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Curriculum Vitae: Kai Nagel

Professional coordinates:

- Address: TU Berlin Sek. SG 12, Salzufer 17–19, D-10587 Berlin, Germany
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Research interests

Large-scale multi-agent travel behavior and traffic flow simulations

Using simulation to understand the dynamics of social systems

Higher Education

1994: Ph.D. in Computer Science (University of Cologne/Germany)

1991: Masters degree ('Diplom') in physics (University of Cologne/Germany)

1989: Masters degree ('DEA') in oceanology and meteorology (University of Paris 6 and Ecole Normale Supérieure, Paris/France)

Long-term appointments

2004 – present: Full professor (C4) for Transport systems planning and transport telematics, TU Berlin, Institute for Land and Sea Transport Systems, Germany

1999 – 2004: Assistant professor for Computer Science, Swiss Federal Institute of Technology (ETH) Zürich, Switzerland

1995 – 1999: Postdoc promoted to Technical Staff Member (permanent position) promoted to Research Team Leader, Los Alamos National Laboratory, TSA-Division, Simulation Applications Group

1993 – 1995: Scholar of the Graduate College ('Graduiertenkolleg') Scientific Computing Cologne/St. Augustin

1991 – 1993: Research Associate, Department of Mathematics and Center for Parallel Computing (now Center for Applied Informatics), University of Cologne, Germany

Editorships

Since 2008: "Applied Spatial Analysis and Policy" (editorial advisory board)

2007–2011: "Advances in Complex Systems" (area editor)

Since 2005: "International Journal of Modern Physics C" (editorial advisory board)

Since 2004: "disP" (ETH Zürich; editorial advisory board)

Since 1999: "Networks and spatial economics" (area editor)

Other administrative and professional service (selected)

Member of the price committee for the Heinz-Maier-Leibnitz price of DFG, 2014 –

Supervisory referee (Fachkollegiat) for systems engineering (traffic and transport systems, logistics) for the German National Science Foundation (DFG), 2008 – 2012 and 2016 –

Reviewer for German National Research Council (Wissenschaftsrat), 2008, 2011, 2012, 2015

Member of Transportation Research Board committee on Travel Behavior and Values (ADB10), 2008 –

Member of the advisory board, "Verkehrskonzept für Berlin/Brandenburg (Traffic concept for Berlin/Brandenburg)", 2007 – 2009

Member of the German National Science Foundation (DFG) commission for the research training groups (Graduiertenkollegs), 2007 – 2008

Member of the MATSim developer team, since inception around 2005

Ten selected publications

[1] Nagel, K. and M. Schreckenberg. A cellular automaton model for freeway traffic. *Journal de Physique I France*, 2, 2221, 1992.

[2] Nagel, K. and M. Rickert. Parallel implementation of the TRANSIMS micro-simulation. *Parallel Computing*, 27(12), 1611, 2001.

[3] Nagel, K., P. Wagner, and R. Woesler. Still flowing: Approaches to traffic flow and traffic jam modeling. *Operations Research*, 51(5), 681, 2003.

[4] Balmer, M., N. Cetin, K. Nagel, and B. Raney. Towards truly agent-based traffic and mobility simulations. In *Autonomous agents and multiagent systems (AAMAS'04)*. New York, NY, July 2004.

[5] Balmer, M., B. Raney, and K. Nagel. Adjustment of activity timing and duration in an agent-based traffic flow simulation. In H. Timmermans, ed., *Progress in activity-based analysis*, pp. 91–114. Elsevier, Oxford, UK, 2005.

[6] Nagel, K. and F. Marchal. Computational methods for multi-agent simulations of travel behaviour. In K. Axhausen, ed., *Moving through nets: The physical and social dimensions of travel*, pp. 131–188. Elsevier, 2007. ISBN 0-08-944213-7.

[7] Nagel, K. and G. Flötteröd. Agent-based traffic assignment: Going from trips to behavioural travelers. In R. Pendyala and C. Bhat, eds., *Travel Behaviour Research in an Evolving World – Selected papers from the 12th international conference on travel behaviour research*, chap. 12, pp. 261–294. International Association for Travel Behaviour Research, 2012. ISBN 978-1-105-47378-4.

[8] Flötteröd, G., M. Bierlaire, and K. Nagel. Bayesian demand calibration for dynamic traffic simulations. *Transportation Science*, 45(4), 541, 2011. doi:10.1287/trsc.1100.0367.

[9] Kickhöfer, B., D. Grether, and K. Nagel. Income-contingent user preferences in policy evaluation: application and discussion based on multi-agent transport simulations. *Transportation*, 38(6), 849, 2011. ISSN 0049-4488. doi:10.1007/s11116-011-9357-6.

[10] Kickhöfer, B. and K. Nagel. Towards high-resolution first-best air pollution tolls. *Networks and Spatial Economics*, pp. 1–24, 2013. doi:10.1007/s11067-013-9204-8.

Teaching experience

Lectures:

1. “Grundlagen der Verkehrssystemplanung und Verkehrsinformatik” (Foundations of Transport Systems Planning and Transport Informatics)”, undergraduate level class in transport engineering, TU Berlin, summer terms 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015.
2. “Verkehrssystemanalyse: Analyse und Bewertung von Verkehrssystemen (Transport Systems Analysis)”, advanced undergraduate level class in transport engineering, TU Berlin, summer terms 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015.
3. “Methoden der Verkehrstelematik (Methods of transport telematics)”, graduate level class in transport engineering, TU Berlin, summer terms 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015.
4. “Multiagenten-Simulationen für Verkehr (Multi-agent simulations for transport planning)”, graduate level class in transport engineering, TU Berlin, summer terms 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2015, 2015.
5. “Objektorientes Programmieren für (Verkehrs-)Ingenieure (Object-oriented programming for (transport) engineers)”, undergraduate level class in transport engineering, TU Berlin, winter terms 2004/05, 2005/06, 2006/07, 2007/08, 2009/10, 2010/11, 2011/12, 2012/13, 2014/15.
6. “Grundlagen der Modellierung und Simulation von Verkehr (Fundamentals of modelling and simulation of traffic)”, advanced undergraduate level class in transport engineering, TU Berlin, winter terms 2004/05, 2005/06, 2006/07, 2007/08, 2009/10, 2010/11, 2011/12, 2012/13, 2014/15.
7. “Simulation sozialer Systeme (Simulation of social systems)”, graduate level class in transport engineering, TU Berlin, summer term 2009.
8. “Planungsverfahren für Verkehrsmaßnahmen (Planning Methods for Transport Systems)” (in part), undergraduate level class in transport engineering, TU Berlin, summer terms 2004, 2005, 2006, 2007.
9. “Simulation of Complex Systems” (in English), graduate level class for computer science, computational science, and physics, ETH Zürich, summer term 2001, winter terms 2002/03 and 2003/04, incl. lab
10. “Simulation methods for transportation planning” (in English), graduate level class for computer science, computational science, and civil engineering, ETH Zürich, summer terms 2000, 2002, and 2003, incl. lab
11. “Symbolisches und Numerisches Rechnen (Symbolic and numerical computing)”, 3rd semester computer science, ETH Zürich, winter terms 1999/2000, 2000/01, and 2001/02

Ph.D. thesis supervision:

1. Benjamin Kickhöfer, Economic Policy Appraisal and Heterogeneous Users, TU Berlin transport engineering, 2014.
2. Andreas Neumann, A paratransit-inspired evolutionary process for public transit network design, TU Berlin transport engineering, 2014.
3. Dominik Grether, Extension of a multi-agent transport simulation for traffic signal control and air transport Systems, TU Berlin transport engineering, 2014.
4. Manuel Moyo, Calibration of Public Transit Routing for Multi-Agent Simulation, TU Berlin transport engineering, 2013.
5. Thomas Nicolai, MATSim for UrbanSim: Integrating an urban simulation model with a travel model, TU Berlin transport engineering, 2013.
6. Yu Chen, Adding a comprehensive Calibration Methodology to an Agent-Based Transportation Simulation, TU Berlin transport engineering, 2012.
7. Johannes Illenberger, Social Networks and Cooperative Travel Behaviour, TU Berlin transport engineering, 2012.

8. Gregor Lämmel, Escaping the Tsunami: Evacuation Strategies for Large Urban Areas – Concepts and Implementation of a Multi-Agent Based Approach, TU Berlin transport engineering, 2011
9. Marcel Rieser, Adding transit to an agent-based transportation simulation – Concepts and implementation, TU Berlin transport engineering, 2010
10. David Strippgen, Investigating the technical possibilities of real-time interaction with simulations of mobile intelligent particles, TU Berlin transport engineering, 2009
11. Gunnar Flötteröd, Traffic state estimation with multi-agent simulations, TU Berlin transport engineering, 2008
12. Nurhan Cetin, Large scale parallel graph-based simulations, ETH Zurich computer science, 2005
13. Christian Gloor, Distributed intelligence in agent-based simulations, ETH Zurich computer science, 2005
14. Bryan Raney, Large scale agent learning, ETH Zurich computer science, 2005
15. Marcus Rickert, Traffic simulation on distributed memory computers, official supervisor Prof. Bachem, 1997

Thesis commitee member:

1. Luk Knapen, Refined tools for micro-modeling in transportation research, Hasselt University, 2015.
2. Evelien van der Hurk, Passengers, Information, and Disruptions, Rotterdam School of Management, 2015.
3. Christoph Dobler, Travel behaviour modelling for scenarios with unpredictable events – Methods and implementation, ETH Zurich technical sciences, 2013
4. Martin Strehler, Signalized Flows: Optimizing Traffic Signals and Guideposts and Related Network Flow Problems, BTU Cottbus mathematics, 2012
5. Stefan Schneider, A methodology for the extrapolation of trip chain data, TU Berlin transport engineering, 2011
6. Stefan Lorkowski, Fusion von Verkehrsdaten mit Mikromodellen am Beispiel von Autobahnen, TU Berlin transport engineering, 2009
7. Martin Winter, Essays in transport modelling – Methodology and case studies, TU Berlin industrial engineering, 2009
8. J. Emeterio Navarro, Adaptive investment strategies for different scenarios, Humboldt University Berlin computer science, 2008
9. David Charypar, Efficient algorithms for the travel behavior microsimulation of very large scenarios, ETH Zurich technical sciences, 2008
10. Daniel Hinkeldein, Verkehrsmanagement 2020: Wie verändern sich die Anforderungen an die Verkehrsoperatoren?(How do the job requirements for traffic operators change?), TU Berlin transport engineering, 2008
11. Duncan Cavens, Agent-based framework for modelling the impact of landscape change on tourist behaviour, ETH Zurich technical sciences, 2008
12. Manfred Rabe, Vergleichbarkeit von ÖPNV- und MIV-Tagesganglinien der realisierten Verkehrsnachfrage (Comparability of traffic volumes as a function of the time-of-day between public transit and motorized individual traffic), TU Berlin transport engineering, 2008
13. Luc Bläser, A component language for pointer-free concurrent programming and its application to simulation, ETH Zurich computer science, 2007
14. Michael Balmer, Travel demand modeling for multi-agent transport simulations: Algorithms and systems, ETH Zurich civil engineering, 2007
15. Valery Naumov, Routing in large vehicular ad-hoc networks, ETH Zurich computer science, 2006
16. Heiko Schilling, Route assignment problems in large networks, TU Berlin mathematics, 2006

17. Roland Chrobok, Theory and application of advanced traffic forecast methods, University of Duisburg physics, 2005
18. Frank Crittin, New algorithmic methods for real-time transportation problems, EPF Lausanne Operations Research, 2003
19. Thomas R. Lincke, Exploring the computational limits of large exhaustive search problems, ETH Zurich computer science, 2002

Funded projects

year	amount (Eu)	funding body	partners	topic
2016	197 354	DFG	./.	“Untersuchung der Nutzung simulierter dynamischer Preise zur Optimierung von Verkehrssystemen (Investigation of simulated dynamic prices for the optimization of transport systems)” (NA 682/14-1)
2015	25 000	Audi Electronics Venture GmbH	./.	“Simulation zur Validierung einer autonomen Stadtflotte (Simulation to validate an autonomous urban vehicle fleet)”
2015	60 000	VW AG	./.	“Aufbau eines MATSim Simulationsmodells der Region Wolfsburg zur Bewertung von Lösungsansätzen zur Verbesserung urbaner Mobilität (Setup of a MATSim simulation model of the Wolfsburg region for the evaluation of options for the improvement of urban mobility)”
2014	44 000	BVG	./.	“Machbarkeitsstudie Teilszenarien und Standardbusse (Feasibility study cut-out scenarios and standard buses)”
2014	403 330	DFG	./.	“Ein agenten-basierter evolutionärer Ansatz für die nutzerorientierte Optimierung von komplexen öffentlichen Verkehrssystemen (An agent-based evolutionary approach for the user-oriented optimization of complex public transit systems)” (NA 682/11-1)
2014	99 104	ERAfrica	ETH Zürich, U Pretoria, U Nairobi	“Measuring accessibility in policy evaluation”
2014	43 166	BMVI	WIP (TU Berlin) PLANCO Intraplan	“Grundsätzliche Überprüfung und Weiterentwicklung der Kosten-Nutzen-Analyse im Bewertungsverfahren der Bundesverkehrswegeplanung (Fundamental review and revision of the cost benefit analysis approach of German federal transport planning)” Aufstockung (extension)
2013	ca. 240 000	DFG	TU Cottbus	“Optimization and network wide analysis of traffic signal control” (NA 682/7-1)
2013	ca. 240 000	Einstein Foundation Berlin	DLR Adlershof	“eCab: Simulationsbasiertes System für ein nachhaltiges Management von elektrisch angetriebenen Taxiflotten (Simulation-based system for the sustainable management of electrically powered taxi fleets)”
2013	ca. 20 000	BVG	./.	“Nachfragesensitive Angebotsplanung (Demand-sensitive supply planning [in public transit])”
2011	ca. 20 000	VW AG	./.	“Simulationsgestützte Bewertung von Mehrwertdiensten (Simulation-based evaluation of value-adding services)”
2011	25 000	BMVBS (via Infratest)	TNS Infratest ETH Zürich	“Ermittlung von Bewertungsansätzen für Reisezeiten und Zuverlässigkeit auf der Basis eines Modells für modale Verlagerungen im nichtgewerblichen und gewerblichen Personenverkehr für die Bundesverkehrswegeplanung (Determination of values of time and of reliability ... for German federal transport planning)”
2011	70 167	BMVBS	WIP (TU Berlin) PLANCO Intraplan	“Grundsätzliche Überprüfung und Weiterentwicklung der Kosten-Nutzen-Analyse im Bewertungsverfahren der Bundesverkehrswegeplanung (Fundamental review and revision of the cost benefit analysis approach of German federal transport planning)”
2011	185 680	BMBF	Traffgo HT GmbH U Heidelberg	“GIS-basiertes Risikoanalyse-, Informations- und Planungssystem für die Evakuierung von Gebieten (GRIPS) (GIS-based risk analysis, information, and planning system for the evacuation of areas)”
2010	ca. 200 000	DFG	KIT Karlsruhe	“Beiträge des Verkehrs zur Verwirklichung einer 2000W City (Contributions of transport towards the realization of a 2000W city)” (NA 682/6-1)
2010	20 000	BVG via PTV	PTV AG Karlsruhe, senozon AG (CH)	“Verkehrsmodellierung des ÖPNV im Großraum Berlin (Modelling of the public transit traffic in the Berlin area)”
2010	199 457	EU	ETH Zurich, others	“Micro-simulation for the prospective of sustainable cities in Europe – SustainCity”
2009	10 000	Satellic	FH Ulm	“Adaptions and Applications of MATSim for vehicle trajectory generation”
2009	19 800	BVG	./.	“Fahrgast-Wirkung Verknüpfung M44 und 344 (User consequences of joining [public transit] lines M44 and 344 [in Berlin])”
2009	9 900	BVG	./.	“Evaluation Linie 156 (Evalution of [public transit] line 156 [in Berlin])”
2009	ca. 160 000	DFG	Math (TU Berlin)	“Methods for modeling and large-scale simulation of multi-destination pedestrian crowds” (NA 682/5-1)

2009	16 660	BMVBS	WIP (TU Berlin)	“Analyse der verkehrspolitischen Instrumente der Bundesverkehrswegeplanung (Analysis of the policy instruments of the German Federal transport planning procedure)”
2008	ca. 266 400	DFG	TU Munich	“Detaillierte Evaluation verkehrlicher Maßnahmen mit Hilfe von Mikrosimulation (Detailed assessment of transport measures using micro-simulation)” (NA 682/3-1)
2007	198 510	BMBF	Math (TU Berlin) TU Braunschw. TU Cottbus	“Adaptive Verkehrssteuerung (Adaptive Traffic Control)”
2007	ca. 420 000	DFG	./.	“State estimation for traffic simulations as coarse grained systems” (NA 682/1-1)
2007	249 144	BMBF	U Hannover, UNU Bonn, TU Munich, DLR Oberpfaff.	“Numerisches last-mile Tsunami Frühwarn- und Evakuierungsinformationssystem (Numerical last-mile tsunami early warning and evacuation information system)”
2007	225 000	VW-Found.	ETHZ	“Travel impacts of social networks and networking tools”
2006	72 000	EU	FAV Berlin many others	“Co-operative networks for intelligent road safety – COOPERS”
2006	50 000	BMBF via DLR	DLR	“Systematische Analyse und Prognose des durch die Fußballweltmeisterschaft induzierten Individualverkehrs unter Berücksichtigung der besonderen Gegebenheiten verschiedener Austragungsorte – SOCCER (Systematic analysis and prognosis of the traffic induced by the soccer world championships ...)”
2005	25 000	Landkreis Uckermark	FG Schienenfahrwege und Bahnbetrieb (TU Berlin)	“Integriertes Verkehrskonzept Uckermark”
2005	71 000	VOLVO Research Foundation	WIP (TU Berlin)	“Modelling and simulation approaches for livable cities”
2002	ca. 89 000	ETHZ	CAAD (ETHZ)	“A unified approach for agent-based learning with application in architecture and in transportation planning”
2002	ca. 133 500	SNF	ORL (ETHZ)	“Planning with Virtual Alpine Landscapes and Autonomous Agents”
2001	ca. 100 000	ETHZ	IVT (ETHZ)	“Large scale multi-agent simulation of travel behavior and traffic flow”

Satellic: Satellic Traffic Management GmbH
DFG: German National Science Foundation
SNF: Swiss National Science Foundation
ETHZ: ETH Zurich internal research funding (competitive, refereed)

BVG: Berliner Verkehrsbetriebe (Berlin public transit company)
EU: European Union
VW AG: Volkswagen AG

Publications of Kai Nagel

Most of my publications are available via `http://www.kainagel.org`.
Earlier version of similar papers (typically non-copyrighted conference versions) are in part removed from the list.

Books

1. Horni, A., K. Nagel, and K. W. Axhausen, eds. *The Multi-Agent Transport Simulation MATSim*. Ubiquity Press, in preparation. See `http://ci.matsim.org:8080/view/All/job/MATSim-Book/ws/main.pdf`.
2. Walz, A., C. Gloor, P. Bebi, A. Fischlin, E. Lange, K. Nagel, and B. Allgöwer. *Virtual Worlds – Real Decisions? The Alps in a Modeller's Nutshell. Thematic Synthesis Report and Outlook, Research Focus V "Virtual representation"*. Swiss National Science Foundation SNSF. vdf Hochschulverlag AG, 2008. ISBN 978-3-7281-3202-1.
3. Walz, A., C. Gloor, P. Bebi, A. Fischlin, E. Lange, K. Nagel, and B. Allgöwer. *Virtuelle Welten – reale Entscheide? Die Alpen im Modellbaukasten. Thematische Synthese zum Forschungsschwerpunkt V "Virtuelle Repräsentation"*. Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung SNF. vdf Hochschulverlag AG, 2008. ISBN 978-3-7281-3202-4.

Refereed, in journals

4. Ziemke, D., K. Nagel, and C. Bhat. Integrating CEMDAP and MATSim to increase the transferability of transport demand models. *Transportation Research Record*, 2493, 117, 2015. doi:10.3141/2493-13.
5. Zilske, M. and K. Nagel. A simulation-based approach for constructing all-day travel chains from mobile phone data. *Procedia Computer Science*, 52, 468, 2015. ISSN 1877-0509. doi:10.1016/j.procs.2015.05.017.
6. Agarwal, A., M. Zilske, K. Rao, and K. Nagel. An elegant and computationally efficient approach for heterogeneous traffic modelling using agent based simulation. *Procedia Computer Science*, 52(C), 962, 2015. ISSN 1877-0509. doi:10.1016/j.procs.2015.05.173.
7. Röder, D. and K. Nagel. Integrated analysis of commuters' energy consumption. *Procedia Computer Science*, 32, 699, 2014. ISSN 1877-0509. doi:10.1016/j.procs.2014.05.479.
8. Nagel, K., B. Kickhöfer, and J. W. Joubert. Heterogeneous tolls and values of time in multi-agent transport simulation. *Procedia Computer Science*, 32, 762, 2014. ISSN 1877-0509. doi:10.1016/j.procs.2014.05.488.
9. Fourie, P., J. Illenberger, and K. Nagel. Increased convergence rates in multi-agent transport simulations with pseudo-simulation. *Transportation Research Record*, 2343, 68, 2013. doi:10.3141/2343-09.
10. Kickhöfer, B. and K. Nagel. Towards high-resolution first-best air pollution tolls. *Networks and Spatial Economics*, pp. 1–24, 2013. doi:10.1007/s11067-013-9204-8.
11. Grether, D., S. Fürbas, and K. Nagel. Agent-based modelling and simulation of air transport technology. *Procedia Computer Science*, 19, 821, 2013. ISSN 1877-0509. doi:10.1016/j.procs.2013.06.109.
12. Grether, D. and K. Nagel. Extensible software design of a multi-agent transport simulation. *Procedia Computer Science*, 19, 380, 2013. ISSN 1877-0509. doi:10.1016/j.procs.2013.06.052.
13. Neumann, A. and K. Nagel. Passenger agent and paratransit operator reaction to changes of service frequency of a fixed train line. *Procedia Computer Science*, 19, 803, 2013. ISSN 1877-0509. doi:10.1016/j.procs.2013.06.106.
14. Grether, D., A. Neumann, and K. Nagel. Simulation of urban traffic control: A queue model approach. *Procedia Computer Science*, 10, 808, 2012. ISSN 1877-0509. doi:10.1016/j.procs.2012.06.104.
15. Taubenböck, H., N. Goseberg, G. Lämmel, N. Setiadi, T. Schlurmann, K. Nagel, F. Siegert, J. Birkmann, K.-P. Traub, S. Dech, V. Keuck, F. Lehmann, G. Strunz, and H. Klüpfel. Risk reduction at the "Last-Mile": an attempt to turn science into action by the example of Padang, Indonesia. *Natural Hazards*, 65(1), 915, 2013. doi:10.1007/s11069-012-0377-0.
16. Maciejewski, M. and K. Nagel. Towards multi-agent simulation of the dynamic vehicle routing problem in MATSim. In R. Wyrzykowski et al, ed., *Parallel Processing and Applied Mathematics (PPAM), Revised Selected Papers, Part II*, Lecture Notes in Computer Science. Springer, 2012. doi:10.1007/978-3-642-31500-8_57.
17. Illenberger, J., K. Nagel, and G. Flötteröd. The role of spatial interaction in social networks. *Networks and Spatial Economics*, 2011. doi:10.1007/s11067-012-9180-4. Doi: 10.1007/s11067-012-9180-4.
18. Flötteröd, G., M. Bierlaire, and K. Nagel. Bayesian demand calibration for dynamic traffic simulations. *Transportation Science*, 45(4), 541, 2011. doi:10.1287/trsc.1100.0367.
19. Schröder, S., M. Zilske, G. Liedtke, and K. Nagel. Towards a multi-agent logistics and commercial transport model: The transport service provider's view. *Procedia Social and Behavioral Sciences*, 39, 649, 2012. doi:10.1016/j.sbspro.2012.03.137.
20. Illenberger, J., G. Flötteröd, and K. Nagel. A model of risk-sensitive route-choice behaviour and the potential benefit of route guidance. *IEEE Transactions on Intelligent Transportation Systems*, 12(2), 384, 2011. ISSN 1524-9050. doi:10.1109/TITS.2011.2105266.
21. Illenberger, J., M. Kowald, K. W. Axhausen, and K. Nagel. Insights into a spatially embedded social network from a large-scale snowball-sample. *European Physical Journal B*, 84(4), 549, 2011. doi:10.1140/epjb/e2011-10872-0.
22. Kickhöfer, B., D. Grether, and K. Nagel. Income-contingent user preferences in policy evaluation: application and discussion based on multi-agent transport simulations. *Transportation*, 38(6), 849, 2011. ISSN 0049-4488. doi:10.1007/s11116-011-9357-6.
23. Dressler, D., G. Flötteröd, G. Lämmel, K. Nagel, and M. Skutella. Optimal evacuation solutions for large-scale scenarios. In B. Hu, K. Morasch, S. Pickl, and M. Siegle, eds., *Operations Research Proceedings 2010*, pp. 239–244. Springer Berlin Heidelberg, 2011. ISBN 978-3-642-20009-0. doi:10.1007/978-3-642-20009-0_38.
24. Grether, D., B. Kickhöfer, and K. Nagel. Policy evaluation in multi-agent transport simulations. *Transportation Research Record*, 2175, 10, 2010. ISSN 0361-1981. doi:10.3141/2175-02.

25. Lämmel, G., D. Grether, and K. Nagel. The representation and implementation of time-dependent inundation in large-scale microscopic evacuation simulations. *Transportation Research Part C: Emerging Technologies*, 18(1), 84, 2010. ISSN 0968-090X. doi:10.1016/j.trc.2009.04.020.

26. Taubenböck, H., N. Goseberg, N. Setiadi, G. Lämmel, F. Moder, M. Oczipka, H. Klüpfel, R. Wahl, T. Schlurmann, G. Strunz, J. Birkmann, K. Nagel, F. Siegert, F. Lehmann, S. Dech, A. Gress, and R. Klein. "Last-Mile" preparation for a potential disaster – Interdisciplinary approach towards tsunami early warning and an evacuation information system for the coastal city of Padang, Indonesia. *Natural Hazards and Earth System Science*, 9(4), 1509, 2009. ISSN 1561-8633. doi:10.5194/nhess-9-1509-2009.

27. Rieser, M., D. Grether, and K. Nagel. Adding mode choice to a multi-agent transport simulation. *Transportation Research Record*, 2132, 50, 2009. doi:10.3141/2132-06.

28. Nagel, K., D. Grether, U. Beuck, Y. Chen, M. Rieser, and K. Axhausen. Multi-agent transport simulations and economic evaluation. *Journal of Economics and Statistics (Jahrbücher für Nationalökonomie und Statistik)*, 228(2+3), 173, 2008. See `http://www.digizeitschriften.de/dms/resolveppn/?PID=PPN345616359_0228%7CLOG_0020`.

29. Rieser, M. and K. Nagel. Network breakdown "at the edge of chaos" in multi-agent traffic simulations. *European Journal of Physics*, 63(3), 321, 2008. doi:10.1140/epjb/e2008-00153-6.

30. Wagner, P. and K. Nagel. Comparing traffic flow models with different number of "phases". *European Physical Journal B*, 63(3), 315, 2008. doi:10.1140/epjb/e2008-00078-0.

31. Walz, A., C. Gloor, P. Bebi, A. Fischlin, E. Lange, K. Nagel, and B. Allgöwer. Virtual worlds – real decisions: Recent research in landscape modelling and visualisation and the potential of computer-based tools for planning. *Mountain Research and Development*, 28(2), 122, 2008. doi:10.1659/mrd.0965.

32. Beuck, U., K. Nagel, M. Rieser, D. Strippgen, and M. Balmer. Preliminary results of a multi-agent traffic simulation for Berlin. *Advances in Complex Systems (ACS)*, 10(2 supp), 289, 2007. doi:10.1142/S0219525907001367.

33. Rieser, M., K. Nagel, U. Beuck, M. Balmer, and J. Rümenapp. Truly agent-oriented coupling of an activity-based demand generation with a multi-agent traffic simulation. *Transportation Research Record*, 2021, 10, 2007. doi:10.3141/2021-02.

34. Charypar, D., K. Axhausen, and K. Nagel. Event-driven queue-based traffic flow microsimulation. *Transportation Research Record*, 2003, 35, 2007. doi:10.3141/2003-05.

35. Balmer, M., K. Axhausen, and K. Nagel. A demand generation framework for large scale micro simulations. *Transportation Research Record*, 1985, 125, 2006. doi:10.3141/1985-14.

36. Charypar, D. and K. Nagel. Q-learning for flexible learning of daily activity plans. *Transportation Research Record*, 1935, 163, 2006. ISSN 0361-1981. doi:10.3141/1935-19.

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