *Transportation Research Record*, **2021**, 10–17.
- Schlich, R., S. Schönfelder, S. Hanson and K.W. Axhausen (2004) The structures of leisure travel: Temporal and spatial variability, *Transport Reviews*, **24** (4) 219–228.
- Schönfelder, S., J.H. Rich, O.A. Nielsen, C. Würtz and K.W. Axhausen (2007) Road pricing and its consequences for individual travel patterns, *Mobilities*, **2** (1) 75–98.
- Schüssler, N. and K.W. Axhausen (2009) Processing GPS raw data without additional information, *Transportation Research Record*, **2105**, 28–36.
- Scott, D.M. and K.W. Axhausen (2006) Household mobility tool ownership: Modeling interactions between cars and season tickets, *Transportation*, **33** (4) 311–328.
- Simma, A. and K.W. Axhausen (2004) Commitments and modal usage: An analysis of German and Dutch panels, *Transportation Research Record*, **1854**, 22–31.
- Simma, A. and K.W. Axhausen (2004) Interactions between travel behaviour, accessibility and personal characteristics: The case of the Upper Austria, *European Journal of Transport and Infrastructure Research*, **3** (2) 179–198.
- Smieszek, T., M. Balmer, J. Hattendorf, K.W. Axhausen, J. Zinsstag, R.W. Scholz (2011) Reconstructing the 2003/2004 H3N2 influenza epidemic in Switzerland with a spatially explicit, individual-based model, *BMC Infectious Diseases*, **11**, 115.

- Spissu, E., A.R. Pinjari, C.R. Bhat, R.M. Pendyala and K.W. Axhausen (2009) An analysis of weekly out-of-home discretionary activity participation and time use behaviour, *Transportation*, **36** (5) 483–510.
- Tschopp M., P. Fröhlich, P. Keller and K.W. Axhausen (2008) Accessibility, spatial organisation and demography in Switzerland through 1850 to 2000: First results, *Journal of Transport History*, **29** (1) 83–97.
- Vitins, B. and K.W. Axhausen (2008) Optimization of large transport networks using the Ant Colony heuristic, *Journal of Computer-Aided Civil and Infrastructure Engineering*, **24** (1) 1–14.
- Vrtic, M., N. Schüssler, A. Erath and K.W. Axhausen (2011) Mobility Pricing: Zahlungsbereitschaft und Verhaltensreaktionen, *Strassenverkehrstechnik*, **55** (11) 637–645.
- Vrtic M., N. Schuessler, A. Erath and K.W. Axhausen (2010) The impacts of road pricing on route and mode choice behaviour, *Journal of Choice Modelling*, **3** (1) 109–126.
- Vrtic, M., D. Lohse, P. Fröhlich, C. Schiller, N. Schüssler, H Teichert and K.W. Axhausen (2007) A simultaneous two-dimensionally constraint disaggregate trip generation, distribution and mode choice model: Theory and application for a Swiss national model, *Transportation Research A*, **41** (9) 857–873.
- Weis, C. and K.W. Axhausen (2009) Induced travel demand: Evidence from a pseudo panel data based structural equations model, *Research in Transport Economics*, **25** (1) 1–11.
- Weis, C., K.W. Axhausen, R. Schlich and R. Zbinden (2010) Models of mode choice and mobility tool ownership beyond 2008 fuel prices, *Transportation Research Record*, **2157**, 86–94.

## 2 REFEREED PAPERS IN BOOKS AND PROCEEDINGS

### 2.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Spacek, P. and F. Rolland (2005) Influences of changes to the law on highway geometric design: Country report of Switzerland, in TRB (ed.) *3rd International Symposium on Highway Geometric Design*, 188–197, Transportation Research Board, Washington, D.C.

### 2.2 TRANSPORT SYSTEMS

- Bepperling, S.-L. (2009) Deriving a generic system definition for railway risk assessments applied to BP-Risk, paper presented at the *4th International Conference on System Safety*, London, October 2009.
- Bepperling, S.-L. and A. Schöbel (2011) Estimation of safety requirements for wayside hot box detection systems, in E. Schnieder and G. Tarnai (eds.) *FORMS/FORMAT 2010*, 135–143, Springer, Berlin.
- Bepperling, S.-L. and A. Schöbel (2010) Estimation of safety requirements for wayside derailment detectors, paper presented at the *5th IET International System Safety Conference*, Manchester, October 2010.
- Buchmüller, S., U. Weidmann and A. Nash (2008) Development of a dwell time calculation model for timetable planning, *Computers in Railways XI*, 525–534, WIT Press.
- Carrasco, N. (2011) Reliability improvement potential of a high quality bus transit service in Zurich, Switzerland, paper presented at the *90th Annual Meeting of the Transportation Research Board*, Washington D.C. January 2011.
- Dorbritz, R. (2011) Assessing the resilience of transportation systems in case of large-scale disastrous events, paper presented at *8th International Conference "Environmental Engineering"*, Vilnius, May 2011.
- Dorbritz, R. (2008) How to handle increasing demands in limited areas – A case study of the campus area in downtown Zurich, paper presented at the *7th International Conference on Environmental Engineering*, Vilnius, May 2008.
- Dorbritz, R., M. Lüthi and U. Weidman (2009) Effects of onboard ticketing strategies on public transport's service reliability, paper presented at the *88th Annual Meeting of the Transportation Research Board Annual Meeting*, Washington, D.C., January 2009.

- Fink, O., and U. Weidmann (2011) Scope and potential of applying artificial neural networks in reliability prediction with a focus on railway rolling stock, paper presented at the *European Safety and Reliability Conference (ESREL)*, Troyes.
- Fink, O., and U. Weidmann (2011) Review of artificial neural network applications in reliability prediction with a focus on design phase and railway rolling stock applications, paper presented at the *17th ISSAT International Conference on Reliability and Quality in Design*, Vancouver.
- Fink, O., U. Weidmann, D. Hofmann, and A. Krolo (2011) Anwendungspotential künstlicher neuronaler Netze in der Prognose und Analyse der technischen Zuverlässigkeit, paper presented at the *Tagung technische Zuverlässigkeit (TTZ)*, Leonberg.
- Fries, N. and J. Wichser (2007) Wie wettbewerbsfähig ist der Kombinierte Verkehr?, in U. Clausen (ed.) *Wirtschaftsverkehr 2007, Modelle – Strukturen – Umsetzung*, 103–115, Verlag Praxiswissen, Dortmund.
- Fries, N., A. Nash, J. Wichser, G. Abay and G. Moreni (2008) Modal split functions for a Swiss national freight transport model, paper presented at the *European Transport Conference*, Noordwijkerhout, October 2008.
- Fries, N., Z. Patterson and U. Weidmann (2009) Shippers' willingness to pay for sustainable freight transport and Implications on European freight transport policy, paper presented at the *European Transport Conference 2009*, Noordwijkerhout, October 2009.
- Lüthi, M. (2008) Reducing energy consumption in rail networks by implementing an integrated traffic management system, *Proceedings of the 11th International Conference on Computers in Railways*, 349–358, WIT Press, Southampton.
- Lüthi, M., F. Laube and U. Weidmann (2007) Principles and dynamic aspects for a rail traffic real-time rescheduling system, in E. Schnieder and G. Tarnai (eds.) *Proceedings of the 6th FORMS/FORMAT 2007 Symposium*, 129–136, Braunschweig, January 2007.
- Lüthi, M., U. Weidmann and A. Nash (2007) Passenger arrival rates at public transport stations, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Lüthi, M., U. Weidmann, F. Laube and G. Medeossi (2007) Rescheduling and train control: A new framework for railroad traffic control in heavily used networks, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Lüthi, M.; Nash, A.; Weidmann, U.; Laube, F.; Wüst, R. (2007) Increasing railway capacity and reliability through integrated real-time rescheduling, *Proceedings of the 11th World Conference on Transport Research*, Berkeley.
- Moll, S. (2011) Rail transport planning in the mineral oil sector of Switzerland – a case study, paper presented at the *7th Scientific International Conference TRANSBALTICA 2011*, Vilnius, May 2011.
- Nash, A. (2006) Lessons for public transit from the low cost airline industry – or, what if Southwest Airlines ran the Muni?, paper presented at the *85th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2006.
- Nash, A. and D. Hürlimann (2004) Railroad simulation using open track, in J. Allan, C.A. Brebbia, R.J. Hill, G. Sciutto and S. Sone (eds.) *Proceedings of the 9th International Conference on Computers in Railways*, 45–54, WIT Press, Southampton.
- Nash, A. and U. Weidmann (2008) Europe's high-speed rail network: Maturation and opportunities, paper presented at the *87th Annual Meeting of the Transportation Research Board*, Washington D.C., January 2008.
- Nash, A. and U. Weidmann (2006) Introducing new commuter rail service on busy routes: Case study Stadtbahn Zug, paper presented at the *85th Annual Meeting of the Transportation Research Board*, Washington, January 2006.
- Nash, A., D. Hürlimann, J. Schütte and V.P. Krauss (2004) RailML – a standard data interface for railroad applications, in J. Allan, C.A. Brebbia, R.J. Hill, G. Sciutto and S. Sone (eds.) *Proceedings of the 9th International Conference on Computers in Railways*, 233–240, WIT Press, Southampton.
- Nash, A., U. Weidmann and M. Lüthi (2009) Can information technology help rail play a greater role in preventing climate change?, paper presented at the *88th Annual Meeting of the Transportation Research Board*, Washington, January 2009.
- Orth, H., M. Scherer, U. Weidmann (2011) Small agglomerations, high transit use: Transportation system deployment and land use in Switzerland, paper presented at the *90th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, January 2011.



- Scherer, M. and J. Wichser (2008) High quality public transport in small urban and rural areas- automated people mover or new developments of a bus system?, Paper presented at the *7th International Conference on Environmental Engineering*, Selected Papers (3), VGTU Press, Vilnius, 1039–1045.
- Scherer, M., K. Dziekan and C. Ahrend (2011) Exploring the rail factor with schemata of bus and rail: Two studies from Germany and Switzerland, paper presented at the *90th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2011.
- Schranil, S., and A. Stephan (2011) Modeling of the electrical flow-field in the area of rail return conductors of DC-powered railway systems, paper presented at the *90th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2011.
- Weidmann, U., A. Nash and J. Wichser (2008) Implementation of new public transport systems: Liechtenstein automated people mover case study, paper presented at the *87th Annual Meeting of the Transportation Research Board*, Washington D.C., January 2008.
- Wichser, J. (2008) Shifting freight transport through the alps from road to rail- overview of the Swiss transport policies, in *7th International Conference on Environmental Engineering*, 1087–1092, VGTU Press, Vilnius.
- Wichser, J. U. Weidmann, N. Fries and A. Nash (2007) Strategies for increasing intermodal freight transport between Eastern and Western Europe, paper presented at the *European Transport Conference*, Noordwijkerhout, October 2007.

### 2.3 TRANSPORT PLANNING

- Arentze, T., M. Kowald and K.W. Axhausen (2011) A method to model population-wide social networks for large scale activity-travel micro-simulations, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Axhausen, K.W. and A. Frei (2008) Contacts in a shrunken world, paper presented at the *87th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2008.
- Axhausen, K.W., A. Frei and T. Ohnmacht (2006) Networks, biographies and travel: First empirical and methodological results, paper presented at the *11th International Conference on Travel Behaviour Research*, Kyoto, August 2006.
- Balmer, M. and K. Nagel (2006) Shape morphing of intersection layouts using curb side oriented driver simulation, in J. P. van Leeuwen and H. J. P. Timmermans (eds.) *Innovations in Design & Decision Support Systems in Architecture and Urban Planning*, 167–183, Springer Berlin.
- Balmer, M., B. Raney and K. Nagel (2005) Adjustments of activity timing and duration in an agent-based traffic flow simulation, H. J. P. Timmermans (ed.), *Progress in Activity-Based Analysis*, 91–114, Elsevier, Oxford.
- Balmer, M., K. Meister, M. Rieser, K. Nagel and K.W. Axhausen (2008) Agent-based simulation of travel demand: Structure and computational performance of MATSim-T, paper presented at the *2nd TRB Conference on Innovations in Travel Modeling*, Portland, June 2008.
- Balmer, M., K.W. Axhausen and K. Nagel (2006) A demand generation framework for large scale micro-simulations, paper presented at the *85th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2006.
- Balmer, M., K.W. Axhausen and K. Nagel (2006) An agent-based demand-modeling framework for large scale micro-simulations, paper presented at the *85th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2006.
- Balmer, M., N. Cetin, B. Raney and K. Nagel (2004) Towards truly agent-based traffic and mobility simulations, paper presented at the *Autonomous Agents and Multiagent Systems (AAMAS'04)*, New York, July 2004.
- Beige, S. and K.W. Axhausen (2011) The relationships between turning points in life and long-term mobility decisions, paper to be presented at the *91st Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Beige, S. and K.W. Axhausen (2008) Long-term and mid-term mobility decisions during the life course, paper presented at the *87th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2008.

- Beige, S. and K.W. Axhausen (2008) The ownership of mobility tools during the life course, paper presented at the *87th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2008.
- Beige, S. and K.W. Axhausen (2006) Long-term mobility decisions during the life course: Experiences with a retrospective survey, paper presented at the *11th International Conference on Travel Behaviour Research*, Kyoto, August 2006.
- Beige, S. and K.W. Axhausen (2006) Residence locations and mobility tool ownership during the life course: Results from a retrospective survey in Switzerland, paper presented at the *2006 European Transport Conference*, Strasbourg, October 2006.
- Bernard, M. and K.W. Axhausen (2006) Proposal for a new design load concept for transport infrastructures (Main focus: highways), paper presented at the *85th Annual TRB Meeting*, Washington D.C., January 2006.
- Bernard, M. and K.W. Axhausen (2005) A proposal for a new design load concept for transport infrastructures, paper presented at the *84th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2006.
- Bhat, C.R., S. Srinivasan and K.W. Axhausen (2004) An analysis of multiple interactivity durations using a unifying multivariate hazard model, paper presented at the *83th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2004.
- Bodenmann, B.R. (2011) Modelling firm (re-)location choice in UrbanSim, paper presented at the *51st ERSA Congress*, Barcelona, September 2011.
- Charypar, D., K.W. Axhausen and K. Nagel (2006) Implementing activity-based models: Accelerating the re-planning process of agents using an evolution strategy, paper presented at the *11th International Conference on Travel Behaviour Research*, Kyoto, August 2006.
- Charypar, D., M. Balmer and K.W. Axhausen (2009) High-performance traffic flow microsimulation for large problems, paper presented at the *88th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2009.
- Ciari, F. and K.W. Axhausen (2011) Choosing carpooling or car sharing as a mode: Swiss stated choice experiments, paper to be presented at the *91st Annual Meeting of the Transportation Research Board*, Washington, DC, January 2012.
- Ciari, F. and K.W. Axhausen (2011) Modeling location decisions of retailers with an agent-based approach, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Ciari, F., M. Balmer and K.W. Axhausen (2009) Concepts for large-scale carsharing system: modeling and evaluation with agent-based approach, paper presented at the *88th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2009.
- Ciari, F., M. Balmer and K.W. Axhausen (2009) Large scale use of collective taxis: a multi-agent approach, paper presented at the *12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Ciari, F., N. Schuessler and K.W. Axhausen (2011) Estimation of car-sharing demand using an activity-based microsimulation approach: Model discussion and preliminary results, paper presented at the *90th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2011.
- Cirillo, C. and K.W. Axhausen (2006) Dynamic model of activity type choice and scheduling, paper presented at the *European Transport Conference*, Strasbourg, October 2006.
- De Lapparent, M., A. Frei and K.W. Axhausen (2009) Choice of mode for long distance travel: Current SP-based models from three European countries, paper presented at the *European Transport Conference*, Leiden, October 2009.
- Dobler, C., M. Kowald, N. Schüssler and K.W. Axhausen (2011) Within-day replanning of exceptional events, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Erath, A. (2010) Joint failure vulnerability of transportation infrastructure, paper presented at the *European Transport Conference*, Glasgow, October 2010.
- Erath, A. and K.W. Axhausen (2010) A new approach to evaluate long term user reactions to changes in transport costs, paper presented at the *89th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2010.

- Erath, A. and K.W. Axhausen (2008) New practices in vulnerability assessment, paper presented at the *European Transport Conference*, Leiden, October 2007.
- Feil, M., M. Balmer and K.W. Axhausen (2010) New approaches to generating comprehensive all-day activity-travel schedules, paper presented at the *89th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2010.
- Feil, M., M. Balmer and K.W. Axhausen (2009) Generating complete all-day schedules: Expanding activity-based travel demand modelling, paper presented at the *European Transport Conference, Leiden*, October 2009.
- Fosgerau, M. and S. Hess (2006) Competing methods for representing random taste *heterogeneity* in discrete choice models, paper presented at the *European Transport Conference*, Strasbourg, October 2006.
- Frei, A., T. Kuhnimhof and K.W. Axhausen (2010) Long distance travel in Europe today: Experiences with a new survey, paper presented at the *89th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2010.
- Frick, M., G. Carle, A. Wokaun and K.W. Axhausen (2005) Optimization of the compressed natural gas (CNG) refueling station distribution: Swiss case studies, paper presented at the *84th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2005.
- Habib, K.N., A. Sasic, C. Weis and K.W. Axhausen (2011) Investigating the non-linear relationship between transportation system performance and daily activity scheduling behaviour, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Hackney, J., F. Marchal and K.W. Axhausen (2004) Monitoring a road system's level of service: The Canton Zürich floating car study 2003, paper presented at the *83th Annual Meeting of the Transportation Research Board*, Washington, January 2004.
- Hackney, J.K. and K.W. Axhausen (2006) An agent model of social network and travel behavior interdependence, paper presented at the *11th International Conference on Travel Behaviour Research*, Kyoto, August 2006.
- Hackney, J.K., M. Bernard and K.W. Axhausen (2007) Explaining road speeds with spatial lag and spatial error regression models, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Hess, S. (2007) Posterior analysis of random taste coefficients in air travel choice behaviour modelling, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Hess, S. (2006) Posterior analysis of random taste coefficients in air travel choice modelling, paper presented at the *European Transport Conference*, Strasbourg, October 2006.
- Hess, S., A. Erath, M. Vrtic and K.W. Axhausen (2007) Reducing bias in value of time estimates by joint estimation on multiple datasets: A case study in Switzerland, paper presented at the *European Transport Conference*, Leiden, October 2007.
- Horni, A., D. Charypar and K.W. Axhausen (2011) Empirically approaching destination choice set formation, paper presented at the *90th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2011.
- Horni, A., K. Nagel and K.W. Axhausen (2011) High-resolution destination choice in agent-based demand models, paper to be presented at the *91st Annual Meeting of the Transportation Research Board*, Washington, D.C. January 2012.
- Illenberger, J., G. Flötteröd, M. Kowald and K. Nagel (2009) A model for spatial embedded social networks, paper presented at the *12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Jäggi, B., M. Castro, L. Schmitt, K.W. Axhausen and C.R. Bhat (2011) Multiple discrete-continuous choice model of household energy reduction across multiple sectors using priority evaluator data, paper to be presented at the *91st Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Kato, H., K.W. Axhausen and M. Imai (2008) Value of travel time savings of urban private travel: comparison of Tokyo and Karlsruhe paper presented at the *87th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2008.
- Killer, V. and K.W. Axhausen (2010) Mapping overlapping commuting areas, paper presented at the *89th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2010.

- Killer, V., K.W. Axhausen, D. Guth and C. Holz-Rau (2010) Understanding regional effects of travel times in Switzerland and Germany 1970–2005, paper presented at the *50th European Regional Science Association (ERSA)*, Jönköping, Schweden, August 2010.
- Kitamura, R., T. Yamamoto, Y.O. Susilo and K.W. Axhausen (2004) On the day-to-day variability of prism vertex location, paper presented at the *83th Annual Meeting of the Transportation Research Board*, Washington, D.C. January 2004.
- Koll-Schretzenmayr, M. and C. Zöllig (2010) Innenentwicklung akteursbezogen, in M. Klemme and K. Selle (eds.) *Siedlungsflächen entwickeln*, 214–227, Dorothea Rohn, Detmold.
- Kowald, M. and K.W. Axhausen (2011) Collecting data on connected personal leisure networks, Conference Paper for the *9th International Conference on Transport Survey Methods (ISCTSC)*, Thermas de Puyehue, November 2011.
- Kowald, M. and K.W. Axhausen (2011) Strong and weak relationships: Tie strengths in egocentric leisure networks, paper presented at the *106th American Sociological Association Annual Meeting*, Las Vegas, August 2011.
- Kowald, M. and K.W. Axhausen (2009) The link between social contacts and leisure travel, paper presented at the *12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Kowald, M., A. Frei, J.K. Hackney, J. Illenberger and K.W. Axhausen (2009) The influence of social contacts on leisure travel: A snowball sample of personal networks, paper presented at the *12th International Conference on Travel Behaviour Research*, Jaipur.
- Lämmel, G., M. Rieser and K. Nagel (2008) Bottlenecks and congestions in evacuation scenarios: A microscopic evacuation simulation for large-scale disasters, paper presented at the *5th Workshop on Agents in Traffic and Transportation, Autonomous Agents and Multiagent Systems (AAMAS 2008)*, Estoril, Portugal, May 2008.
- Mabit, S., S. Caussade and S. Hess. (2006) Representation of taste heterogeneity in willingness-to-pay indicators: Past mistakes, state-of-the-art and future directions, paper presented at the *European Transport Conference, Strasbourg*, October 2006.
- Marchal, F., J.K. Hackney and K.W. Axhausen (2004) Efficient map-matching of large GPS data sets –Tests on a speed monitoring experiment in Zurich, paper presented at the *83th Annual Meeting of the Transportation Research Board*, Washington, January 2004.
- Märki, F., D. Charypar and K.W. Axhausen (2011) Target driven activity planning, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Meister, K., M. Balmer, K.W. Axhausen and K. Nagel (2006) planomat: A comprehensive scheduler for a large-scale multi-agent transportation simulation, paper presented at the *11th International Conference on Travel Behaviour Research*, Kyoto, August 2006.
- Meister, K., M. Frick and K.W. Axhausen (2004) A GA-based household scheduler, paper presented at the *83th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2004.
- Müller, K. and K.W. Axhausen (2011) Hierarchical IPF: Generating a synthetic population for Switzerland, paper presented at the *51st Congress of the European Regional Science Association*, Barcelona, September 2011.
- Müller, K. and K.W. Axhausen (2011) Occam's Razor and some randomness: Generating a synthetic population for Switzerland, paper presented at the *European Transport Conference*, Glasgow, October 2011.
- Müller, K. and K.W. Axhausen (2011) Population synthesis for micro-simulation: State of the art, paper presented at the *90th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2011.
- Portnov, B., K.W. Axhausen and M. Tschoop (2009) Location relativity in space and time: Some evidence from Swiss Municipalities, 1950–2000, paper presented at *49th ERSA*, Lodz, August 2009.
- Rieser, M., K. Nagel, U. Beuck, M. Balmer and J. Rügenapp (2007) Truly agent-oriented coupling of an activity-based demand generation with a multi-agent traffic simulation, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Rieser, M., U. Beuck, K. Nagel and K.W. Axhausen (2007) Researching the influence of time-dependent tolls with a Multi-Agent traffic simulation, paper presented at the *European Transport Conference*, Leiden, October 2007.
- Schirmer, P., C. Zöllig, K. Müller, B.R. Bodenmann and K.W. Axhausen (2011) The Zurich Case Study of UrbanSim, paper presented at *51st European Congress of the Regional Science Association*, Barcelona, September 2011.

- Schönfelder, S. and K.W. Axhausen (2009) Travel as a function of (life) projects, paper presented at the *European Transport Conference*, Leiden, October 2009.
- Schönfelder, S., H. Li, R. Guensler, J. Ogle and K.W. Axhausen (2005) Analysis of Commute Atlanta instrumented vehicle GPS data: Destination choice behaviour and activity spaces, paper presented at the *84th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2005.
- Schönfelder, S., J.H. Rich, O.A. Nielsen, C. Würtz and K.W. Axhausen (2005) Road pricing and its individual responses within travel patterns – lessons from the AKTA study, *Proceedings of 2005 European Transport Conference*, London, September 2005.
- Schüssler, N. and K.W. Axhausen (2011) Investigating the influence of environmentalism and variety seeking on mode choice, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Schüssler, N. and K.W. Axhausen (2010) Efficient map-matching of GPS points on high-resolution navigation networks, paper presented at the *89th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2010.
- Schüssler, N. and K.W. Axhausen (2009) Accounting for route overlap in urban and suburban route choice decisions derived from GPS observations, paper presented at the *12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Scott, D.M. and K.W. Axhausen (2004) Mobility tools: Modelling the interactions between car and season ticket ownership, paper presented at the *83th Annual Meeting of the Transportation Research Board*, Washington, January 2004.
- Tschopp, M. and K.W. Axhausen (2007) Transport infrastructure and spatial development in Switzerland between 1950 and 2000, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Tschopp, M., P. Fröhlich and K.W. Axhausen (2005) Accessibility and spatial development in Switzerland during the last 50 years, in D.M. Levinson and K.J. Krizek (eds.) *Access to Destinations*, 361–376, Elsevier, New York.
- Vitins, B., N. Schüssler and K.W. Axhausen (2011) Comparison of Hierarchical Network Design Shape Grammars for Roads and Intersection, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Vrtic, M. and P. Fröhlich (2006) A simultaneous disaggregate trip generation, distribution and mode choice model: Theory and application for a regional public transport model, paper presented at the *XIVth PANAM Conference*, Las Palmas de Gran Canaria, September 2006.
- Vrtic, M., A. Erath, N. Schüssler and K.W. Axhausen (2007) Design elements of road pricing schemes and their acceptability, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Vrtic, M., D. Lohse, P. Fröhlich, C. Schiller, N. Schüssler, H. Teichert and K.W. Axhausen (2005) A simultaneous two-dimensionally constraint disaggregate trip generation, distribution and mode choice model: Theory and application for a Swiss national model, paper presented at the *European Congress of the Regional Science Association (ERSA)*, Amsterdam, August 2005.
- Vrtic, M., N. Schüssler, A. Erath and K.W. Axhausen (2007) Route, mode and departure time choice behaviour in the presence of mobility pricing, paper presented at the *86th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2007.
- Waraich, R. A. and K.W. Axhausen (2011) An agent-based parking choice model, accepted for presentation at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Waraich, R. A., M.D. Galus, C. Dobler, M. Balmer, G. Andersson and K.W. Axhausen (2009) Plug-in hybrid electric vehicles and smart grid: Investigations based on a micro-simulation, *paper presented at the 12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Weis, C. and K.W. Axhausen (2009) Structural equations modelling of travel behaviour dynamics using a pseudo panel approach, paper presented at the *12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Weis, C., A. Frei, K.W. Axhausen, B. Fell and T. Haupt (2008) A comparative study of web- and paper-based travel behaviour surveys, paper presented at the *European Transport Conference*, Leiden, October 2007.

- Weis, C., C. Dobler and K.W. Axhausen (2011) A stated adaptation approach to surveying activity scheduling decisions, paper presented at the *9th International Conference on Transport Survey Methods*, Termas de Puyehue, November 2011.
- Weis, C., K.W. Axhausen, R. Schlich and R. Zbinden (2010) Models of mode choice and mobility tool ownership beyond 2008 fuel prices, *89th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2010.
- Weis, C., M. Vrtic, P. Widmer and K.W. Axhausen (2011) Influence of parking on location and mode choice: A Stated Choice survey, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Zheng, N., R.A. Waraich, N. Geroliminis and K.W. Axhausen (2011) A dynamic cordon pricing scheme combining a macroscopic and an agent-based traffic models, paper to be presented at the *91th Annual Meeting of the Transportation Research Board*, Washington, D.C., January 2012.
- Zöllig, C. and K.W. Axhausen (2011) A conceptual, agent-based model of land development for UrbanSim, paper presented at *51th ERSA Conference*, Barcelona, September 2011.

### 3 PAPERS IN PROFESSIONAL JOURNALS

#### 3.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Laube, F. and M. Luethi (2008) A new method for using reserves from strategic planning to operations, *Journal of Communications of the Operations Research Society of Japan*, **53** (8) 458–463.
- Laube, F. and M. Luethi (2008) Making every second count, *Railway Gazette International*, **164** (12) 952–954.
- Laube, F., S. Roos, R. Wüst, M. Luethi and U. Weidmann (2007) PULS 90 – Ein systemumfassender Ansatz zur Leistungssteigerung von Eisenbahnnetzen, *Eisenbahntechnische Rundschau*, **56** (3) 104–107.
- Leemann, N. (2010) Leistungsfähigkeit and Sicherheit zweistreifiger Kreisell, *strasse und verkehr*, **96** (5) 12–14.
- Lindenmann, H.P. (2004) Safety Numbers-Road Safety Audit, *Traffic Technology International*, **4** (5) 94–106.
- Lindenmann, H.P. (2005) The effects on road safety of 30 Kilometer-per-hour zone signposting in residential districts, *ITE Journal*, **75** (6) 50–54.
- Lindenmann, H.P. and F. Schiffmann (2006) Crashpoints: Focus on Switzerland, *Traffic Technology International*, **2/3**, 40–42.
- Lindenmann, H.P. and F. Schiffmann (2008) Forschungspaket Massnahmenplanung im Erhaltungsmanagement Fahrbahnen, *strasse und verkehr*, **94** (11) 6–9, Zürich.
- Lindenmann, H.P. and M. Doerfel (2009) Sicherheit von Anfang an, Sicherheitsaudit für Projekte von Strassenverkehrsanlagen, *strasse und verkehr*, **95** (1–2) 12–14.
- Pitzinger, P. and P. Spacek (2005) Erfahrungen mit integrierten Anschlussbewirtschaftungen im Limmattal-Gubrist, *strasse und verkehr*, **91** (11) 22–30.
- Pitzinger, P. and P. Spacek (2007) Ein neuer Ansatz zum Abschätzen von Leistungsfähigkeit und Verkehrsablauf an ungesteuerten Knotenpunkten, *Strassenverkehrstechnik*, **51** (4) 183–191.
- Seiler, L. (2006) Normung und Verkehrssicherheit – eine Herausforderung?, *strasse und verkehr*, **59** (12) 38–41.

#### 3.2 TRANSPORT SYSTEMS

- Bepperling, S.-L. (2010) Eine generische Risikobeurteilung für den Zugleitbetrieb, *Signal+ Draht*, **102** (3) 19–23.
- Bepperling, S.-L. (2009) Validation of a semi-quantitative approach for railway risk assessments, *IRSE News*, **147**, 8–11.
- Dorbritz, R. and U. Weidmann (2011) Öffentlicher Strassenverkehr als integrierender Teil des Systems “öV Schweiz”, *strasse und verkehr*, **97** (7–8) 28–31.

- Dorbritz, R., M. Lüthi and U. Weidmann (2009) Betriebsstabilität von Buslinien mit Fahrausweisverkauf durch den Fahrer, *Verkehr + Technik*, **62** (2) 57–62.
- Dorbritz, R., M. Lüthi, U. Weidmann and A. Nash (2010) On-board ticket sales – A destabilizing factor for bus lines?, *Mobility – The European Public Transport Magazine*, **6** (17) 70–76.
- Frank, P., M. Friedrich and J. Schlaich (2008) Vereinfachtes Kostenmodell zur Ermittlung von Betriebskosten von Busverkehren, *Nahverkehr*, **26** (11) 15–22.
- Fries, N., J. Wichser and U. Weidmann (2007) Strategien zur Stärkung des Kombinierten Verkehrs, *Güterbahnen*, **6** (3) 38–43.
- Hansen, I., E. Wendler, U. Weidmann, M. Lüthi, J. Rodriguez and S. Ricci (2009) RailZurich2009 – Book of Abstracts 2009.
- Höppner, S., U. Weidmann, H. Wallbaum and N. Heeren (2010) Lebensdauerkosten von Schwellenmaterialien unter Einbezug ökologischer Aspekte, *Eisenbahntechnische Rundschau*, **59** (9) 654–656.
- Lüthi, M. and O. Stalder (2007) Strategien zur Kapazitätssteigerung von Eisenbahnnetzen, *strasse und verkehr*, **93** (3) 10–13.
- Lüthi, M., U. Weidmann, S-L. Bepperling and D. Hürlimann (2009) Strategien für einen hochwertigen Betrieb von stark belasteten Eisenbahnnetzen, *ZEVrail*, **133** (6–7) 234–239.
- Milius, B. and S-L. Bepperling (2010) Fast forward to a harmonized European risk assessment process, *Journal of System Safety*, **46** (6).
- Moll, S. and U. Weidmann (2011) Partial Productivity Measurement in Rail Freight Transport, *European railway review*, **17** (2), 28–32.
- Moll, S. and U. Weidmann (2009) Anreizwirkung und Harmonisierung von Trassenpreissystemen – Ein struktureller Vergleich am Beispiel von Deutschland, Frankreich und der Schweiz, *Internationales Verkehrswesen*, **61** (11) 430–433.
- Nahrath, S., P. Csikos, F. Buchli and M. Rieder (2008) Les impacts de la régionalisation et de la libéralisation sur la durabilité du secteur ferroviaire en Suisse, *Flux*, **72/73**, 49–64.
- Rieder, M. (2010) Le passé et l’avenir de la ligne Dinant–Givet, *Ardenne-Wallonne*, **36** (122) 15–50.
- Rieder, M. and U. Weidmann (2011) Wiedereinführung des Personenverkehrs auf der Sursee–Triengen-Bahn? *Schweizer Eisenbahn-Revue*, **48** (6) 308–310.
- Rieder, M. and U. Weidmann (2006) Was bringt die Regionalisierung? Ein Ländervergleich zwischen der Schweiz, Belgien und Frankreich, *Nahverkehr*, **24** (6) 60–65.
- Scherer, M. and T. Ohnmacht (2008) Vom Flughafen direkt in die Zürcher Innenstadt – Die zweite Etappe der Glattalbahn als Alternative, *Nahverkehrspraxis*, **26** (7) 29–30.
- Schneebeli, H., M. Wegmann and S. Tobias (2004) Nachhaltigkeitsbeurteilung der Linienführung einer Eisenbahnneubaustrecke, *Der Eisenbahningenieur*, **55** (10) 40–44.
- Weidmann, U. (2010) Kombiniert Energie sparen, *eta [energie]*, **4** (1) 44–45.
- Weidmann, U. (2009) An die Grenzen gehen, um Grenzen zu überwinden, *Quaderni del Bollettino Storico della Svizzera Italiana*, **8**, 279–288.
- Weidmann, U. (2008) Bahnliberalisierung: Innovationstreiberin oder Hemmschuh?, *Eisenbahntechnische Rundschau*, **57** (11) 778.
- Weidmann, U. (2008) Konsequenzen der EU-Verkehrspolitik für den Eisenbahnbetrieb, *Der Eisenbahningenieur*, **59** (5) 44–47.
- Weidmann, U. (2008) Magnetschnellbahn: Vision oder Fiktion – Die Fallstudie “SWISSMETRO”, *Internationales Verkehrswesen*, **60** (1+2) 15–20.
- Weidmann, U. (2007) Das Herz schlägt für die Bahn, *Eisenbahntechnische Rundschau*, **56** (11) 715.
- Weidmann, U. (2005) Schlüsselstellen und Netze, *tec 21*, **131** (27–28) 3.
- Weidmann, U. and F. Suter, (2005) RTE – Das Regelwerk Technik der schweizerischen Eisenbahnen, *Eisenbahn-Ingénieur*, **56** (9) 18–25.
- Weidmann, U. and J. Wichser (2006) Bahngüterverkehr: Sorgenkind und Hoffnungsträger, *tec 21*, **124** (14) 13–16.
- Weidmann, U. and M. Lüthi (2006) Die Fahrplanabhängigkeit der Fahrgastankunft an Haltestellen, *Nahverkehr*, **24** (12) 16–19.
- Weidmann, U. and R. Leemann (2008) Das Regelwerk Technik Eisenbahn – ein Zwischenstand, *Schweizer Eisenbahn-Revue*, **31** (10) 524–526.

- Weidmann, U. and R. Leemann (2006) Das Regelwerk Technik Eisenbahn – eine zukunftsweisende Plattform für Eisenbahn-Fachleute, *Schweizerische Eisenbahn-Revue*, **29** (7) 362–365.
- Weidmann, U. and H. Orth (2011) Mit Bus und Tram durch dichte Räume, *tec* 21, **129** (3) 32–35.
- Weidmann, U., H. Schneebeli and J. Wichser (2006) Neues Schweizer Glossar “Fachbegriffe des öffentlichen Verkehrs”, *Verkehr und Technik*, **59** (8) 329–332.
- Weidmann, U., P. Giger and D. Hürlimann (2007) Ein Vierteljahrhundert Bahnbetriebssimulation an der ETH Zürich – von den Anfängen zum Marktdurchbruch, *Schweizer Eisenbahn-Revue*, **30** (3) 130–133.
- Weidmann, U., P. Giger and D. Hürlimann (2007) Ein Vierteljahrhundert Bahnbetriebssimulation an der ETH Zürich – von den Anfängen zum Marktdurchbruch, *Eisenbahn Österreich*, **48** (3) 130–133.
- Weidmann, U., P. Giger and D. Hürlimann (2007) Ein Vierteljahrhundert Bahnbetriebssimulation an der ETH Zürich – von den Anfängen zum Marktdurchbruch, *Eisenbahn-Revue International*, **14** (3) 130–133.
- Weidmann, U. (2011) Die Weiterentwicklung des schweizerischen Bahnnetzes im Kontext der NEAT, *Eisenbahn-Technische Rundschau*, **60** (7+8) 82–87.
- Wichser J. (2006) Wettbewerb um knappe Trassen, die Angebotsqualität des Schienen-Güterverkehrs im Lichte immer knapper werdender Streckenkapazitäten, *Güterbahnen*, (1) 21–25.
- Wichser, J. (2010) Nutzerorientierte Verkehrsinfrastrukturen statt universell nutzbare Strassen- und Bahnanlagen, *Schweizerische Kommunalrevue*, **17** (1) 119–121.
- Wichser, J. (2008) Trassenpreissysteme und die Nutzung von Eisenbahninfrastrukturen, *Internationales Verkehrswesen*, **60** (3) 83–85.
- Wichser, J. and B. Bopp (2008) Forschungsvorhaben zum Güterverkehr, Erarbeitung eines Forschungspaketes Güterverkehr, *strasse und verkehr*, **94** (12) 26–27.
- Wichser, J. and M. Scherer (2008) Leben ohne Strasse – Erschliessung von Ortschaften durch Bergbahnen, *strasse und verkehr*, **94** (6) 6–9.
- Wichser, J. and P. Schmidt (2007) Studie zu einem neuen Trassenpreissystem, *Eisenbahntechnische Rundschau*, **56** (11) 720–723.

### 3.3 TRANSPORT PLANNING

- Axhausen, K.W. (2006) Neue Modellansätze der Verkehrsnachfragesimulation: Entwicklungslinien, Stand der Forschung, Forschungsperspektiven, *Stadt Region Land*, **81**, 149–164.
- Axhausen, K.W. and A. Erath (2011) Urban sustainability and transportation: Research framework for medium and long term transport planning, *Journeys*, **7**, 7–20.
- Axhausen, K.W. and C. Weis (2010) Predicting response rate: A natural experiment, *Survey Practice*, **3** (2), <http://surveypractice.org/2010/04/14/predicting-response-rate/>.
- Axhausen, K.W. and C. Weis (2008) Datenbank für Verkehrsaufkommensraten, *strasse und verkehr*, **94** (6) 23–27.
- Balmer, M., K. Nagel and R. Raney (2004) Large scale multi-agent simulations for transportation applications, *ITS Journal*, **8** (4) 205–221.
- Bürgle, M., M. Löchl and U. Waldner (2005) Entwicklung eines Simulationsmodells – Infrastruktur, Erreichbarkeit und Raumentwicklung, *DISP*, **160**, 94–95.
- Dittrich-Wesbuer, A., M. Frehn and M. Löchl (2004) Verkehrliche Orientierungen und ÖPNV-Nutzung in der Stadtregion Münster, *Verkehr und Technik*, **57** (2) 39–45; (4) 115–112 and (5) 166–172.
- Hauri, H.R., K.W. Axhausen and M. Löchl (2008) Standortwahl von Generalagenturen in der Versicherungsbranche, *IVW Management Information*, **30** (1) 27–31.
- Hauri, H.R., M. Löchl and K.W. Axhausen (2008) Aufgaben von Corporate Real Estate und FM, *inpuncto*, **8** (2) 2–4.
- Kohte, M., M. Bürgle and M. Löchl (2005) Zur Zukunft urbaner Kulturlandschaften: Halbzeittagung des ETH-Forschungsprojektes am Netzwerk Stadt und Landschaft, Tagungsbericht, *DISP*, **163**, 78–80.
- König, A. and K.W. Axhausen (2005) Bewertung der Verlässlichkeit: Neue Schweizer Ergebnisse, *Internationales Verkehrswesen*, **57** (10) 424–429.
- König, A., K.W. Axhausen and G. Abay (2004) Zeitkosten im Personenverkehr: Eine Schweizer Studie, *strasse und verkehr*, **90** (10) 20–28.



- Moll, S. and U. Weidmann (2009) Anreizwirkung und Harmonisierung von Trassenpreissystemen – Ein struktureller Vergleich am Beispiel von Deutschland, Frankreich und der Schweiz, *Internationales Verkehrswesen*, **61** (11) 430–433.
- Rieser, M., K. Nagel, U. Beuck, M. Balmer and J. Rügenapp (2006) Truly agent-oriented coupling of an activity-based demand generation with a multi-agent traffic simulation, *Stadt Region Land*, **81**, 185–192.
- Van Eggermond, M. and K.W. Axhausen (2009) Using discrete choice models to support strategic decision-making of air transportation service providers, *Wirtschaftspolitische Blätter*, **56** (1) 37–58.
- Vrtic, M., N. Schüssler, A. Erath, K.W. Axhausen, E. Freijinger, J. Stojanovic, M. Bierlaire, R. Rudel, S. Scagnolari and R. Maggi (2006) Wie reagieren Verkehrsteilnehmer auf Preissignale, *strasse und verkehr*, **92** (12) 20–22.
- Vrtic, M. (2005) Simultanes Routen- und Verkehrsmittelwahlmodell, *Strassenverkehrstechnik*, **49** (8) 393–401.
- Vrtic, M. and K.W. Axhausen (2004) Verkehrsmittelwahl auf der Grundlage von Stated-Preference-Daten, *strasse und verkehr*, **90** (4) 23–28.
- Vrtic, M. and P. Fröhlich (2007) Regionale Verkehrsmodelle, *Nahverkehr*, **25** (1–2) 56–63.
- Vrtic, M. and P. Fröhlich (2006) Erstellung von Quell-Ziel-Matrizen für ein regionales Verkehrsmodell, *Der Nahverkehr*, **24** (11) 56–63.
- Vrtic, M. and P. Fröhlich (2006) Was beeinflusst die Wahl der Verkehrsmittel?, *Der Nahverkehr*, **24** (4) 52–57.
- Vrtic, M., P. Fröhlich, N. Schüssler, S. Dasen, S. Erne, B. Singer, C. Schüller, K.W. Axhausen and D. Lohse (2006) Das neue Personenverkehrsmodell für die Schweiz, *Internationales Verkehrswesen*, **58** (7+8) 329–338.
- Zöllig, C. and K.W. Axhausen (2011) Integrierte Flächennutzungs- und Transportmodelle verbessern die Beurteilung von Verkehrsinfrastrukturprojekten, *Forum Raumentwicklung*, **11** (3) 17–19.

## 4 BOOKS

### 4.3 TRANSPORT PLANNING

- Axhausen, K.W. (ed.) (2006) *Moving through Nets: The Physical and Social Dimensions of Travel*, Elsevier, Oxford.
- Larsen, J., J. Urry and K.W. Axhausen (2006) *Mobilities, Networks, Geographies*, Ashgate, Aldershot.
- Mokhtarian, P. and K.W. Axhausen (eds.) (2010) R. Kitamura 1949–2009 A Tribute, *Transportation*, **36** (6).
- Schönfelder, S. and K.W. Axhausen (2010) *Urban Rhythms*, Ashgate, Farnham.
- Tschopp, M., S. Beige and K.W. Axhausen (2010) *Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen Landschaften*, vdf, Zurich.

## 5 NORMS AND GUIDELINES

### 5.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- VSS (2004) *SN 640 138b: Linienführung, Zusatzstreifen in Steigungen und Gefällen*, VSS, Zurich (Spacek, P.)
- VSS (2006) *SN 640 018a: Leistungsfähigkeit, Verkehrsqualität, Belastbarkeit; Freie Strecke auf Autobahnen*, VSS, Zurich. (Koy, T.)
- VSS (2006) *SN 640 024a: Leistungsfähigkeit, Verkehrsqualität, Belastbarkeit; Knoten mit Kreisverkehr*, VSS, Zurich. (Koy, T.)
- VSS (2006) *SN 640 900a: Strassenverkehrsunfälle, Lokalisierung und Rangierung von Unfallstellen*, VSS, Zurich. (Lindenmann, H.P., M. Doerfel and M. Weissert)
- VSS (2006) *SN 640 900a Strassenverkehrsunfälle, Lokalisierung und Rangierung von Unfallstellen*, VSS, Zurich (Lindenmann, H.P., M. Doerfel and M. Weissert)

- VSS (2007) SN 640 023a Leistungsfähigkeit, Verkehrsqualität, Belastbarkeit: Knoten mit Lichtsignalanlagen, EK 3.08, VSS, Zurich (Spacek, P. and T. Koy)
- VSS (2008) SN 641 712 Strassenverkehrssicherheit – Sicherheitsaudit für Projekte von Strassenverkehrsanlagen, VSS, ETH Zürich, Zurich, (H. P. Lindenmann)
- VSS (2008) SN 641 822a Kosten-Nutzen-Analysen (KNA) bei Massnahmen im Strassenverkehr: Zeitkosten im Personenverkehr, VSS, Zurich (P. Spacek)
- VSS (2010) SN 640 020a, Leistungsfähigkeit, Verkehrsqualität, Belastbarkeit; Zweistreifige Strassen ohne bauliche Richtungstrennung, VSS, Zurich, (Spacek, P.)

### 5.3 TRANSPORT PLANNING

- VSS (2009) SN 641 822a Zeitkosten im Personenverkehr: Kosten-Nutzen-Analysen im Strassenverkehr, EK 2.02, VSS, Zurich. (Erath, A., S. Hess and K.W. Axhausen)
- VSS (2009) SN 641 826 Kosten-Nutzen-Analysen im Strassenverkehr: Bewertung und Abschätzung der Zuverlässigkeit im Verkehr, EK 1.02, VSS, Zurich. (Chaumet, R., F. Bruns, P. Locher, M. Bernard and K.W. Axhausen)
- VSS (2007) SN 640 015 Dokumentation der Messung von Verkehrserzeugungsraten (Metadaten), EK 2.01, VSS, Zurich (Oblozinska, Z. and K.W. Axhausen)
- VSS (2007) SN 641 822 Zeitkosten im Personenverkehr: Kosten-Nutzen-Analysen im Strassenverkehr, EK 2.02, VSS, Zürich. (König, A., S. Hess, A. Erath, K.W. Axhausen, G. Abay, M. Bierlaire and J.J. Bates)

## 6 PUBLISHED REPORTS

### 6.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Girmscheid, G., H.P. Lindenmann, J. Dreyer and F. Schiffmann (2008) Kommunale Strassennetze in der Schweiz: Formen neuer Public Private Partnership (PPP) – Kooperationen für den Unterhalt, Schlussbericht ASTRA 2003/007, *Schriftenreihe*, **1226**, Bundesamt für Strassen, UVEK, Bern.
- Heil, C., Leemann, N. and P. Spacek (2008) Verkehrssicherheit an Tagesbaustellen und bei Anschlüssen im Baustellenbereich von Hochleistungsstrassen, Schlussbericht VSS 2005/303, *Schriftenreihe*, **1238**, Bundesamt für Strassen, UVEK, Bern.
- Latuske N., E. Puffe and P. Spacek (2010) Geschwindigkeiten in Steigungen und Gefällen: Überprüfung, Schlussbericht VSS 2009/010, *Schriftenreihe*, **1303**, Bundesamt für Strassen, UVEK, Bern.
- Lindenmann H.P. and L. Seiler (2006) Überprüfung der VSS-Normen hinsichtlich Relevanz und Defiziten bezüglich Verkehrssicherheit, Schlussbericht VSS 2004/009, *Schriftenreihe*, **1066**, Bundesamt für Strassen, UVEK, Bern.
- Lindenmann, H.P. and N. Leemann (2010) Griffigkeit auf winterlichen Fahrbahnen, Schlussbericht VSS 2007/012, *Schriftenreihe*, **1298**, Bundesamt für Strassen, UVEK, Bern.
- Lindenmann, H.P. I. Belopitov and P. Spacek (2004) Leistungsfähigkeit hochbelasteter Kreisel (Grundlagen), Schlussbericht VSS 1998/076, *Schriftenreihe*, **1279**, Bundesamt für Strassen, UVEK, Bern.
- Lindenmann, H.P., A. Jacot (SACR) and L. Seiler (2007) Grundlagen zur Revision der Griffigkeitsnormen, VSS 1999/298 *Schriftenreihe*, **1194**, Bundesamt für Strassen, UVEK, Bern.
- Lindenmann, H.P., A. Rafi and I. Scazziga (2006) Erhaltungsmanagement: Gesamtbeurteilung der Fahrbahnen, Substanz- und Gebrauchswert, Schlussbericht VSS 2000/544, *Schriftenreihe*, **1141**, Bundesamt für Strassen, UVEK, Bern.
- Lindenmann, H.P., N. Leemann and P. Spacek (2009) Leistungsfähigkeit zweistreifiger Kreisel, Schlussbericht VSS 2005/301, *Schriftenreihe*, **1279**, Bundesamt für Strassen, UVEK, Bern.
- Lindenmann, H.P., S. Frey and M. Schwob (2004) Gestaltung des Strassenraumes in erhaltenswerten Ortskernen, Erfahrungsbilanz, Schlussbericht VSS 1999/110, *Schriftenreihe*, **1073**, Bundesamt für Strassen, UVEK, Bern.

- Pitzinger, P. and P. Spacek (2010) Verkehrsqualität und Leistungsfähigkeit von komplexen ungesteuerten Knoten: Analytisches Schätzverfahren, Schlussbericht VSS 2008/301, *Schriftenreihe*, **1287**, Bundesamt für Strassen, UVEK, Bern.
- Spacek P., M. Laube and G. Santel (2005) Baustellen an Hochleistungsstrassen; Verkehrstechnische Massnahmen zur Verbesserung der Sicherheit und des Verkehrsflusses, Schlussbericht VSS 1999/127, *Schriftenreihe*, **1124**, Bundesamt für Strassen, UVEK, Bern.
- Spacek, P., H.P. Lindenmann, N. Latuske and T. Weber (2009) Auswirkungen von fahrzeuginternen Informationssystemen auf das Fahrverhalten und die Verkehrssicherheit, Verkehrstechnischer Schlussbericht ASTRA 2004/016, *Schriftenreihe*, **1278**, Bundesamt für Strassen, UVEK, Bern.

## 6.2 TRANSPORT SYSTEMS

- Anderhub, G., R. Dorbritz and U. Weidmann (2008) Leistungsfähigkeitsbestimmung öffentlicher Verkehrssysteme, *Schriftenreihe*, **139**, IVT, ETH Zürich, Zurich.
- Buchmüller, S. and U. Weidmann (2006) Parameters of pedestrians, pedestrian traffic and walking facilities, *Schriftenreihe*, **132**, IVT, ETH Zürich, Zurich.
- Jermann, J. (2005) GIS-basiertes Konzept zur Modellierung von Einzugsbereichen auf Bahn-Haltestellen, *Schriftenreihe*, **129**, IVT, ETH Zürich, Zurich.
- Rieder, M. (2007) Regionen im Umbruch! – Regionalverkehr im Aufbruch? Tagungsband, Ein persönliches Vorwort, *Schriftenreihe*, **136**, IVT, ETH Zürich, Zurich.
- Rieder, M. (2005) Regionalisierung des Schienenverkehrs in der Schweiz: Gewinner und Verlierer unter den Aspekten der Angebotsqualität und der Finanzierung. – Das Schweizer Modell im Vergleich zu Belgien und Frankreich, *Schriftenreihe*, **131**, IVT, ETH Zürich, Zurich.
- Ruosch, M., R. Karrer, R. Steffen, J. Wichser, B. Bojanic, F. Bollinger and C. Kölblle (2005) Ausgestaltung von Terminals für den Kombinierten Ladungsverkehr (KLV), Schlussbericht VSS 1998/199, *Schriftenreihe*, **1127**, Bundesamt für Strassen, UVEK, Bern.
- Scherer, M., P. Spacek and U. Weidmann (2010) Multimodale Verkehrsqualitätsstufen für den Strassenverkehr – Vorstudie, Forschungsauftrag SVI 2007/005, *Schriftenreihe*, **1277**, Bundesamt für Strassen, UVEK, Bern.
- Schranil, S. and U. Weidmann (2011) Anforderungen an das Abweichungsmanagement, Schweizerische Bundesbahnen SBB, Bern.
- Weidmann, U., L. Nägeli, M. Scherer and S. Schranil (2011) Gutachten Tram Region Bern, Überprüfung von Zweckmässigkeit und Kosten, IVT, ETH Zurich, ewp AG, Effretikon, 3 May 2011.
- Weidmann, U. (2008) Forschungspaket “Güterverkehr”, Initialprojekt “Bestandesaufnahme und Konkretisierung des Forschungspakets”, Schlussbericht SVI 2006/001, *Schriftenreihe*, **1217**, Bundesamt für Strassen, UVEK, Bern.
- Weidmann, U. and J. Wichser (2009) Verlässliche Finanzierung des öffentlichen Verkehrs in der Schweiz – Konzeptstudie, *Schriftenreihe*, **145**, IVT, ETH Zürich, Zurich.
- Weidmann, U. and P. Frank (2008) Gesamterschliessungskonzept Science City – Synthesebericht, *Schriftenreihe*, **142**, IVT, ETH Zürich, Zurich.
- Weidmann, U. and S. Moll (2010) Ein lärmabhängiges Trassenpreissystem für die Schweiz, *Schriftenreihe*, **152**, IVT, ETH Zürich, Zurich.
- Weidmann, U., K. Baudys, S. Moll, S. Schranil (2011) Auslastungssteigerung des SBB-Fernverkehrs unter Optimierung der Gesamtwirtschaftlichkeit, Schweizerische Bundesbahnen, Bern.
- Weidmann, U., J. Wichser and P. Schmidt (2008) Systemvorschlag für ein neues schweizerisches Trassenpreissystem, *Schriftenreihe*, **137**, IVT, ETH Zürich, Zurich.
- Weidmann, U., J. Wichser, N. Fries, P. Schmidt and H. Schneebeli (2007) Studie zu einem neuen schweizerischen Trassenpreissystem, *Schriftenreihe*, **135**, IVT, ETH Zürich, Zurich.
- Weidmann, U., J. Wichser, S. Höppner, U. Kirsch and S. Schranil (2010) Regiotram Biel, Pflichtenheft Bahntechnik für Vorprojektphase, Gesamtbericht, IVT, ETH Zürich, Zurich, November 2010.
- Weidmann, U., K.W. Axhausen, P. Spacek, B. Alt, G. Anderhub, R. Dorbritz, A. Frei, M. Laube, M. Scherer and C. Weis (2008) Mobilitätsplan Hochschulgebiet Zürich, *Schriftenreihe*, **141**, IVT, ETH Zürich, Zurich.

- Weidmann, U., S. Buchmüller, M. Rieder, A. Nash and A. Erath, (2006) Europäische Marktstudie für das System Swissmetro, *Schriftenreihe*, **134**, IVT, ETH Zürich, Zurich.
- Weidmann, U., S. Moll and P. Schmidt (2009) Ein Trassenpreissystem aus Umweltsicht unter besonderem Augenmerk des Lärm, *Schriftenreihe* **143**, IVT, ETH Zürich, Zurich.
- Weidmann, U., W. Stölzle, N. Fries, E. Hofmann, K. Gebert and B. Bopp (2010) Nachhaltige Güterfeinverteilung, *Schriftenreihe*, **151**, IVT, ETH Zürich, Zurich.
- Weidmann, U., S. Buchmüller, R. Dorbritz and M. Lüthi (2008) Betriebsstabilität bei Buslinien mit Fahrausweisverkauf durch Fahrer, *Schriftenreihe*, **138**, IVT, Zürich.
- Wichser, J. (2004) VöV Kommission, Güterverkehr, Technische Übersetzung aktueller Nachfrageprognosen für den Schienengüterverkehr, IVT, ETH Zürich, Zurich, May 2004.
- Wichser, J. (2004) VöV, Regelwerk Technik der Eisenbahn RTE, Konzept der Weiterentwicklung ab 2005, IVT, ETH Zürich, Zurich, November 2004.
- Wichser, J., H. Schneebeli and S. Bollinger (2005) Fachbegriffe des öffentlichen Verkehrs, *Schriftenreihe*, **130**, IVT, ETH Zürich, Zurich.
- Wichser, J., S. Besters, B. Bojanic, S. Bollinger and N. Fries (2006) Strategies for increasing intermodal transport between Eastern and Western Europe, *Schriftenreihe*, **133**, IVT, ETH Zürich, Zurich.

### 6.3 TRANSPORT PLANNING

- Bernard, M. and K.W. Axhausen (2008) Grundlagen für eine differenzierte Bemessung von Verkehrsanlagen, Schlussbericht SVI 2000/339, *Schriftenreihe*, **1283**, Bundesamt für Strassen, UVEK, Bern.
- Chaumet, R., P. Locher, F. Bruns, D. Imhof, M. Bernard and K.W. Axhausen (2007) Verfahren zur Berücksichtigung der Zuverlässigkeit in Evaluationen, Schlussbericht VSS 2002/002, *Schriftenreihe*, **1176**, Bundesamt für Strassen, UVEK, Bern.
- Hess, S., A. Erath and K.W. Axhausen (2008) Zeitwerte im Personenverkehr: Wahrnehmungs- und Distanzabhängigkeit, Schlussbericht SVI 2005/007, *Schriftenreihe*, **1322**, Bundesamt für Strassen, UVEK, Bern.
- König, A., K.W. Axhausen and G. Abay (2004) Zeitkosten im Personenverkehr – Hauptstudie, Schlussbericht SVI 534/01, *Schriftenreihe*, **1065**, Bundesamt für Strassen, UVEK, Bern.
- Löchl, M., S. Schönfelder, R. Schlich, T. Buhl, P. Widmer and K.W. Axhausen (2005) Untersuchung der Stabilität des Verkehrsverhaltens, Schlussbericht SVI 2001/514, *Schriftenreihe*, **1120**, Bundesamt für Strassen, UVEK, Bern.
- Oblozinska, Z. and K.W. Axhausen (2005) Standartisierte Erfassung des Gesamtverkehrsaufkommens von einzelnen Verkehrserzeugern, Schlussbericht SVI 2000/340, *Schriftenreihe*, **1102**, Bundesamt für Strassen, UVEK, Bern.
- Schlich, R., A. Simma and K.W. Axhausen (2004) Determinanten des Wochenendfreizeitverkehrs, Schlussbericht SVI 73/00, *Schriftenreihe*, **1071**, Bundesamt für Strassen, UVEK, Bern.
- Stopher, P.R., R. Alsnih, C.G. Wilmot, C. Stecher, J. Pratt, J. Zmud, W. Mix, M. Freedman, K.W. Axhausen, M. Lee-Gosselin, A.E. Pisarski and W. Brög (2008) Standardized procedures for personal travel surveys, *NCHRP Report*, **571**, TRB, Washington, D.C.
- Vrtic, M., K.W. Axhausen, M.G.H. Bell, S. Grosso and W. Matthews (2004) Methoden zum Erstellen und Aktualisieren von Wunschlinienmatrizen im motorisierten Individualverkehr, Schlussbericht SVI 2000/379, *Schriftenreihe*, **1066**, Bundesamt für Strassen, UVEK, Bern.
- Vrtic, M., N. Schüssler, A. Erath, M. Bürgle, K.W. Axhausen, E. Frejinger, M. Bierlaire, R. Rudel, S. Scagnolari and R. Maggi (2008) Einbezug der Reisekosten bei der Modellierung des Mobilitätsverhaltens, Schlussbericht SVI 2005/004, *Schriftenreihe*, **1191**, Bundesamt für Strassen, UVEK, Bern.
- Weis, C., M. Bürgle and K.W. Axhausen (2008) Datenbank für Verkehrsaufkommensraten, Schlussbericht VSS 2005/003, *Schriftenreihe* **1314**, Bundesamt für Strassen, UVEK, Bern.
- Widmer, P. and M. Vrtic (2005) Einfluss von Änderungen des Parkierungs-Angebotes auf das Verkehrsverhalten, Schlussbericht VSS 1997/46, *Schriftenreihe*, **1103**, Bundesamt für Strassen, UVEK, Bern.

## 7 UNPUBLISHED REPORTS

### 7.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Koy, T. and P. Spacek (2004) Kreisel Fänn in Küsnacht (SZ), Variantenstudie zur Anschlussgestaltung, Zurich.
- Koy, T. and P. Spacek (2005) Kreisel Acherli in Seewen (SZ), Auswirkungen der geplanten Nutzungsverdichtung auf die Verkehrsqualität und Leistungsfähigkeit, IVT, ETH Zürich, Zurich.
- Koy, T. and P. Spacek (2005) Kreisel Fänn in Küsnacht (SZ), Auswirkungen der geplanten Nutzungsverdichtung auf die Verkehrsqualität und Leistungsfähigkeit, IVT, ETH Zürich, Zurich.
- Laube, M., H.P. Lindenmann, G. Santel and P. Spacek (2006) Kantonsstrasse KV6 Stansstad-Kehrsiten, Verkehrsstudie, Lösungsmöglichkeiten für verbesserte Erschliessung des Ortsteils Kehrsiten, Kanton Nidwalden, Baudirektion, Tiefbauamt, IVT, ETH Zürich, Zurich.
- Lindenmann, H.P. and F. Schiffmann (2006) Griffigkeitsmessungen auf Nationalstrassen im Kanton Wallis, Schlussbericht, im Auftrag des Kantons Wallis, IVT, ETH Zürich, Zurich.
- Lindenmann, H.P. and M. Doerfel (2006) Zweiphasenausbildung, Grundlagen zur Prüfung von Anlagen zur Durchführung der Fahrerlebnisse, Schlussbericht, Schweizerischer Verkehrssicherheitsrat, IVT, ETH Zürich, Zurich.
- Lindenmann, H.P., M. Laube and H.M. Burger (2004) Auswirkungen passivbeleuchteter Fussgängerstreifen auf die Verkehrssicherheit, Bericht an die Swiss Insurance Association, IVT, ETH Zürich, Zurich.
- Lindenmann, H.P., N. Leemann and L. Seiler (2007) Pilotstudie Winterdienst Nationalstrassen, Bundesamt für Strassen and IVT, ETH Zürich, Zurich.
- Spacek, P. and Pitzinger, P. (2004) Verkehrsbeeinflussungsanlagen Westumfahrung, Anschlussbewirtschaftungen: Konzept und Verkehrsingenieur-Detailprojekt, Bericht an Baudirektion Kt. Zürich, Tiefbauamt, Zurich.
- Spacek, P. and T. Koy (2006) PTL Galleria Veduggio – Cassarate, Verifica della rete stradale proposta nel Masterplan NOC Verifica della rete stradale al portale Veduggio, Schlussbericht, Repubblica e Cantone Ticino, Dipartimento del territorio, Divisione delle costruzioni, IVT, ETH Zürich, Zurich.
- Spacek, P., C. Heil and T. Koy (2006) Verkehrsstudie Halbanschluss Spreitenbach, Simulationsberechnungen zur Beurteilung des Verkehrsablaufs im Bereich des geplanten Autobahn-Halbanschlusses, Schlussbericht, Departement Bau, Verkehr und Umwelt des Kantons Aargau, Abteilung Verkehr, IVT, ETH Zürich, Zurich.

### 7.2 TRANSPORT SYSTEMS

- Bollinger, S. (2004) Fahrgastbefragung in den ETH-Direktbussen, Auswertungen, IVT, ETH Zürich, Zurich, June 2004.
- Bollinger, S. and C. Kölblle (2005) HGV-Anschluss, Variante 8 Kombination Ost, Betriebsimulation Zürich-Schaffhausen, Bericht, IVT, ETH Zürich, Zurich, April 2005.
- Bollinger, S., M. Lüthi and U. Weidmann (2005) Untersuchung über die Fahrgastwechsel- und die Haltezeiten auf der Züricher S-Bahn, IVT, ETH Zürich, Zurich, February 2005.
- Buchmüller, S. and P. Frank (2008) Vergleich der Fahr- und Haltezeiten des DOMINO mit weiteren Fahrzeugtypen, IVT, ETH Zürich, Zurich, October 2008.
- Buchmüller, S. and U. Weidmann (2008) Handbuch zur Anordnung und Dimensionierung von Fussgängeranlagen in Bahnhöfen, Erarbeitet im Auftrag von SBB Infrastruktur, Projektmanagement Zürich, IVT, ETH Zürich, Zurich, August 2008.
- Buchmüller, S. and U. Weidmann (2007) Berechnung und Optimierung der Haltezeit Porta Alpina Sedrun, Endversion, IVT, ETH Zürich, Zurich, March 2007.
- Buchmüller, S., M. Lüthi and U. Weidmann (2007) Überprüfung der Wirksamkeit optimierter DPZ-Einsteige, IVT, ETH Zürich, Zurich, March 2007.
- Lüthi, M., R. Dorbritz and H. Schneebeli (2007) Auswertung von Bremsversuchen, Projektauftrag, IVT, ETH Zürich, Zurich, January 2007.

- Meyer, M., M. Lerjen, S. Menth, M. Lüthi and M. Tuchschnid (2009) Verifizierung der Stromeinparung durch energieeffizientes Zugmanagement, Schlussbericht, emblematic GmbH & IVT, ETH Zürich, Zurich, November 2009.
- Orth, H., P. Schmidt, F. Radano (2011) TESS – Intermodal Solutions for Trans-European Temperature-Sensitive Shipments, Work Package 4 Report, report to be published with final results of the project, IVT, ETH Zürich, Zurich.
- Rieder, M., S. Schranil and U. Weidmann (2010) Kurzbericht zum Schlussbericht “Zukunft Waldenburgerbahn Modul 3 Betriebskonzept”.
- Rieder, M. and J. Wichser (2007) Marktdaten Management und Engineering sowie RPV Strasse und Ortsverkehr, Teil Marktdaten Management und Engineering, PostAuto AG, Bern.
- Rieder, M. and J. Wichser (2007) Marktstudie öffentlicher Verkehr, Marktanalyse Orts- und Agglomerationverkehr, PostAuto AG, Bern.
- Rieder, M. and U. Weidmann (2008) Stand der Technik im Werkstättenbereich, Standortbestimmung, Vorstudie, BLS AG Werkstätten, Spiez.
- Weidmann, U., J. Wichser, E. Barth, S. Bepperling, S. Höppner and U. Kirsch (2009) Zukunft Bahnhof Bern (ZBB), Begutachtung der bisherigen Planungsarbeiten, Schlussbericht, IVT, ETH Zürich, Zurich, June 2009.
- Weidmann, U., B. Scholl, J. Wichser, F. Günter, M. Nollert, R. Signer, I. Tosoni, E. Barth and M. Zäh (2009) Zukünftige Entwicklung der Bahninfrastruktur, Beurteilung der Infrastrukturmassnahmen auf den NEAT-Zufahrten Gotthard im Norden und Süden, IVT, IRL, ETH Zürich, Zurich, September 2009.
- Weidmann, U., J. Wichser, B. Alt., M. Scherer, H. Schneebeli, M. Hecht, M. Besch, H. Bobleter and P. Guha (2006) PUTGAP Schliessung der Lücke zwischen Bussystemen und strassenunabhängigen Systemen mit neuartigen Verkehrssystemen, Schlussbericht, für Regierung Fürstentum Liechtenstein, IVT, ETH Zürich, Zurich.
- Weidmann, U., J. Hrabacek, P. Joris and R. Zeller (2006) Durchmesserlinie Trogen-St. Gallen-Appenzell, Markt und Betrieb, Technischer Bericht, IVT, ETH Zürich, Zurich, June 2006.
- Weidmann, U., K. Baudys S. Schranil and S. Moll (2011) Auslastungssteigerung des SBB-Fernverkehrs unter Optimierung der Gesamtwirtschaftlichkeit.
- Weidmann, U. (2010) Kurzbericht zum Schlussbericht “Zukunft Waldenburgerbahn Modul 3 Betriebskonzept”, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2004) Prüfung Stand Bahntechnik GBT, Nr. BAVAT\_03\_011, Prüfbericht, 21 October 2004.
- Weidmann, U. and J. Wichser (2008) Comune di Stabio, Bahnübergänge der neue Bahnstrecke Mendrisio-Varese, Im Auftrags des Kantons Tessin, Dipartimento del Territorio, Sezione della Mobilità, Bericht, IVT, ETH Zürich, Zurich, February 2008.
- Weidmann, U. and M. Rieder (2008) BLS AG Werkstätten, Stand der Technik im Werksättenbereich, Standortbestimmung, Vorstudie, IVT, ETH Zürich, Zurich, November 2008.
- Weidmann, U. and S. Bollinger (2004) Strassenbelastung durch Doppelgelenkbusse und Anhängerkompositionen, IVT, ETH Zürich, Zurich, August 2004.
- Weidmann, U. and S. Buchmüller (2004) Erschliessung von Science City mit Schienenverkehrsmitteln, Machbarkeitstudie, IVT, ETH Zürich, Zurich, August 2004.
- Weidmann, U. and S. Schranil (2011) Anforderungen an das Abweichungsmanagement, ErZu-Weiterentwicklung und Anforderungen für die Störungsprognose, IVT, ETH Zürich, Zurich, August 2011.
- Weidmann, U., and E. Barth (2010) Das Potential seilgetriebener Verkehrssysteme im Urbanen Raum, Marktstudie, IVT, ETH Zürich, Zurich.
- Weidmann, U., and S. Moll (2010) Ein lärmabhängiges Trassenpreissystem für die Schweiz, Folgestudie zum Bericht: “Ein Trassenpreissystem aus Umweltsicht unter besonderem Augenmerk des Lärms”, IVT, ETH Zürich, Zurich, October 2010.
- Weidmann, U., A. Isler, B. Singer, A. Bärsch, T. Haug, D. Heer, L. Nägeli, M. Scherer and S. Schranil (2011) Gutachten, Tram Region Bern, Überprüfung von Zweckmässigkeit und Kosten, Effretikon, 3 May 2011.
- Weidmann, U., B. Bopp and R. Zeller (2008) Gemeinsame Haltestellenbenutzung durch Bus und Tram, Verkehrsbetriebe Zürich (VBZ), IVT, EZH Zürich, Zurich, October 2008.
- Weidmann, U., C. Kölblle and N. Fries (2005) Zukunft des Voralpen-Express, Modul 1, Integration des Voralpen-Express in die S-Bahn Luzern, Schlussbericht, IVT, ETH Zürich, Zurich, April 2005.

- Weidmann, U., G. Anderhub, R. Dorbritz and M. Scherer (2007) Analyse einer direkten Busverbindung Sadtzentrum- Science City, Forschungsauftrag, IVT, ETH Zürich, Zurich, November 2007.
- Weidmann, U., J. Wichser and E. Barth (2011) Tramnetz Region Basel 2020, Ausformulierungen zur Vorgehensweise bei der Erarbeitung des Netzdesigns (Phase II), Kantone Basel-Stadt und Basel-Landschaft, Schlussbericht, IVT, ETH Zürich, Zurich, January 2011.
- Weidmann, U., J. Wichser and E. Barth (2010) Externe Begleitung zur Planung des Projektes “Tramnetz Agglomeration Basel 2025”, Kantone Basel Stadt und Basel-Landschaft, Schlussbericht, IVT, ETH Zürich, Zurich, August 2010.
- Weidmann, U., J. Wichser and B. Bopp (2010) Verifikation der Stabilität lückenloser Gleise von Meterspurgleisen in engen Kurven (gem. R RTE 22541), Teilprojekt 1: Vorgehenskonzept, Schlussbericht, IVT, ETH Zürich, Zurich, April 2010.
- Weidmann, U., J. Wichser and R. Zeller (2007) Umsprung Zentralbahn, Projektauftrag, Schlussbericht, IVT, ETH Zürich, Zurich, January 2007.
- Weidmann, U., J. Wichser, B. Alt., M. Scherer, H. Schneebeili, M. Hecht, M. Besch, H. Bobleter and P. Guha (2006) PUTGAP, Systementwicklung öffentlicher Verkehr in Liechtenstein, Gesamtbericht IVT, ETH Zürich, Zurich, December 2006.
- Weidmann, U., J. Wichser, B. Bopp and P. Frank (2009) Gutachten zur Machbarkeit einer Wankkompensations-einrichtung für Schienenfahrzeuge, Einsatz zur Reduktion der Fahrzeit Bern – Lausanne unter eine Stunde, Schlussbericht, IVT, ETH Zürich, Zurich, August 2009.
- Weidmann, U., J. Wichser, B. Bopp and R. Zeller (2008) Verschleisskriterien zur Bemessung des Trassenpreises, Projektauftrag, Schlussbericht, IVT, ETH Zürich, Zurich, October 2008.
- Weidmann, U., J. Wichser, E. Barth and P. Frank (2010) Herzstück Regio-S-Bahn Basel, Zweitmeinung zur vorgeschlagenen Variantenwahl, IVT, ETH Zürich, Zurich, November 2010.
- Weidmann, U., J. Wichser, H. Orth, P. Schmidt (2011) Zukünftige Bahnlandschaft Schweiz – Konzeptstudie mit besonderer Beachtung der Zukunft der BLS AG, Schlussbericht an die BLS AG, IVT, ETH Zürich, Zurich.
- Weidmann, U., J. Wichser, M. Lüthi and R. Zeller (2008) Künftige Verantwortungsstruktur der schweizerischen Normalspur-Bahninfrastruktur, Schlussbericht Konzeptstudie, July 2008.
- Weidmann, U., J. Wichser, P. Schmidt and B. Bopp (2007) Potentiale durch den Einsatz von radialeinstellbaren Fahrwerken im Schienengüterverkehr, insbesondere auf Energieeffizienz, Dokumentvorlage für Gesamtbericht, IVT, ETH Zürich, Zurich, December 2007.
- Weidmann, U., M. Rieder and S. Moll (2010) Marktmonitoring Eisenbahnverkehr, Schlussbericht, IVT, ETH Zürich, Zurich, 2010.
- Weidmann, U., M. Rieder, P. Frank and S. Höppner (2010) Gemeindeverband RegioHER, Angebotskonzept für eine zu realisierende Wiggertalbahn und deren Nachfrage- und Netzwirkung, Vorstudie, IVT, ETH Zürich, Zurich, 2010.
- Weidmann, U., M. Rieder, P. Frank, S. Höppner (2008) Sursee-Triengen-Bahn (ST), Wiedereinführung des Personenverkehrs auf der Sursee-Triengen-Bahn und einer allfälligen Verlängerung, Vorstudie, IVT, ETH Zürich, Zurich, May 2009.
- Weidmann, U., N. Fries and M. Scherer (2006) Mittel- und langfristige Weiterentwicklung des Voralpen-Express, Angebots- und Infrastrukturkonzepte, Schlussbericht, IVT, ETH Zürich, Zurich, March 2006.
- Weidmann, U., P. Spacek, R. Dorbritz, E. Puffe and G. Santel (2010) Bedeutung des öffentlichen Strassenverkehrs in der Schweiz, Grundlagenstudie, IVT, ETH Zürich, Zurich, Fachverband infra, Zürich, Schweiz, Mischgut-Industrie, SMI, Zurich.
- Weidmann, U., R. Dorbritz, and M. Lüthi (2007) Betriebsstabilität bei Buslinien mit Fahrausweisverkauf durch den Fahrer, Hauptstudienauftrag, IVT, ETH Zürich, Zurich, May 2007.
- Weidmann, U., S. Buchmüller and R. Zeller (2007) Review zur Studie über Problematik der Abstände Fahrzeuge – Perronkanten, IVT, ETH Zürich, Zurich, May 2007.
- Weidmann, U., S. Buchmüller, R. Dorbritz and M. Lüthi (2006) Betriebsstabilität bei Buslinien mit Fahrausweisverkauf durch Fahrer, Vorstudienauftrag, 12/05, PostAuto Region Zürich, Zurich.
- Weidmann, U., S. Buchmüller, U. Kirsch, D. Helbing, A. Johansson, P. Felten and W. Yu (2008) Studie Personenhydraulik, IVT & SOMS, ETH Zürich, Zurich, April 2008.

- Wichser J., N. Fries, P. Schmidt and H. Schneebeli (2006) Trassenpreissystem und seine Auswirkung auf die Umsetzung des Verlagerungsziels SBB Cargo, Bericht an SBB Cargo.
- Wichser, J. and N. Fries (2010) Logistik und Transport im Raumentwicklungskonzept NW+, Bericht, IVT, ETH Zürich, Zurich, March 2010.
- Wichser, J. and C. Kölblle (2004) Ostschweizer Modell zur BR 2, IVT, ETH Zürich, Zurich, March 2004.
- Wichser, J. and M. Rieder (2007) PostAuto Schweiz AG, Marktstudie öffentlicher Verkehr, IVT, ETH Zürich, Zurich, October 2007.
- Wichser, J. and N. Fries (2007) Centro Merci Intermodale Milano Nord, Gutachten zum Gesamtkonzept, IVT, ETH Zürich, Zurich, November 2007.
- Wichser, J., H. Schneebeli, W. Hüsler and M. Bogiani (2005) Optimierung des Bahn- und Busangebotes im Pustertal, Gesamtkonzept, Technischer Bericht, January 2005.

### 7.3 TRANSPORT PLANNING

- Axhausen, K.W. (2006) Evaluation plan, OPUS Deliverable, **D12.1**, IVT, ETH Zürich, Zurich.
- Axhausen, K.W. (2005) Review and update of the modelling framework, *OPUS Deliverable*, **D5**, IVT, ETH Zürich, Zurich.
- Axhausen, K.W., S. Beige and M. Bernard (2004) Perspektiven des Schweizerischen Verkehrs bis 2030: Module Mo4 und Mo5 Besitz von Mobilitätswerkzeugen-Fahrleistungen/Betriebsleistungen und Verkehrsleistungen, *Bericht an das ARE*, IVT, ETH Zürich, Zurich.
- Balmer, M., K. Meister, R.A. Waraich, A. Horni, F. Ciari and K.W. Axhausen (2010) Agentenbasierte Simulation für location based services, *Endbericht, F&E Förderung: Science to Market, KTI 8443.1 ESPP-ES*, Datapuls AG, IVT, ETH Zürich, Zurich.
- Balmer, M., K.W. Axhausen, A. Horni, K. Meister, D. Charypar and F. Ciari (2008) Wirkungen der Westumfahrung Zürich: Eine Analyse mit einer Agenten-basierten Mikrosimulation, *Endbericht*, Baudirektion Kanton Zürich, IVT, ETH Zürich, Zurich.
- Beige, S. and K.W. Axhausen (2005) Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen Landschaften – Feldbericht der Erhebung zum Touristenverhalten, NFP 48-Projekt, *Arbeitsberichte Verkehrs- und Raumplanung*, **268**, IVT, ETH Zürich, Zurich.
- Erath, A. and K.W. Axhausen (2010) Long term fuel price elasticity: Effects on mobility tool ownership and residential location choice, *Schlussbericht*, Bundesamt für Energie (BFE), Bundesamt für Umwelt (BAFU), Bern, IVT, ETH Zürich, Zurich.
- ETIS Base Project Partners (2005) Final Progress Report, NEA, Rijswijk.
- ETIS Base Project Partners (2005) Technological Implementation Plan, NEA, Rijswijk.
- Frei, A. and K.W. Axhausen (2009) Archived data set (according to the current DDI standard), KITE – a knowledge base for intermodal passenger travel in Europe, *Deliverable*, **9**, IVT, ETH Zürich, Zurich.
- Frei, A. and K.W. Axhausen (2009) Call for tender for pilot survey, KITE – a knowledge base for intermodal passenger travel in Europe, *Deliverable*, **6**, IVT, ETH Zürich, Zurich.
- Frei, A. and K.W. Axhausen (2009) Report about field work and recommendations for a survey of intermodal long-distance travel in Europe, KITE – a knowledge base for intermodal passenger travel in Europe, *Deliverable*, **7**, IVT, ETH Zürich, Zurich.
- Frei, A. and K.W. Axhausen (2009) Report about results: User requirements and indications about demand volumes, *KITE – a knowledge base for intermodal passenger travel in Europe, Deliverable*, **8**, IVT, ETH Zürich, Zurich.
- Hackney, J.K. and K.W. Axhausen (2005) Speed of transit in Zurich, *Bericht an das Amt für Verkehr des Kantons Zürich*, IVT, ETH Zürich, Zurich.
- Larsen, J., J. Urry and K.W. Axhausen (2005) Social networks and future mobilities, *Schlussbericht, Horizons Programme* of the Department for Transport, Department of Sociology, University of Lancaster and IVT, ETH Zürich, Lancaster and Zurich.
- Szimba, E., M. Kraft, O. Schnell, J. Hackney, F. Winterling and J. Siegele (2004) D6 Annex report WP 7: ETIS-Database methodology development and database user manual – passenger transport supply, NEA, Rijswijk.



- Vrtic, M., P. Fröhlich, N. Schüssler, K.W. Axhausen, C. Schulze, P. Kern, F. Perret, S. Pfisterer, C. Schultze, A. Zimmerman and U. Heidl (2005) Verkehrsmodell für den öffentlichen Verkehr des Kantons Zürich, im Auftrag des Amtes für Verkehr, Kanton Zürich, IVT, Ernst Basler + Partner and PTV Karlsruhe, Zurich.
- Vrtic, M., P. Fröhlich, N. Schüssler, S. Dasen, S. Erne, B. Singer, K.W. Axhausen, C. Schiller and D. Lohse (2005) Erzeugung neuer Quell-/Zielmatrizen im Personenverkehr, Bericht an die Bundesämter für Raumentwicklung, für Strassen und für Verkehr, IVT, Emch und Berger and TU Dresden, Zurich.
- Weis, C. and K.W. Axhausen (2011) Household behaviour and environmental policy: Report on transport related data analysis, final report, OECD, Paris.
- Weis, C. and K.W. Axhausen (2009) Benzinpreis und Bahnnutzung, Bericht an die SBB, IVT, ETH Zürich, Zurich.
- Westlake A., V.S. Chalasani, M. Collop and M. Logie (2005) D3.2 Report of WP3: Specifications for the Extension of the LATS Database System for the Transport Domain, OPUS consortium, London.
- Westlake, A., R. Krishnan, V.S. Chalasani, M. Collop and M. Logie (2005) D6.1 Report of WP6: Generic Structures and Functionality for Support of Statistical Models in Statistical Databases – Using Information from Statistical Models, OPUS consortium, London.
- Wittmer, A., P. Fröhlich, R. Weinert and K.W. Axhausen (2008) Luftfahrtentwicklung im Grossraum Zürich unter Einbezug von Reisezeitersparnissen und Emissionen, Schlussbericht für Komitee Weltoffenes Zürich, Centre for Aviation Competence, Fröhlich Verkehrsconsulting and IVT, St.Gallen and Zurich.
- Zöllig, C., R. Hilber and K.W. Axhausen (2010) Konzeptstudie Flächennutzungsmodellierung, Bericht an das ARE, IVT, ETH Zürich, Mappuls AG, Zurich.

## 8 TEXTBOOKS AND TEACHING MATERIALS

### 8.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Lindenmann H.P. (2008) Bau und Erhaltung von Verkehrsanlagen, Vorlesungsunterlage, IVT, ETH Zürich, Zurich.
- Lindenmann, H.P. and P. Spacek (2008) Betrieb und Erhaltung von Verkehrssystemen für den Individualverkehr (Verkehr III), Vorlesungsunterlage, IVT, ETH Zürich, Zurich.
- Lindenmann, H.P., N. Leemann and M. Doerfel (2007) Sicherheit von Verkehrsanlagen, Vorlesungsunterlagen, IVT, ETH Zürich, Zurich.
- Spacek, P. (2006) Strasseninfrastruktur: Kosten, Dimensionen, Leistungsfähigkeiten, Vortrag in MAS Raumplanung: Modul 5 "Infrastrukturen", Zurich, February 2006.

### 8.2 TRANSPORT SYSTEMS

- Dorbritz, R. (2010) Statistische Grundlagen, Weiterbildungskurs RAMS/LCC bei Bahnprojekten, eduRail und IVT, ETH Zürich, Olten, May 2010.
- Scherer, M. (2010) Theoretische Grundlagen der Angebotsplanung Personenverkehr. Weiterbildungslehrgang SBB – Academia: integrierter öffentlicher Verkehr, Löwenberg/Muntellier, September 2010.
- Weidmann, U. (2010) Bahngüterverkehr in der Logistik, Universität St.Gallen / Fraunhofer Institut Materialfluss und Logistik – Diplomstudium Logistikmanagement, Modul 5, Arbon, October 2008 and September 2010.
- Weidmann, U. (2010) Die Bedeutung des öffentlichen Verkehrs, ZHAW / Institut für Angewandte Psychologie, Lehrgang Fachlehrer für Verkehr, Zürich, August 2010.
- Weidmann, U. (2010) Infrastrukturen des öffentlichen Verkehrs, MAS Raumplanung der ETH Zürich / Präsenzwoche Technische Infrastrukturen, February 2008 and February 2010.
- Weidmann, U. (2010) Infrastrukturen spurgeführter Systeme – Anlagenprojektierung, lecture notes (*Band 3.2*), Institut für Verkehrsplanung und Transportsysteme, Zürich.

- Weidmann, U. (2010) Introduction in Public Transports of Switzerland: An overview, AER Summer School, Rorschach, August 2010.
- Weidmann, U. (2009) Infrastrukturen spurgeführter Systeme, lecture notes, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2009) Management und Systembetrieb – Unternehmensführung, lecture notes, Band 4.1, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2009) Sicherheit und Risiko im Verkehr, WBZ ETH Zürich in Risiko und Sicherheit technischer System, Modul V6 / Transport gefährlicher Güter, Zurich, February 2007 and January 2009.
- Weidmann, U. (2009) Systemdimensionierung und Kapazität – Fahrzeug- und Antriebstechnik, Energieversorgung, Traktionstechnik und Fahrzeitberechnung, lecture notes, Band 2.2, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2008) Grundlagen der Planung und Dimensionierung von Fussgängeranlagen, Trassen-Manager SBB / Integrierter öffentlicher Verkehr, Löwenberg / Murten, December 2008.
- Weidmann, U. (2008) System- und Netzplanung – Angebotskonzepte des Personenverkehrs, lecture notes, Band 1.2, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2008) System- und Netzplanung – Grundlagen der System- und Netzplanung, System- und Netzplanung des Personenverkehrs, lecture notes, Band 1.1, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2008) Systemdimensionierung und Kapazität – Grundlagen der Produktions- und Ressourcenplanung, Fahrzeugstrategien und Fahrzeugkonzepte, Dimensionierung und Ressourcenbedarf, lecture notes, Band 2.1, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2007) Bahngüterverkehr/Kombiverkehr – Konventioneller und kombinierter Güterverkehr, HSG / Executive MBA in Logistik, Verkehrsmanagement, Basel, November 2007.
- Weidmann, U. (2007) Sicherheit und Risiko im Verkehr, WBZ ETH Zürich in Risiko und Sicherheit, Modul V6 / Gefahrguttransporte, Zurich, February 2007.
- Weidmann, U. (2006) Die Bedeutung des öffentlichen Verkehrs, IAP / Lehrgang Fachlehrer für Verkehr, Zürich, January 2005 and June 2006.
- Weidmann, U. (2006) Stellung der Normen im Rahmen der gesamten Bahn-Normenlandschaft am Beispiel der Schweiz, NDK Risk & Safety, Zurich, October 2006.
- Weidmann, U. and R. Dorbritz (2009) Systemdimensionierung und Kapazität – Grundlagen der Kapazitätsberechnung, Kapazitätsberechnung für Strecken, Knoten und Teilnetze, lecture notes, Band 2.3, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2011) Bahninfrastrukturen – Grundlagen, Infrastrukturplanung, lecture notes (*Band 3.1*), IVT, ETH Zürich, Zurich.
- Weidmann, U. (2011) Systemdimensionierung und Kapazität – Grundlagen der Produktions- und Ressourcenplanung; Fahrzeit, Haltezeit und Wendezeit; Ressourcendimensionierung und -einsatz, lecture notes (*Band 2.1*), IVT, ETH Zürich, Zurich.
- Weidmann, U. (2011) Systemdimensionierung und Kapazität – Fahrzeugstrategien und Fahrzeugkonzepte; Fahrzeug- und Antriebstechnik; Energieversorgung; Fahrdynamik, lecture notes (*Band 2.2*), IVT, ETH Zürich, Zurich.
- Weidmann, U. et al. (2007) Infrastruktur des öffentlichen Verkehrs – Grundlagen, Infrastrukturplanung, Infrastrukturprojektierung, *Lecture notes* (Band 2.1), IVT, ETH Zürich, Zurich.
- Weidmann, U. et al. (2007) Infrastruktur des öffentlichen Verkehrs – Bau von Bahnanlagen, Inbetriebnahme von Infrastrukturanlagen, Erhaltung von Infrastrukturanlagen, *Lecture notes* (Band 2.2), IVT, ETH Zürich, Zurich.
- Weidmann, U. et al. (2006) Infrastruktur des öffentlichen Verkehrs – Grundlagen, Infrastrukturplanung, Infrastrukturprojektierung, *Lecture notes* (Band 2.1), IVT, ETH Zürich, Zurich.
- Weidmann, U. et al. (2006) Infrastruktur des öffentlichen Verkehrs – Bau von Bahnanlagen, Inbetriebnahme von Infrastrukturanlagen, Erhaltung von Infrastrukturanlagen, *Lecture notes* (Band 2.2), IVT, ETH Zürich, Zurich.
- Weidmann, U. and M. Schwertner (2011) Sicherheit und Zuverlässigkeit im Eisenbahnbetrieb, lecture notes (*Band 4.3*), IVT, ETH Zürich, Zurich.
- Weidmann, U. and N. Carrasco (2010) Systemführung, Marketing, Qualität, lecture notes (*Band 4.2*), IVT, ETH Zürich, Zurich.

- Wichser, J. (2010) Entwicklung des Eisenbahnnetzes der Schweiz, Trassenmanager 2, Weiterbildungsveranstaltung der SBB Infrastruktur – Academia, Muntelier-Löwenberg, November 2008, November 2009 and October 2010.
- Wichser, J. (2008) Fahrweginfrastruktur, Lecture Eisenbahn-Systemtechnik I, D-ITET, ETH Zürich, November 2008 and November 2010.
- Wichser, J. (2008) Güterverkehrslogistik und Gütertransportsysteme, Trassenmanager 2, Weiterbildungsveranstaltung der SBB Infrastruktur – Academia, Muntelier-Löwenberg, March 2008, November 2008, November 2009, October 2010.

### 8.3 TRANSPORT PLANNING

- Bodenmann, B.R. (2011) Mobilität und Verkehr im städtebaulichen Entwurf, presentation at the *Special Urban Design Studio Chengdu*, Zurich, March 2011.
- Horni, A. (2011) A brief overview of the multi-agent transport simulation MATSim, MATSim Tutorial, Shanghai, May 2011.

## 9 INVITED CONTRIBUTIONS

### 9.2 TRANSPORT SYSTEMS

- Boillat A., W. Stohler, M. Vogt and J. Wichser (2006) Reflektionen zur Neuordnung der Eisenbahn-Infrastruktur in der Schweiz, Jahrbuch 2005/2006 *Schweizerische Verkehrswirtschaft*, 167–176, SVWG St. Gallen.
- Fries, N. (2009) Freight transport demand modelling in Switzerland – An environmental approach, in U. Clausen (ed.) *Wirtschaftsverkehr 2009 – Daten – Modelle – Anwendungen*, 65–78, Verlag Praxiswissen, Dortmund.
- Weidmann, U. (2008) Der ungebremste Drang zur Mobilität, künftige Antworten und eine neue Frage, 50 Jahre Verkehrstechnik und Elektrische Spezialanlagen – Einblicke in die Geschichte eines Zürcher Geschäftsfeldes, Hans Diem, Zurich.
- Weidmann, U. (2008) Innovationsförderung durch neues Trassenpreissystem – Die Fallstudie LEILA, Jahrbuch 2008, *Schweizerische Verkehrswirtschaft*, 207–219, SVWG, St. Gallen.
- Weidmann, U. (2008) Spagat zwischen Wunsch und Wirklichkeit, *BY RAIL NOW!* 2008/2009, STV-Verlags AG der Ingenieure und Architekten, 11, 10–12.
- Weidmann, U. (2007) Bahn-Infrastrukturfinanzierung: Bruch mit der Vergangenheit – Wege in die Zukunft, Jahrbuch 2007/08, *Schweizerische Verkehrswirtschaft*, 287–310, SVWG, St. Gallen.
- Weidmann, U. (2007) Profile for new public intercity transport – Discussion note / Reply, *European Journal of Transport and Infrastructure Research*, 7 (3) 267–270.
- Weidmann, U. (2007) Schlüsselinfrastruktur Bahnhof – Das Herz der Eisenbahn?!, *Almanach 2006/2007*, 78–94, *Deutsche Akademie für Städtebau und Landesplanung*, Berlin.
- Weidmann, U. (2006) Handlungsfelder bei der Weiterentwicklung des schweizerischen Regionalverkehrs, Jahrbuch 2005/2006, *Schweizerische Verkehrswirtschaft*, 55–77, SVWG, St. Gallen.
- Weidmann, U. (2006) Verkehr im Umbruch – Eine Skizze, Jahresbericht 2006, 11–23, SBB – Gruppe der Schweizerischen Bahnindustrie, Bern.
- Weidmann, U. and J. Wichser (2010) Gedanken zur Finanzierung des öffentlichen Verkehrs im Jahre 2030, Verband öffentlicher Verkehr, Mobilitätsszenarien für die Schweiz 2030, *VöV-Schriften 09*, 85–94.
- Weidmann, U. and J. Wichser (2010) Perspektiven des Bahngüterverkehrs im 21. Jahrhundert – Beobachtungen und Überlegungen, Jahrbuch 2010, *Schweizerische Verkehrswirtschaft*, 129–156, SVWG, St. Gallen.
- Weidmann, U. and J. Wichser, (2009) Finanzierung des öffentlichen Verkehrs in der Schweiz – Zielsetzungen and Konzepte, Jahrbuch 2009, *Schweizerische Verkehrswirtschaft*, 134–148, SVWG, St. Gallen.

Weidmann, U., M. Lüthi and P. Spacek (2009) Traffic management, in H.J. Bullinger (ed.) *Technology Guide – Principles Applications, Trends*, 284–287, Springer Verlag, Berlin.

### 9.3 TRANSPORT PLANNING

- Armoogum, J., K.W. Axhausen and J-L. Madre (2009) Synthesis of the working group European Transport Surveys of the European Action “Changing behavior towards a more sustainable transport system”, in P. Bonnel, J. Zmud, M. Lee-Gosselin and J-L. Madre (eds.) *Transport Survey Methods: Keeping up with a Changing World*, 621–634, Emerald, Bingley.
- Axhausen, K.W. (2011) Transport modeling, in D. Robinson (eds.) *Computer Modelling for Sustainable Urban Design: Physical Principles, Methods and Applications*, 149–174, earthscan, London.
- Axhausen, K.W. (2009) Advances in activity analysis, in R. Kitamura (ed.) *The Expanding Sphere of Travel Behaviour Research: Selected Papers from the 11th International Conference on Travel Behaviour Research*, 457–463, Emerald, Bingley.
- Axhausen, K.W. (2008) Definition of movement and activity for transport modelling, in D.A. Hensher and K.J. Button (eds.) *Handbook of Transport Modelling*, 2. Ausgabe, 329–344, Elsevier, Oxford.
- Axhausen, K.W. (2007) Concepts of travel behavior research, in L. Steg and T. Gärling (eds.) *Threats to the Quality of Urban Life from Car Traffic: Problems, Causes and Solutions*, 165–185, Elsevier, Oxford.
- Axhausen, K.W. (2006) Rationale Parkstandsbereitstellung: review of D. Shoup “The High Costs of Free Parking”, *strasse and verkehr*, **59** (5) 35–37.
- Axhausen, K.W. (2005) A dynamic understanding of travel demand: A sketch, in M.E.H. Lee-Gosselin and S.T. Doherty (eds.) *Integrated Land-Use and Transportation Models: Behavioural Foundations*, 1–20, Elsevier, Oxford.
- Axhausen, K.W. (2005) Erhebungen zur Verkehrsnachfrage: Stated Preferences, in G. Steierwald, H.-D. Künne and W. Vogt (eds.) *Stadtverkehrsplanung: Grundlagen, Methoden, Ziele*, 133–139, Springer, Heidelberg.
- Axhausen, K.W. (2004) Social networks and travel: Some hypotheses, in K. Donaghy (ed.) *Social Aspects of Sustainable Transport: Transatlantic Perspectives*, 90–108, Ashgate, Aldershot.
- Axhausen, K.W. and M. Frick (2005) Nutzungen, Strukturen, Verkehr, in G. Steierwald, H.-D. Künne and W. Vogt (eds.) *Stadtverkehrsplanung: Grundlagen, Methoden, Ziele*, 61–79, Springer, Heidelberg.
- Axhausen, K.W. and P. Fröhlich (2004) Public investment and accessibility change, in H. Held and P. Marti (eds.) *Bauen, Bewirtschaften, Erneuern – Gedanken zur Gestaltung der Infrastruktur*, 207–224, vdf, Zurich.
- Axhausen, K.W., D.M. Scott, A. König and C. Jürgens (2004) Locations, commitments and activity spaces, in M. Schreckenberg and R. Selten (eds.) *Human Behaviour and Traffic Networks*, 205–230, Springer, Berlin: Springer.
- Axhausen, K.W., J. Larsen and J. Urry (2009) Network society and networked traveller, in W. Saleh and G. Sammer (eds.) *Road User Pricing: the Success and Failure of Travel Demand Management*, 89–108, Ashgate, Aldershot.
- Axhausen, K.W., M. Botte and S. Schönfelder (2004) Systematic measurement of catchment areas, *CTPP 2000 Status Report August 2003*, 2–3, Federal Highways Administration, Washington, DC.
- Axhausen, K.W., P. Fröhlich, M. Tschopp and P. Keller (2005) Zeitkarten, Erreichbarkeiten und Verkehrspolitik, in K.W. Axhausen and L. Hurni (eds.) *Zeitkarten Schweiz 1950–2000*, Kapitel 1, IVT and IKA, ETH Zürich, Zurich.
- Axhausen, K.W., P. Fröhlich, M. Tschopp and P. Keller (2004) Erreichbarkeitsveränderungen in der Schweiz und ihre Wechselwirkungen mit der Bevölkerungsveränderung 1950–2000, in W. Gemerith, P. Messerli, P. Meusburger and H. Wanner (eds.) *Alpenwelt – Gebirgswelten, Inseln, Brücken, Grenzen*, 309–317, Deutschen Gesellschaft für Geographie, Bonn and Bern.
- Balmer, M., M. Rieser, A. Vogel, K.W. Axhausen and K. Nagel (2005) Generating day plans using hourly origin-destination matrices, *Jahrbuch 2004/2005*, 5–36, SVWG, St. Gallen.
- Balmer, M., M. Rieser, K. Meister, D. Charypar, N. Lefebvre and K. Nagel (2009) MATSim-T: Architecture and simulation times, in A. L. C. Bazzan and F. Klügl (eds.) *Multi-Agent Systems for Traffic and Transportation Engineering*, 57–78, Information Science Reference, Hershey.

- Bernard, M. (2004) Methoden und Techniken der Bemessung von Verkehr, *Jahrbuch 2003/2004*, 5–30, SVWG, Universität St. Gallen.
- Bodenmann, B.R. (2007) Modelle zur Standortwahl von Unternehmen, in T. Bieger, C. Lässer and R. Maggi (eds.) *Jahrbuch 2006/2007 Schweizerische Verkehrswirtschaft*, 5–34, St. Gallen.
- Chalasan, V.S. and K.W. Axhausen (2005) Conceptual data model for the integrated travel survey and spatial data, in R. Khan, R. Banks, R. Cornelius, S. Evans and T. Manners (eds.) *Proceedings of ASC 2005: Maximising Data Value*, 123–135, ASC, Chesham.
- Dobler C. (2011) Exceptional events in a transport simulation, in R. Leidl and A. K. Hartmann (eds.) *Modern Computational Science 11: Lecture Notes from the International Summer School Oldenburg, August 15–26, 2011*, BIS-Verlag, Oldenburg.
- Erath, A. (2007) Der Einfluss von Mobility Pricing auf den Besitz von Mobilitätswerkzeugen und die Standortwahl, in T. Bieger, C. Laesser and R. Maggi (eds.) *Jahrbuch 2007 Schweizerische Verkehrswirtschaft*, 43–72, SVWG, St. Gallen.
- Frei, A. and S. Sandmeier (2008) Aussichten und Einsichten: Angestellte, Alumni und Diplomierende des IVT und seiner Vorgänger, in S. Sandmeier and K.W. Axhausen (eds.) *125 Jahre Verkehrswesen an der ETH Zürich*, 34–40, IVT, ETH Zürich, Zurich.
- Frei, A., K.W. Axhausen and T. Ohnmacht (2009) Mobilities and social network geography: Size and spatial dispersion – the Zurich case study results, in T. Ohnmacht, H. Maksim and M. Bergmann (eds.) *Mobilities and Inequalities*, 99–120, Ashgate, Farnham.
- Frei, A., M. Kowald, J.K. Hackney and K.W. Axhausen (2010) Die Verbindung zwischen Verkehrsplanung und sozialen Netzwerk, in C. Stegbauer and R. Häußling (eds.) *Handbuch Netzwerkforschung*, 891–903, VS Verlag, Wiesbaden.
- Fröhlich, P., M. Tschopp and K.W. Axhausen (2005) Netzmodelle und Erreichbarkeit in der Schweiz: 1950–2000, in K.W. Axhausen and L. Hurni (eds.) *Zeitkarten Schweiz 1950–2000*, Kapitel 2, IVT and IKA, ETH Zürich, Zurich.
- Kowald, M. and K.W. Axhausen (2010) Egos' horizons and behind it: Snowball sampling of personal leisure networks, in M. Grieco and J. Urry (eds.) *Mobilities: New Perspectives on Transport and Society*, Ashgate, Farnham.
- Kowald, M., A. Frei, J.K. Hackney, J. Illenberger and K.W. Axhausen (2010) Collecting data on leisure travel: The link between leisure acquaintances and social interactions, *Procedia – Social and Behavioral Sciences*, **4** (1) 38–48.
- Reubi, S., H. U. Schiedt and M. Tschopp (2004) Critical literature survey: Transport history in Switzerland, in M. Merger and M. N. Polino (eds.) *Cost 340 – Towards a European Intermodal Transport Network: Lessons from History – A Critical Bibliography, 193–220*, Association pour l'histoire des chemins de fer en France, Paris.
- Sandmeier, S. (2008) Artikel "Nationalstrassen", *Historisches Lexikon der Schweiz*, <http://www.dhs.ch> (zugänglich im passwortgeschützten Bereich: <http://www.hls-dhs-dss.ch/textesc/d/D7960.php> [31.12.2008]).
- Sandmeier, S. (2008) Artikel "Verkehrspolitik", *Historisches Lexikon der Schweiz*, <http://www.dhs.ch> (zugänglich im passwortgeschützten Bereich: <http://www.hls-dhs-dss.ch/textesc/d/D13793.php> [31.12.2008]).
- Sandmeier, S. (2008) Review of of Michael Hascher "Politikberatung durch Experten: Das Beispiel der deutschen Verkehrspolitik im 19. und 20. Jahrhundert", *Journal of Transport History*, **29** (2).
- Schlich, R., A. Simma and K.W. Axhausen (2004) Kontraste im Diffusen: Erklärungsmodelle für den Freizeitverkehr, in L. Dienel, H.-P. Meier-Dallach and C. Schröder (eds.) *Die neue Nähe: Raumpartnerschaften verbinden Kontrasträume*, 186–206, Franz Steiner Verlag, Wiesbaden.
- Vrtic, M. and M. Arendt (2006) Nationales Personenverkehrsmodell des Bundes als verkehrsplanerische Grundlage, in T. Bieger, C. Laesser and R. Maggi (eds.) *Jahrbuch 2006/2007 Schweizerische Verkehrswirtschaft*, SVWG, St. Gallen.
- Weis, C., A. Frei, K.W. Axhausen, T. Haupt and B. Fell (2008) Vergleich zwischen web-basierten und schriftlichen Befragungen zum Verkehrsverhalten im Zürcher Hochschulquartier, in T. Bieger, C. Lässer and R. Maggi (eds.) *Jahrbuch 2006/2007 Schweizerische Verkehrswirtschaft*, 9–30, SVWG, St. Gallen.

## 10 DISSERTATIONS

### 10.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

Santel, G. (2011) Laterales Fahrverhalten, Seitliche Bewegungsspielräume und Begegnungsabstände von Fahrzeugen auf Strassen bei verschiedenen Querschnittsausprägungen, *Dissertation*, ETH Zürich, Zurich.

### 10.2 TRANSPORT SYSTEMS

Alt, B. (2010) Investigation of space-time structures in public transport networks and their optimization, *Dissertation*, ETH Zürich, Zurich.

Fries, N. (2009) Market potential and value of sustainable freight transport chains, *Dissertation*, ETH Zürich, Zurich.

Jermann, J. (2004) Konzept zur Modellierung von Einzugsbereichen auf Bahnhofstestellen, *Dissertation*, ETH Zürich, Zurich.

Lüthi, M. (2009) Improving the efficiency of heavily used railway networks through integrated real-time rescheduling, *Dissertation*, ETH Zürich, Zurich.

Schäffeler, U. (2004) Netzgestaltungsgrundsätze für den öffentlichen Nahverkehr in Verdichtungsräumen, *Dissertation*, ETH Zürich, Zurich.

Ullius, M. (2004) Verwendung von Eisenbahnbetriebsdaten für die Schwachstellen- und Risikoanalyse zur Verbesserung der Angebots- und Betriebsqualität, *Dissertation*, ETH Zürich, Zurich.

### 10.3 TRANSPORT PLANNING

Balmer, M. (2007) Travel demand modeling for multi-agent traffic simulations: Algorithms and systems, *Dissertation*, ETH Zürich, Zurich.

Beige, S. (2008) Long-term and mid-term mobility decisions over the life course, *Dissertation*, ETH Zürich, Zurich; also available from *Südwestdeutscher Verlag für Hochschulschriften*, Saarbrücken.

Bernard, M. (2008) Entwicklung eines Bemessungskonzepts für Autobahnabschnitte unter Berücksichtigung der Zufallsgrößen Verkehrsnachfrage und Kapazität in der Risikoanalyse, *Dissertation*, ETH Zürich, Zurich.

Bodenmann, B.R. (2011) Location choice of firms with special emphasis on spatial accessibility, *Dissertation*, ETH Zürich, Zurich.

Charypar, D. (2008) Efficient algorithms for the travel behavior microsimulation of very large scenarios, *Dissertation*, ETH Zürich, Zurich.

Erath, A. (2011) Vulnerability assessment of road transport infrastructure, *Dissertation*, ETH Zürich, Zurich.

Fröhlich, P. (2008) Änderungen der Intensitäten im Arbeitspendelverkehr von 1970 bis 2000, *Dissertation*, ETH Zürich, Zurich.

Hackney, J. (2009) Integration of social networks in a large-scale travel microsimulation, *Dissertation*, ETH Zürich, Zurich.

Heimgartner, C. (2005) Systemdynamische Simulation von Verkehr und Flächennutzungen: Evaluation nachhaltigkeitsfördernder Massnahmen, *Dissertation*, ETH Zürich, Zurich.

König, A. (2004) Messung und Modellierung der Verlässlichkeit des Verkehrsangebots: Experimente mit Schweizer Befragten, *Dissertation*, November 2004.

Löchl, M. (2010) Application of spatial analysis methods for understanding geographic variation of prices, demand and market success, *Dissertation*, ETH Zürich, Zurich.

Meister, K. (2011) Contribution to agent-based demand optimization in a multi-agent transport simulation, *Dissertation*, ETH Zürich, Zurich.

- Schlich, R. (2004) Verhaltenshomogene Gruppen in Längsschnitterhebungen, *Dissertation*, June 2004.
- Schönfelder, S. (2006) Urban rhythms: Modelling rhythms of individual travel behaviour, *Dissertation*, ETH Zürich, Zurich.
- Schüssler, N. (2010) Accounting for similarities between alternatives in discrete choice models based on high-resolution observations of transport behaviour, *Dissertation*, ETH Zürich, Zurich.
- Vrtic, M. (2004) Simultanes Routen- und Verkehrs-mittelwahlmodell, *Dissertation*, Fakultät für Verkehrswissenschaften, TU Dresden, Dresden, April 2004.

## 11 WORKING AND CONFERENCE PAPERS

### 11.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Doerfel, M. (2008) Technical Committee C.1 Safer Road Infrastructure, paper presented at the *AIPCR Koordinations-sitzung der technischen Delegierten*, Geneva, June 2008.
- Leemann, N. and G. Santel (2009) Two-lane roundabouts, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Lindenmann, H.P. (2007) Forschungsprojekt PPP im kommunalen Strassenunterhalt, Überblick und Benchmarking, paper presented at the *Symposium PPP*, ETH Zürich, Zurich, October 2007.
- Lindenmann, H.P. and F. Schiffmann (2005) Unfallschwerpunkte auf den Schweizerischen Nationalstrassen, Konferenzbeitrag, paper presented at the *Internationale Konferenz Safer Highways*, Stuttgart, May 2005.
- Lindenmann, H.P. and T. Weber (2006) Verkehrsablauf auf Autobahnen, Hauptstrassen innerorts und ausserorts, Jahresauswertung und -bericht 2006, IVT, ETH Zürich, Zurich.
- Lindenmann, H.P. and T. Weber (2007) Verkehrsablauf auf Autobahnen, Hauptverkehrsstrassen ausserorts und innerorts, Jahresauswertung 2007, IVT ETH Zürich, Zurich.
- Santel, G. (2006) Traffic flow and accident occurrence in construction zones on freeways, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Santel, G. (2008) Standard-profile of cross sections, paper presented at the *8th Swiss Transport Research Conference*, 11 October 2008.
- Santel, G. (2010) Lateral driving behaviour, paper presented at the *10th Swiss Transport Research Conference*, Ascona, September 2010.
- Schiffmann, F. (2008) Forschungspaket Massnahmenplanung im Erhaltungsmanagement Fahrbahnen, paper presented at the *EMS D-A-CH Tagung*, Dresden, April 2008 and the *VSS-Fachtagung Neuorientierung des Strassenunterhalts in der Schweiz*, Olten, November 2008.
- Schiffmann, F. (2006) Communal road networks in Switzerland: Forms of new Public-Private Partnership (PPP) Cooperations for the Maintenance, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Schiffmann, F. (2007) Performance-based specification for the operational and structural road maintenance of communal road networks, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September, 2007.
- Seiler, L. (2004) Is the correlation between pavement skid resistance and accident frequency significant?, paper presented at the *4th Swiss Research Conference*, Ascona, March 2004.
- Spacek, P. (2007) Datenstruktur für Auswertung und Analyse des Fahrverhaltens, IVIS – COST 352, COST-Aktion, December 2007.
- Spacek, P. (2007) Ereignisse / Beobachtungen, Belegung der Ereignistasten, Aufgaben der Versuchsleiter, IVIS – COST 352, Cost Aktion, May 2007.
- Weber, T. (2007) COST 352: Influence of Modern In-Vehicle Information Systems on Road Safety Requirements, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.

## 11.2 TRANSPORT SYSTEMS

- Alt, B. (2009) A stochastic reduction approach for public transport network design using ant colony optimization and genetic algorithm, paper presented at the *23rd European Conference on Operational Research*, Bonn, July 2009.
- Alt, B. (2007) Investigation of space-time structures in public transport networks and their optimisation, paper presented at the *7th Swiss Transport Research Conference, Ascona*, September 2007.
- Alt, B. and U. Weidmann (2009) A stochastic multiple area approach for public transport network design, paper presented at the *11th Conference on Advanced Systems for Public Transport*, Hongkong, July 2009.
- Bepperling, S-L. (2011) Verwendung von BP-Risk zur Ableitung von Sicherheitsanforderungen für strecken-seitige Zugkontrollleinrichtungen, paper presented at the *9. Wiener Eisenbahnkolloquium*, Vienna, March 2011.
- Besters, S., Wichser, J. and U. Weidmann, (2005) Elaboration of east-west market development strategies for intermodal transport, *5th Swiss Transport Research Conference, Ascona*, 9–11 March 2005.
- Carle, G. (2005) Swiss fuel filling stations, Travel Survey Metadata Series, 24, IVT, ETH Zürich, Zurich.
- Carle, G. (2005) Swiss fuel prices, Travel Survey Metadata Series, 23, IVT, ETH Zürich, Zurich.
- Carle, G. (2004) Market potential of compressed natural gas, paper presented at the *4th Swiss Transport Research Conference, Ascona*, March 2004.
- Carle, G., A. Wokaun, P. Keller and K.W. Axhausen (2004) Fuel cells for cars – a competitive analysis, paper presented at the *10th World Conference on Transport Research*, Istanbul, July 2004.
- Carrasco, N. (2009) Quantifying public transport reliability in Zurich, Paper presented at the *11th Swiss Transport Research Conference, Ascona*, May 2011.
- Dorbritz, R. (2010) Auswirkungen von Störungen, Attacken und Naturgefahren auf die Stabilität von Verkehrsnetzen, Tag der Forschung und Innovation, *Transinfra*, Fribourg, March 2010.
- Dorbritz, R. (2007) How many passengers can public transport systems handle? And how much do they handle? – A new approach to capacity, *7th Swiss Transport Research Conference, Ascona*, September 2007.
- Dorbritz, R. and M. Scherer (2008) How to handle increasing demands in limited areas – A case study of the campus area in downtown Zürich, paper presented at the *7th International Conference on Environmental Engineering*, 924–930, VGTU Press, Vilnius.
- Fries, N. (2007) Labelling – A Path Towards Energy Efficiency in Freight Transport?, paper presented at the *7th Swiss Transport Research Conference, Ascona*, September, 2007.
- Fries, N. and J. Wichser (2006) Cost and strategies for intermodal transport between Eastern and Western Europe, paper presented at the *6th Swiss Transport Research Conference, Ascona*, March 2006.
- Fries, N. and Z. Patterson (2008) Carrier or Mode? – The Dilemma of Shippers' Choice in Freight Modeling, paper presented at the *8th Swiss Transport Research Conference, Ascona*, October 2008.
- Jakubauskas, G. and U. Weidmann (2009) Analysis of possibilities to combine public and private transport in Vilnius based on Zurich urban transport model, paper presented at the *6th International Scientific Conference TRANSBALTICA 2009*, Vilnius, April 2009.
- Jakubauskas, G. and U. Weidmann (2008) Principles of sustainable multimodal Urban Public Transport Systems, paper presented at the *7th International Conference: Reliability and Statistics in Transportation and Communication*, Riga, October 2008.
- Johner, A. and M. Lüthi (2007) The train departure process and its impact on the rail network performance; paper presented at the *7th Swiss Transport Research Conference, Ascona*, 2007.
- Kisseleff, B. and M. Lüthi (2008) Analysis of depeaking effects for Zurich airport's ground handler, paper presented at the *8th Swiss Transport Research Conference, Ascona*, October 2008.
- Kölble, C. (2004) New technologies increase efficiency in intermodal transport, paper presented at the *4th Swiss Research Conference, Ascona*, March 2004.
- Latuske, N. (2009) COST 352 – Influence of Modern In-vehicle Information Systems on Road Safety Requirements, paper presented at the *9th Swiss Transport Research Conference, Ascona*, September 2009.
- Longo, G., M. Lüthi, G. Medeossi and U. Weidmann (2007) Nuove metodologie per l'incremento di capacità di reti ferroviarie, paper presented at the *SIDT Conference 2007*, Naples, February 2007.



- Lüthi, M. (2009) Precise operation – accurate and fast rescheduling: Potential benefits and challenges in the field of railway operations research, paper presented at the *23rd European Conference on Operational Research*, Bonn, July 2009.
- Lüthi, M. (2008) Optimizing traffic flow in heavily used railway networks: Influence factors and potential strategies, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Lüthi, M., A. Nash, U. Weidmann, F. Laube and R. Wuest (2007) Increasing railway capacity and reliability through integrated real-time rescheduling, paper presented at the *11th World Conference on Transportation Research*, Berkeley, June 2007.
- Lüthi, M., D. Hürlimann and A. Nash (2005) Understanding the timetable planning process as a closed loop, Proceedings of the 1st IAROR Conference, Delft, May 2005.
- Lüthi, M., G. Medeossi and A. Nash (2007) Evaluation of an integrated real-time rescheduling and train control system for heavily used areas, paper presented at the *2nd International Seminar on Railway Operations Modelling and Analysis*, Hannover, June 2007.
- Moll, S. and P. Schmidt (2009) Lärmabhängige Trassenpreise: Variantendiskussion und favorisiertes Modell am Beispiel der Schweiz, paper presented at the *RAIL-noise 2009*, Berlin, February 2009.
- Nash, A. (2006) Design of effective public transport systems, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Orth, H., R. Dorbritz and U. Weidmann (2011) Public Transport Capacity and Quality – Development of an LOS-Based Evaluation Scheme, *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Rieder, M. (2011) Auswirkungen der Liberalisierung auf die Nachhaltigkeit der Eisenbahnpenttransversalen Lötschberg und Gotthard (1990–2010) – Fallstudie, Institut Universitaire Kurt Bösch (IUKB), Sion.
- Rieder, M. and U. Weidmann (2010) Analyse du régime institutionnel du secteur ferroviaire en Suisse (1850–2009), Institut Universitaire Kurt Bösch (IUKB), Sion.
- Rieder, M. and U. Weidmann (2007) Analyse der historischen Entwicklung der Eisenbahninfrastrukturfinanzierung in Belgien, Frankreich und der Schweiz, Congrès annuel de l'ASSP des 22/23 novembre 2007 à Balsthal.
- Scherer, M., G. Anderhub and B. Alt (2008) Fussgängererhebungen im Hochschulgebiet – Mobilitätsplan Hochschulgebiet Zürich, Arbeitsbericht, IVT, ETH Zürich, Zurich.
- Schranil, S. (2011) Grosse Bahn im kleinen Massstab, Paper at NSL, 2011.
- Schranil, S. (2011) Monitoring des Störgeschehens in Bahnsystemen, Paper at Qsys-Tagung Dresden 2011.
- Weidmann, U. (2010) Die Bahn in der Schweiz von 1975 bis 2010. Krise und Wiedererstarken, Gesellschaft der Ingenieure des öffentlichen Verkehrs (GdI – AdI), (K)Ein Wunder, dass es uns noch gibt – 100 Jahre Gesellschaft der Ingenieure des öffentlichen Verkehrs 1910–2010, *Schriftenreihe*, **149**, 106–138, IVT, ETH Zürich, Zurich.
- Weidmann, U. (2010) Was braucht die Schweiz nach der NEAT?, Tagungsband zur Veranstaltung vom 12 November 2010 “NEAT: Wo stehen wir, wohin gehen wir?“, 83–87, Fachverband INFRA, Zurich.
- Weidmann, U. (2008) Hidden discrimination potentials in an integrate railway organisation, paper presented at the *Competition and Regulation in Network Industries*, Brüssel, November 2008.
- Weidmann, U. (2008) Peripherie – Eine Identifikationsfigur gerät in Vergessenheit, paper presented at the *IVT/SVI workshop Peripherer Verkehr – Verkehrte Peripherie?*, Solothurn, April 2008.
- Weidmann, U. (2007) Der Regionalverkehr als Herausforderung für die Angebots- und Infrastrukturplanung – acht Fragen und zwei Antworten, Regionen im Umbruch! – Regionalverkehr im Aufbruch?, Veranstaltung zur Zukunft des Regionalverkehrs vom 8. März 2007 an der ETH Zürich, Tagungsband, IVT, ETH Zürich, Zurich.
- Weidmann, U. and M. Scherer (2009) Effects of urban public transport systems on selected stakeholder's perceptions and reactions, paper presented at the *Symposium Trilogy of the Swiss Spatial Sciences Framework (S3F)*, Zürich, November 2009.
- Wichser, J., (2007) Automated People Movers in small urban and rural areas, paper presented at the *APM Conference*, Wien, April 2007.
- Zabel, R. and U. Weidmann (2007) Neue Herausforderungen RAMS und Technische Spezifikationen Interoperabilität: Normen, Ansätze und Überlegungen zur Anwendung auf die gesamte Bahntechnik, *Jubiläum 5 Jahre ELBAS Schweiz AG*, Zurich, March 2007 and *21. Verkehrswissenschaftliche Tage an der Technischen Universität Dresden*, Dresden, September 2007.

### 11.3 TRANSPORT PLANNING

- Arifin, Z.N. and K.W. Axhausen (2011) Investigating commute mode and route choice variability in Jakarta using multi-day GPS Data, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Armoogum, J., K.W. Axhausen, J.-P. Hubert and J.-L. Madre (2004) Immobility and mobility seen through trip based versus time use surveys, paper presented at the *7th International Conference on Travel Survey Methods*, Los Suenos, August 2004.
- Axhausen, K.W. (2011) Computational challenges for integrated micro-simulation models, in C.R. Bhat and R. Pendyala (ed.) *Travel Behaviour Research for an Evolving World*, Emerald, 2012.
- Axhausen, K.W. (2011) Translating daily life into simulation: MATSim and its possibilities, *TSU Seminar Series "Future Research in Transport"*, University of Oxford, Oxford, February 2011.
- Axhausen, K.W., S. Beige and A. Martinovits (2004) Vertiefte Auswertungen zur langfristigen räumlichen Mobilität, Forschungsprogramm UNIVOX 2003 Teil I G Verkehr, Vertiefungsbericht, *Arbeitsberichte Verkehrs- und Raumplanung*, **238**, IVT, ETH Zürich, Zurich.
- Balmer M., A. Vogel and K. Nagel (2005) Shape morphing of intersections using curb side oriented driver simulation, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Balmer M., M. Bernard and K.W. Axhausen (2005) Matching geo-coded graphs, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Balmer M., M. Rieser, A. Vogel, K.W. Axhausen and K. Nagel (2005) Generating day plans based on origin-destination matrices – a comparison study between VISUM and MATSIM based on Kanton Zürich data, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Balmer, M. (2006) Shape morphing of intersection layouts using curb side oriented driver simulation, *8th International Conference on Design & Decision Support Systems in Architecture and Urban Planning (DDSS)*, Heeze, July 2006.
- Balmer, M., B. Raney and K. Nagel (2004) Agent-based activities planning for an iterative traffic simulation of Switzerland, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Balmer, M., B. Raney and K. Nagel (2004) Coupling activity-based demand generation to a truly agent-based traffic simulation-activity time allocation, *EIRASS workshop on Progress in activity-based analysis*, Maastricht, May 2004.
- Balmer, M., K. Meister and K.W. Axhausen (2010) Integration of individual travel behavior and micro-simulation, paper presented at the *Networks for Mobility*, Stuttgart, September 2010.
- Balmer, M., K.W. Axhausen and K. Nagel (2006) A demand generation framework for large scale micro simulations, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Balmer, M., M. Rieser and K.W. Axhausen (2010) Integrated activity-based demand modeling and traffic assignment on micro-level for very large scenarios, paper presented at the *Innovations in Travel Modeling (ITM'10)*, Tempe, May 2010.
- Balmer, M., M. Rieser, K. Meister, D. Charypar, N. Lefebvre, K. Nagel and K.W. Axhausen (2008) MATSim-T: Architektur und Rechenzeiten, *Heureka '08*, Stuttgart, March 2008.
- Beige, S. (2006) Long-term mobility decisions in the life course, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Beige, S. (2005) Tourist behaviour in alpine regions of Switzerland, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Beige, S. (2005) Transport infrastructure, tourist behaviour and spatial structure in the landscapes and habitats of the alps, *Travel Survey Metadata Series*, **14**, IVT, ETH Zürich, Zurich.
- Beige, S. (2004) Ownership of mobility tools in Switzerland, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Beige, S. and K.W. Axhausen (2005) Besitz und Nutzung von Mobilitätsressourcen sowie Einstellungen zum Road Pricing in der Schweiz, Forschungsprogramm UNIVOX 2005 Teil I G Verkehr, Trendbericht, *Arbeitsberichte Verkehrs- und Raumplanung*, **288**, IVT, ETH Zürich, Zurich.
- Beige, S. and K.W. Axhausen (2005) Feldbericht der Befragung zur langfristigen räumlichen Mobilität, *Arbeitsberichte Verkehrs- und Raumplanung*, **315**, IVT, ETH Zürich, Zurich.

- Beige, S. and K.W. Axhausen (2005) Road Pricing in der Schweiz: Auswertungen zur Einstellung gegenüber Road Pricing sowie zur Verwendung der entstehenden Einnahmen, Forschungsprogramm UNIVOX 2005 Teil I G Verkehr, Vertiefungsbericht, *Arbeitsberichte Verkehrs- und Raumplanung*, **323**, IVT, ETH Zürich, Zurich.
- Bell, M.G.H., J.S. Hwee, S. Grosso and K.W. Axhausen (2006) The PFE: a one-stage network flow estimator for transport planning and traffic management, *Arbeitsberichte Verkehrs- und Raumplanung*, **339**, IVT, ETH Zürich, Zurich.
- Bernard, M. (2005) New design concepts for transport infrastructures, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Bernard, M. (2004) Notes on the design concepts for transport infrastructures: past and future, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Bernard, M. and K.W. Axhausen (2007) A highway design concept based on probabilistic operational reliability, paper presented at the *11th World Conference of Transport Research*, Berkeley, June 2007.
- Bernard, M., J.K. Hackney and K.W. Axhausen (2006) Correlation of link travel speeds, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Bodenmann, B.R. (2007) Company decisions on choice of location: Case study St. Gallen region, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Bodenmann, B.R. (2006) Lebenszyklusmodelle für Unternehmen in der Raumplanung, *Arbeitsberichte Verkehrs- und Raumplanung*, **393**, IVT, ETH Zürich, Zurich.
- Bodenmann, B.R. (2006) Modelle zur Standortwahl von Unternehmen, *Arbeitsberichte Verkehrs- und Raumplanung*, **420**, IVT, ETH Zürich, Zurich.
- Bodenmann, B.R. (2008) A model of company location choice for the region of St. Gallen, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Bürgle, M., M. Löchl and U. Waldner (2005) Integrated transport and land use Simulation for Zürich, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Bürgle, M., M. Löchl, U. Waldner and K.W. Axhausen (2005) Land use and transport simulation: Applying UrbanSim in the Greater Zürich area, paper presented at the *Computers in Urban Planning and Urban Management 2005*, London, June 2005.
- Cascetta, E., F. Pagliara and K.W. Axhausen (2010) Can dominance affect spatial choices?, *Arbeitsberichte Verkehrs- und Raumplanung*, **621**, IVT, ETH Zürich, Zurich.
- Cascetta, E., F. Pagliara and K.W. Axhausen (2007) The use of dominance variables in choice set generation, paper presented at the *11th World Conference of Transport Research*, Berkeley, June 2007.
- Casetta, E., F. Pagliara and K.W. Axhausen (2007) Dominance variables and intervening opportunities for choice set generation, paper presented at the *15th European Colloquium on Theoretical and Quantitative Geography*, Montreux, September 2008.
- Cassetta, E., F. Pagliara and K.W. Axhausen (2006) Dominance attributes for alternatives' perception in choice set formation: An application to spatial choices, *Arbeitsberichte Verkehrs- und Raumplanung*, **371**, IVT, ETH Zürich, Zurich.
- Chakirov, A. and A. Erath (2011) Use of public transport smart card fare payment data for travel behaviour analysis in Singapore, paper presented at the *16th International Conference of Hong Kong Society for Transportation Studies*, Hong Kong, December 2011.
- Chalasani, V.S. (2005) Enriching the household travel survey data: Experiences from Microcensus 2000, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Chalasani, V.S. (2004) Travel data archiving: The art of presenting and preserving travel data, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Chalasani, V.S. and K.W. Axhausen (2004) A comparison of Swiss Household travel surveys: EVE1998, MZ2000 and SRM2001, *Arbeitsberichte Verkehrs- und Raumplanung*, **174**, IVT, ETH Zürich, Zurich.
- Charypar, D. (2009) Agent-based continuous replanning: Concept and challenges, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Charypar, D., A. Horni and K.W. Axhausen (2010) Pushing the limits: A concept of a parallel microsimulation framework, *Arbeitsberichte Verkehrs- und Raumplanung*, **640**, IVT, ETH Zürich, Zurich.
- Charypar, D., F. Märki and K.W. Axhausen (2011) Integrating two Simulation Modules with a General Parallelization Framework, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.

- Charypar, D., K.W. Axhausen and K. Nagel (2007) An event-driven parallel queue-based microsimulation for large scale traffic scenarios, paper presented at the *11th World Conference of Transport Research*, Berkeley, June 2007.
- Charypar, D., K.W. Axhausen and K. Nagel (2006) Implementing Activity-Based Models: accelerating the re-planning process of agents using an evolution strategy, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Charypar, D., M. Balmer and K.W. Axhausen (2008) A high-performance traffic flow microsimulation for large problems, *Arbeitsbericht Verkehrs- und Raumplanung*, **509**, IVT, ETH Zürich, Zurich.
- Ciari, F. (2011) Modelling location decisions of retailers with an agent-based approach, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Ciari, F. (2010) Estimation of car-sharing demand using an activity-based microsimulation approach: Model discussion and preliminary results, paper presented at the *10th Swiss Transportation Research Conference*, Ascona, September 2010.
- Ciari, F. (2009) Modeling collective taxis in a multi-agent traffic simulation framework, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Ciari, F. (2008) A new mode choice model for a multi-agent transport simulation, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Ciari, F. and K.W. Axhausen (2011) Carsharing membership: A model for Switzerland, *Arbeitsberichte Verkehrs- und Raumplanung*, **742**, IVT, ETH Zürich, Zurich.
- Ciari, F. and K.W. Axhausen (2011) Why do people carpool: Results from a Swiss survey, *Arbeitsberichte Verkehrs- und Raumplanung*, **741**, IVT, ETH Zürich, Zurich.
- Ciari, F., M. Balmer and K.W. Axhausen (2010) Estimating the potential of a large scale car-sharing system with an agent-based microsimulation approach, paper presented at the *12th World Conference on Transport Research*, Lisbon, July 2010.
- Ciari, F., M. Balmer and K.W. Axhausen (2007) Mobility tool ownership and mode choice decision processes in multi-agent transportation simulation, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Ciari, F., M. Löchl and K.W. Axhausen (2008) Location choice of retailers – an agent-based approach, paper presented at the *15th International Conference on Recent Advances in Retailing and Services Science*, Zagreb, July 2008.
- Cirillo, C., F. Koppelman and K.W. Axhausen (2004) Modelling activity travel scheduling for workers, paper presented at the *Workshop Activity-based Analysis*, Maastricht, May 2004.
- De Jong, G., S. Gayda, A. Papola, S. Algers, I.B. Hovi, L. Klinge, J. Polak und P. Fröhlich (2004) The EXPEDITE project: Applying meta-models for passenger and freight transport in Europe, paper presented at the *10th World Conference on Transport Research*, Istanbul, July 2004.
- De Lapparent, M., A. Frei and K.W. Axhausen (2010) Long distance mode choice and distributions of values of travel time savings in the European countries, *Arbeitsberichte Verkehrs- und Raumplanung*, **654**, IVT, ETH Zürich, Zurich.
- Dobler, C. (2009) An implementation of within day replanning in MATSim, *Arbeitsberichte Verkehrs- und Raumplanung*, **598**, IVT, ETH Zürich, Zurich.
- Dobler, C. (2009) Simulation of information oriented knowledge models, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Dobler, C., K.W. Axhausen, M. Balmer and S. Weinmann (2011) Transport simulations: Knowledge levels and system outcomes, *Arbeitsberichte Verkehrs- und Raumplanung*, **699**, IVT, ETH Zürich, Zurich.
- Edelhoff, T., H. Schilling, M. Balmer and R.H. Möhring (2007) Optimal route assignment in large scale microsimulations, *Arbeitsberichte*, **409**, IVT, ETH Zürich, Zurich.
- Erath A. (2006) Value of travel time savings for shopping trips in Switzerland, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Erath, A. (2008) A Framework of assessing vulnerability of transport infrastructure, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Erath, A. (2007) Graph-theoretical analysis of the Swiss road and railway networks over time, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.

- Erath, A. (2005) Shopping travel survey 2004, *Travel Survey Metadata Series*, **20**, IVT, ETH Zürich, Zurich.
- Erath, A. and K.W. Axhausen (2010) Assessing network vulnerability using the CBA and Logsum measure, paper presented at the *12th World Conference on Transportation Research*, Lisbon, July 2010.
- Erath, A. and K.W. Axhausen (2009) Mobility costs and residence location choice, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Erath, A. and K.W. Axhausen (2008) New practices in vulnerability assessment: Applicability and limitations, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Erath, A. and P. Fröhlich (2004) Geschwindigkeiten im PW-Verkehr und Leistungsfähigkeiten von Strassen über die Zeit, *Arbeitsberichte Verkehrs- und Raumplanung*, **184**, IVT, ETH Zürich, Zurich.
- Erath, A., J. Birdsall, K.W. Axhausen and R. Hajdin (2008) Vulnerability assessment of the Swiss road network, *Arbeitsberichte Verkehrs- und Raumplanung*, **513**, IVT, ETH Zürich, Zurich.
- Erath, A., N. Frank, R. Lademann and K.W. Axhausen (2007) The impact of travel time savings on shopping location choice or how far do people go to shop cheaply?, paper presented at the *14th International Conference on Recent Advances in Retailing and Service Science*, San Francisco, July 2007.
- Feil, M., M. Balmer and K.W. Axhausen (2009) Enhancement and estimation of MATSim's utility function, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Fourie, P. and K. Müller (2011) Multi-level weighting of travel survey results, paper presented at the *16th International Conference of Hong Kong Society for Transportation Studies*, Hong Kong, December 2011.
- Frei, A. (2008) Survey issues in long-distance travel, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Frei, A. (2005) Swiss hedonic consumer price index for Car between 1947 and 2004, *Travel Survey Metadata Series*, **19**, IVT, ETH Zürich, Zurich.
- Frei, A. and K.W. Axhausen (2011) Collective location choice model, *Arbeitsberichte Verkehrs- und Raumplanung*, **686**, IVT, ETH Zürich, Zurich.
- Frei, A. and K.W. Axhausen (2011) Modeling spatial embedded social networks, *Arbeitsberichte Verkehrs- und Raumplanung*, **685**, IVT, ETH Zürich, Zurich.
- Frei, A. and K.W. Axhausen (2007) Size and structure of social network geographies, *Arbeitsberichte Verkehrs- und Raumplanung*, **439**, IVT, ETH Zürich, Zurich.
- Frejinger, E., M. Bierlaire, J. Stojanovic, M. Vrtic, N. Schüssler and K.W. Axhausen (2006) A route choice model in Switzerland Based on RP and SP Data, *Arbeitsberichte Verkehrs- und Raumplanung*, **374**, IVT, ETH Zürich, Zurich.
- Frick, M. (2005) Synthetic population of the Canton Zurich for the year 2000, *Travel Survey Metadata Series*, **18**, IVT, ETH Zürich, Zurich.
- Frick, M. A. (2004) Generating Synthetic Populations using IPF and Monte Carlo Techniques: Some New Results, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Fröhlich, P. and K.W. Axhausen (2004) Sensitivity of accessibility measurements to the underlying transport network model, *Arbeitsberichte Verkehrs- und Raumplanung*, **245**, IVT, ETH Zürich, Zurich.
- Fröhlich, P. and T. Fonfara (2004) A method for estimating highway gradients and curvatures for capacity determination, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Fröhlich, P., T. Frey, S. Reubi and H.-U. Schiedt (2004) Entwicklung des Transitverkehrs-Systems und deren Auswirkung auf die Raumnutzung in der Schweiz (COST 340): Verkehrsnetz-Datenbank, *Arbeitsberichte Verkehrs- und Raumplanung*, **208**, IVT, ETH Zürich, Zurich.
- Galus, M.D., R.A. Waraich, M. Balmer, G. Andersson and K.W. Axhausen (2009) A framework for investigating the impact of PHEVs, paper presented at the *International Advanced Mobility Forum 2009*, Geneva, March 2009.
- González Vayá, M., T. Krause, R.A. Waraich and G. Andersson (2011) Locational marginal pricing based impact assessment of plug-in hybrid electric vehicles on transmission networks, *Arbeitsberichte Verkehrs- und Raumplanung*, **672**, IVT, ETH Zürich, Zurich.
- Habib, K.M.N., E. Miller and K.W. Axhausen (2007) How reasonable is the typical week modeling time frame approach in activity-based travel demand modelling? Case study on shopping activity/trip using multi-week trip diary survey data, *Arbeitsberichte Verkehrs- und Raumplanung*, **443**, IVT, ETH Zürich, Zurich.

- Hackney, J., A. Frei, T. Ohnmacht and K.W. Axhausen (2006) Incorporating social networks into travel behavior analysis, paper presented at the *SUNBELT XXVI*, Vancouver, April 2006.
- Hackney, J.H. (2005) Canton Zurich floating car based link speed measurements, *Travel Survey Metadata Series*, **17**, IVT, ETH Zürich, Zurich.
- Hackney, J.K. (2008) Microsimulation of interdependent activity plans with social networks, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Hackney, J.K. (2006) Results of discrete choice models for long-distance travel based on the DATELINE survey, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Hackney, J.K. (2005) Results of discrete choice models for long-distance travel based on the DATELINE Survey, *Arbeitsberichte Verkehrs- und Raumplanung*, **334**, IVT, ETH Zürich, Zurich.
- Hackney, J.K. (2004) Discrete choice models for long-distance travel based on the DATELINE Survey, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Hackney, J.K. (2004) Measures of rail impedance in an improved IVT european rail model *Arbeitsberichte Verkehrs- und Raumplanung*, **262**, IVT, ETH Zürich, Zurich.
- Hackney, J.K. and F. Marchal (2008) A model for coupling multi-agent social interactions and traffic simulation, *Arbeitsberichte Verkehrs- und Raumplanung*, **522**, IVT, ETH Zürich, Zurich.
- Hackney, J.K., M. Bernard, S. Bindra and K.W. Axhausen (2007) Predicting road speeds with regional structure variables and network information, paper presented at the *11th World Conference of Transport Research*, Berkeley, June 2007.
- Hackney, J.K., Z. Oblozinska and K.W. Axhausen (2004) Qualität des Verkehrsangebots: mIV, *Schlussbericht an den Kanton Zürich*, IVT, ETH Zürich, Zurich.
- Hess, S. (2007) Stated preference models for airport and airline choice with conditioning on observed choices, paper presented at the *11th World Conference of Transportation Research Board*, Washington, Berkeley, June 2007.
- Hess, S. and J.M. Rose (2007) Some lessons for working with repeated choice data, paper presented at the *11th World Conference of Transport Research*, Berkeley, June 2007.
- Hess, S. and K.W. Axhausen (2004) Checking our assumptions in value-of-travel-time modelling: Recovering taste distributions, *Arbeitsberichte Verkehrs- und Raumplanung*, **249**, IVT, ETH Zürich, Zurich
- Hess, S., J.W. Polak and K.W. Axhausen (2005) Distributional assumptions in mixed logit models, *Arbeitsberichte Verkehrs- und Raumplanung*, **305**, IVT, ETH Zürich, Zurich.
- Hess, S., J.W. Polak and M. Bierlaire (2006) Confounding between substitution patterns and random taste heterogeneity, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Hess, S., M. Bierlaire and J.W. Polak (2006) Discrete mixtures models, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Horni, A. (2008) Location choice for leisure and shopping activities implemented in the activity-based multi-agent transport simulation MATSim, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Horni, A. and F. Ciari (2011) Microsimulating choices of different agent types: Shoppers and retailers, poster presented at Rational Choice Seminar, San Servolo (Venice), November 2011.
- Horni, A., B. Vitins and K.W. Axhausen (2011) The Zurich Scenario: A Technical Overview, *Arbeitsberichte Verkehrs- und Raumplanung*, **687**, IVT, ETH Zürich, Zurich.
- Horni, A., D. Charypar and K.W. Axhausen (2011) Variability in transport microsimulations investigated for MATSim: Preliminary results, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Horni, A., D. Charypar and K.W. Axhausen (2011) Variability in transport microsimulations Investigated with the multi-agent transport simulation MATSim, *Arbeitsberichte Verkehrs- und Raumplanung*, **692**, IVT, ETH Zürich, Zurich.
- Horni, A., D.M. Scott, M. Balmer and K.W. Axhausen (2009) Location choice modeling for shopping and leisure activities with MATSim: Utility Function Extension and Validation Results, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Jäggi, B. and K.W. Axhausen (2011) Modeling long term investment decisions in housing and transportation, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.

- Jäggi, B. and K.W. Axhausen (2010) Surveying energy efficiency in housing and transport using a Priority Evaluator, *Arbeitsberichte Verkehrs- und Raumplanung*, **636**, IVT, ETH Zürich, Zurich.
- Jäggi, B., C. Weis and K.W. Axhausen (2011) Stated Response and multiple discrete-continuous choice models: Analyses of residuals, *Arbeitsberichte Verkehrs- und Raumplanung*, **661**, IVT, ETH Zürich, Zurich.
- Joubert, J.W. and K.W. Axhausen (2009) Inferring commercial vehicle activities in Southern Africa, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Kato, H. (2005) Japan Inter-regional travel survey 1990, *Travel Survey Metadata Series*, **21**, IVT, ETH Zürich, Zurich.
- Kato, H., K.W. Axhausen and M. Imai (2007) Value of travel time savings of urban private travel: Comparison of Tokyo and Karlsruhe, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Killer, V. (2009) The dynamics of commuting linkage and overlaps within polycentric regions, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Killer, V. and K.W. Axhausen (2011) Functional similarities in spatially correlated location choice models: An idea sketch, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Killer, V. and K.W. Axhausen (2009) The spatial and temporal change of commuting regions, *Arbeitsberichte Verkehrs- und Raumplanung*, **583**, IVT, ETH Zürich, Zurich.
- Köll, H., M. Bader and K.W. Axhausen (2004) Auswirkungen des Grünblinkens bei lichtsignalgesteuerten Knoten auf die Verkehrssicherheit, *Arbeitsberichte Verkehrs- und Raumplanung*, **206**, IVT, ETH Zürich, Zurich.
- Köll, H., M. Fellendorf, K.W. Axhausen and M. Bader (2004) Auswirkungen des Grünblinkens auf die Leistungsfähigkeit von lichtsignalgesteuerten Knoten, *Arbeitsberichte Verkehrs- und Raumplanung*, **217**, IVT, ETH Zürich, Zurich.
- Kowald, M. (2010) Focussing on response behaviour from the perspective of goal-framing theory, *Arbeitsberichte Verkehrs- und Raumplanung*, **616**, IVT, ETH Zürich, Zurich.
- Kowald, M. (2010) The spatial spread of leisure networks: Experiences from a snowball survey, *30th Sunbelt Social Networks Conference*, Riva del Garda, July 2010.
- Kowald, M. (2010) The structure and spatial spread of egocentric leisure networks, paper presented at the *10th Swiss Transport Research Conference*, Ascona, September 2010.
- Kowald, M. (2009) Collecting data on leisure contacts and daily activities, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Kowald, M. (2008) Spatial relationships and social networks: An iterative approach, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Kowald, M. (2008) Spatial relationships and social networks: An iterative survey approach, paper presented at the *Workshop Applications of Social Network Analysis*, Zurich, September 2008.
- Kowald, M. and K.W. Axhausen (2011) Leisure contacts and behaviour. Fieldwork report and selected results from an activity diary, *Arbeitsberichte Verkehrs- und Raumplanung*, **712**, IVT, ETH Zürich, Zurich.
- Kowald, M. and K.W. Axhausen (2010) Spatial distribution of connected leisure networks: Selected results from a snowball sample, *Arbeitsberichte Verkehrs- und Raumplanung*, **614**, IVT, ETH Zürich, Zurich.
- Kowald, M. and T. Arentze (2010) Dealing with hierarchically clustered data: Missing value analyses and imputations, *Arbeitsberichte Verkehrs- und Raumplanung*, **656**, IVT, ETH Zürich, Zurich.
- Kowald, M., A. Frei, J.K. Hackney, J. Illenberger and K.W. Axhausen (2009) Collecting data on Leisure Travel: The Link between Leisure Acquaintances and Social Interactions, paper presented at the *Applications of Social Network Analysis*, Zürich, August 2009.
- Kowald, M., A. Frei, J.K. Hackney, J. Illenberger and K.W. Axhausen (2009) Using an ascending sampling strategy to survey connected egocentric networks: A field work report on phase one of the survey, *Arbeitsberichte Verkehrs- und Raumplanung*, **582**, IVT, ETH Zürich, Zurich.
- Kowald, M., C. Dobler und K.W. Axhausen (2011) Der Einfluss sozialer Kontakte in gross-räumigen Evakuierungsereignissen, *Arbeitsberichte Verkehrs- und Raumplanung*, **683**, IVT, ETH Zürich, Zurich.
- Kowald, M., C. Dobler und K.W. Axhausen (2011) Evakuierungsverhalten in der Schweiz: Feldbericht einer repräsentative Bevölkerungsbefragung, *Arbeitsberichte Verkehrs- und Raumplanung*, **711**, IVT, ETH Zürich, Zurich.

- Kowald, M., C. Dobler und K.W. Axhausen (2011) Soziales Verhalten in gross-räumigen Evakuierungsergebnissen: Ergebnisse einer Expertenbefragung, *Arbeitsberichte Verkehrs- und Raumplanung*, **710**, IVT, ETH Zürich, Zurich.
- Kowald, M., J.K. Hackney and A. Frei (2008) Mögliche Vorgehensweisen zur Erhebung sozialer Netzwerkdaten durch die iterative Kombination ego-zentrierter Netzwerke, *Arbeitsberichte Verkehrs- und Raumplanung*, **506**, IVT, ETH Zürich, Zurich.
- Larsen, J., J. Urry and K.W. Axhausen (2005) Distance connections and face-to-face Proximities, *Arbeitsberichte Verkehrs- und Raumplanung*, **298**, IVT, ETH Zürich, Zurich.
- Lefebvre, N. and M. Balmer (2007) Fast shortest path computation in time-dependent traffic networks, *Arbeitsberichte Verkehrs- und Raumplanung*, **439**, IVT, ETH Zürich, Zurich.
- Löchl, M. (2008) Standortplanung im Detail-/Einzelhandel: Auswertung von Interviews mit Unternehmen in Deutschland und der Schweiz, *Arbeitsberichte Verkehrs- und Raumplanung*, **492**, IVT, ETH Zürich, Zurich.
- Löchl, M. (2007) Considering spatial dependence in hedonic rent price regression, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Löchl, M. (2005) Stability of travel behaviour: Thurgau 2003, *Travel Survey Metadata Series*, **16**, IVT, ETH Zürich, Zurich.
- Löchl, M., K.W. Axhausen and S. Schönfelder (2005) Analysing Swiss longitudinal travel data, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Löchl, M., M. Bürgle and U. Waldner (2007) Handbuch Simulationsmodell Grossraum Zürich, *Arbeitsberichte Polyprojekt "Zukunft urbane Kulturlandschaften"*, **10**, NSL, ETH Zürich, Zurich.
- Löchl, M., R. Hauri and K.W. Axhausen (2009) Agents, space and market shares: A spatial analysis of the Swiss insurance market, *Arbeitsberichte Verkehrs- und Raumplanung*, **557**, IVT, ETH Zürich, Zurich.
- Löchl, M., U. Waldner and M. Bürgle (2005) Haushaltsbefragung zur Wohnsituation im Grossraum Zürich – Tabellenband, *Arbeitsberichte Polyprojekt Zukunft urbane Kulturlandschaften*, **2**, NSL, ETH Zürich, Zurich.
- Machguth, H. and M. Löchl (2004) Geokodierung 6-Wochenbefragung Thurgau 2003, *Arbeitsberichte Verkehrs- und Raumplanung*, **219**, IVT, ETH Zürich, Zurich.
- Machguth, H., M. Löchl and M. Bürgle (2004) Berechnung von Routen- und Verkehrsmittelalternativen für den Datensatz Thurgau 2003, *Arbeitsberichte Verkehrs- und Raumplanung*, **231**, IVT, ETH Zürich, Zurich.
- Märki, F., D. Charypar and K.W. Axhausen (2011) Target driven activity planning, *Arbeitsberichte Verkehrs- und Raumplanung*, **704**, IVT, ETH Zürich, Zurich.
- Märki, F., D. Charypar and K.W. Axhausen (2011) A continuous simulation concept for daily travel, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Märki, F., D. Charypar and K.W. Axhausen (2010) A first approach to a continuous simulation of daily travel, paper presented at the *10th Swiss Transport Research Conference*, Ascona, September 2010.
- Martinez, F., E. Cascetta, F. Pagliara, M. Bierlaire and K.W. Axhausen (2008) An application of the constrained multinomial Logit (CMNL) for modeling dominated choice alternatives, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Meister, K. and K.W. Axhausen (2011) An improved procedure for the calculation of an agent-based stochastic user equilibrium in a multi-agent transport simulation, *Arbeitsberichte Verkehrs- und Raumplanung*, **747**, IVT, ETH Zürich, Zurich.
- Meister, K., D. Charypar, N. Lefebvre, M. Rieser, M. Balmer and K.W. Axhausen (2007) An agent-based model of travel demand of all of Switzerland, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Meister, K., M. Balmer and K.W. Axhausen (2005) An improved replanning module for agent-based micro simulations of travel behavior, *Arbeitsberichte Verkehrs- und Raumplanung*, **303**, IVT, ETH Zürich, Zurich.
- Meister, K., M. Balmer, F. Ciari, A. Horni, M. Rieser, R.A. Waraich and K.W. Axhausen (2010) Large-scale agent-based travel demand optimization applied to Switzerland, including mode choice, paper presented at the *12th World Conference on Transportation Research*, Lisbon, July 2010.
- Meister, K., M. Balmer, K.W. Axhausen and K. Nagel (2006) Planomat: A comprehensive scheduler for a large-scale multi-agent transportation simulation, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.



- Meister, K., M. Frick and K.W. Axhausen (2005) Generating daily activity schedules for households using Genetic Algorithms, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.
- Meister, K., M. Rieser, F. Ciari, A. Horni, M. Balmer and K.W. Axhausen (2008) Anwendung eines agentenbasierten Modells der Verkehrsnachfrage auf die Schweiz, *Heureka '08*, Stuttgart, March 2008.
- Moll, S. and P. Schmidt (2009) Lärmabhängige Trassenpreise: Variantendiskussion und favorisiertes Modell am Beispiel der Schweiz, paper presented at the *RAIL-noise 2009*, Berlin, February 2009.
- Moll, S. and U. Weidmann (2010) Steigerung der Produktivität im Schienengüterverkehr durch eine systematische Integration von Kundenwissen in die operative Planung, *Schweizerische Management Gesellschaft. Best Practice Meeting*, Zurich, June 2010.
- Ohnmacht, T. (2005) Social Networks, Mobily Biographies and Mobility Tools, *Travel Survey Metadata Series*, **15**, IVT, ETH Zürich, Zurich.
- Ohnmacht, T., A. Frei and K.W. Axhausen (2007) Geografien des Sozialen und Mobilität: Für wen macht das Privatleben mehr Arbeit?, *Arbeitsberichte Verkehrs- und Raumplanung*, **413**, IVT, ETH Zürich, Zurich.
- Ordonez, S. and A. Erath (2011) Semi-automatic tool for map-matching bus routes on high-resolution navigation networks, paper presented at the *16th International Conference of Hong Kong Society for Transportation Studies*, Hong Kong, December 2011.
- Pagliaria, F., E. Cassetta and K.W. Axhausen (2006) Variabili di dominanza ed intervening opportunities per la simulazione dell'insieme di scelta, paper presented at the *XXVII Conferenza Scientifica Annuale dell'AIRe*, Pisa, October 2006.
- Rieser, M. and K. Nagel (2007) Network breakdown “at the edge of chaos” in multi-agent traffic simulations, paper presented at the *European Conference on Complex Systems (ECCS)*, Dresden, October 2007.
- Rieser, M., U. Beuck, M. Balmer and K. Nagel (2008) Modelling and simulation of a morning reaction to an evening toll, paper presented at the *Innovations in Travel Modeling (ITM'08)*, Portland, June 2008.
- Sandmeier S. (2008) Vom Eisenbahnbau zur Verkehrsplanung: Die Institutionalisierung des Verkehrswesens an der ETH Zürich, in S. Sandmeier and K.W. Axhausen (eds.) *125 Jahre Verkehrswesen an der ETH Zürich*, 4–33, *Arbeitsberichte Verkehrs- und Raumplanung*, **493**, IVT, ETH Zürich, Zurich.
- Sandmeier S. and K.W. Axhausen (eds.) (2008) *125 Jahre Verkehrswesen an der ETH Zürich*, *Arbeitsberichte Verkehrs- und Raumplanung*, **493**, IVT, ETH Zürich, Zurich.
- Sandmeier, S. (2008) Die Etablierung der Verkehrsplanung an der ETH: Zur Vorgeschichte des IVT, *Arbeitsberichte Verkehrs- und Raumplanung*, **545**, IVT, ETH Zürich, Zurich.
- Schirmer, P. (2010) Options and constraints of a parcel based approach in ‘UrbanSimE’, paper presented at *10th Swiss Transport Research Conference*, Ascona, September 2010.
- Schirmer, P. (2010) Möglichkeiten und Anforderungen eines Parzellen-basierten Ansatzes in ‘UrbanSimE’, presented at *Universitätstagung Verkehrswesen*, Berlin, September 2010.
- Schirmer, P. and N. Kawagishi (2011) Using shape grammars as a rule based approach in urban planning – a report on practice, in T. Zupancic, M. Juvancic, S. Verovsek and A. Jutraz (eds.) *Respecting Fragile Places – Proceedings of the 29th Conference on Education in Computer Aided Architectural Design in Europe*, 116–124, eCAADe and Uni Ljubljana, Ljubljana.
- Schirmer, P., B.C. Belart and K.W. Axhausen (2011) Location choice in the greater Zurich Area – an intermediate report, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Schlich, R. und K.W. Axhausen (2005) Analysing interpersonal variability for homogeneous groups of travelers, *Arbeitsberichte Verkehrs- und Raumplanung*, **296**, IVT, ETH Zürich, Zurich.
- Schönfelder, S. and K.W. Axhausen (2004) Structure and innovation of human activity spaces, *Arbeitsberichte Verkehrs- und Raumplanung*, **258**, IVT, ETH Zürich, Zurich.
- Schüssler, N. (2011) Capitalising modern data sources for observing and modelling transport behaviour, *Arbeitsberichte Verkehrs- und Raumplanung*, **707**, IVT, ETH Zurich, Zurich.
- Schüssler, N. and K. W. Axhausen (2011) Combining GPS travel diaries with psychometric scales, paper presented at the *9th International Conference on Survey Methods in Transport*, Termas de Puyehue, November 2011.
- Schüssler, N. and K. W. Axhausen (2010) Development of psychometric scales to evaluate the attitude towards risk, environmentalism and variety seeking of public transport users, *Arbeitsberichte Verkehrs- und Raumplanung*, **644**, IVT, ETH Zurich, Zurich.

- Schüssler, N. and K.W. Axhausen (2009) Accounting for similarities in destination choice modelling: A concept, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Schüssler, N. and K.W. Axhausen (2008) Identifying trips and activities and their characteristics from GPS raw data without further information, paper presented at the *8th International Conference on Survey Methods in Transport*, Annecy, May 2008.
- Schüssler, N. and K.W. Axhausen (2007) Recent developments regarding similarities in transport modelling, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Schüssler, N., L. Montini, C. Dobler and K.W. Axhausen (2011) Improving automatic post-processing routines for GPS observations using prompted-recall data, paper presented at the *9th International Conference on Survey Methods in Transport*, Termas de Puyehue, November 2011.
- Schüssler, N., M. Balmer and K.W. Axhausen (2009) Deriving route choice sets from GPS data and navigation networks, *Arbeitsberichte Verkehrs- und Raumplanung*, **567**, IVT, ETH Zürich, Zurich.
- Shah, M. (2010) Activity-based travel demand modelling including freight and cross-border traffic with transit simulation, *Arbeitsberichte Verkehrs- und Raumplanung*, **654**, IVT, ETH Zürich, Zurich.
- Sharma, S. and K.W. Axhausen (2009) Design diagrams for road infrastructure elements: High capacity roads, *Arbeitsberichte Verkehrs- und Raumplanung*, **560**, IVT, ETH Zürich, Zurich.
- Simma, A., P. Cattaneo, M. Baumeler and K.W. Axhausen (2004) Factors influencing the individual shopping behaviour: The case of Sitzerland, *Arbeitsberichte Verkehrs- und Raumplanung*, **247**, IVT, ETH Zürich, Zurich.
- Stauffacher, M., R. Schlich, K.W. Axhausen and R. Scholz (2005) The diversity of travel behaviour: motives and social interactions in leisure time activities, *Arbeitsberichte Verkehr- und Raumplanung*, **321**, IVT, ETH Zürich, Zurich.
- Susilo, Y. and K.W. Axhausen (2007) Stability in individual daily activity-travel-location patterns: A study using the Herfindahl-Hirschman Index, *Arbeitsberichte Verkehrs- und Raumplanung*, **435**, IVT, ETH Zürich, Zurich.
- Susilo, Y.O. and K.W. Axhausen (2007) How firm are you? A study of the stability of individual activity-travel-location patterns using the Herfindahl-Hirschman Index, paper presented at the *11th World Conference of Transport Research*, Berkeley, June 2007.
- Szimba, E., K.W. Axhausen, J.K. Hackney and M. Kraft (2007) Passenger rail tariffs in Europe: An approach for modeling direct user costs under consideration of market segment and country-specific peculiarities, paper presented at the *11th World Conference of Transport Research*, Berkeley, June 2007.
- Tschopp, M. and K.W. Axhausen (2005) Verkehrssystem, Touristenverhalten und Raumstruktur in alpinen Landschaften – Bericht zu Raumstruktur, lokaler und interregionaler Erreichbarkeit, *Arbeitsberichte Verkehrs- und Raumplanung*, **273**, IVT, ETH Zürich, Zurich.
- Tschopp, M. and K.W. Axhausen (2004) Methoden zur räumlichen Datenanalyse, *Arbeitsberichte Verkehrs- und Raumplanung*, **233**, IVT, ETH Zürich, Zurich.
- Tschopp, M., P. Fröhlich and K.W. Axhausen (2006) Accessibility development and its spatial impacts in Switzerland 1950–2000, paper presented at the *6th Swiss Transport Research Conference*, Ascona, March 2006.
- Tschopp, M., P. Fröhlich and K.W. Axhausen (2006) Verkehrsinfrastruktur und räumliche Entwicklung – eine ökonometrische Analyse, *Arbeitsberichte Verkehrs- und Raumplanung*, **352**, IVT, ETH Zürich, Zurich.
- Tschopp, M., P. Fröhlich and K.W. Axhausen (2004) Accessibility and spatial development in Switzerland during the last 50 years: A multilevel regression approach, paper presented at the *Access to Destinations Conference*, Minneapolis, November 2004.
- Tschopp, M., P. Keller, P. Fröhlich and K.W. Axhausen (2004) Are Swiss traffic and land use policy consistent?, paper presented at the *4th Swiss Transport Research Conference*, Ascona, March 2004.
- Upadhyay, D., N. Schüssler, K.W. Axhausen, M. Flamm and V. Kaufman (2008) Optimal parameter values for GPS post-processing: An experiment, *Arbeitsberichte Verkehrs- und Raumplanung*, **506**, IVT, ETH Zürich, Zurich.
- Van Eggermond, M., M. Lehner and A. Erath (2011) Modeling hedonic prices in Singapore, paper presented at the *16th International Conference of Hong Kong Society for Transportation Studies*, Hong Kong, December 2011.

- Van Eggermond, M.A.B., N. Schüssler and K.W. Axhausen (2007) Consumer choice behaviour and strategies of air transportation service providers, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Vitins, B. and K.W. Axhausen (2007) Optimization of large transport networks using the Ant Colony heuristic, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Vitins, B., N. Schüssler and K.W. Axhausen (2011) Comparison of Hierarchical Network Design Shape Grammars for Roads and Intersection, *Arbeitsberichte Verkehrs- und Raumplanung*, **688**, IVT, ETH Zürich, Zurich.
- Vitins, B.J. and K.W. Axhausen (2010) Patterns and grammars for transport network generation, paper presented at the *10th Swiss Transport Research Conference*, Ascona, September 2010.
- Vitins, B.J., N. Schüssler and K.W. Axhausen (2011) Grammar rules for passenger transport network generation, paper presented at the *2011 European Transport Conference*, Glasgow, October 2011.
- Vitins, B.J., N. Schüssler and K.W. Axhausen (2011) Shape Grammars for Hierarchical Transport Network Design, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Vrtic, M. (2005) Simultanes Routen- und Verkehrsmittelwahlmodell, *Heureka 05*, 423–443, Forschungsgesellschaft für Straßen- und Verkehrswesen (FGSV), Köln.
- Vrtic, M. and K.W. Axhausen (2004) Forecast based on different data types: A before and after study, paper presented at the *10th World Conference on Transport Research*, Istanbul, July 2004.
- Vrtic, M., N. Schüssler, A. Erath and K.W. Axhausen (2007) Design elements of road pricing schemes and their acceptability, paper presented at the *11th World Conference on Transportation Research*, Berkeley, June 2007.
- Vrtic, M., N. Schüssler, A. Erath and K.W. Axhausen (2007) The impacts of mobility pricing on route and mode choice behaviour, paper presented at the *11th World Conference on Transportation Research*, Berkeley, June 2007.
- Waldner, U., M. Löchl, M. Bürgle and K.W. Axhausen (2005) Haushaltsbefragung zur Wohnsituation im Grossraum Zürich – Feldbericht, *Arbeitsberichte Polyprojekt Zukunft urbane Kulturlandschaften*, **1**, NSL, ETH Zürich, Zurich.
- Waraich, R. A. (2009) Improvements for large scale traffic simulation in MATSim, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Waraich, R.A., D. Charypar, M. Balmer and K.W. Axhausen (2009) Performance improvements for large scale traffic simulation in MATSim, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Weis, C. (2009) Fuel price and rail usage, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Weis, C. (2009) Models of mode choice and mobility tool ownership beyond 2008 fuel prices, paper presented at the *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Weis, C. (2008) Modelling travel behaviour using pseudo panel data – First results, paper presented at the *8th Swiss Transport Conference*, Ascona, October 2008.
- Weis, C. (2008) Structural equations modeling of the dynamics of travel behaviour using a pseudo panel approach – first results, paper presented at the *8th Swiss Transport Research Conference*, Ascona, October 2008.
- Weis, C. (2007) An online travel diary survey among members of ETH Zurich, paper presented at the *7th Swiss Transport Research Conference*, Ascona, September 2007.
- Weis, C. (2006) Schätzung der Wahrscheinlichkeit von Übergängen zwischen Landnutzungstypen im Grossraum Zürich zur Verwendung in UrbanSim, *Arbeitsberichte Polyprojekt Zukunft urbane Kulturlandschaften*, **5**, NSL, ETH Zürich, Zurich.
- Weis, C. and K.W. Axhausen (2011) Assessing changes in travel behaviour induced by modified travel times: A stated adaptation survey and modelling approach, *Arbeitsberichte Verkehrs- und Raumplanung*, **669**, IVT, ETH Zürich, Zurich.
- Weis, C., C. Dobler and K.W. Axhausen (2010) An interactive stated adaptation survey of activity scheduling decisions, *Arbeitsberichte Verkehrs- und Raumplanung*, **637**, IVT, ETH Zürich, Zurich.
- Weis, C., C. Dobler and K.W. Axhausen (2010) Stated adaptation survey of activity scheduling reactions to changing travel conditions: Field work and preliminary results, paper presented at the *12th World Conference on Transportation Research*, Lisbon, July 2010.

- Widmer, J.-P. and K. Meister (2005) Ausgewählte Zeitreihen zur Schweizer Verkehrsentwicklung, *Materialien zur Vorlesung Verkehrsplanung*, **2**, IVT, ETH Zürich, Zurich, URL.
- Zheng, N., R.A. Waraich, N. Geroliminis and K.W. Axhausen (2011) Investigation of macroscopic fundamental diagrams in urban road networks using an agent-based simulation model, paper presented at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Zöllig, C. and K.W. Axhausen (2011) How to model the gains from infrastructure investment?, *Arbeitsbericht Verkehrs- und Raumplanung*, **673**, IVT, ETH Zürich, Zurich.
- Zöllig, C. and K.W. Axhausen (2010) Calculating benefits of infrastructural investment, *Arbeitsberichte Verkehrs- und Raumplanung*, **612**, IVT, ETH Zürich, Zurich.

## 12 NEWSPAPER CONTRIBUTIONS

### 12.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Lindenmann, H.P. (2005) Verkehrskreisel reduziert Unfälle drastisch, *Wochenzeitung Kibitz*, Gemeinde Effretikon, (3), **28**. Jahrgang, 8.9.2005.
- Spacek, P. (2008) Für Zürich keine Option: Ein Ort ganz ohne Schilder (Interview), *Tages-Anzeiger*, **116** (143) 14.
- Spacek, P. (2009) Ausbau von Strassen löst Probleme nicht (Montagsinterview), *Aargauer Zeitung/Mittellandzeitung*, Aarau.

### 12.2 TRANSPORT SYSTEMS

- Frank, P. (2011) Zürichs teuerste Modelleisenbahn, *Tages-Anzeiger*, 4.8.2011.
- Frank, P. (2011) Eisenbahn spielen, *St. Galler Tagblatt*, 9.8.2011.
- Frank, P. (2011) SBB-Sicherheitstraining an der ETH (Interview), *Schweiz Aktuell*, Schweizer Fernsehen DRS, 9.8.2011.
- Lendi, M. and U. Weidmann (2007) Ein Pionier der Raum- und Verkehrsplanung – Zum Tod von Martin Rotach, *Neue Zürcher Zeitung*, **228** (73) 17; *strasse und verkehr*, **93** (4) 35; *forum raumentwicklung*, **35** (1) 36 / 60 / 78; *Der Bauingenieur*, **3** (4) 4.
- Loderer, B. and U. Weidmann (2010) Ist Mobilität ein Menschenrecht? (Interview), *Connect ETH ALUMNI*, (22) 20–23.
- Schalcher, H., B. Scholl and U. Weidmann (2008) Wie Uri von der Neat profitieren kann – Mit der Bahn die Raumplanung steuern, *Neue Zürcher Zeitung*, **229** (52) 11.
- Schmidt, P. and U. Weidmann (2007) Ein Trassenpreis, der den Konsum spiegelt – Vorschlag für mehr Kostentransparenz im Eisenbahnverkehr, *Neue Zürcher Zeitung*, **228** (105) 19.
- Schneebeli, H. (2004) Study and living at the Departement of Civil, Environmental and Geomatics Engineering (D-BAUG), *Annual Report 2003* Departement of Civil, Environmental and Geomatics Engineering.
- Weidmann, U. (2010) Der Ligerztunnel ist überfällig (Interview), *Bieler Tagblatt*, 20 March 2010.
- Weidmann, U. (2010) Ein Anstieg der Billettpreise um 15 Prozent ist machbar (Interview), *Tages-Anzeiger*, 22 February 2010.
- Weidmann, U. (2010) Es braucht den Wisenbergtunnel (Interview), *Basler Zeitung*, 25 March 2010.
- Weidmann, U. (2010) Es wird nicht bei dieser Erhöhung bleiben (Interview), *Zürichsee-Zeitung* **160** (11) 10, 15 January 2010.
- Weidmann, U. (2010) In den Agglomerationen sollten U-Bahnen gebaut werden (Interview), *Tages-Anzeiger online*, 22 March 2010.
- Weidmann, U. (2010) In Geschwindigkeit statt Kapazitätserweiterung investieren (Interview), *Der Bund*, 24 March 2010.

- Weidmann, U. (2010) Klein-klein bringt uns im Bahnausbau nicht mehr weiter (Interview), *Berner Zeitung*, 27 March 2010.
- Weidmann, U. (2010) Reine Alpenluft dank kühnen Köpfen? – Nachgefragt (Interview), *baublatt*, 26 November 2010.
- Weidmann, U. (2010) Tiefbahn hätte mir gefallen (Interview), *Limmattaler Zeitung*, 17 April 2010.
- Weidmann, U. (2010) Umbau am “Chnopf” – Der Zürcher Hauptbahnhof wird laufend vergrössert. Der Professor für Verkehrssysteme erzählt, wie der Verkehr umgedacht werden muss (Interview), *HOCHPARTERRE*, **23** (5) 42–44.
- Weidmann, U. (2010) Von der richtigen Ausrichtung des Brezelstandes (Interview), *Neue Zürcher Zeitung*, 20 August 2010.
- Weidmann, U. (2010) Wir sollten in Geschwindigkeit investieren (Interview), *Berner Zeitung* and *Tages-Anzeiger*, 24 March 2010.
- Weidmann, U. (2010) Der Bahn 2030 fehlt die Tempo-Vision (Interview), *20 Minuten online*, 24 March 2010.
- Weidmann, U. (2009) Bahnhöfe: “Man nimmt in Kauf, dass sich Pendler einmal stauen” (Interview), *Tages-Anzeiger online*, 18 November 2009.
- Weidmann, U. (2009) Das Tram ist ein bewährtes System (Interview), *Kommunal-Magazin*, **26** (9) 30–31.
- Weidmann, U. (2009) Folgekosten im Auge behalten (Interview), *touring*, (15) 9, 3.
- Weidmann, U. (2009) Hört auf mit “teuren Hobby’s”! (Interview), *swiss-architects.com*, *gekehrt* 37/09.
- Weidmann, U. (2009) Wir haben in den letzten Jahren Pendler gezüchtet (Interview), *SonntagsZeitung*, **23** (46) 17.
- Weidmann, U. (2008) Bauen fürs Jahrhundert – Hochwertige Infrastrukturen für eine ökologische Verkehrszukunft, *SBB-Zeitung*, (20), 30–31.
- Weidmann, U. (2008) Begeisterung herrsche! (Kolumne), *ETHlife* (9), [www.ethlife.ethz.ch/archive\\_articles/o8o8o3\\_kol6\\_weidmann/index](http://www.ethlife.ethz.ch/archive_articles/o8o8o3_kol6_weidmann/index).
- Weidmann, U. (2008) Costruire per il secolo – Infrastrutture di alta qualità per un futuro ecologico del traffico, *Corriere FFS*, (20) 30–31
- Weidmann, U. (2008) Construire l’avenir – Des infrastructures de qualité pour des transports respectueux de l’environnement, *Courrier CFF*, (20) 30–31
- Weidmann, U. (2008) Das Spieglein an der Wand, Indikatoren, Verständnis und Vertrauen (Kolumne), *ethlife* (8), [www.ethlife.ethz.ch/archive\\_articles/o8o8o6-kol5\\_weidmann/index](http://www.ethlife.ethz.ch/archive_articles/o8o8o6-kol5_weidmann/index).
- Weidmann, U. (2008) Der Tunnel durch den Berg, den es nicht gibt, *ETHlife*, ETH Zürich, [www.ethlife.ethz.ch](http://www.ethlife.ethz.ch).
- Weidmann, U. (2008) Der Urlaubsflug – Ein Dialog (Kolumne), *ethlife* (7), [www.ethlife.ethz.ch/archive\\_articles/o8o7o9-kol4\\_weidmann/index](http://www.ethlife.ethz.ch/archive_articles/o8o7o9-kol4_weidmann/index).
- Weidmann, U. (2008) Die Bahnbenutzer sollen mitbezahlen (Interview), *Aargauer Zeitung*, 13.
- Weidmann, U. (2008) Die Passagiere sollen Mitzahlen (Interview), *Der Bund*, **159** (132), 5.
- Weidmann, U. (2008) ECTS und ETCS (Kolumne), *ethlife* (6), [www.ethlife.ethz.ch/archive\\_articles/o8o611-kol3\\_weidmann/index](http://www.ethlife.ethz.ch/archive_articles/o8o611-kol3_weidmann/index).
- Weidmann, U. (2008) Effektive Mobilität für ein lebenswertes Berggebiet, Netzwerkplattform Berggebiete, Schweizer Berghilfe, [www.berggebiete.ch](http://www.berggebiete.ch).
- Weidmann, U. (2008) In 56.9 Minuten nach Bern (Interview), *ethlife*, [www.ethlife.ethz.ch](http://www.ethlife.ethz.ch).
- Weidmann, U. (2008) Mit voller Fahrt in die Sackgasse (Interview), *Wendekreis*, **113** (11), 6.
- Weidmann, U. (2008) Pendeln statt umziehen (Interview), *Sonntagsblick*, (3), 9.
- Weidmann, U. (2008) SBB Cargo sollte über Kooperationen nachdenken (Interview), *Die Südostschweiz*, (63), 19.
- Weidmann, U. (2008) Toni Walker aus der Alpinen Brache, *ETHLife*, [www.ethlife.ethz.ch](http://www.ethlife.ethz.ch).
- Weidmann, U. (2008) Verkehrsplanung als Meinungsbildungsprozess (Interview), *ETH GLOBE*, (1) 24–25.
- Weidmann, U. (2008) Zweifel am gewählten Alleingang (Interview), *Aargauer Zeitung* and *Solothurner Zeitung*, **13** (63), 6.
- Weidmann, U. (2007) Die Gotthardbahn sprengt alle Grenzen – La ligne ferroviaire du Gotthard a repoussé toutes les limites (Interview), *profil* (SBB), (5) 9–10.
- Weidmann, U. (2007) Grosser nationaler Nutzen (Interview), *Der Bund*, **158** (137) 3.
- Weidmann, U. (2007) Interview im redaktionellen Teil, *swisstraffic*, (44) 6–8.

- Weidmann, U. (2007) Kapazität nicht künstlich durch Neigezüge beschränken (Interview), *Neue Zürcher Zeitung*, **228** (144) 7.
- Weidmann, U. (2007) Kompassnadel hat sich gedreht (Interview), *Neue Luzerner Zeitung*, (137) 49–50.
- Weidmann, U. (2007) Nische bleibt (Interview), *Der Bund*, 158 (263) 25.
- Weidmann, U. (2006) Von der Verkehrsnot zur Mobilitätschance – Rezepte für den schweizerischen Agglomerationsverkehr, *Neue Zürcher Zeitung*, 227 (214) 15.
- Weidmann, U. (2005) Die Bahn riskiert eine Abwärtsspirale, Interview in der *Neuen Zürcher Zeitung*, 1 December 2005, (13).
- Weidmann, U. (2004) Interview in der Spezial-Fernsehsendung über Bahn 2000 und die Bahn der Zukunft, Schweizer Fernsehen DRS, Menschen-Technik-Wissenschaft, Zürich, 10 June 2004.
- Weidmann, U. (2004) Zukunft der Verkehrsingenieure – Verkehrsingenieure der Zukunft, *TEAMverkehr*, December 2004.
- Weidmann, U. and Frank, P. (2011) Bahn frei auf erneuerter Modellanlage, *ETHlife*, ETH Zürich, [www.ethlife.ethz.ch](http://www.ethlife.ethz.ch)
- Weidmann, U. and Frank, P. (2011) Wenn Ingenieure mit der Modelleisenbahn “spielen”, *Limmattaler Zeitung*, 31.1.2011.
- Weidmann, U. and J. Wichser (2010) Mehr Tempo – vor allem zwischen Zürich und Geneva / Prioritäten für den künftigen Ausbau der Eisenbahn aus der Sicht von Experten, *Neue Zürcher Zeitung* **231** (27) 13.
- Weidmann, Ulrich (2011) Chancen für den Ausbau sind gestiegen (Interview), *Der Bund*, 6 July 2011.
- Weidmann, Ulrich (2011) Die Leute müssen wieder mehr zügeln (Interview), *20 Minuten online*, 21 January 2011.
- Weidmann, Ulrich (2011) Eine dichte Stadt ist umweltfreundlich (Interview), *Tages-Anzeiger*, 25 July 2011.
- Weidmann, Ulrich (2011) Erweiterung wird alle befriedigen (Interview), *Bieler Tagblatt*, 6 July 2011.
- Weidmann, Ulrich (2011) Grosse Investitionen werden durch die NEAT blockiert (Interview), *Tages-Anzeiger*, 1 April 2011.
- Weidmann, Ulrich (2011) Nicht revolutionär, aber zweckmässig (Interview), *Berner Zeitung*, 6 July 2011.
- Weidmann, Ulrich (2011) Preissteigerung um 27 Prozent ist riskant (Interview), *Der Landbote*, 13. July 2011.
- Weidmann, Ulrich (2011) Unterirdische Trams nicht teurer als Glattalbahn, *20 Minuten*, Seite 5, 17 June 2011.
- Wichser J. (2009) So sieht es der Experte, Interview zum Thema Verknüpfung Bergbahn Kronplatz (It) mit der Bahn, *Radius*, Magazin für die Europaregion Tirol Athesia GmbH, Bozen, 11.
- Wichser, J. (2010) Bahn Infrastruktur, Opfer ihres eigenen Erfolges, (Interview) *Luzerner Zeitung*, Luzern, 20 February 2010.
- Wichser, J. (2010) Diese Initiative ist problematisch (Interview) *Luzerner Zeitung*, Geamtausgabe, 7 September 2010.
- Wichser, J. (2010) Nachgefragt: Irgend jemand muss dies nun zahlen (Interview) *Zürcher Oberländer, Zürcher Unterländer, Zürichsee Zeitung*, 20 February 2010.
- Wichser, J. (2010) Nachgefragt: SBB Cargo ist auf dem richtigen Weg (Interview) *Aargauer Zeitung, Solothurner Zeitung*, 19 February 2010.
- Wichser, J. (2010) Pendlerzuschlag in weiter Ferne, (Interview zum Thema Billettpreise) *Basellandschaftliche Zeitung*, Liestal; *Aargauer Zeitung*, Aarau; *Solothurner Zeitung*, Solothurn, 16 January 2010.
- Wichser, J. (2006) Ordnung schaffen bei den Schienen, ein Vorschlag zur Neuorganisation der Eisenbahninfrastruktur, *NZZ*, **273** (23.11.) 15.

### 12.3 TRANSPORT PLANNING

- Andersson, G., K. W. Axhausen, K. Boulouchos, F. Noembrini, G. Georges, M. D. Galus, M. G. Vaya, R. A. Waraich (2011) Was ist E-Mobilität und kann sie den “Planeten” retten?, poster presented at the *1st Scientifica – Zürcher Wissenschaftstage*, Zurich, August 2011.
- Axhausen, K.W. (2011) Development paths for agent-based models of activity scheduling, presentation at the *ITLS Seminar*, University of Sydney, May 2011.
- Axhausen, K.W. (2011) Recent Swiss stated-adaptation experiments: Surveys methods and some results, presentation at the *Centre for the Study of Choice Seminar*, University of Technology Sydney, May 2011.

- Axhausen, K.W. (2011) Scheduling models in MatSim, presentation at the *iTEAM Seminar*, Washington, D.C., January 2011.
- Axhausen, K.W. (2011) Social networks and travel: Current status and expected change, *Workshop Behaviour in Networks*, University of Seoul, June 2011.
- Axhausen, K.W. (2008) Mobilität wohin?, in R. Köhler (eds.) *Strassenverkehr Schweiz 2009*, 8–11, Künzler Bachmann Medien, St. Gallen.
- Axhausen, K.W. and C. Zöllig (2011) How to model the gains from infrastructure investment?, *Workshop Emerging issues and methods in policy-oriented travel demand analysis*, presentation at the Technion, Haifa, June 2011.
- Balmer, M. (2008) NZZ Swiss made: Die Zürcher Westtangente – das Ende aller Staus?, Fernsehsendung, November 2008, URL: <http://www.nzzformat.ch/108+M5dbaob64859.html>.
- Bodenmann, B.R. (2011) Micro-simulation of firm's location choice, presentation at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Bodenmann, B.R. (2011) SustainCity: Advancing land use transport interaction models in Europe, presentation at the *1st Symposium on Computation for Sustainable Architecture and Urbanism*, Zurich, July 2011.
- Erath, A. (2010) Beeinflusst der Benzinpreis die Wahl des Verkehrsmittels und des Wohnstandortes?, *Netzwerk Stadt und Landschaft Newsletter*, 6.
- Fröhlich, P. (2004) Ungewöhnliche Topografie der Schweiz, in *Horizonte – Schweizer Forschungsmagazin*, Schweizerischer Nationalfonds, Bern.
- Horni, A. (2011) Destination Choice for Discretionary Activities in MATSim, MATSim User Meeting, Berlin, April 2011.
- Müller, K. (2011) IPF within multiple domains: Generating a synthetic population for Switzerland, presentation at the *11th Swiss Transport Research Conference*, Ascona, May 2011.
- Schirmer, P., C. Zöllig, B.R. Bodenmann, K. Müller and K.W. Axhausen (2011) Current works on UrbanSim at the IVT, presentation at *UrbanSim Workshop: Developing Common Data Structures for Urban Modeling and 3D-Visualisation*, Zurich, February 2011.
- Schüssler, N. (2011) How mode choice in an urban setting is influenced by environmentalism and variety seeking of decision-makers, presentation at the *7th Workshop on Discrete Choice Models*, EPF Lausanne, Lausanne, August 2011.
- SRG SSR idée suisse (2008) Einstein: Verkehrssimulation für Planungsfragen, Fernsehsendung, May 2008, URL <http://www.sf.tv/sf1/einstein/sendung.php?docid=20080529>.
- Vitins, B.J. (2011) A new evolutionary algorithm for transport network generation and shape grammars development for urban systems, presentation at the *Equilibrium Sorting in Urban Systems Workshop*, Zurich, March 2011.
- Vitins, B.J. (2011) An integrated and adaptive ant colony and genetic algorithm for transport network design, presentation at the *2011 OR Zurich Conference*, Zurich, August 2011.
- Waraich, R.A. (2011) Agent-based parking choice, presentation at the *3rd MATSim User Meeting*, Berlin, April 2011.

## 13 TALKS AND PRESENTATIONS

### 13.1 INDIVIDUAL TRANSPORT AND TRAFFIC ENGINEERING

- Doerfel, M. (2004) Verkehrssicherheitsbeurteilung / Road Safety Audit . Stand in der Schweiz, paper presented at the *D-A-CH-Tagung*, St. Gallen, November 2004.
- Doerfel, M. (2006) Road Safety Audit – Verkehrssicherheitsbeurteilung, ein Verfahren zur Auditierung von Projekten von Verkehrsanlagen, ASTRA, Bern, February 2006.
- Koy, T. (2005) Speed on upgrades and downgrades, paper presented at the *5th Swiss Transport Research Conference*, Ascona, March 2005.

- Lindenmann, H. P. (2006) PMS-CH, Stand von Entwicklungen, *DACH-PMS Tagung*, Chur, April 2006.
- Lindenmann, H. P. (2007) Massnahmenplanung im Erhaltungsmanagement von Fahrbahnen, Kommission für Forschung im Strassenwesen des UVEK, Bern, January 2007.
- Lindenmann, H. P. (2007) PPP im kommunalen Strassenunterhalt von Städten und Gemeinden, *PPP Symposium, IBB and IVT ETH Zürich*, Zurich, 25. October 2007.
- Santel, G. (2007) Die unbekanntenen Kollegen des Blechpolizisten, *Treffpunkt Science City – Wissenschaft erleben*, Zürich, 11 September 2007.
- Schiffmann, F. (2004) Zustandserfassung und – erfassung Nationalstrassen (Fahrbahnen) ZEB-NS, *Dreiländer Tagung der Forschungsgesellschaften VSS/FGSV/FSV*, Innsbruck, April 2004.
- Schiffmann, F. (2005) Kommunale Strassennetze in der Schweiz: Formen neuer Public-Private-Partnership (PPP) Kooperationen für den Unterhalt, *6. Europäisches Symposium “PPP in der europäischen Strassen und Schieneninfrastruktur”*, Berlin, September 2005.
- Schiffmann, F. (2005) The level of safety on the Swiss freeway network, *SAFE highways of the future*, Stuttgart, May 2005.
- Schiffmann, F. (2005) Vorstellung des Forschungspaketes “Massnahmenplanung Fahrbahnen im Erhaltungsmanagement von Strassenverkehrsanlagen” (VSS 2004/710–715), *Dreiländer Tagung der Forschungsgesellschaften VSS/FGSV/FSV*, Hamburg, April 2005.
- Schiffmann, F. (2006) Kommunale Strassennetze in der Schweiz: Formen neuer PPP-Kooperationen für den Unterhalt, *Dreiländer Tagung der Forschungsgesellschaften VSS/FGSV/FSV*, Chur, April 2006.
- Schiffmann, F. (2007) Die Fahrbahnoberfläche, Kurzvorlesung, *Treffpunkt Science City – Wissenschaft erleben*, Zürich, November, 2007.
- Schiffmann, F. (2008) Forschungspaket Massnahmenplanung im Erhaltungsmanagement Fahrbahnen, paper presented at the *EMS D-A-CH Tagung*, Dresden, April 2008.
- Schiffmann, F. (2010) Forschung im Strassen- Brücken und Tunnelwesen (SBT) Schweiz – Orientierung über laufende und neu lancierte Forschungsprojekte SBT, paper presented at the *EMS D-A-CH Tagung*, Graz, April 2010.
- Schiffmann, F. (2010) New highway work zone management using optimization technique, *10th Swiss Transport Research Conference*, Ascona, September 2010.
- Schiffmann, F. (2010) Optimierung der Baustellenplanung an Autobahnen, paper presented at the *EMS D-A-CH Tagung*, Graz, April 2010.
- Spacek, P. (2008) Möglichkeiten zur Bekämpfung von Verkehrsproblemen in Agglomerationen und Städten, *Orientierung für Medienvertreter aus Volksrepublik China*, Zurich, October 2008.
- Weber, T. (2007) Informationen im Auto kontra Verkehrssicherheit, *Treffpunkt Science City – Wissenschaft erleben*, Zürich, November 2007.
- Weber, T. (2008) COST Action 352: The influence of In-Vehicle Information Systems (IVIS) on driver behaviour and road safety, paper presented at the *7th European Congress and Exhibition on Intelligent Transport Systems and Services*, Geneva, June 2008.
- Weber, T. (2008) Einflüsse von fahrzeuginternen Informationssystemen (IVIS) auf die Verkehrssicherheit, paper presented at the *IVT-Alumni-Seminar, Verkehrsingenieurtag*, Zürich, March 2008.

## 13.2 TRANSPORT SYSTEMS

- Anderhub, G. (2008) Park-n-Ride und Bike+Ride Potentiale, *Kontakttreffen Kontakttreffen IVT–VBZ*, November 2008.
- Anderhub, G. (2007) Einsatzbereiche verschiedener Verkehrsmittel in Agglomerationen, *SVI-Tagung*, Olten, September 2007.
- Bepperling, S-L. (2010) Risikoanalysen mit BP-Risk – Konstruktion und Anwendungsbeispiel, *Bahnsystemkolloquium des Instituts für Bahnsysteme und öffentlicher Verkehr*, Technische Universität Dresden, February 2010.
- Bepperling, S-L. (2009) Konstruktion eines semi-quantitativen Ansatzes zur Risikobeurteilung in der Eisenbahntechnik, *Verkehrswissenschaftliche Tage*, Dresden, September 2009.



- Bopp, B. (2008) Gemeinsame Haltestellennutzung durch Bus und Tram, *Kontakttreffen IVT–VBZ*, November 2008.
- Carle, G. (2004) Market potential of compressed natural gas cars in the Swiss passenger car sector, *NGV2004 Conference*, Buenos Aires.
- Carrasco, N. (2011) Quantifying public transport reliability in Zurich, *COST TU 603 – Management Committee and Working Group meeting*, Zurich, May 2011.
- Carrasco, N. (2011) Quantifying public transport reliability in Zurich, *IVT Seminar, IVT, ETH Zürich*, Zürich, July 2011.
- Carrasco, N. (2011) Quantifying public transport reliability in Zurich, *Visit from representatives of Birmingham University at ETH Zürich*, Zürich, July 2011.
- Carrasco, N. (2011) Reliability analysis of bus lines in Zurich, *Kontakttreffen IVT – Verkehrsbetriebe Zürich (VBZ)*, Zürich, August 2011.
- Carrasco, N. (2010) Buses with High Level of Service – COST 603 Project update, *Verkehrsbetriebe Zürich (VBZ)*, Zürich, September 2010.
- Carrasco, N. (2010) Estudiar en el exterior: sus retos y recompensas. Una experiencia personal, *Pontificia Universidad Javeriana*, Cali, Colombia, October 2010.
- Carrasco, N. (2010) Sistemas urbanos de transporte public en el mundo desarrollado: El ejemplo de Suiza, *Pontificia Universidad Javeriana*, Cali, Colombia, October 2010.
- Carrasco, N. (2010) Movilidad como limite o movilidad al limite? Retos y perspectivas de soluciones para el desarrollo futuro de ciudades y zonas urbanas, *Pontificia Universidad Javeriana*, Cali, Colombia, October 2010.
- Carrasco, N. (2009) COST Project TU 603 – Buses with High Level of Service, *Verkehrsbetriebe Zürich (VBZ)*, Zürich, February 2009.
- Carrasco, N. (2009) Public transport in Zurich: Overview of a system-integrated, high quality bus service. Case study of bus line 31, *COST TU 603 – Management Committee meeting*, Utrecht, April 2009.
- Carrasco, N. (2009) Instituto de Planeacion y Sistemas de Transporte de la ETH, *Pontificia Universidad Javeriana*, Cali, Colombia, December 2009.
- Carrasco, N. (2009) Instituto de Planeacion y Sistemas de Transporte de la ETH e introduccion del proyecto de investigacion: Estabilidad operacional de rutas de buses urbanos, *Metrocali*, Cali, Colombia, December 2009.
- Carrasco, N. (2009) Instituto de Planeacion y Sistemas de Transporte de la ETH e introduccion del proyecto de investigacion: Estabilidad operacional de rutas de buses urbanos, *Transmilenio*, Bogota, Colombia, December 2009.
- Carrasco, N., U. Weidmann (2009) IVT Institute presentation and introduction of COST Project TU 603 – Buses with High Level of Service, *Continental Group*, Neuhausen, August 2009.
- Dorbritz, R. (2008) Stabilität von Verkehrsnetzen im Störfall, *Kontakttreffen IVT–VBZ*, November 2008.
- Dorbritz, R. (2011) Komplexität und Stabilität von Verkehrssystemen im gestörten und ungestörten Betriebszustand, Dritte interdisziplinäre *Tagung “Stabil mobil – Komplexe Verkehrssysteme als Herausforderung unserer Gesellschaft”*, Zürich, June 2011.
- Dorbritz, R. (2010) Stabilität von Netzwerken, *Verkehringenieurtag 2010*, IVT, ETH Zürich, Zurich, March 2010.
- Dorbritz, R. (2010) Statistische Grundlagen, *Weiterbildungskurs RAMS/LCC bei Bahnprojekten*, eduRail und Institut für Verkehrsplanung und Transportsysteme (IVT) der ETH Zürich, Olten, May 2010.
- Dorbritz, R. (2009) Schlusswort, Zweite interdisziplinäre *Tagung “Die Revolution der Automation – Komplexe Verkehrssysteme als Herausforderung unserer Gesellschaft”*, Zürich, June 2009.
- Dorbritz, R. (2009) Stability of public transportation systems in case of random failures and intended attacks – A Case Study from Switzerland, *4th International Conference on System Safety*, London, October 2009.
- Dorbritz, R., M. Scherer (2011) Multimodale Verkehrsqualitätsstufen für den Strassenverkehr, *Fachtagung Forschung des SVI*, Olten, September 2011.
- Frank, P. (2011) Die Wankkompensation im Gesamtsystem Bahn, *FBS-Anwendertreffen*, Berlin, 6.5.2011.
- Frank, P. (2010) Vereinfachte Methodik zur Berechnung der Investitionskosten von Eisenbahninfrastrukturprojekten, *TRANSINFRA – Tag der Forschung*, Fribourg, March 2010.
- Hürlimann, D. (2005) Objektorientierte Modellierung im Eisenbahnwesen. Vortrag am 1. *Workshop des Virtuellen Instituts Flughafenplanung und -management zum Thema Level of Service für geplanten Verkehr*, Aachen, September 2005.

- Hürlimann, D. and M. Lüthi (2006) Simulation mit OpenTrack – Voraussetzungen, Durchführung und Auswertung, *Eisenbahntechnisches Kolloquium*, TU Darmstadt, June 2006.
- Kölble, C. (2004) OpenTrack – Simulation of Railway Networks – Das Fahrplan-Planungssystem OpenTrack, 3. *Sommerexkursion Junges Forum der DVWG und YFE*, Kreuzlingen.
- Latuske, N. (2009) Auswirkung von fahrzeuginternen Informationssystemen auf die Verkehrssicherheit, *Die Revolution der Automation*, Zürich, June 2009.
- Lüthi, M. (2009) Effizienter Bahnbetrieb: Optimierung von Energieverbrauch und Infrastrukturauslastung, *suissestraffic, Fachtagung Bahntechnologie Energieoptimierung*, Bern, November 2009.
- Lüthi, M. (2008) Effects of Integrated Real-Time Rescheduling on Infrastructure and Energy Usage, TU Delft, June 2008.
- Lüthi, M. (2008) Improving rail infrastructure performance, *ITo8.rail, systransis Atelier*, ETH Zürich, January 2008.
- Lüthi, M. (2008) Mehr Züge – weniger Verspätungen – Neue Wege bei Planung und Betrieb von Eisenbahnsystemen, *Verkehrsingenieurtag*, ETH Zürich, March 2008.
- Lüthi, M. (2008) Planning and Operating Principles for Swiss Railways, Universität Pardubice, Pardubice, April 2008.
- Lüthi, M. (2008) Strategies for efficient and effective railway operations, Railway Planning, Design and Operations, Workshop, Beijing Institute of Technology, Beijing, November 2008.
- Lüthi, M. (2008) Weniger Reserven und trotzdem höhere Pünktlichkeit: Ein integraler Ansatz zur Effizienzsteigerung im Eisenbahnverkehr, *Kolloquium Verkehrsmanagement und Verkehrstelematik*, TU Dresden, June 2008.
- Lüthi, M. (2007) Increasing Performance of the Rail Network: A Program for the Swiss Federal Railways, Universität Trieste, October 2007.
- Lüthi, M. (2006) Methodische Grundlagen für ein Real-Time Rescheduling, *Verkehrswissenschaftliches Fachgespräch des VWI*, Universität Stuttgart, September 2006.
- Moll, S. and U. Weidmann (2010) Steigerung der Produktivität im Schienengüterverkehr durch eine systematische Integration von Kundenwissen in die operative Planung, Schweizerische Management Gesellschaft. *Best Practice Meeting*, Zurich, June 2010.
- Nash, A. (2005) Traffic calming in the United States – an overview, Institution of Highways & Transportation (IHT) *Conference: Traffic Calming for Today's Society*, London, January 2005.
- Nash, A., U. Weidmann, S. Buchmueller and M. Rieder (2007) Assessing the Feasibility of Transport Mega-Projects: Swissmetro European Market Study; *Transportation Research Board Annual Meeting*, Washington, January 2007.
- Orth, H. (2011) Einsatzbereiche verschiedener Verkehrsmittel in Agglomerationen, presentation at the *SVI symposium*, September 2011.
- Puffe, E. (2010) Rolltreppenmessung mit dem System Dilax OptoCount, *Kontakttreffen IVT–VBZ*, Zurich, March 2010.
- Rieder, M. (2009) Kunden- und Behördenanlass der Sursee-Triengen-Bahn (ST): Wiedereinführung des Personenverkehrs auf der Sursee–Triengen-Bahn, Sursee, April 2009.
- Rieder, M. (2008) Stand der Technik im Werkstättenbereich, Standortbestimmung, Vorstudie, Ergebnisse, Spiez, November 2008.
- Rieder, M. (2011) Parlement wallon: Auditions sur les lignes ferroviaires transfrontalières: Facteurs de succès et d'échec pour les réouvertures de lignes ferroviaires transfrontalières dans les zones limitrophes, Namur, February 2011.
- Rieder, M. (2011) Confédération syndicale interrégionale (CSIR): Dinant–Givet: Ligne pilote de la SNCB pour l'exploitation dans une zone transfrontalière limitrophe, Reims, May 2011.
- Rieder, M. (2011) Centre Culturel Régional de Dinant: Service ferroviaire en zone rurale. Complémentarité entre train, bus, vélo et marche à pied, Namur, May 2011.
- Rieder, M. (2011) Gesellschaft der Ingenieure des öffentlichen Verkehrs (GdI): Wiedereinführung des Personenverkehrs auf der Sursee-Triengen-Bahn, Sursee, May 2011.
- Rieder, M. (2011) Communauté des Communes Ardenne Rives de Meuse: Dinant–Givet: ligne pilote pour l'exploitation ferroviaire dans une zone transfrontalière limitrophe, Givet, September 2011.

- Rieder, M. (2011) Les Amis du Rail de Halanzy (ARH): Conférence sur le Rail à Bastogne: Maintien et réouverture de lignes en zones transfrontalières et rurales, Bastogne, September 2011.
- Rieder, M. (2010) Comité d'expert de la Chambre de Commerce et d'Industrie Nord de France (CCI Nord de France): Schéma logistique Nord de France: Partie ferroviaire, Valenciennes, April 2010.
- Rieder, M. (2010) Communauté des Communes Ardenne Rives de Meuse: Table ronde: L'avenir de la ligne Dinant–Givet, Givet, September 2010.
- Rieder, M. (2009) Confédération syndicale interrégionale (CSIR): Contribution au débat à Heer au Castel des Sorbiers: La ligne Dinant–Givet, à quoi bon? Heer, February 2009.
- Rieder, M. (2009) Contribution à la conférence de presse de Dinant à l'invitation de la Ville de Dinant et de la Ville de Givet: Diskussionspapier: Ligne Dinant–Givet – Cohabitation ou concurrence avec les grandes axes ferroviaires belges? Dinant, March 2009.
- Rieder, M. (2009) Just in Log – Valenciennes: Enjeux du transport ferroviaire en Suisse et en France, Valenciennes, September 2009.
- Rieder, M. (2007) Marktdaten Management und Engineering sowie RPV Strasse und Ortsverkehr, Teil Marktdaten Management und Engineering, PostAuto AG, Bern, April 2007.
- Rieder, M. (2007) Analyse der historischen Entwicklung der Eisenbahninfrastrukturfinanzierung in Belgien, Frankreich und der Schweiz, *Congrès annuel de l'ASSP* des 22/23 novembre 2007 à Balsthal, Novembre 2007.
- Scherer, M. (2008) Angebotsplanung im Personenverkehr: Grundlagen und Hintergründe, Weiterbildung integrierter öffentlicher Verkehr – SBB Academia, Löwenberg, Schweiz, November 2008.
- Scherer, M.; Weidmann, U. (2011) Der städtische Schienenbonus: Ansätze und Resultate, *Kontakttreffen VBZ – IVT*, Zürich, 25 August 2011.
- Schmidt, P. (2007) Vorschlag zur Ausgestaltung eines neuen Trassenpreissystems unter besonderer Berücksichtigung von Lärm- und Verschleissaspekten, *Lärmsymposium*, Olten, August 2007.
- Schmidt, P. (2007) Vorschläge zur Weiterentwicklung des schweizerischen Trassenpreissystems, *Verkehrswissenschaftliche Tage*, Dresden, September 2007.
- Schmidt, P. and U. Weidmann (2008) Systemvorschlag für ein neues schweizerisches Trassenpreissystem, DB Netz AG, Frankfurt a.M., May 2008.
- Schranil, S. (2011) Analyse des Dispositionsprozesses, Presentation at Operation Center Zurich of SBB, Zurich, 08/2011.
- Schranil, S. (2011) Analyse von Bahnbetriebsstörungen – ein ressourcenorientierter Ansatz, *Verkehrswissenschaftliche Zukunftstage*, Fulda, 04/2011.
- Schranil, S. (2011) Anforderungen an das Abweichungsmanagement, Presentation at Dresden public transport company DVB, 09/2011.
- Schranil, S. (2011) Ereignisse im Zugverkehr (ErZu) der BLS, Presentation at BLS Operation Center, Spiez, 07/2011.
- Schranil, S. (2011) Grosse Bahn im kleinen Massstab, Presentation at *NSL Infrastructure Meeting*, Zurich, 06/2011.
- Schranil, S. (2011) Infrastrukturstörungen der Dresdner Verkehrsbetriebe, Presentation at Dresden public transport company DVB, 12/2010.
- Schranil, S. (2011) Meldekettens im Störfall, Presentation at Dresden public transport company DVB, 07/2011.
- Schranil, S. (2011) Prognose der Dauer von Störungen Zwischenstand, Presentation at Führungsteam Betrieb of SBB, Basel, 07/2011.
- Schranil, S. (2011) Prozessanalyse: Meldekettens im Störfall, Presentation at CNS, Wien, 04/2011.
- Schranil, S. (2010) Die Gruppe Verkehrssysteme am IVT, Vortrag beim *NSL-Mittelbautreffen*, Zürich, 07/2010.
- Schranil, S. (2010) Regiotram Biel Pläne, Visionen, Realitäten, Presentation at IVV, Zurich, 12/2010.
- Schranil, S. (2010) Fallstudie Betriebsstörungen der City-Bahn Chemnitz, Presentation at City-Bahn Chemnitz, 07/2010.
- Schranil, S. (2010) Fallstudie Betriebsstörungen der Städtischen Verkehrsbetriebe Zwickau, Presentation at Zwickau public transport company SVZ, 07/2010.
- Schranil, S., U. Weidmann (2011) Monitoring des Betriebsgeschehens in Bahnsystemen, Presentation at *Qsys-Tagung Dresden*, 09/2011.

- Weidmann, U. (2011) Die Finanzierung des öffentlichen Verkehrs – Beurteilung der Situation aus der Sicht der Verkehrswissenschaft, *ch Stiftung-Regierungs-Seminar 2011*, Interlaken, 7 January 2011.
- Weidmann, U. (2011) Rollen des Staates im öffentlichen Verkehr, Organisationsmodelle der Bahninfrastruktur und Diskriminierungspotentiale, *Expert OBI*, Bern, 12 January 2011.
- Weidmann, U. (2011) The Future of Mobility – Optimizing Public Transportation, *World Economic Forum / IdeasLab with Swiss Federal Institutes of Technology*, Davos, 27 January 2011.
- Weidmann, U. (2011) Die Akteure im öV: Kompetenzen – Konkurrenzen – Kooperationen, *Schweizerische Bundesbahnen / Kaderkurs Bahn-Know how*, Muntelier-Löwenberg, 24 March 2011.
- Weidmann, U. (2011) Institute for Transportation Planning and Systems: Research and teaching for the Public Transport of the Future, *COST TU 603 Buses with a high level of service / Final Meeting*, Zürich, 9 May 2011.
- Weidmann, U. (2011) Kreativität im öffentlichen Verkehr: Wie entsteht ein Fahrplan? *Kadertag Kantonspolizei Zürich / Persönliche Initiative versus Disziplin – Wie Innovationen in Organisationen entstehen*, Zürich, 31 May 2011.
- Weidmann, U. (2011) Weiterschreiben an der Erfolgsstory / 50 % Marktanteil des öffentlichen Verkehrs – Rezepte und Nebenwirkungen (Podiumsdiskussion), *Verkehrsclub der Schweiz*, Bern, 24 June 2011.
- Weidmann, U. (2011) Zürichs Tram – Schnell unten durch (Vortrag und Podiumsdiskussion), *Architekturforum Zürich / Städtebau-Stammtisch*, Zürich, 29 June 2011.
- Weidmann, U. (2011) Zukunft Bahnhof Bern – Beurteilung des Prozesses und der Variantenwahl, *Pressekonferenz der Bau-, Verkehrs- und Energiedirektion des Kantons Bern*, Bern, 5 July 2011
- Weidmann, U. (2011) Tram Region Bern, Gutachten (Vortrag und Hearing), *Gemeinde Köniz / Kerngruppe Tramprojekte*, Köniz, 5 July 2011.
- Weidmann, U. (2011) Forschung und Lehre im Bereich öffentlicher Verkehrssysteme an der ETH Zürich, *Studiervisite der Technischen Universität Graz*, Zürich, 11 July 2011.
- Weidmann, U. (2011) Weiterentwicklung des Zürcher Tramnetzes – eine Konzeptidee, *Kontakttreffen VBZ – IVT*, Zürich, 25 August 2011.
- Weidmann, U. (2011) Trams unter den Boden – ist das eine gute Lösung (Podiumsdiskussion), *Grüne Partei der Stadt Zürich*, Zurich, 8. September 2011.
- Weidmann, U. (2011) Vergangenheit, Gegenwart und Perspektiven des Nahverkehrs in Zürich, *Deutsche Verkehrswissenschaftliche Gesellschaft / Junges Forum*, Zürich, 21 September 2011.
- Weidmann, U. (2011) Neue Bahnerschliessungen für Graubünden – eine Aussensicht, *ProRätia / Landtagung*, Scuol, 24 September 2011.
- Weidmann, U. (2011) Bahngüterverkehr in der Logistik, *Universität St.Gallen / Fraunhofer Institut Materialfluss und Logistik – Diplomstudium Logistikmanagement, Modul 5*, Arbon, 28. September 2011.
- Weidmann, U. (2010) AlpTransit: Ein europäischer Verkehrsweg durch die Schweizer Alpen, ETH Zürich – D-BAUG/geomETH, Mit Millimetergenauigkeit durch den Gotthard, Zürich, October 2010.
- Weidmann, U. (2010) Ausgewählte Projekte von VSS und SVI am Lehrstuhl für Verkehrssysteme, *Informationsveranstaltung ASTRA-Forschungsprojekte am D-BAUG*, Zürich, 5 February 2010
- Weidmann, U. (2010) Bahnbetriebliche Forschung des IVT der ETH Zürich und Forschungs-Road Map mit SBB, Deutsche Bahn AG / Studienbesuch bei SBB Betrieb, Zürich, June 2010.
- Weidmann, U. (2010) Der Stadtverkehr und die Zukunft des Trams, *Innovative Mobilität*, 2, June 2010.
- Weidmann, U. (2010) Die Akteure im öV: Die Lauten in der Öffentlichkeit und die Leisen im Hintergrund, *Verband öffentlicher Verkehr / öV-Forum 2010*, Oberhofen, 2 December 2010.
- Weidmann, U. (2010) Die Entwicklung des öffentlichen Verkehrs in der Ostschweiz und dessen Einbindung in Bahn 2030, *Schweizerische Südostbahn / SIA / FBH / FEB: 100 Jahre Sitterviadukt – Ingenieure planen, bauen und erhalten*, St. Gallen, 28 October 2010.
- Weidmann, U. (2010) Die Koexistenz der Verkehrsträger: Welche Modelle haben eine Zukunft?, *Transinfra 2010 / Mobilität in den Schweizer Agglomerationen: Mit- oder gegeneinander?*, Fribourg, 9 March 2010.
- Weidmann, U. (2010) Die Verkehrssysteme der Zukunft: Was kommt auf uns zu?, *Zürcher Senioren- und Rentnerverband / 6. Zürcher Alterskonferenz*, Zürich, 16 September 2010.
- Weidmann, U. (2010) Eigenschaften und Optimierungspotentiale des Fahrgastwechsels, TU Berlin/Institut für Land- und Seeverkehr (Schienenfahrwege und Bahnbetrieb) / *Eisenbahnwesen-Seminar*, Berlin, July 2010.

- Weidmann, U. (2010) Escher, der Engel & die Fibonacci-Zahlen (Podiumsdiskussion), Premiere des gleichnamigen Films / Filmpodium Studio 4, Zürich, May 2010.
- Weidmann, U. (2010) Gotthard-Basistunnel: Bahn der Zukunft – und die Zukunft der Bahn?, Meeting des Lions Club Altdorf, Flüelen, 7 September 2010.
- Weidmann, U. (2010) Institute for Transport Planning and Systems: Research and teaching for the Public Transport of the Future, *University of Birmingham, Railway Systems Engineering and Integration, Study Visit*, Zürich, 19 May 2010.
- Weidmann, U. (2010) Mobilität als Limite oder Mobilität am Limit? – Herausforderungen und Lösungsperspektiven für die künftige Erschliessung von Städten und Agglomerationen, Schweizerischer Städteverband / *Schweizerischer Städtetag*, Zurich, August 2010.
- Weidmann, U. (2010) Planerische Grundlagen der Fussgängeranlagen und der Kombinierten Mobilität, Trassen-Manager SBB / Integrierter öffentlicher Verkehr, Löwenberg/Murten, October 2010.
- Weidmann, U. (2010) Zukunft Bahnhof Bern (ZBB) – Ziele und Ergebnisse des Gutachtens der ETH Zürich, Gesellschaft der Ingenieure des öffentlichen Verkehrs / Mitgliederversammlung der Ortsgruppe Bern, Bern, March 2010.
- Weidmann, U. (2010) Zürich mit einer U-Bahn – eine U-Bahn für Zürich?, Tram-Museum Zürich / U-Bahn in Zürich – Träume, Projekte, Abstimmungskampf, Zurich, July 2010.
- Weidmann, U. (2010) Langfristige Weiterentwicklung der schweizerischen Bahninfrastrukturen: Evolution oder Revolution?, Städteallianz, Zürich, 16 April 2010.
- Weidmann, U. (2009) Ausbildungsangebote im öffentlichen Verkehr, *SuisseTraffic 2009*, Bern, November 2009.
- Weidmann, U. (2009) Bahninfrastrukturen 2050: Evolution oder Revolution?, *9. Thurgauer Technologietag*, Romanshorn, March 2009.
- Weidmann, U. (2009) Energiesparen durch kombinierte Mobilität – Die Erfahrungen mit Park & Ride in der Schweiz, EXPO Hannover / Clean Moves, Hannover, April 2009.
- Weidmann, U. (2009) Entwicklung des Bahnnetzes Schweiz: Bestimmungsgrößen, Prozesse, Perspektiven, *CARGO FORUM SCHWEIZ*, Bern, May 2009.
- Weidmann, U. (2009) Institute for Transport Planning and Systems: Research and teaching for the Public Transport of the Future, *Study Visit Beijing Jaotong University / State Key Lab of Traffic Control and Safety*, Zürich, 20 March 2009.
- Weidmann, U. (2009) Kombinierte Mobilität – Wirkungsmechanismen und Auswirkungen, *Kontakttreffen VBZ – IVT*, Zürich, April 2009.
- Weidmann, U. (2009) Nahverkehrsbahnen: Mode oder Medizin?, paper presented at the Forum Realisierung von Nahverkehrsbahnen – Vom Agglomerationsprogramm zum baureifen Projekt, Zürich, May 2009.
- Weidmann, U. (2009) Netzentwicklung, Organisation und Finanzierung der Bahn in der Schweiz, Gastvorlesung, Technische Universität Prag, Prag, December 2009.
- Weidmann, U. (2009) Öffentlicher Stadtverkehr: Kontinuitäten, Chancen und Herausforderungen, *Continental Public Transport Solutions / Usertagung 2009*, Zurich, May 2009.
- Weidmann, U. (2009) Perspektiven für den Bahnmarkt Schweiz – Trends und Konsequenzen, *Management Forum Bombardier Transportation*, Zurich, May 2009.
- Weidmann, U. (2009) Planerische Grundlagen der Fussgängeranlagen und der Kombinierten Mobilität, Trassen-Manager SBB / Integrierter öffentlicher Verkehr, Löwenberg/Murten, November 2009.
- Weidmann, U. (2009) Produktion im Eisenbahnsystem: Ressourcen, Prozesszeiten, Kapazitäten, Bundesamt für Verkehr / Basiswissen Betriebs-, Volkswirtschaft, Planung und Verkehr, Bern, May 2009.
- Weidmann, U. (2009) Regeln und Normen der schweizerischen Bahnen im Überblick, WBZ ETH Zürich / Risiko und Sicherheit technischer Systeme, Zurich, June 2009.
- Weidmann, U. (2009) Verkehrssysteme unseres Landes – wohin künftig Schiene und Strasse führen, *Die ETH Zürich in Bundesbern – Nachhaltige Raumplanung in der Schweiz*, Bern, 26. November 2009.
- Weidmann, U. (2009) Welcome at RailZurich2009! *International Association of Railway Operations Research*, Zürich, 11 February 2009.
- Weidmann, U. (2009) Zukunft Bahnhof Bern – Gutachten des Instituts für Verkehrsplanung und Transportsysteme, Kommission für Planung, Verkehr und Stadtgrün (PVS) der Stadt Bern, Bern, October 2009.

- Weidmann, U. (2009) Zukunft Bahnhof Bern – Gutachten des Instituts für Verkehrsplanung und Transportsysteme, Kommission für Verkehr und Fernmeldewesen des Nationalrates, Bern, November 2009.
- Weidmann, U. (2008) Alternative Finanzierung des öffentlichen Verkehrs, Verband öffentlicher Verkehr / *öV-Forum 2008* – Öl-Wechsel beim öffentlichen Verkehr, Oberhofen, December 2008.
- Weidmann, U. (2008) Angebots- und Preispolitik von Bahn, Tram und Bus im Kreuzfeuer – Kurzstatement, Vorstandssitzung der LITRA, Bern, June 2008.
- Weidmann, U. (2008) Das IVT 2008 – Rückblick und aktuelle Projekte, *IVT-Alumni-Seminar*, Zürich, 7 March 2008
- Weidmann, U. (2008) Decision making in the Swiss transalpine railway mega-projects: An international negotiation process, *Seminar on Railway Research*, Technical University of Denmark / Department of Transport, Lyngby, November 2008.
- Weidmann, U. (2008) Der Bahngüterverkehr und die Marktöffnung – Risiko oder Chance?, *Informationsveranstaltung Gewerkschaftsbund Uri / Schweizerischer Eisenbahn- und Verkehrspersonalverband / Sozialdemokratische Partei* “Wettbewerb im Bahngüterverkehr – Fluch oder Segen?”, Erstfeld, February 2008.
- Weidmann, U. (2008) Die Reserve als Stellhebel im Gesamtprozess aus Planung, Betrieb und Qualität – Zusammenfassung des Symposiums, *ITo8.RAIL: Closing the loop – Capacity and Quality of Railway Systems*, Zürich, January 2008.
- Weidmann, U. (2008) Diskriminierungspotentiale bei der liberalisierten Eisenbahn – Versuch einer Ortung, Schiedskommission im Eisenbahnverkehr, Bern, May 2008.
- Weidmann, U. (2008) Erfahrungen mit der Anwendung von EN 50126 ff. für die ganze Bahntechnik – Fallstudie AlpTransit, Zuverlässigkeits- und Sicherheitsplanung bei Bahnprojekten gemäss CENELEC-Normen EN 50126 ff. (RAMS), eduRail/zintec, Olten, November 2008.
- Weidmann, U. (2008) Grundlagen des Fussgängerverkehrs und der Anlagenleistungsfähigkeit, Pilot-Workshop, *SBB-Planungshandbuch zur Anordnung und Dimensionierung von Fussgängeranlagen in Bahnhöfen*, Zürich, August 2008.
- Weidmann, U. (2008) Infrastrukturnotwendigkeiten des öffentlichen Verkehrs und Finanzierungsmöglichkeiten, VLP-ASPAN / Parlamentarische Gruppe für Raumentwicklung, Bern, December 2008.
- Weidmann, U. (2008) Konsequenzen der EU-Eisenbahnpolitik für den konkreten Eisenbahnbetrieb, Technische Universität Dresden / Eisenbahnbetrieb: Chancen und Herausforderungen für Wissenschaft und Praxis, Dresden, February 2008.
- Weidmann, U. (2008) Les transports publics: Les épargnants d'énergie avec une perspective d'avenir, *Mobilité 2030*, Schweizerische Akademie der Technischen Wissenschaften (SATW), Yverdon, August 2008.
- Weidmann, U. (2008) NEAT – A national Mega-Project with European Dimensions and Regional Impacts, FOVUS/ paper presented at the *4th International Symposium Networks for Mobility 2008*, Stuttgart, September 2008.
- Weidmann, U. (2008) Öffentlicher Verkehr: Verankert in der Vergangenheit – gerüstet für die Zukunft, Senioren-Universität, Zurich, November 2008.
- Weidmann, U. (2008) Öffentlicher Verkehr: Verankert in der Vergangenheit – gerüstet für die Zukunft, Universitäre Vorlesungen in Winterthur, Winterthur, December 2008.
- Weidmann, U. (2008) RAIL2000 et Alp Transit: Deux projets visionnaires et deux visions bin différentes, Colloque Professeur Robert Rivier – Le Chemin de Fer aux portes de son Avenir, EPFL, Lausanne, November 2008.
- Weidmann, U. (2008) Switzerland's Bahn2000: Planning, Operations and the Future, *Transportation Research Board Annual Meeting*, Washington D.C., January 2008.
- Weidmann, U. (2008) Ticket selling processes on suburban busses and it's effects on delay propagation, *Contact Meeting with Transportation*, Delft, June 2008.
- Weidmann, U. (2008) Trends und Perspektiven für das Lokpersonal des Personenverkehrs SBB, *Workshop Personenverkehr SBB / Operations*, Münchenwiler, August 2007.
- Weidmann, U. (2008) Trends und Perspektiven für den Personenverkehr der BLS AG, *Kaderworkshop Personenverkehr BLS*, Stalden, November 2008.
- Weidmann, U. (2008) Überlegungen zum Güterverkehrsgesetz und zur Umsetzung der Alpeninitiative, Hearing in der Kommission für Verkehr und Fernmeldewesen des Ständerates, Bern, July and July 2008.

- Weidmann, U. (2008) Unsere Welt im Jahre 2025 – und unsere Bahn?, *5 Jahre SYSTRANSIS*, Zug, November 2008.
- Weidmann, U. (2008) Von A wie Autobahn bis Z wie Zooseilbahn, 2 Schwamendinger Zunftbott (Podiumsdiskussion), Zurich, August 2008.
- Weidmann, U. (2008) Wieviel öffentlichen Verkehr braucht eine lebenswerte Stadt – und welchen?, Neue Horizonte im Stadtverkehr *TROLLEYMOTION*, Zurich, November 2008.
- Weidmann, U. (2007) Agglomerationsverkehr 2020: Schicksalsfrage für die Städte – Chance für die Bahn, *Kundentag PROSE AG 2007*, Winterthur, May 2007.
- Weidmann, U. (2007) An die Grenze gehen, um Grenzen zu überwinden, Convegno internazionale di studi sulle trasversali alpine / Il San Gottardo: Dalla galleria di Favre all'AlpTransit, Locarno, October 2007.
- Weidmann, U. (2007) Analyse einer direkten Busverbindung Stadtzentrum – Science City, Round Table Science City, Zürich, November 2007.
- Weidmann, U. (2007) Ansätze für ein wirkungsorientiertes schweizerisches Trassenpreissystem der Zukunft, *Vorstandssitzung VAP*, Zürich, April 2007.
- Weidmann, U. (2007) Bahngüterverkehr/Kombiverkehr – Verkehrspolitik und Geschäftsstrategien, *HSG/Executive MBA in Logistik, Verkehrsmanagement*, Basel, November 2007.
- Weidmann, U. (2007) Der Regionalverkehr als Herausforderung für die Angebots- und Infrastrukturplanung, Regionen im Umbruch! Regionalverkehr im Aufbruch?, Zürich, March 2007.
- Weidmann, U. (2007) Das Institut für Verkehrsplanung und Transportsysteme – Mobil für die Mobilität der Zukunft, *Schulleitung der ETH Zürich*, December 2007.
- Weidmann, U. (2007) Ein Bus ist eben kein Tram, Pressekonferenz Tram Zürich-West, Zürich, June 2007.
- Weidmann, U. (2007) Erschliessung von Science City – Standbericht, Roundtable Science City, Zürich, April 2007.
- Weidmann, U. (2007) Haltestellenzufluss in Abhängigkeit vom Fahrplankontakt, *Kontaktmeeting VBZ – IVT*, Zürich, April 2007.
- Weidmann, U. (2007) Im Sekundenschritt – Der Schweizer Bahnpräzision auf der Spur, Treffpunkt Science City, Zürich, November 2007.
- Weidmann, U. (2007) Institute for Transportation Planning and Systems: Research and teaching for the Public Transport of the Future, *Präsenz Schweiz/Study Trip on Public Transportation and Mobility in Switzerland*, Zürich, August 2007.
- Weidmann, U. (2007) Magnetschnellbahnen: Vision oder Fiktion? – Die Fallstudie SWISSMETRO, Mit Tempo in die Zukunft? Die Geschwindigkeit der Eisenbahn, Zürich, June 2007.
- Weidmann, U. (2007) Neue Eisenbahn-Alpentransversalen – Von der Vision zur Realität, *Technisch-wissenschaftliche Vorträge im Allgäu*, Kempten, November 2007.
- Weidmann, U. (2007) Öffentlicher Verkehr in den nächsten 125 Jahren – Eine Herausforderung für Forschung und Lehre, *Kongress Stadt und Verkehr Verkehrsbetriebe Zürich / IVT*, Zurich, November 2007.
- Weidmann, U. (2007) Regionalisierung und Liberalisierung des öffentlichen Verkehrs in der Schweiz – Erfahrungen und Perspektiven, Technische Universität Pardubice, December 2007.
- Weidmann, U. (2007) Verkehrsplanung in der Schweiz und im Wirtschaftsraum Zürich, Arbeitsbesuch des Bürgermeisters von Villnius/Litauen, Zurich, August 2007.
- Weidmann, U. (2007) Verkehrssysteme als Provider der Raumnutzung – Das Fallbeispiel des Mobilitätsplanes für das Zürcher Hochschulgebiet, *ETH Rat / Dialog 2007*, Zurich, May 2007.
- Weidmann, U. (2006) “Suum cuique – jedem seine Bahn”, *Gurtengespräche Emch + Berger*, Bern, May 2006.
- Weidmann, U. (2006) Beiträge des IVT in einem Kompetenzzentrum Luftfahrt Schweiz (KZSL), AEROSUISSE / Fachkommission Bildung und Forschung, Kloten, September 2006.
- Weidmann, U. (2006) Crossing the Alps – Swiss Transport Policy and Strategic Projects, *TRIAL in MOTION*, Rotterdam, November 2006.
- Weidmann, U. (2006) Das Fahrzeug – Ein System im System, *Informationsfahrt LITRA*, Winterthur, May 2006.
- Weidmann, U. (2006) Das IVT und sein Forschungsschwerpunkt Betriebsprozesssteuerung, *4. Verkehrswissenschaftliches Fachgespräch der Universität Stuttgart*, Stuttgart, September 2006.
- Weidmann, U. (2006) Differenzierte Strategien für einen erfolgreichen Agglomerationsverkehr, *Jahresversammlung der Gesellschaft der Ingenieure des öffentlichen Verkehrs*, Zürich, May 2006.
- Weidmann, U. (2006) Erschliessung von Science City mit dem öffentlichen Verkehr, *Informationsveranstaltung Science City*, Zürich, January 2006.

- Weidmann, U. (2006) Erschliessung von Science City mit dem öffentlichen Verkehr, Kommission für Energie, Verkehr und Umwelt des Kantonsrates Zürich, Zurich, April 2006.
- Weidmann, U. (2006) Fakten – Fokusse – Feiern: Eine Art Schlusswort, *IVT-Verkehrsingenieurtag*, March 2006.
- Weidmann, U. (2006) Forschung und Lehre des IVT für die Schweizer Bahnen der Zukunft, Verband öffentlicher Verkehr / Kommission Technik Bahnen, Bern, April 2006.
- Weidmann, U. (2006) Infrastrukturfinanzierung: Finanzierung ohne Struktur?, *Konferenz der Direktoren des öffentlichen Verkehrs*, Bürgenstock, September 2006.
- Weidmann, U. (2006) Institute for Transportation Planning and Systems – Research for Public Transport for the Future, *Studienreise Dr. Gunnar Anderson*, Zürich, March 2006.
- Weidmann, U. (2006) Institut for Transportation Planning and Systems – Research and teaching for the Public Transport of the Future, *Visit of Czech Technical University*, Zürich, May 2006.
- Weidmann, U. (2006) Neue Eisenbahn-Alpentransversale – Von der Vision zur Realität?! TU München / VDI, München, January 2006 and *Technisch-wissenschaftliche Vorträge im Allgäu*, Kempten, November 2007
- Weidmann, U. (2006) Public transport in Switzerland, Visit of Czech Technical University, Zurich, May 2006.
- Weidmann, U. (2006) Public Transport in Switzerland: Key Success Factors and new challenges, *I.R.S.E. Convention 2006*, Interlaken, September 2006.
- Weidmann, U. (2006) Schlüsselinfrastruktur Bahnhof – Das Herz der Eisenbahn?! Deutsche Akademie für Landesplanung und Städtebau / Jahreskongress, Ulm, October 2006.
- Weidmann, U. (2006) Sicherheit und Risiko im öffentlichen Verkehr, *NDK Risk & Safety*, Zurich, October 2006.
- Weidmann, U. (2006) Von Tunnels und Tonnen: Die neuen Schweizer Alpentunnels im Kontext der Transitverkehrspolitik, TU Graz, Graz, March 2006.
- Weidmann, U. (2006) Werkstattbericht “Der periphere Raum unter Druck”, *Mitgliederversammlung SVI*, Lugano, May 2006.
- Weidmann, U. (2006) Wieviele Verbunde wünscht der Fahrgast?, *VÖV-Forum 2006*, Gerzensee, November 2006.
- Weidmann, U. (2005) Am Anfang war der Bus... und er hat Zukunft! *Bus CH, Gründungsversammlung*, Luzern, October 2005.
- Weidmann, U. (2005) Bahn 2000 – Erfolge und Herausforderungen, Vorstand LITRA, Bern, December 2005.
- Weidmann, U. (2005) Das Institut für Verkehrsplanung und Transportsysteme und seine Beiträge für den öffentlichen Verkehr der Zukunft, Bundesamt für Verkehr, Abteilungsleitung Technik, Bern, May 2005
- Weidmann, U. (2005) Das Institut für Verkehrsplanung und Transportsysteme und seine Beiträge für den öffentlichen Verkehr der Zukunft, Verwaltungsrat des Regionalverkehrs Bern-Solothurn RBS, Zürich, August 2005.
- Weidmann, U. (2005) Das Institut für Verkehrsplanung und Transportsysteme und seine Beiträge für den öffentlichen Verkehr der Zukunft, Leitung SIEMENS Transportation (Schweiz), Zürich, November 2005.
- Weidmann, U. (2005) Datensysteme im Führungsprozess Eisenbahn, Seminar Planung, Betrieb und Qualitätskontrolle – Daten und IT-Systeme in der Eisenbahn, Zürich, May 2005.
- Weidmann, U. (2005) Die simulierten Pendler: Pünktlichkeit der S-Bahn Zürich, 150 ETH-Professoren im Gespräch, Zürich, April 2005 und May 2005.
- Weidmann, U. (2005) Forschung und Ausbildung für wettbewerbsfähige Bahnen, Geschäftsleitung der BLS Lötschbergbahn, Bern, February 2005.
- Weidmann, U. (2005) Künftige Herausforderungen der schweizerischen Verkehrspolitik, Verkehrskommission der FDP Schweiz, Bern, December 2005.
- Weidmann, U. (2005) NEAT und die VerkehrsingenieurInnen: Going to the limits, *Presseseminar ETH Zürich*, Zurich, September 2005.
- Weidmann, U. (2005) Public Transport in Switzerland: Key Success Factors, Johns Hopkins University, *Fellows Conference 2005*, Zurich, June 2005.
- Weidmann, U. (2005) Rail freight transit in Switzerland – Today and tomorrow, Fachhochschule Nordwestschweiz, *Seminar StoffNetz*, Olten, January 2005.
- Weidmann, U. (2005) Regionalverkehr in der Schweiz: Aufbruch und Umbruch, IDHEAP, Lausanne, November 2005.
- Weidmann, U. (2005) Regionalverkehr: Aufbruch, Umbruch und aufgeschobene Reformen, *Konferenz der Delegierten des öffentlichen Verkehrs*, Luzern, November 2005.



- Weidmann, U. (2005) Regionalverkehr: Fusionen und Konfusionen, *Generalversammlung der Konferenz der Direktoren des öffentlichen Verkehrs KÖV*, Stein am Rhein, September 2005.
- Weidmann, U. (2005) Regionalverkehr: Investitionen im volatilen Umfeld, Verband öffentlicher Verkehr, *öV-Forum 2005*, Oberhofen, November 2005.
- Weidmann, U. (2005) Überlegungen zur zukunftsgerichteten Erschliessung von Bern West, Begleitkommission Tram Bern West, Bern, February 2005.
- Weidmann, U. (2005) Wandel und Werte: Öffentliche Verkehrssysteme im 21. Jahrhundert, *Einführungsvorlesung an der ETH Zürich*, Zurich, June 2005.
- Weidmann, U. (2005) Zukunft der SBB – Unternehmung der Zukunft, SBB, Division Personenverkehr / Leitung Operations, Bern, September 2005.
- Weidmann, U. (2004) Das Institut für Verkehrsplanung und Transportsysteme der ETH Zürich, Vortrag im Rahmen der Verleihung der Goldenen Schiene der GdI, Zürich, November 2004 und beim Kantonsrat Zürich, Zurich, September 2004.
- Weidmann, U. (2004) Das Institut für Verkehrsplanung und Transportsysteme, Vortrag im Rahmen der *Jahresveranstaltung des Kantonsrates Zürich*, Zurich, September 2004.
- Weidmann, U. (2004) Das schweizerische Verkehrssystem und die aktuelle Wettbewerbspolitik im öffentlichen Verkehr, Vortrag im Rahmen der Grossen Bauingenieur-Exkursion der Universität der Bundeswehr München, Zürich, July 2004.
- Weidmann, U. (2004) Die Zukunft des (öffentlichen) Zürcher Verkehrs, Vortrag vor der Zürcher Studiengesellschaft für Bau- und Verkehrsfragen, Zürich, November 2004.
- Weidmann, U. (2004) Einfluss der Infrastruktur auf die Unternehmenslandschaft des öffentlichen Verkehrs, Vortrag im Rahmen des *Forums Gerzensee des VöV*, Gerzensee, September 2004.
- Weidmann, U. (2004) Erschliessung Bern West – Zukunftsgerichtete Lösung für Kanton, Stadt und Agglomeration, Vortrag im Rahmen der Klausur des Regierungsrates des Kantons Bern, Bern, October 2004.
- Weidmann, U. (2004) Liberalisierung der Bahn in der Schweiz: Das Spiel beginnt! *Verkehrswissenschaftliches Kolloquium des Instituts für Verkehrs- und Infrastruktursysteme*, Dresden, October 2004.
- Weidmann, U. (2004) ÖV-Erschliessung Bern West / Sicht des Experten, *Medienkonferenz der Behörden-delegation Tram Bern West*, Bern, November 2004.
- Weidmann, U. (2004) Projekte für die Bahn der Zukunft, Vortrag im Rahmen der Grossen Bauingenieur-Exkursion der Universität der Bundeswehr München, Zurich, July 2004.
- Weidmann, U. (2004) Unternehmenslandschaften der Transportunternehmungen des öffentlichen Verkehrs, Vortrag im Rahmen des *Forums Gerzensee des VöV*, Gerzensee, September 2004.
- Weidmann, U. (2004) Verkehrszukunft Zürich – Ansichten und Aussichten eines noch (fast) Unbelasteten, Vortrag vor der *Jahresversammlung des Verbandes der Kader des öffentlichen Verkehrs Zürich (KVöV)*, Zurich, August 2004.
- Weidmann, U. and M. Lüthi (2006) Qualitätssicherung bei Fahrplanplanung und Betrieb, Geoleitsysteme und Qualitätssicherung bei Fahrplanerstellung und Betrieb im öffentlichen Verkehr, ETH Zürich, March 2006.
- Weidmann, U. and M. Scherer (2010) Warum wollen die Fahrgäste ein Tram, meinen aber nicht immer das Tram?, *Trolley-motion: Neue Horizonte im Stadtverkehr – Innovative E-Bus-Systeme für attraktive Städte*, Luzern, 30 November 2010.
- Weidmann, U. and P. Frank (2010) Herzstück Regio-S-Bahn Basel – Zweitmeinung zur vorgeschlagenen Variantenwahl, Bau- und Planungskommission des Grossen Rates des Kantons Basel-Stadt / Umwelt-, Verkehrs- und Planungskommission des Landrates des Kantons Basel-Landschaft, Liestal, October 2010.
- Weidmann, U. and P. Schmidt (2007) Vorschläge zur Weiterentwicklung des schweizerischen Trassenpreissystems, Verband öffentlicher Verkehr / Kommission Güterverkehr, Bern, February 2007.
- Weidmann, U., H. Schneebeli, B. Alt, S. Buchmüller and N. Schüssler (2005) Erschliessung von Science City mit dem öffentlichen Verkehr, Projektstudie im Rahmen der (Master-) Planung von Science City, IVT, ETH Zürich, Zurich.
- Weidmann, U., S. Moll and M. Rieder (2010) Market monitoring of Rail Transport in Switzerland, Schiedskommission im Eisenbahnverkehr / IQ-C plus Meeting of the Regulatory Bodies, Zürich, June 2010.

- Weidmann, U. and K.W. Axhausen (2009) Das Institut für Verkehrsplanung und Transportsysteme sowie Schwerpunkte der Professur für Verkehrssysteme, *SIEMENS Mobility / Kompetenztour*, Zürich, 9 December 2009.
- Weidmann, U.; Barth, E.; Frank, P. (2011) Second Opinion über die weitere Angebotsentwicklung und den weiteren Ausbau der Bahninfrastruktur (Vortrag und Hearing), *Eidgenössische Finanzverwaltung / Bundesamt für Verkehr*, Bern, 29 June 2011.
- Weidmann, U.; Carrasco, N.; Scherer, M. (2011) Pünktlichkeit im Stadtverkehr: Wie der Bus zum Tram werden kann, *Stadt und Verkehr – Koexistenz und Kooperation im Stadtverkehr: Kampf um die knappen Ressourcen Zeit und Raum*, Zürich, 16 March 2011.
- Weidmann, U.; Dorbritz, R. (2011) Bedeutung des öffentlichen Strassenverkehrs in der Schweiz – Ergebnisse der Grundlagenstudie, *Fachverband INFRA / Pressekonferenz*, Luzern, 31 March 2011.
- Weidmann, U.; Frank, P. (2011) Herzstück Regio-S-Bahn Basel – Stellungnahme zur Variantenbeurteilung, *Fachtagung "Herzstück konkret – gemeinsam die nächsten Schritte planen"*, Basel, 10 January 2011.
- Weidmann, U.; Lüthi, M. (2007) Das IVT und sein Forschungsschwerpunkt Betriebsprozess-Steuerung, *Kontakttreffen Qnamic-IVT*, Hägendorf, February 2007.
- Weidmann, U.; Singer, B. (2011) Tram Region Bern (TRB), Gutachten, *Pressekonferenz der Bau-, Verkehrs- und Energiedirektion des Kantons Bern*, Bern, 30 May 2011.
- Wichser J. (2009) Brauchen wir eine neue Stehplatzkultur bei Bus und Bahn, *ÖV Forum*, Oberhofen a. Thun-ersee, Oberhofen November 2009.
- Wichser J. (2005) Umlagerung von Strassen-Güterverkehr auf die Schiene in der Schweiz, TU München, November 2005.
- Wichser J., (2009) Bessere Nutzung der begrenzten Streckenkapazität, Herausforderungen an ein neues Trassenpreissystem, *Logisticcircle der ÖVG*, Wien, March 2009.
- Wichser J., (2009) Der öffentliche Verkehr in der Schweiz, ausgewählte Aspekte, Studenten der TU Dresden beim Bau- und Verkehrsdepartement BE, Bern, June 2009.
- Wichser J., (2009) Entwicklung der Infrastruktur sowie heutige und zukünftige Engpässe, paper presented at the *Business Day der GS 1*, Zürich, October 2009.
- Wichser J., (2009) Güterverkehrslogistik und Gütertransportsysteme, Trassenmanager 2, *Weiterbildungsveranstaltung der SBB Infrastruktur – Academia*, Muntelier-Löwenberg, November 2009.
- Wichser, J. (2010) Forschungspaket Güterverkehr, paper presented at the Besuch ASTRA beim D-Baug, ETH Zürich, Zurich, November 2010.
- Wichser, J. (2008) Güterverkehrslogistik und Gütertransportsysteme, Trassenmanager 2, *Weiterbildungsveranstaltung der SBB Infrastruktur – Academia*, Muntelier-Löwenberg, March 2008.
- Wichser, J. (2008) Güterverkehrslogistik und Gütertransportsysteme, Trassenmanager 2, *Weiterbildungsveranstaltung der SBB Infrastruktur – Academia*, Muntelier-Löwenberg, November 2008.
- Wichser, J. (2008) Schienen-Netzentwicklung und Planungsprozesse, Trassenmanager 2, *Weiterbildungsveranstaltung der SBB Infrastruktur – Academia*, Muntelier-Löwenberg, April 2008.
- Wichser, J. (2007) 6. Rahmenprogramm der EU, Rückblick aus Sicht der Jury des ISB, *ISB Workshop Wien*, January 2007.
- Wichser, J. (2007) Entwicklung der Verkehrsströme West-Ost in der erweiterten EU, was heisst das für Sachsen, *IZBE Symposium Mobilität in der erweiterten EU*, Dresden, July 2007.
- Wichser, J. (2007) Möglichkeiten und Grenzen der Verlagerung des Güterverkehrs auf die Schiene. Was trägt das IVT dazu bei?, *Science City Anlass*, Zurich, November 2007.
- Wichser, J. (2007) Towards a sustainable Freight Transport in Europe, *Meeting IDEA League*, Bruxelles, June 2007.
- Wichser, J. (2007) Warum wollen alle Wettbewerb im öffentlichen Personenverkehr?, *ÖV Forum Oberhofen* 4.12.2007, Zurich.
- Wichser, J. (2006) PUTGAP – neues Verkehrssystem, Vortrag *Veranstaltung Mobiles Liechtenstein 2015*, 27.11.06 Vaduz.
- Wichser, J. (2004) Die Güterbahn, ein Verkehrssystem mit Zukunft, Herausforderungen für Forschung und Entwicklung, Impulsreferat *ÖBB – Rail Cargo Austria Forschung und Entwicklungswerkstatt 2004*, Wien, November 2004.

- Wichser, J. (2004) NEAT Kapazitätsanalyse der Nord-Sued Achsen, Orientierung der Verkehrskommission des Nationalrates Bern, November 2004.
- Wichser, J. (2004) Trassenkapazitäten im Güterverkehr, *Tagung VöV*, Bern, June 2004.
- Wichser, J. and H. Schneebeli (2004) Verbesserungspotential des öffentlichen Verkehrs im Bezirk Pustertal, Orientierung Behörden des Bezirkes Pustertal, January 2004.
- Wiedersheim, S. and M. Laumanns (2011) Decomposition methods for periodic railway timetabling problems, *International Conference on Operations Research*, Zurich, September 2011.
- Wüst, R. and M. Lüthi (2008) Leistungssteigerung durch Elektronik, Workshop Szenario Nachfrageverdopplung S-Bahn Zürich, SMA and Partner AG, Zürich, September 2008.

### 13.3 TRANSPORT PLANNING

- Axhausen, K.W. (2011) Activity Space and Social Network Geographies: Growth Ahead?, presentation at the *NUS Department of Sociology*, Singapore, November 2011.
- Axhausen, K.W. (2011) Agent-based travel demand models and social networks: Next challenges, presentation at the *4th International Workshop Frontiers in Transportation*, Niagara on the Lake, October 2011.
- Axhausen, K.W. (2011) Grossräumige Evakuierungen bei KKW-Unfällen, presentation at the *BSK'11*, Davos, November 2011.
- Axhausen, K.W. (2011) Leveraging GIS-data: The case of transport modeling, *12th GITEX conference*, Singapore, May 2011.
- Axhausen, K.W. (2011) Stochastic user equilibrium of 106 daily plans and their agents, presentation at *NUS Civil Engineering Department*, Singapore, November 2011.
- Axhausen, K.W. (2010) Auswirkungen der Stellplatzbaupflicht auf die Stadtentwicklung und Mobilität, paper presented at the *Veranstaltung der Grünen Fraktion im Hessischen Landtag* "Effektiv steuern mit der Stellplatzsatzung: Chancen für eine nachhaltige Stadt- und Mobilitätsentwicklung", Frankfurt, April 2010.
- Axhausen, K.W. (2010) Demand and user behaviour: Suggestions for a research agenda, paper presented at the *Transport and Crowd Management Workshop 2010*, Jeddah, May 2010.
- Axhausen, K.W. (2010) Ingenieurbau: Perspektiven für nachhaltigen Erfolg, *Vorstandsklausur Bilfinger+Berger Ingenieurbau*, Taunusstein, March 2010.
- Axhausen, K.W. (2010) Modelling infrastructure gains: An experiment, paper presented at the *LESO Lunch-time seminar*, EPF Lausanne, May 2010.
- Axhausen, K.W. (2010) Nationale Verkehrsmodelle: Anforderungen an Verhaltensdaten und -modelle, paper presented at the *DVWG Seminar Qualitäts-anforderungen an Verkehrsnachfragemodelle*, Berlin, March 2010.
- Axhausen, K.W. (2010) Soziale Netze und Verkehr im Zeitalter von ‚Skype‘, *DVWG Seminar*, Stuttgart, July 2010.
- Axhausen, K.W. (2009) Collecting and organising time-use data, *1st International Time Use Observatory*, Santiago de Chile, January 2009.
- Axhausen, K.W. (2009) Computational algorithms and procedures for integrated micro-simulation models, Plenarvortrag, *12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Axhausen, K.W. (2009) Dynamics of activity spaces and social geographies, *Vortragsveranstaltung zur Verabschiedung von Prof. Dr.-Ing. Dirk Zumkeller*, Universität Karlsruhe, April 2009.
- Axhausen, K.W. (2009) Social network geographies and travel, *3rd Workshop Frontiers in Transportation*, Niagara on the Lake, August 2009.
- Axhausen, K.W. (2009) Transport Science and History, *7th Conference on the History of Traffic, Transport and Mobility*, Luzern, 2009.
- Axhausen, K.W. (2009) Update on MATSim, *88th Annual Meeting of the Transportation Research Board*, Washington, January 2009.
- Axhausen, K.W. (2008) Agent-based modeling of the travelers and their infrastructure demand, paper presented at the *ESC Conference Smart Energy Strategies 2008*, Zürich, September 2008.

- Axhausen, K.W. (2008) Auswirkungen sich ändernder Energiekosten für den öffentlichen Verkehr im Zusammenhang mit dem Individualverkehr: Technik, Preise, Nachfrage, Kapazitäten, paper presented at the *VÖV Forum 2008 Oel-Wechsel beim Verkehr*, Oberhofen, December 2008.
- Axhausen, K.W. (2008) Mobilität – wohin ?, *Mobilität 2048: Ein knappes Gut wird neu verteilt*, paper presented at the *Tagung der Swiss Future*, Luzern, May 2008.
- Axhausen, K.W. (2008) Spatial patterns of social networks and social contacts, *Kolloquium Geographische Informationswissenschaft*, Universität Zürich, Zurich, April 2008.
- Axhausen, K.W. (2008) The Willingness to Pay for mobility, paper presented at the *7th European Congress on Intelligent Transport Systems and Services*, Geneva, June 2008.
- Axhausen, K.W. (2008) What does similarity measure?, paper presented at the *4th Workshop on Applications of Discrete Choice Models*, EPF Lausanne, Lausanne, August 2008.
- Axhausen, K.W. (2007) Capturing the geographies of social networks: Current measurement experiences, paper presented at the *Department for Geography*, Hebrew University, Jerusalem, April 2007.
- Axhausen, K.W. (2007) Catchment areas, social network geographies and travel: A conceptual model, paper presented at the *Annual Meeting of the Israeli Association of Transportation Research*, Haifa, March 2007.
- Axhausen, K.W. (2007) Measurement of social network geographies: New empirical results and their modelling implications, *Department for Urban Management*, Kyoto University, June 2007.
- Axhausen, K.W. (2007) Modelling 7.5 mio person-days with an agent-based framework: Status and challenges for MATSIM-T, paper presented at the *Graduate School for International Development and Cooperation*, Hiroshima University, July 2007.
- Axhausen, K.W. (2007) Networked or neighboured? – The dilemma of daily life, presentation at the ESF Workshop *How to Measure Access: Definition, Measurement and Consequences of a Changed Set of Objectives in Transportation Designed to Meet the Needs of People*, Dresden, September 2007.
- Axhausen, K.W. (2007) Networked strangers in the neighbourhood: Empirical evidence from Switzerland and policy implications, paper presented at the *Department for Civil Engineering*, Tokyo Institute of Technology, Tokyo, June 2007.
- Axhausen, K.W. (2007) Social network geographies: Expected dynamics and empirical results, *Cosmobilities Network Meeting 2007: Mobilities, space and inequality*, Basle, September 2007.
- Axhausen, K.W. (2007) Social networks and travel: Frequencies, modes and distances, paper presented at the *Department of Industrial and Engineering Management*, Ben Gurion University, Beer Sheva, May 2007.
- Axhausen, K.W. (2007) Tracing the impact of accessibility change: Switzerland 1850 to 2000, *International Workshop on Advanced Transportation Studies, Graduate School for International Development and Cooperation*, Hiroshima University, August 2007 and at the *Department for Civil Engineering*, Tokyo University, Tokyo, July 2007.
- Axhausen, K.W. (2007) Tracing the impact of accessibility change: Switzerland 1850 to 2000, paper presented at the *Department for Civil Engineering*, Tokyo University, Tokyo, July 2007.
- Axhausen, K.W. (2006) Grenzüberschreitende Netze – Grenzüberschreitende Verkehre und Sozialkapital, *DVWG Jahrestagung*, Freiburg, May 2006.
- Axhausen, K.W. (2006) MATSIM-T: A micro-simulation system of activity demand, *TRB Travel Demand Forecasting Conference*, Austin, May 2006.
- Axhausen, K.W. (2006) Mobilität und Tourismus, *BfS – Tagung Tourismusstatistik: Heute und in Zukunft*, Neuenburg, September 2006.
- Axhausen, K.W. (2006) New survey items for a fuller description of traveler behaviour (Biographies and social networks), *TRB Travel Demand Forecasting Conference*, Austin, May 2006.
- Axhausen, K.W. (2006) Parkraum und Zielwahl, *Runder Tisch Parkraumbewirtschaftung*, Basel, June 2006.
- Axhausen, K.W. (2006) Soziale Netze, Mobilitätsbiographien und Verkehrsverhalten, *Kolloquium Soziologie*, ETH Zürich and Universität Zürich, Zurich, April 2006.
- Axhausen, K.W. (2006) Stadt und Verkehr: Konzepte und Modelle, *ETH Alumni Deutschland*, München, May 2006.
- Axhausen, K.W. (2006) The social content and the generalised costs of travel: Balancing the explanations, *NSSI/HEI research group meetings*, Zurich, January 2006.

- Axhausen, K.W. (2006) The Swiss National Model and the Swiss value of travel time savings: Aggregate and disaggregate results, University of Toronto, Toronto, August 2006.
- Axhausen, K.W. (2005) 150 Jahre schrumpfende Schweiz: Die Dynamik von Verkehr und Raumnutzung, 150 *ETH Professoren im Gespräch*, Zürich, April/May 2005.
- Axhausen, K.W. (2005) Data collection methods and models for consumer choice behaviour: Examples from the transport sector, *CEPE Kolloquium*, ETH Zürich, Zurich, June 2005.
- Axhausen, K.W. (2005) Geographies of social networks: The product of personal mobility biographies and generalised costs of contact?, *37th World Congress of the International Institute of Sociology*, Stockholm, July 2005.
- Axhausen, K.W. (2005) Markets, networks and productivity: Some suggestions, Seminar at FUNDP, Namur, March 2005.
- Axhausen, K.W. (2005) Measuring activity spaces and behavioural innovation: Recent results, *Seminar at FUNDP*, Namur, March 2005.
- Axhausen, K.W. (2005) Mobilität im gesellschaftlichen Wandel: Aktuelle Forschungen zum Verkehrsverhalten und Sozialen Netzen, TU Graz, November 2005.
- Axhausen, K.W. (2005) Modelling travel behaviour with OR tools: From microsimulation to fixed point problems, *Seminar "Optimization and Applications"*, Insitute for Operation Research, ETH Zürich, Zurich, November 2005.
- Axhausen, K.W. (2005) Standortqualität – Verkehrswachstum – mögliche Entwicklungen, *Generalversammlung des Baumeisterverbandes Aargau*, Lenzburg, March 2005.
- Axhausen, K.W. (2005) Was haben Standortqualität und Verkehrswachstum miteinander zu tun?, Feierabendgespräch der Bauunternehmer Region Basel, Basel, September 2005.
- Axhausen, K.W. (2005) Wie viel Stadt braucht Herr Müller? Stabilität, Dynamik und Innovation im Verkehrsverhalten, "*Verkehr Aktuell*", Deutsches Museum, München, February 2005.
- Axhausen, K.W. (2005) Zur Dynamik des Verkehrsverhaltens in der Schweiz, *Museumsnacht St. Gallen*, September 2005.
- Axhausen, K.W. (2004) Biographien, soziale Netze und Verkehrsverhalten: Hypothesen und erste Ergebnisse, *CIS-Tagung – Anwendung der sozialen Netzwerkanalyse*, Universität Zürich, October 2004.
- Axhausen, K.W. (2004) Erreichbarkeit und Bevölkerungsveränderung in der Schweiz seit 1950, *Educatis – Vortragsreihe*, Altdorf, November 2004.
- Axhausen, K.W. (2004) Europäische Ingenieurausbildung im internationalen Wettbewerb, 6. Friedrich-List Forum, Dresden, November 2004.
- Axhausen, K.W. (2004) Microsimulation of travel demand: A view ahead, *TRB Workshop on Microsimulation*, Washington, D.C., January 2004.
- Axhausen, K.W. (2004) Mobilität der Zukunft – Zukunft der Mobilität, paper presented at the *Swiss Mobility Day*, Bern, June 2004.
- Axhausen, K.W. (2004) Personal biography, social networks and travel behaviour: Hypotheses and assumptions, *Odyssey Meeting*, University of Ulster, Belfast, August 2004.
- Axhausen, K.W. (2004) Personal biography, social networks and travel behaviour: Measurement and analysis, *Odyssey Meeting*, University of Ulster, Belfast, August 2004.
- Axhausen, K.W. (2004) Persönliche Biographie, soziale Bindungen und Reiseverhalten: Hypothesen und Vermutungen, *Kolloquium Wissenschaftliche Mobilitätsforschung*, Wissenschaftszentrum Berlin, Berlin, June 2004.
- Axhausen, K.W. (2004) *Social Networks and Travel: Some Hypotheses*, *Presentation at the EIRASS Conference on Activity-based Analysis*, Maastricht, May 2004.
- Axhausen, K.W. (2004) Stabilität und Innovation der Aktivitätsmuster, *DVWG/DLR Seminar "Zeitverwendung und Mobilität – Die These vom konstanten Zeitbudget"*, Berlin, November 2004.
- Axhausen, K.W. (2004) Trends in der Erreichbarkeit und der Mobilität der Schweiz, Vortrag bei *Schweizer Immobilienmärkte 2005*, Zurich, October 2004.
- Axhausen, K.W. (2004) Verkehrsverhalten, Aktivitätenräume und soziale Netze, Fortbildungsseminar des Instituts für Verkehrswesen, Universität Karlsruhe, June 2004.
- Axhausen, K.W. (2004) Was können integrative Computer-Modelle für die Siedlungsentwicklung leisten?, *SAGUF Tagung*, Stans, October 2004.

- Axhausen, K.W. (2004) Zum Entwurf der Schweizer Normen im KNA – Bereich, IVT Seminar, Zurich, October 2004.
- Axhausen, K.W. and A. König (2004) Swiss Value of Time Study: First results, *Centre for Transport Studies Seminar*, Imperial College, London, March 2004.
- Axhausen, K.W. and N. Schüssler (2010) Improving and replacing travel diaries using mobile tracing?, paper presented at the *Mobile Tartu 2010*, Tartu, August 2010.
- Axhausen, K.W. and P. Fröhlich (2004) Erreichbarkeitsuntersuchungen für Luft, Schiene und Strasse, PTV Anwenderseminar, October 2004.
- Balmer, M. (2010) Agentenbasierte Integration von aktivitätsbasierter Nachfragemodellierung und dynamischer Umlegung für grosse Szenarien: Die Schweiz im Detail, *Transinfra: Tag der Forschung und Innovation*, Freiburg, March 2010.
- Balmer, M. (2010) Case studies and analysis with MATSim, *MATSim User Meeting*, Zürich, April 2010.
- Balmer, M. (2010) Smart cities + future demand estimation = sustainable urban development, workshop: traffic solutions for smart cities, *Swedish-Swiss Chamber of Commerce*, Zurich, November 2010.
- Balmer, M. (2010) The core of MATSim – an overview, *MATSim User Meeting*, Zurich, April 2010.
- Balmer, M. (2008) Mobilität simulieren, paper presented at the *FHS St. Gallen*, St. Gallen, September 2008.
- Balmer, M. (2008) Modeling travel behaviour in multi-agent transport simulation (MATSim), paper presented at the *TRANSP-OR*, EPF Lausanne, Lausanne, January 2008.
- Balmer, M. (2008) Westumfahrung Zurich: Real world case studies with MATSim, paper presented at the *Laboratoire d'Economie des Transports (LET)*, Universität Lyon, Lyon, June 2008.
- Balmer, M. (2008) Wirkungsanalyse der Westumfahrung Zürich, *Verkehrssystemplanung und Verkehrstelematik*, Technische Universität Berlin, Berlin, May 2008.
- Balmer, M. (2007) MATSim: Multi-Agent Transport Simulation, *Stadtpolizei Zürich, Dienstabteilung Verkehr*, Zürich, December.
- Balmer, M. (2007) Wie funktioniert eigentlich MATSim?, *Treffpunkt Science City*, ETH Zürich, Zurich, November.
- Balmer, M. (2004) Agent-Based Activities Planning for an Iterative Traffic Simulation of Switzerland – Activity Time Allocation, *VSP*, TU Berlin, Berlin.
- Balmer, M. (2004) Anwendung von Verkehrssimulationen in Zürich, paper presented at the *Verkehrsseminar der DVWG – Junges Forum*, Berlin, Deutschland.
- Balmer, M. and K. Meister (2005) Nachfrageerzeugung für agentenbasierte Simulation von Verkehrssystemen, *Deutsche Hochschultagung Verkehrswesen 2005*, Wildbad Kreuth, September 2005.
- Balmer, M., D. Charypar, A. Horni, K. Meister, F. Ciari and K.W. Axhausen (2009) Effect analysis of changes in travel behavior: Real world case studies with a large-scale micro-simulation, *12th International Conference on Travel Behaviour Research*, Jaipur, December 2009.
- Beige, S. (2006) A comparison of residential mobility in a retrospective survey and the Swiss Household Panel, *3rd International Conference of Panel Data Users in Switzerland*, Neuchâtel, February 2006.
- Beige, S. (2005) Wechselwirkungen zwischen Erreichbarkeit und Touristenverhalten im alpinen Raum der Schweiz, *4. Europäischer Verkehrskongress*, Salzburg, June 2005.
- Beige, S., M. Tschopp and K.W. Axhausen (2005) Wie beeinflusst die Verkehrsinfrastruktur die Nutzung der Alpen?, *VLP-ASPAN Tagung "Chancen für den Alpenraum"*, Goldau, September 2005.
- Bernard, M. and K.W. Axhausen (2007) Design loads for road infrastructures: A new approach, paper presented at the *Transport Engineering Seminar*, Technion, Haifa, May 2007.
- Bleisch, A. and P. Fröhlich (2004) Which transport modes are essential?, *BAK International Benchmark Club*, Basel, June 2004.
- Chalasanani V.S. (2005) Travel data archiving: Art of presenting and preserving travel data, *Napier University*, Edinburgh, September 2005.
- Charypar, D. (2006) Mikrosimulation ganz gross, *Verkehrsingenieurtag*, ETH Zürich, March 2006.
- Charypar, D. (2006) Optimierung von grossen Mikrosimulationmodellen der Verkehrsnachfrage – Wie simuliert man 10 Millionen Agenten?, *IVT-Seminar Optimale Verkehrssysteme?*, ETH Zürich, June 2006.
- Ciari, F. (2011) MATSim: An agent based traffic simulator, *CTS Seminar*, University of Illinois at Chicago, August 2011.

- Ciari, F. (2010) Potenzial von Fahrgemeinschaften, presentation at the *ASTRA-Informationsveranstaltung*, Zurich, February 2010.
- Dobler, C. (2010) Implementation of a time step based parallel queue simulation in MATSim, *10th Swiss Transport Research Conference*, Ascona, September 2010.
- Dobler, C. (2010) Modelling disasters – First experiments with an agent-based simulation, *CCSS Seminar*, Zurich, May 2010.
- Erath, A. (2008) Berechnung der Verletzlichkeit eines nationalen Strassennetzes am Beispiel der Schweiz, paper presented at the *PTV Anwenderseminar*, Karlsruhe, October 2008.
- Erath, A. (2007) Berücksichtigung der Verletzlichkeit im Schweizer Verkehrsinfrastrukturmanagement, *Hochschultagung Straßen- und Verkehrswesen 2007*, Rust am Neusiedler See, October 2007.
- Erath, A. (2007) Route, mode and departure time choice behaviour in the presence of mobility pricing, *Think Swiss and Präsenz Schweiz: Study Trip on Public Transportation and Mobility*, Zurich, August 2007.
- Erath, A. (2006) Rolle von Zeit im Verkehr: der Fall Personenverkehr, *SVWG Forum des Schweizer Verkehrs*, Bern, October 2006.
- Frei, A. (2006) Measuring activity spaces, social networks geographies and biographies: Some methodological and empirical results, *COST 355 – WG3 meeting*, Prague, October 2006.
- Frei, A. (2006) Soziale Netze, Biographien und Verkehr, *Hochschultagung Strassen- und Verkehrswesen*, Hohenwart, September 2006.
- Fröhlich, P. (2006) Anwendung des Nationalen Personenverkehrsmodells für die Berechnung der Auswirkungen von Mobility Pricing, *ITS-Fachtagung 2006*, Olten, December 2006.
- Fröhlich, P. (2006) Best practice in transport simulation using VISSIM, Universidade Federal do Rio Grande do Sul, Porto Alegre, April 2006.
- Fröhlich, P. (2006) Practice in Transport Modeling and Simulation, Universidade Federal de Santa Catarina, Florianópolis, April 2006.
- Fröhlich, P. (2005) Practice in Transport Modeling, Escola Politécnica da Universidade de São Paulo, November 2005.
- Fröhlich, P. and K.W. Axhausen (2005) Large Scale Accessibility Study: Which level of accuracy is necessary?, Committee Transportation and Land Development presentation, *85th TRB Annual Meeting*, Washington D.C., January 2005.
- Haase, R. and M. Löchl (2009) Mietzinsen und Erreichbarkeit bei Büro- und Wohnimmobilien: Neue Ergebnisse für den Grossraum Zürich, *IVT-Seminar "Wie schafft Erreichbarkeit Werte?"*, ETH Zürich, May 2009.
- Hackney, J.K. (2008) Validation results from a multi-agent simulation of coupled travel and social behavior, paper presented at the *Workshop on Challenges and Visions in the Social Sciences*, Zurich, August 2008.
- Hackney, J.K. (2005) Modelling the interdependence of social network interactions and the transportation network, *Frontiers in Transportation: Social and Spatial Interactions*, University of Amsterdam, Amsterdam.
- Hackney, J.K. (2005) Modelling the interdependence of social networks and activity spaces, *Applications of Social Network Analysis*, Universität of Zurich, Zurich.
- Hackney, J.K., M. Bernard and K.W. Axhausen (2006) Predicting link speeds with floating car data, paper presented at the Urban Data Committee, *85th Transportation Research Board Annual Meeting*, Washington, D.C., January 2006.
- Hess, S. (2006) Advanced discrete choice models with applications to transport demand, Massachusetts Institute of Technology, October 2006.
- Hess, S. (2006) Modelling passengers' choice of airport, University of Westminster, November 2006.
- Hess, S. (2006) Understanding air travel choice behaviour, *Monash University*, Melbourne, May 2006.
- Horni, A. (2008) Einkaufsverkehr-Zielwahlmodellierung in der aktivitäten-basierten Multi-Agentensimulation MATSim – *Universitätstagung Verkehrswesen*, Warberg, September 2008.
- Horni, A. (2007) Vergleich: Simulation – Zählungen. Wie gut ist unsere Simulation?, *Science City*, 11.11.2007.
- Killer, V. (2008) Räumliche Erreichbarkeiten und die Dynamik der Pendlerverflechtungen in Deutschland und der Schweiz 1970–2005, paper presented at the *34. Kongress Deutscher Gesellschaft für Soziologie*, Jena, October 2008.
- Kowald, M. (2009) Collecting data on combined egocentric networks by taking a snowball sample, *Sunbelt Social Networks Conference*, San Diego, March 2009.

- Kowald, M. (2009) Collecting data on the link between leisure contacts and travel, *Symposium: Frontiers in Network Science*, Berlin, September 2009.
- Kowald, M. and K.W. Axhausen (2010) The structure and spatial spread of egocentric leisure networks, paper presented at the *Applications of Social Network Analysis*, Zurich, 2010.
- Kowald, M. and K.W. Axhausen (2009) A snowball around a random sample, *3rd Workshop Frontiers in Transportation*, Niagara on the Lake, August 2009.
- Löchl, M. (2007) Modelling hedonic residential rent prices in Canton Zurich, *Symposium Hedonic Methods in Real Estate*, Geneva, June 2007.
- Löchl, M. (2004) Mikrosimulation der Flächennutzung und des Verkehrsverhaltens – Eine Anwendung für den Grossraum Zürich, paper presented at the *Hochschultagung "Strassen- und Verkehrswesen"*, St. Mariental, September 2004.
- Löchl, M. and K.W. Axhausen (2008) The Zürich Experience, *European UrbanSim Users' Conference*, Zurich, March 2008.
- Price, M., E. Gløersen, M. Löchl, I. Lysenko and C. Schürmann (2004) Delineating Europe's mountains, Vortrag auf dem 30. Kongress der International Geographical Union (IGU), Glasgow, August 2004.
- Price, M., M. Löchl, C. Schürmann and Erik Gløersen (2004) Developing typologies to comprehend the diversity of Europe's mountains, Vortrag auf dem 30. Kongress der International Geographical Union (IGU), Glasgow, August 2004.
- Schüssler, N. (2009) Challenges of route choice models derived from GPS, *5th Workshop on Discrete Choice Models*, EPF Lausanne, Lausanne, August 2009.
- Schüssler, N. (2008) Using GPS data for route choice modelling, *4th Workshop on Applications of Discrete Choice Models*, EPF Lausanne, Lausanne, August 2008.
- Schüssler, N. (2007) Similarities in air transport connection choice, *Third Workshop on Applications of Discrete Choice Models*, EPFL Lausanne, Lausanne, August 2007.
- Schüssler, N. (2007) The role of similarities for air connection choice, paper presented at the *IVT Seminar*, ETH Zürich, Zurich, December 2007.
- Schüssler, N. (2006) Initial ideas on accounting for similarities between alternatives in route, mode and destination choice, *Second Workshop on Applications of Discrete Choice Models*, EPF Lausanne, Lausanne, September 2006.
- Tschopp, M., P. Fröhlich and K.W. Axhausen (2005) Accessibility and spatial development in Switzerland 1950–2000, *COST 340 final conference*, Paris, June 2005.
- Tschopp, M., P. Fröhlich and K.W. Axhausen (2004) Bevölkerung und Erreichbarkeitsentwicklung in der Schweiz zwischen 1950 und 2000 – ein Vergleich, Vortrag Hochschultagung "Strassen- und Verkehrswesen", St. Mariental, September 2004.
- Waraich, R.A. (2010) A Parking Location Choice Model for MATSim, *10th Swiss Transport Research Conference 2010*, Ascona, September 2010.
- Waraich, R.A. (2010) An agent based micro-simulation of PHEVs, *Vision of Future Energy Networks Workshop: Integrated Modeling and Analysis of PHEV in Power and Transportation Systems*, Zürich, October 2010.
- Waraich, R.A. (2010) Aufladeverhalten von Plug-In-Hybrid Elektrischen Fahrzeugen, *Verkehrsingenieurtag 2010*, Zürich, March 2010.
- Waraich, R.A. (2010) Demand modelling for electric vehicles, *ThinkSwiss Study Tour on Energy*, Zürich, May 2010.
- Waraich, R.A. (2010) Plug-in Hybrid Electric Vehicles and Smart Grid, paper presented at the *2nd MATSim User Meeting*, Zurich, May 2010.
- Waraich, R.A. (2009) Simulation von Plug-In-Hybrid Elektrischen Fahrzeugen, *Universitätstagung Verkehrswesen*, Schwerte, September 2009.
- Weis, C. (2010) Aktivitätenorientierte Analyse des Neuverkehrs: Stated Adaptation Befragung und Auswertung, *4. SVI Fachtagung Forschung*, Olten, September 2010.
- Weis, C. (2010) Wie reagieren Haushalte auf veränderte Reisezeiten?, *IVT-Seminar "Induzierter Verkehr"*, Zurich, December 2010.
- Weis, C. (2008) SVI 2005/203 – Neuverkehr, paper presented at the *SVI Fachtagung Forschung*, Olten, September 2008.



- Weis, C., A. Frei and K.W. Axhausen (2008) A comparative study of web- and paper-based travel behaviour surveys, paper presented at the *COST 355 Meeting*, Annecy, May 2008.
- Zöllig, C. (2009) Where does the additional utility of an improvement to the transport system occur?, *9th Swiss Transport Research Conference*, Ascona, September 2009.
- Zöllig, C., P. Schirmer, K. Müller, B.R. Bodenmann and K.W. Axhausen (2011) Simulation von Flächennutzungsentwicklungen am Beispiel Zürich, *4th Symposium Planungsnetzwerk geo-Innovation*, Karlsruhe, September 2011.

