Sebastian HÖRL

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I am a senior researcher at **IRT SystemX** where, since 2020, I have taken the technical and scientific lead on various activities around the modelling of transportation systems, including five H2020 and Horizon projects. I have led various projects with known national and international private and public actors such as SNCF, Volkswagen and the City of Paris. Since 2022 I am invited researcher at the GRETTIA lab of **Université Gustave Eiffel**, where I have been involved in the supervision of multiple PhD projects. In May 2025 I have successfully defended my **HDR** at Université Paris Est. My research interests revolve around replicable use of open data and software in transport planning, robust **population synthesis**, and applied large-scale **agent-based transport simulation**. I animate a research community around the open-source framework *eqasim* for **reproducible** population synthesis.

Shortcuts:

Personal information

Address	*Nationality*	*Languages*
F-75019 Paris, France	Germany	German, English, French

Professional career

Senior researcher **since 07/2020**	*Institut de Recherche Technologique SystemX*, Paris, France, CDI ● Technical and scientific lead on transport modelling and simulation ● Conception and management of national and European projects ● Co-supervision of PhD theses
Invited researcher **since 09/2022**	*Université Gustave Eiffel, COSYS/GRETTIA,* Paris, France ● Academic collaboration in transport modelling ● Co-supervision of PhD theses
Founding member 01/2020 - 04/2021	*Odyssée*, Paris, France ● Consultancy firm on urban development ● Management of transport modelling activities
PhD researcher 07/2016 - 06/2020	*Institute for Transport Planning and Systems, ETH Zurich,* Switzerland ● Implementation of PhD project ● Supervision of Bachelor and Master theses ● Management and planning of research projects
Internship 06/2015 - 09/2015	*Volvo Cars*, Göteborg, Sweden ● Development of tools to estimate fuel economy indicators
Internship 10/2012 - 03/2013	*HILTI AG*, Schaan, Liechtenstein ● Systems modelling for construction tools

Student assistant 10/2011 - 08/2012	*Institute for Automation and Engineering, Univ. of Magdeburg,* Germany ● Systems modelling for industrial robots ● Teaching in programming

Civil service 2009 - 2010	*University Hospital Leipzig*, Germany ● Intensive care unit

Academic career

HDR 05/2025	*Habilitation à diriger des recherches* Université Paris Est, defended 27/05/2025 Title: *Towards reproducible agent-based simulations of the transportation system* (Link, Slides) Reporting jury members: ● Cyril FONLUPT (PU, Université du Littoral - Côte d'Opale) ● Chirine GHEDIRA (PU, IAE Lyon School of Management) ● Francisco PEREIRA (Professor, DTU) Examinating jury members: ● Flavien BALBO (PU, ENS Mines Saint-Etienne) ● Stéphane GALLAND (PU, UT Belfort Montbéliard) ● Monica MENENDEZ (Professor, New York University) ● Antonio SCIARETTA (Chercheur HDR, IFP énergies nouvelles) ● Mahdi ZARGAYOUNA (DR, Université Gustave Eiffel)

PhD 07/2016 - 06/2020	*Institute for Transport Planning and Systems* ETH Zurich, Switzerland, awarded 24/06/2020 Thesis : *Dynamic demand estimation for Automated Mobility on Demand* (Link) Supervisor: ● Prof. Dr. Kay W. Axhausen (ETH Zurich) Jury: ● Prof. Dr. Klaus Bogenberger (TU Munich) ● Prof. Dr. Hani Mahmassani (Northwestern University) ● Prof. Dr. Kai Nagel (TU Berlin)

Master of Science 09/2014 - 06/2016	*Complex Adaptive Systems* Chalmers University of Technology, Göteborg, Sweden Thesis : *Implementation of an autonomous taxi service in a multi-modal traffic simulation using MATSim* (Link) Supervisors : ● Prof. Dr. Claes Andersson (Chalmers Univ. of Technology) ● Dr. Pieter Fourie (Future Cities Lab Singapore / ETH Zurich) ● Dr. Alexander Erath (Future Cities Lab Singapore / ETH Zurich)

Bachelor of Science 10/2010 - 08/2014	*Systems engineering and cybernetics* Otto-von-Guericke University Magdeburg, Germany Thesis : Smooth approximation of two-dimensional G-Code trajectories in time-optimal CNC machining Supervisors : ● Prof. Dr. Rolf Findeisen (OVGU Magdeburg) ● Dr. Juan Pablo Zometa (OVGU Magdeburg) ● Dr. Wannes van Loock (KU Leuven)
Abitur 2001 - 2009	Geschwister Scholl Gymnasium, Taucha, Germany

Academic mobility

11/2019 - 02/2020	*Laboratoire Ville Mobilité Transport, École des Ponts ParisTec*h Paris, France: Docotral exchange, invited by Nicolas Coulombel
01/2016 - 06/2016	*Future Cities Lab Singapore, ETH Zurich* Singapore: Master thesis project
01/2014 - 08/2014	*Robotics, Automation and Mechatronics (RAM) lab, KU Leuven* Leuven, Belgium: Bachelor thesis project

Scientific publications

I have published **22 articles in peer-reviewed international journals** of which four have been written by supervised students (2 on Master's level and 2 on PhD level). Furthermore, I have made **53 peer-reviewed contributions to international conferences** of which 14 were prepared by supervised students. The publications stem from various collaborative activities with partners such as I**FP energies nouvelles**, **Télécom ParisSud** in France and **TU Munich**, **TU Berlin** and **ETH Zurich** abroad. My full list of publications can be found further below.

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	**Σ**
International journal articles	-	-	1	3	6	3	3	2	4	-	**22**
International conference contributions	3	3	6	1	8	5	11	6	10	3	**54**

Research projects

Already during my PhD I have lead a few scientific projects at ETH Zurich. After my arrival at IRT SystemX, I took successively over the scientific lead of **five H2020 and Horizon Europe projects**. Furthermore, I helped initiated various third-party projects with SNCF, MOIA, the City of Paris, and the Societé des Grand Projects and I set up a **long-term collaboration with Volkswagen**. Through these activities I **continuously coordinated a team of up to five full-time researchers**. The full list of research projects, including my implication can be found further below.

PhD supervision

Since 2025	*Ali Naaman*, Université Gustave Eiffel, GRETTIA ● Co-supervision: 50% (main supervisor Mahdi Zargayouna) ● Topic: Built environment impacts on on-demand mobility service dispatching
Since 2024	*Jean-Giono Zehounkpe*, Université Gustave Eiffel, GRETTIA ● Co-supervision: 70% (main supervisor Latifa Oukhellou) ● Topic: Systematic assessment of synthetic travel demand generation approaches, including quality criteria ● **1** conference contribution
2022 - 2024	*Benoît Matet*, Université Gustave Eiffel, GRETTIA ● Co-supervision: 15% (main supervisor Latifa Oukhellou) ● Topic: Use of mobility traces from phone data in population synthesis ● **1*** conference contribution, **1*** journal article (*during my involvement)
2020 - 2023	*Tarek Chouaki*, CentraleSupelec and IRT SystemX ● Co-supervision: 50% (main supervisor Jakob Puchinger) ● Topic: Simulation of on-demand services using reinforcement learning ● **6** conference contributions, **2** journal articles

Participation in doctoral committees

2025 (Rapporteur)	*Sylvain Daou*, Ecole des Ponts ParisTech Supervisor: Fabien Leurent
2025 (Rapporteur)	*Tilmann Schlenther*, TU Berlin Supervisor: Kai Nagel
2025 (Jury member)	*Duo Wang*, Telecom SudParis Supervisor: Andrea Araldo
2025 (Jury member)	*Leonardo Galassi-Luquezi*, Université Gustave Eiffel Supervisor: Arnaud Can
2024 (Rapporteur)	*Raphael Mesaric*, Institution: ETH Zurich Supervisor: Kay W. Axhausen
2024 (Rapporteur)	*Aurore Sallard*, Institution: ETH Zurich Supervisor: Milos Balac
2022 (Invité)	*Azise Diallo*, Institution: IMT Nord Europe Supervisor: René Mandiau

Membership in thesis progress committees (CSI)

Since 2024	*Eliane Casassa*, Université Gustave Eiffel Supervisor: Latifa Oukhellou
2020 - 2024	*Ebtehal Alotaibi*, University of Edinburgh Supervisor: Michael Hermann
2020 - 2025	*Marjolaine Lannes*, Ecole Ndes Ponts ParisTech Supervisor: Yelva Roustan
2021 - 2024	*Ouidad Benhlima*, CentraleSupélec Supervisor: Jakob Puchinger

Administrative and committee activities

Management

2022 - 2025	Member of the *Comité Stratégie et Programme (CSP)* of IRT SystemX in the transportation domain which managed the research and funding roadmap of the institute on this topic

Conferences and workshops

2026	Organizing committee member for the *14th Symposium of the European Association for Research in Transportation (hEART 2026)*, one of the largest transportation research conferences in Europe
Since 2023	Organizer of the annual eqasim workshop which gathers the research community around the open-source framework eqasim that I maintain (50+ participants from 20+ institutions and 10+ countries in December 2025)
Since 2022	Program committee member for the *International Conference on Ambient Systems, Networks and Technologies (ANT)* and the *International Workshop on Agent-based Mobility, Traffic and Transportation Models, Methodologies and Applications (ABMTRANS)*
Since 2022	Scientific committee member for the *Triennial Symposium on Transportation Analysis (TRISTAN)*

Open-source activities

Since 2023	**Board member** *of the MATSim Association*, steering the development roadmap of the open-source project MATSim
Since 2019	**Maintainer** of the open-source project eqasim for reproducible population synthesis and agent-based transport simulation (Github) and **animation** of a growing community of contributors
2018 - 2022	**Co-developer** of the open-source project AMoDeus for on-demand fleet simulation and algorithm benchmarking (used for the AI Driving Olympics challenge at *NeurIPS 2018*)
Since 2016	**Core contributor** to the open source project MATSim for agent-based transport simulation (50+ academic and industrial users world-wide, Github)

Teaching responsibilities

since 2021

Large-scale models with open data
Université Gustave Eiffel, Champs-sur-Marne, France

- Full course (10CM + 10TD per year = ∑ 50CM + 50TD)
- Course responsible, conception and teaching
- Content: Use of open data to set up transport models
- Master responsible: Mahdi Zargayouna
- Material (slides autumn 2025, course project on Github)

2022 - 2024	*Introduction to transport modeling* Ecole des Ponts ParisTech, Champs-sur-Marne, France ● Individual course (2CM per year = ∑ 6CM) ● Content: Introduction to agent-based transport simulation ● Course responsible: Tatiana Seregina
2021 - 2024	Mobility issues (courses ∑ 8h) CentraleSupélec, Gif-sur-Yvette, France ● Individual course (2CM per year = ∑ 8CM) ● Content: Use cases of agent-based transport simulation ● Course responsible: Yannick Perez
2021 - 2024	*Agent-based modeling in transportation* ETH Zurich, Zurich, Switzerland ● Individual course (2CM per year = ∑ 8CM) ● Content: Use cases of agent-based transport simulation ● Course responsible: Milos Balac
2020 - 2023	*Economics and Cost-benefit analysis in transportation* Paris School of Economics, Paris, France ● Individual course (2CM per year = ∑ 8CM) ● Content: Introduction to agent-based transport simulation ● Course Responible: Nicolas Coulombel
2017 - 2018	*Agent-based modeling in transportation* ETH Zurich, Zurich, Switzerland ● Partial course (3CM + 9TD per year = ∑6CM + ∑18TD) ● Content: Analysis of population data and population synthesis ● Course Responsible: Thibaut Dubernet

Awards

2024	TERRITORIA award for territorial innovation on an interactive visualization interface for energy demand, together with the Communauté d'agglomération de Paris-Saclay.
2020	Best paper award at the *9th International Workshop on Agent-based Mobility, Traffic and Transportation Models, Methodologies and Applications (ABMTRANS 2020)*
2018	Best paper award at the *7th International Workshop on Agent-based Mobility, Traffic and Transportation Models, Methodologies and Applications (ABMTRANS 2018)*
2012	Deutschlandstipendium (German public-private scholarship)

Reviewing activities

Funding reviews

2025	KU Leuven Industrial Research Fund 2025
2023	Israeli Science Foundation (ISF)
2023	Israeli Smart Transportation Research Center (ISTRC) Annual Call
2021	Agence Nationale de Recherche (ANR), AAP 2021

Journal reviews

- Transportation Research Part A: Policy and Practice (Elsevier): 8
- Transportation Research Part C: Emerging Technologies (Elsevier): 22
- Transportation Research Part D: Transport and Environment (Elsevier): 9
- Transportation Research Record (SAGE): 2
- Transportation (Springer): 2
- Computers, Environment and Urban Systems (Elsevier): 6
- International Journal of Transportation Systems and Technology (Elsevier): 1
- Transport Policy (Elsevier): 1
- Case Studies on Transport Policy (Elsevier): 2
- OR Spectrum (Springer): 1
- Journal of Computational Social Science (Springer): 1
- Landscape and Urban Planning (Elsevier): 2
- Journal of Transport Geography (Elsevier): 1

Supervised theses at Master level

* With contribution to an international peer-reviewed conference

** With article in an international peer-reviewed journal

Wijanarko, F. (2022) Potential Impact of Car-Based Crowdshipping on Vehicle Mileage and Carbon Dioxide Emission: An Agent-Based Modelling Study Case, *Master thesis*, TU Delft, Netherlands. Thesis

Garaicoechea Guruceta, I. (2020) Potential of Autonomous-Mobility-on-Demand operations across Switzerland, *Master thesis*, Escola Camins, UPC Barcelona, Barcelona, Spain. Link

** Räth, Y. (2020) System level policies for pooled autonomous vehicles, *Master thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

Lu, C. (2019) Congestion-Aware Operation of Coordinated Autonomous Mobility-on-Demand Systems, *Master thesis*, Institute for Dynamic Systems and Control (IDSC), ETH Zurich, Zürich, Switzerland. Thesis

Mark, S. (2018) MATSim as a planning tool for public transport networks, *Master thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland.

Haslebacher, R. (2018) Intermodal routing in MATSim applied to SBB Green Class, *Master thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

Liang, H. (2018) Calibration of agent-based transport simulation with SPSA method, *Master thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

Hohenfellner, M.M.R. (2018) A scenario-based approach to crowd safety of major events and its interface to public transport, *Master thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

* Wang, B (2018) Simulation of autonomous transit on demand for fleet size and deployment strategy optimization, *Master thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

** Manser, P. (2018) Public transport network design in a world of autonomous vehicles, *Master thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. **Awarded VSS Prize 2018.** Thesis

Supervised theses at Bachelor level

Bersier, L. (2019) Household-level mobility patterns, *Semester thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland.

Guggisberg Bicudo, D. (2019) Transport modelling based on Open-Data, *Semester thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland.

Mathys, F. (2018) Auslegung der Ladeinfrastruktur für automatisierte elektrische Fahrzeuge am Beispiel Zürichs, *Bachelor thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

Appenzeller, S. (2018) Beurteilung des Platzangebots im Raum Zürich für das Parken von autonomen Fahrzeugen, *Bachelor thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

Schmid, P. (2018) Impact of autonomous vehicles on urban accessibilities and travel time, *Bachelor thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland. Thesis

Gächter, J. (2017) Autonomous Mobility Operator Arena - Simulating competing autonomous mobility on demand systems in MATSim, *Bachelor thesis*, Institute for dynamical systems (IDSC), ETH Zurich, Zürich, Switzerland.

Belser, G. (2017) Bestimmung der Flottengrösse elektrischer autonomer Fahrzeuge unter Berücksichtigung der Aussentemperatur, *Bachelor thesis*, Institute for Transport Planning (IVT), ETH Zurich, Zürich, Switzerland.

Supervised Master degree internships

***** with contribution to international peer-reviewed conference

Use of mobile phone data to improve synthetic population generation algorithms (2025)
Pierre-Adrien Langrognet, at Université Gustave Eiffel, from ENS Lyon

Agent-based simulation of the Grand Paris Express (2025)
Léa Movsessian, at IRT SystemX, from Sorbonne Université

Multi-agent simulations of transport policies in the Île-de-France region (2024)
Akram Elbouanani, at IRT SystemX, from INP Grenoble

***** Automated design of feeder bus lines (2023)
Sylvain Declercq, at IRT SystemX, from Université Paris Cité

Automatic calibration for large-scale agent-based transport simulation (2021)
Tomi Cottrelle, at IRT SystemX, from Université Paris Cité

Integration of battery constraints into a heuristic-based vehicle routing problem solver (2021)
Aiman Mahmoud, at IRT SystemX, from CentraleSupélec

List of scientific publications

International journals with peer-review

(*JCR, Impact factor 2024, SJR 2024, supervised students)

* Natterer, E., S. R. Rao, A. Tejada Lapuerta Tejada, R. Engelhardt, **S. Hörl**, K. Bogenberger (2025) Machine Learning Surrogates for Optimizing Transportation Policies with Agent-Based Models, *Transportation Research Part C: Emerging Technologies*, **180**, 105360. Link (IF 7.9, SJR 2.734, Q1)

* Carreyre, F., T. Chouaki, N. Coulombel, J. Berrada, L. Bouillaut, **S. Hörl** (2025) On-demand Autonomous Vehicles in a periurban territory: a Cost Benefit Analysis, *Sustainability*, **17** (14), 6282. Link (IF 3.3, SJR 0.688, Q1)

* Diepolder, S., A. Araldo, T. Chouaki, S. Maiti, **S. Hörl**, C. Antoniou (2025) Quantifying the Improvement of Accessibility achieved via Shared Mobility on Demand, *Transportation*. Link (IF 3.3, SJR 1.233, Q1)

* **Hörl, S.**, Y. Briand, J. Puchinger (2025) Decarbonization policies for last-mile parcels: A replicable open-data case study for Lyon, *Transportation Research Part D: Transport and Environment*, **146**, 104893. Link (IF 7.7, SJR 2.301, Q1)

* Mehrabani, B. B., V. Henrion, **S. Hörl**, N. Ivanov, B. Mirkovic, J. Blasco, E. Bossaert (2025). Modelling the future of airport accessibility: Synthetic population and discrete choice model approach to UAM and CCAM demand at Brussels airport, *Case Studies on Transport Policy*, **23**, 101654. Link (IF 3.3, SJR 0.897, Q1)

* Carreyre, F., T. Chouaki, N. Coulombel, J. Berrada, L. Bouillaut, **S. Hörl** (2024) On-Demand Autonomous Vehicles in Berlin: A Cost–Benefit Analysis, *Transportation Research Record*, **2678** (5), 13-30. Link (IF 1.8, SJR 0.388, Q2)

* Matet, B., E. Côme, A. Furno, **S. Hörl**, L. Oukhellou, N. El Faouzi (2024) Improving the generation of synthetic travel demand using origin–destination matrices from mobile phone data, *Transportation*. Link (IF 3.3, SJR 1.233, Q1)

* Balac, M., **S. Hörl**, B. Schmid (2024) Discrete choice modeling with anonymized data, *Transportation*, **51**, 351-370. Link (IF 3.3, SJR 1.233, Q1)

* Gall, T., **S. Hörl**, F. Vallet, B. Yannou (2023) Integrating future trends and uncertainties in urban mobility design via data-driven personas and scenarios, *European Transport Research Review*, 15, 45. Link (IF 4.2, SJR 1.105, Q1)

* Belfadel, A., **S. Hörl**, R. J. Tapia, D. Politaki, I. Kureshi, L. Tavasszy, J. Puchinger (2023) A Conceptual Digital Twin Framework for City Logistics, *Computers, Environment and Urban Systems*, **103**, 101989. Link (IF 8.3, SJR 2.523, Q1)

* Räth, Y. M., M. Balac, **S. Hörl**, K.W. Axhausen (2023) Assessing service characteristics of an Automated Transit On-Demand Service, *Journal of Urban Mobility*, **3**, 100038. Link (IF 6.1, SJR 1.403, Q1)

* **Hörl, S.** and K.W. Axhausen (2021) Relaxation–discretization algorithm for spatially constrained secondary location assignment, *Transportmetrica A: Transport Science,* 1-20. Link (IF 3.1, SJR 0.997, Q1)

* Zwick, F., N. Kuehnel, **S. Hörl** (2022) Shifts in perspective: Operational aspects in (non-)autonomous ride-pooling simulations, *Transportation Research Part A: Policy and Practice*, **165**, 300-320. Link (IF 6.8, SJR 2.124, Q1)

* Ruch, C., **S. Hörl**, J. Gächter, J. Hakenberg (2021) The Impact of Fleet Coordination on Taxi Operations, *Journal of Advanced Transportation*, **2021**. Link (IF 1.8, SJR 0.579, Q2)

* Sallard, A., M. Balac and **S. Hörl** (2021) An open data-driven approach for travel demand synthesis: an application to São Paulo, *Regional Studies, Regional Science*, **8**, 371–386. Link (IF 2.4, SJR 0.771, Q1)

* Ruch, C., R. Ehrler, **S. Hörl**, M. Balac, E. Frazzoli (2021) Simulation-Based Assessment of Parking Constraints for Automated Mobility on Demand: A Case Study of Zurich, *Vehicles*, **3** (2), 272-286. Link (IF 2.2, SJR 0.535, Q2)

* **Hörl, S.**, M. Balac (2021) Synthetic population and travel demand for Paris and Île-de-France based on open and publicly available data, *Transportation Research Part C: Emerging Technologies*, **130**, 103291. Link (IF 7.9, SJR 2.734, Q1)

***** **Hörl, S.**, F. Becker, K.W. Axhausen (2021) Simulation of price, customer behaviour and system impact for a cost-covering automated taxi system in Zurich, *Transportation Research Part C: Emerging Technologies*, **123**, 102974. Link (IF 7.9, SJR 2.734, Q1)

***** Balac, M., **S. Hörl**, K.W. Axhausen (2020) Fleet Sizing for Pooled (Automated) Vehicle Fleets, *Transportation Research Record*, **2674** (9), 168-176. Link (IF 1.8, SJR 0.388, Q2)

***** Manser, P., H. Becker, **S. Hörl**, K.W. Axhausen (2020) Designing a large-scale public transport network using agent-based microsimulation, *Transportation Research Part A: Practice and Policy*, **137**, 1-15. Link (IF 6.8, SJR 2.124, Q1)

***** Sieber, L., C. Ruch, **S. Hörl**, K.W. Axhausen, E. Frazzoli (2020) Improved Public Transportation in Rural Areas with Self-Driving Cars: The Example of Swiss Train Lines, *Transportation Research Part A: Policy and Practice*, **134**, 35-51. Link (IF 6.8, SJR 2.124, Q1)

***** **Hörl, S.**, C. Ruch, F. Becker, E. Frazzoli and K.W. Axhausen (2019) Fleet operational policies for automated mobility: A simulation assessment for Zurich, *Transportation Research Part C: Emerging Technologies*, **102**, 20-31. Link (IF 7.9, SJR 2.734, Q1)

International conference with peer-review

(supervised students)

Chouaki, T., & **Hörl, S.** (2026). Joint assessment of the impact of future railway services and design of feeder systems: Towards an integrated approach. 10th International Symposium on the Use of Public Transit Automated Data for Planning, Operations, and Management (TransitData 2026). 10th International Symposium on the Use of Public Transit Automated Data for Planning, Operations, and Management (TransitData 2026), June 2026, Toronto, Canada. Link

Balac, M., **S. Hörl**, T. Chouaki (2026) Mode choice in agent-based models: Efficiency and Stability, paper presented at the 105th Annual Meeting of the Transportation Research Board, January 2026, Washington D.C, USA. Link

Hörl, S., A. Burianne, E. Natterer, R. Engelhardt, J. Müller (2026) Towards a replicable synthetic population and agent-based transport model for Bavaria, *Lecture Notes in Computer Science*, **16031**, presented at the 23rd International Conference on Practical applications of Agents and Multi-Agent Systems (PAAMS 2025), June 2025, Lille, France. Link

2025

Seregina, T., Chouaki, T., Coulombel, N., & **Hörl, S.** (2025). AI-Enhanced Agent-Based Simulation for Urban Mobility Policy Evaluation: Driving Restriction Zones in the Paris Region. International Conference on Artificial Intelligence and Innovative Applications (AIIA 2025), December 2025, Boumerdes, Algeria. Link

Chouaki, T., **S. Hörl**, F. Asgari (2025) Integration of parking constraints in agent-based mobility simulations and discrete choice models: a case-study of Paris, European Transport Conference (ETC 2025), September 2025, Antwerp, Belgium. Link

Zehounkpe, J., **S. Hörl**, L. Oukhellou (2025) A benchmarking methodology to assess population synthesis algorithms: A case study for Ile-de-France (France), International Symposium on Transportation Data & Modelling (ISTDM 2025), September 2025, Montreal, Canada. Link

Servatius, P., **S. Hörl**, K. Bogenberger (2025) MobilityCoins - Towards an Agent-Based Approach to Simulating Tradable Mobility Credits, International Transportation Economics Association (ITEA) 2025 Annual School and Conference, June 2025, Evanston, USA. Link

Chouaki, T., **S. Hörl**, O. Ludwig, S. Axer, H. Rewald (2025) Simulating on-demand person and food transport with intra-day vehicle reconfiguration in Paris, 13th Symposium of the European Association for Research in Transportation (hEART 2025), June 2025, Munich, Germany. Link

Hörl, S., A. Benki (2025) Data-driven analysis of urban logistics policies based on vehicle traces in the Copenhagen capital region, 13th Symposium of the European Association for Research in Transportation (hEART 2025), June 2025, Munich, Germany. Link

Chouaki, T., Y. **S. Hörl**, Y. Briand (2025) A decision-support tool for inclusive cooperative connected automated mobility solutions: From simulation research to operational implications, International Conference on Advanced Systems in Public Transport 2025 (CASPT 2025), July 2025, Kyoto, Japan. Link

Natterer, E., R. Engelhardt, **S. Hörl** and K. Bogenberger (2025) Machine Learning Surrogates for Optimizing Transportation Policies with Agent-Based Models, 12th Triennial Symposium on Transportation Analysis conference (TRISTAN XII), June 2025, Okinawa, Japan. Link

Chouaki, T., **S. Hörl** (2025) Analysis and mitigation of discriminatory behaviour in fleet management algorithms, 12th Triennial Symposium on Transportation Analysis conference (TRISTAN XII), June 2025, Okinawa, Japan. Link

Chouaki, T., **S. Hörl** (2025) A method for efficiently assessing the impact of local mobility services in large-scale agent-based simulations, paper to be presented at the 104th Annual Meeting of the Transportation Research Board, January 2025, Washington D.C, USA. Link

2024

Declercq, S., **S. Hörl**, T. Chouaki (2024) Towards simulation-based assessment of CCAM Airport Access Services, paper presented at the 26th Annual Conference of the EURO Working Group on Transportation (EWGT 2025), September 2024, Lund, Sweden. Link

Chouaki, T., S. Declercq, **S. Hörl** (2024) Towards an integrated approach for the automatic design of feeder bus lines using agent-based simulation and combinatorial optimization, paper presented at the 12th Symposium of the European Association for Research in Transportation (hEART 2024), June 2024, Espoo, Helsinki. Link

Chouaki, T., **S. Hörl** (2024) Comparative assessment of fairness in on-demand fleet management algorithms, paper presented at the 12th Symposium of the European Association for Research in Transportation (hEART 2024), June 2024, Espoo, Helsinki. Link

Hörl, S., T. Chouaki, O. Ludwig, H. Rewald, S. Axer (2024) Evaluating prebooked on-demand mobility services using MATSim, Procedia Computer Science, 238, 763-770. Link

Chouaki, T., M. Reyes-Madrigal, **S. Hörl** (2024) Assessing the impact of monetary incentives for walking using agent-based mobility simulations and discrete mode choice models, paper accepted for presentation at the 103rd Annual Meeting of the Transportation Research Board, January 2024, Washington, D.C., USA. Link

Chouaki, T., Carreyre, F., N. Coulombel, J. Berrada, L. Bouillaut, **S. Hörl** (2024) On-demand Autonomous Vehicles in a periurban territory: a Cost Benefit Analysis, paper accepted for presentation at the 103rd Annual Meeting of the Transportation Research Board, January 2024, Washington, D.C., USA. Link

2023

Hörl, S., K. Pasini (2023) Estimation of transit passenger volumes using mobile phone traffic data, short paper accepted for presentation at NetMob 2023, October 2023, Madrid, Spain.

Hörl, S., J. Puchinger (2023) Modeling the ecological and economic footprint of last-mile parcel deliveries using open data: A case study for Lyon, paper presented at the 11th Symposium of the European Association for Research in Transportation (hEART 2023), September 2023, Zurich, Switzerland. Link

Matet, B., E. Côme, A. Furno, **S. Hörl**, L. Oukhellou (2023) Use of Origin-Destination data for calibration and spatialization of synthetic travel demand, paper presented at the 11th Symposium of the European Association for Research in Transportation (hEART 2023), September 2023, Zurich, Switzerland. Link

Diepolder, S., A. Araldo, T. Chouaki, S. Maiti, **S. Hörl**, C. Antoniou (2023) On the Computation of accessibility provided by shared mobility, paper presented at the 11th Symposium of the European Association for Research in Transportation (hEART 2023), September 2023, Zurich, Switzerland. Link

Hörl, S. (2023) Towards replicable mode choice models for transport simulations in France, submitted for presentation at the 9th International Symposium on Transportation Data & Modelling (ISTDM2023), June 2023, Ispra, Italy. Link

Chouaki, T., **S. Hörl**, J. Puchinger (2023) Control-based integration of rejection rates into endogenous demand ride-pooling simulations, paper presented at the 8th International Conference on Models and Technologies for Intelligent Transportation Systems (MT-ITS 2023), June 2023, Nice, France. Link

Hörl, S., J. Sobieraj, S. Axer, H. Rewald (2023) Resource-constrained replanning in MATSim applied to the simulation of peer-to-peer car sharing services, *Procedia Computer Science*, **220**, 698-703. Link

Mastio, M., **S. Hörl**, M. Balac, V. Loubière (2023) Emission-reducing deployment of shared office networks, *Procedia Computer Science*, **220**, 315-322. Link

Carreyre, F., T. Chouaki, N. Coulombel, J. Berrada, L. Bouillaut, **S. Hörl** (2023) On-demand Autonomous Vehicles in Berlin: a Cost Benefit Analysis, paper presented at the 102nd Annual Meeting of the Transportation Research Board, January 2023, Washington, D.C., USA. Link

Chouaki, T., **S. Hörl** and J. Puchinger (2023) Towards reproducible simulations of the Grand Paris Express and on-demand feeder services, paper presented at the 102nd Annual Meeting of the Transportation Research Board, January 2023, Washington, D.C., USA. Link

Hörl, S. and J. Puchinger (2023) From synthetic population to parcel demand: A modeling pipeline and case study for last-mile deliveries in Lyon, Transportation Research Procedia, **72**, 1707-1714, presented at Transport Research Arena, November 2022, Porto, Portugal. Link

2022

Vallet, F., **S. Hörl**, T. Gall (2022) Matching Synthetic Populations with Personas: A Test Application for Urban Mobility, Proceedings of the Design Society, **2**, 1795-1804. Link

Chouaki, T., **S. Hörl** and J. Puchinger (2022) Implementing reinforcement learning for on-demand vehicle rebalancing in MATSim, *Procedia Computer Science*, **201**, 134-141. Link

Mahmoud, A., T. Chouaki, **S. Hörl** and J. Puchinger (2022) Extending JSprit to solve electric vehicle routing problems with recharging, Procedia Computer Science, **201**, 289-295. Link

M. Balac and **S. Hörl** (2022) Reconstructing activity locations from zone-based trip data for discrete choice modeling, paper presented at the 101st Annual Meeting of the Transportation Research Board, January 2022, Washington, D.C., USA. Link

Hörl, S. and F. Zwick (2022) Traffic Uncertainty in On-Demand High-Capacity Ride-Pooling, paper presented at the 101st Annual Meeting of the Transportation Research Board, January 2022, Washington, D.C., USA. Link

2021

Belfadel, A., **S. Hörl**, R. Tapia, and J. Puchinger (2021) Towards a Digital Twin Framework for Adaptive Last Mile City Logistics, paper presented at SpliTech 2021, September 2021, Split, Croatia. Link

Balac, M. and **S. Hörl** (2021) Simulation of intermodal shared mobility in the San Francisco Bay Area using MATSim, paper presented at the 2021 IEEE International Intelligent Transportation Systems Conference (ITSC), September 2021, Indianapolis, USA. Link

Hörl, S. and M. Balac, M. (2021) Introducing the eqasim pipeline: From raw data to agent-based transport simulation, *Procedia Computer Science*, **184**, 712–719. Link

Hörl, S. (2021) Integrating discrete choice models with MATSim scoring, *Procedia Computer Science*, **184**, 704-711, presented at ABMTRANS 2021, March 2021, Warsaw, Poland. Link

Livingston, C.V., **S. Hörl**, F. Bruns, R. Fischer, K.W. Axhausen (2021) Forecasting a Future with Automated Vehicles In Switzerland: Exploring the Urban-Rural Divide and System Effects, paper presented at the 100th Meeting of the Transportation Research Board (TRB), January 2021, Washington D.C., USA. Link

Räth, Y.M., M. Balac, **S. Hörl**, K.W. Axhausen (2021) System Level Policies For Pooled Autonomous Vehicles, paper presented at the 100th Meeting of the Transportation Research Board (TRB), January 2021, Washington D.C., USA. Link

Balac, M., **S. Hörl** (2021) Synthetic population for the state of California based on open-data: examples of San Francisco Bay area and San Diego County, paper presented at the 100th Meeting of the Transportation Research Board (TRB), January 2021, Washington D.C., USA. Link

Ziemke, D., B. Charlton, **S. Hörl**, K. Nagel (2021) An efficient approach to create agent-based transport simulation scenarios based on ubiquitous Big Data and a new, aspatial activity-scheduling model, *Transportation Research Procedia*, **52**, 613-320. Link

2020

Hörl, S., C. Tchervenkov, M. Balac (2020) A generalizable pipeline for agent-based transport models in France, short paper presented at the 9th Symposium of the European Association for Research in Transportation (hEART), September 2020, Lyon, France. Link

2019

Balac, M, R.L. Rothfeld, **S. Hörl** (2019) The Prospects of on-demand Urban Air Mobility in Zurich, Switzerland, presented at the IEEE Intelligent Transportation Systems Conference, October 2019, Auckland, New Zealand. Link

Balac, M., **S. Hörl** and K.W. Axhausen (2019) Fleet sizing for pooled automated vehicle fleets, paper presented at the 99th Annual Meeting of the Transportation Research Board (TRB), January 2020, Washington DC, USA. Link

Hörl, S. and K.W. Axhausen (2019) Relaxation-discretization algorithm for spatially constrained secondary location assignment, paper presented at the 99th Annual Meeting of the Transportation Research Board (TRB), January 2020, Washington DC, USA. Link

Hörl, S., M. Balac and K.W. Axhausen (2019) Dynamic demand estimation for an AMoD system in Paris, paper presented at the 30th IEEE Intelligent Vehicles Symposium, June 2019, Paris, France. Link

Hörl, S., M. Balac and K.W. Axhausen (2019) Pairing discrete mode choice models and agent-based transport simulation with MATSim, paper presented at the 98th Annual Meeting of the Transportation Research Board (TRB), January 2019, Washington DC, USA. Link

Tchervenkov, C., M. Balac, **S. Hörl**, H. Becker and K.W. Axhausen (2019) How much parking space can carsharing save?, paper presented ath the 98th Annual Meeting of the Transportation Research Board (TRB), January 2019, Washington DC, USA. Link

2018

Ruch, C., **S. Hörl** and E. Frazzoli (2018) AMoDeus, a Simulation-Based Testbed for Autonomous Mobility-on-Demand Systems, paper presented at the 21st International Conference on Intelligent Transportation Systems (ITSC), November 2018, Maui, USA. Link

Hörl, S. (2018) Sizing a fleet of automated vehicles: A demand-responsive case study for Zurich, presentation at the 7th Symposium of the European Association for Research in Transportation (hEART), September 2018, Athens, Greece. Link

Hörl, S., M. Balac and K.W. Axhausen (2018) A first look at bridging discrete choice modeling and agent-based microsimulation in MATSim, *Procedia Computer Science*, **130**, 900-907, presented at ABMTRANS 2018, May 2018, Porto, Portugal. Link

2017

Maciejewski, M, J. Bischoff, **S. Hörl** and K. Nagel (2017) Towards a testbed for dynamic vehicle routing algorithms, in J. Bajo, Z. Vale, K. Hallenborg, A.P. Rocha, P. Mathieu, P. Pawlewski, E. Del Val, P. Novais, F. Lopes, N.D. Duque Méndez and J. Holmgren (eds.) *Highlights of Practical Applications of Cyber-Physical Multi-Agent Systems, International Workshops of PAAMS 2017, Porto, Portugal, June 21-23, 2017*, 69-79, Springer, Cham. Link

Hörl, S. (2017) A methodology for observation-based accessibility, presentation at the 7th Symposium of the European Association for Research in Transportation (hEART), September 2017, Haifa, Israel. Link

B. Wang, H. Liang, **S. Hörl** and F. Ciari (2017) Dynamic ride sharing implementation and analysis in MATSim, presentation at the 7th Symposium of the European Association for Research in Transportation (hEART), September 2017, Haifa, Israel. Link

Hörl, S. (2017) Agent-based simulation of autonomous taxi services with dynamic demand responses, *Procedia Computer Science*, **109**, 899-904, presented at ABMTRANS 2017, May 2017, Madeira, Portugal. Link

Monographs and book contributions

Hörl, S. (2025) Towards reproducible agent-based simulations of the transportation system, Habilitation à diriger des recherches, Université Paris Est. Link

Gall, T., F. Valet, L.M. Reyes Madrigal, **S. Hörl**, A. Abdin, T. Chouaki, J. Puchinger (2023) Sustainable Urban Mobility Futures, Palgrave Macmillan, Cham. Link

Hörl, S. (2020) Dynamic demand estimation for Automated Mobility on Demand, PhD Thesis, ETH Zurich. Link

Hörl, S. (2016) Implementation of an autonomous taxi service in a multi-modal traffic simulation using MATSim, Master thesis, Chalmers University of Technology. Link

Hörl, S. (2014) Smooth approximation of two-dimensional G-Code trajectories in time-optimal CNC machining, Bachelor thesis, Otto-von-Guericke-University Magdeburg.

International conferences without peer-review

Chouaki, T., **S. Hörl**, V. Grajewski, O. Ludwig, H. Rewald, S. Axer (2025) Multidimensional vehicle loads and capacities for Demand Responsive Transport in MATSim, presentation at the MATSim User Meeting 2025, June 2025, Munich, Germany. Link

Hörl, S., O. Ludwig, H. Rewald, S. Axer (2025) Simulating individual charging behaviour in MATSim, presentation at the MATSim User Meeting 2025, June 2025, Munich, Germany. Link

Rewald, H., S. Axer, **S. Hörl** (2024) Household Vehicle Sharing in MATSim, presentation at the MATSim User Meeting 2024, June 2024, Helsinki, Finland. Link

Chouaki, T., **S. Hörl** (2024) The FeederDrt extension: simulation of intermodal on-demand services acting as feeders for public transit, presentation at the MATSim User Meeting 2024, June 2024, Helsinki, Finland. Link

Chouaki, T., **S. Hörl** (2023) Extending the DRT module to enable simulations of pre-booked MoD services, presentation at the MATSim User Meeting 2023, June 2023, Zurich, Switzerland.

Hörl, S. (2019) Discrete Mode Choice for MATSim, presentation at the MATSim User Meeting 2019, May 2019, Leuven, Belgium. Link

Frischknecht, R., C. Bauer, A. Froemelt, S. Hellweg, K. Biemann, T. Buetler, B. Cox, P. de Haan, **S. Hörl**, R. Itten, N. Jungbluth, Y. Ligen, N.A. Mathys, S. Schiess, S. Schori, P. van Loon, J. Wang and S. Wettstein (2018) LCA of mobility solutions: Approaches and findings - 66th LCA forum, Swiss Federal Institute of Technology, Zurich, 30 August, 2017, *The International Journal of Life Cycle Assessment*, **23** (2), 381-386. Link

Hörl, S. (2017) The IVT baseline scenario: Current version and outlook, presentation at the MATSim User Meeting, September 2017, Haifa, Israel. Link

National conferences with peer-review

Chouaki, T., **S. Hörl** (2025) Vers la prise en compte des trajets inter-régionaux dans les simulations multi-agent locales de mobilité en utilisant une population synthétique métropolitaine, 7èmes Rencontres Francophones Transport Mobilité, June 2025, Dunkerque, France. Link

Hörl, S., C. Tchervenkov and M. Balac (2021) Des modèles multi-agent de transport à grande échelle dans le monde francophone, 3èmes Rencontres Francophones Transport Mobilité, June 2021, Marne-la-Vallée, France. Link

Hörl, S. and J. Molloy (2019) A ticket-based public transport pricing model for Switzerland, presentation at the 19th Swiss Transport Research Conference (STRC), May 2019, Ascona, Switzerland. Link

Hörl, S. (2018) An integrated simulation environment for autonomous mobility on demand in Zurich, presentation at the 18th Swiss Transport Research Conference (STRC), May 2018, Ascona, Switzerland. Link

Reports, professional magazines, and data papers

Hörl, S. and M. Balac (2021) Open synthetic travel demand for Paris and Île-de-France: Inputs and output data, *Data in Brief*, **39**, 107622. Link

Hörl, S., F. Becker and K.W. Axhausen (2019) Dynamische Nachfrageabschätzung für ein AMoD-System in Zürich, *Straßenverkehrstechnik*, **2019** (4), 277-281.

Hörl, S., F. Becker, T.D. Dubernet and K.W. Axhausen (2019) Induced demand by autonomous vehicles: An assessment, *Project Report*, SVI 2016/001, FB 1650. Link

Hörl, S., F. Ciari and K.W. Axhausen (2016) Recent perspectives on the impact of autonomous vehicles, Working paper 1216, Institute for Transport Planning (IVT), ETH Zurich, Zürich. Link

Invited talks and seminars

Briand, Y. and **Hörl S.** (2026) Jumeau numérique pour la Logistique Urbaine : Associer transporteurs et territories pour conveoir des politiques équilibrées, Fabrique de la Logistique, 13 January 2026, Webinar.

Hörl, S. (2025) ZTL Ville de Paris : Approche exploratoire Simulation Multi-Agents, Comité francilien des modélisateurs, DRIEAT, 2 December 2025, Paris, France.

Hörl, S. (2025) Large-scale agent-based transport simulations in France, LIP6, 21 November 2025, Paris, France. Link

Hörl, S. (2025) Large-scale agent-based transport simulation models for Île-de-France and Bavaria, Action scientifique RETICULAR, Journée d'étude inter-disciplinaire Espace & Interaction, 15 November 2025, Champs-sur-Marne, France. Link

Hörl, S. (2025) Large-scale agent-based transport simulations in France, Centre international de recherche sur l'environnement et le développement (CIRED), 17 October 2025, Nogent-sur-Marne, France. Link

Hörl, S. (2023) Systemic Effects of Coordination and AEVs on Urban Parcel Deliveries, NSL Colloquium: Transport Planning – Where do we go now?, ETH Zurich, 6 December 2023, Zurich, Switzerland. Link

Hörl, S. (2023) Exploring the system-level impacts of urban parcel deliveries using synthetic data: Results from the project H2020 LEAD, Séminaire d'Economie des Transports, LAET, 2 March 2023, Lyon, France.

Hörl, S. (2022) The Horizon LEAD project: Preliminary results and tools, ATEC ITS France, Urban Logistics Group, 9 September 2022, Online.

Hörl, S. (2021) Exploring the system impact of automated taxis via agent-based simulation, Autonomy Talks ETH Zurich, 23 August 2021, Online.

Hörl, S. (2021) Exploring the system impact of automated taxis via simulation, EHESS Fondation France Japon, 24 June 2021, Online.

Hörl, S. (2021) Using open data for activity-based transportation simulation, Séminaire Intelligence Artificielle pour la transition écologique, Ministère de la transition écologique, 18 March 2021, Online.

Hörl, S. (2019) AMoDeus and eqasim: Dynamic demand simulation of automated mobility on demand, organized workshop at the 2019 IEEE Intelligent Transportation Systems Conference, 27 October 2019, Auckland, New Zealand.

Hörl, S. (2019) An agent-based model of Île-de-France: Overview and first results, Institut Paris Region (IPR), 26 September 2019, Paris, France.

Hörl, S. (2018) Simulating autonomous vehicles: Costs, surveys and simulation with MATSim, International Energy Agency (IEA), 13 June 2018, Paris, France.

List of research projects

Ongoing projects (ordered start date, most recent first)

Since 01/2026 IRT SystemX	*Generating synthetic populations supported by LLMs* ● Funding: **IRT SystemX**, 3 months internal funding ● Role: Conception, Scientific Lead, Implementation ● Topic: Using LLMs to improve synthetic populations by detecting invalid generated data points.
Since 07/2025 IRT SystemX	*AETEC: Improving eqasim to take into account behavioral changes* ● Funding: **Societé des Grands Projets**, 120k EUR ● Role: Contribution to proposal, scientific lead of a work package, implementation ● Topic: Improve the eqasim framework for the representation of home office routines.
Since 2024 GRETTIA / UGE	*City-FAB Communauté urbaine de Dunkerque* ● Funding: **France 2030** ● Role: PhD supervisor; scientific consulting ● Tasks: Supervision of the thesis of Ali Namaan. Scientific support on implementing and calibrating a transport simulation model for Dunkerque.
Since 2023 GRETTIA / UGE	*FORBAC: FORecasting Impacts of Mobility, BACkcasting Optimal Decisions* ● Funding: **PEPR MOBIDEC** ● Role: PhD supervisor ● Tasks: Supervision of the thesis of Jean-Giono Zehounkpe.
Since 09/2022 IRT SystemX	Long-term collaboration on agent-based simulation with Volkswagen ● Funding: **Volkwagen** (∑375k EUR) ● Role: Conception, scientific lead, contact point, implementation ● Topic: Six individual projects on peer-to-peer car-sharing, on-demand mobility, on-demand transportation of goods, electric infrastructure plannning
Since 03/2021 IRT SystemX	*Standardisation and reproducibility in agent-based transport simulation* ● Funding: **IRT SystemX**, several internal funding rounds of 20% FTE ● Role: Conception, scientific lead, implementation ● Supervision: Four internship projects ● Topic: Exploring how agent-based transport simulations can be standardized such that they can yield reproducible results in an applied transport planning context.

Finished projects (ordered by end date, most recent first)

03/2024 - 12/2025 IRT SystemX	*MINGA: Munich's automated local transport with ridepooling, solo bus, and bus platoons* ● Funding: **TU Munich** / Federal Ministry of Research, 90k EUR ● Role: Initiation of the contact, conception, scientific lead, supervision of one researcher, implementation ● Topic: Creating a synthetic population for Bavaria and setting up a transport simulation. Exploring the use of surrogate modeling approaches for agent-based simulations. Support for several simulation projects at TU Munich.
03/2023 - 11/2025 IRT SystemX	*MAIA: Multimodal Access for Intelligent Airports* ● Funding: **Horizon SESAR** (Grant 101114853), 195k EUR ● Role: Proposal, scientific lead, supervision of one researcher, implementation, administrative management ● Topic: Analyzing the applicability of on-demand mobility services for airport access.

09/2022 - 10/2025 IRT SystemX	*SINFONICA - Social Innovation to Foster inclusive cooperative, connected and Automated mobility* ● Funding: **Horizon Europe** (Grant 101064988), 244k EUR ● Role: Contribution to the proposal, scientific lead in the first half of the project (then passing on to my former PhD student Tarek Chouaki) ● Topic: Assessment of discriminatory behavior in state-of-the-art fleet management algorithms. Exploring fairness issues in the deployment of on-demand mobility systems.
06/2023 - 09/2025 IRT SystemX	*DISCO: Data-driven, Integrated, Syncromodal, Collaborative and Optimised urban freight meta model for a new generation of urban logistics and planning with data sharing at European Living Labs* ● Funding: **Horizon Europe** (Grant 101103954), 180k EUR ● Role: Contribution to the proposal, scientific lead, supervision of two researchers, implementation ● Topic: Development of a parcel delivery prediction model for the city of Copenhagen. Data processing of daily vehicle trajectories of ten operators.
03/2023 - 07/2025 IRT SystemX	*Interlab SNCF* ● Funding: **SNCF** (undisclosed, 3+ FTE) ● Role: Contribution to the conception, scientific lead (first half of the project, then taken over by my former PhD student Tarek Chouaki), supervision of two researchers, implementation ● Topic: Designing future SERM (Services Express Regionaux Métropolitains) using agent-based transport simulation.
03/2024 - 03/2025 IRT SystemX	*An agent-based transport model for Paris* ● Funding: **City of Paris** (undisclosed, ~1 FTE) ● Role: Contribution to the conception, scientific lead, supervision of two researchers, implementation ● Topic: Analzing the Low Traffic Zone of Paris using agent-based transport simulation.
02/2023 - 01/2025 IRT SystemX	*SEAMLESS: Safe, Efficient and Autonomous: Multimodal Library of European Shortsea and inland Solutions* ● Funding: **Horizon Europe** (Grant 101096923), 450 kEUR ● Role: Scientific lead (first half of the project), supervision of one researcher ● Topic: Agent-based simulation of automated vessels for fluvial transport of goods.
11/2023 - 01/2024 IRT SystemX	*Assessing the need for electric charging infrastructure* ● Funding: **Communauté d'Agglomération de Paris Saclay** ● Role: Scientific lead, implementation, supervision of one researcher ● Topic: Providing an explorative user interface and model for the deployment of electric charging infrastructure in Île-de-France.
03/2021 - 03/2023 IRT SystemX	*Agent-based simulation of on-demand mobility and last-mile services* ● Funding: **SNCF** (undisclosed, ~1 FTE) ● Role: Contribution to the concept, scientific lead, implementation ● Topic: Simulation of novel on-demand mobility services in connection with massive public transport.
07/2020 - 11/2023 IRT SystemX	*LEAD: Low-Emission Adaptive last mile logistics supporting 'on Demand economy' through digital twins* ● Funding: **Horizon 2020** (Grant 861598), 326k EUR ● Role: Scientific lead of one work package, implementation ● Topic: Using disaggregated modeling to understand decarbonizaton strategies for the last-mile parcel delivery sector with a case study for Lyon.

07/2023 - 11/2023 IRT SystemX	*Anthropolis Chair* ● Funding: **National consortium** (EDF, engie, Renault, Nokia, Saclay) ● Role: PhD supervisor, scientific advice ● Tasks: Supervision of the thesis of Tarek Chouaki; scientific advice and contribution to the thesis work of Tjark Gall
11/2020 - 01/2021 IRT SystemX	*Simulation of on-demand mobility services* ● Funding: **MOIA** (largest electric ride-sharing service in Europe), 82k EUR ● Role: Initiation of the contact, project proposal, scientific lead, implementation ● Topic: Benchmarking state-of-the-art fleet dispatching algorithms in the MATSim simulation platform;
01/2020 - 04/2021 Odyssée	*Impact assessment for the deployment of a network of shared offices in the Occitanie region in France* ● Funding: **VILAGIL** ● Role: Contribution to the proposal, scientific lead, implementation, supervision of one team member and an external PhD student ● Topic: Optimal placement of shared office to minimize energy demand of the population.
06/2019 - 06/2020 ETH Zurich	*Consequences of automated driving - Transportation impact and infrastructure needs* (ASTRA 2008/002, Link) ● Funding: Swiss Federal Road Administration (**ASTRA**), 200k CHF ● Role: Proposal, scientific lead (beginning of the project), supervision of one PhD student ● Topic: Assessing the need of dedicated infrastructure for autonomous cars in Switzerland.
01/2019 - 06/2020 ETH Zurich	*Combining automated mobility simulations with discrete choice models* ● Funding: **Volkswagen** ● Role: Investigation ● Topic: Integrating a discrete choice model in a simulation for the city of Hanover.
09/2018 - 07/2019 ETH Zurich	*Urban Air Mobility* ● Funding: **Airbus** ● Role: Investigation ● Topic: Development for synthetic populations of various cities.
11/2018 - 07/2019 ETH Zurich	*High performance mobility simulation* ● Funding: **SBB** Mobility Initiative ● Role: Investigation ● Topic: Exploration of how the simulation framework MATSim can be used on high-performance computing infrastructure.
06/2018 - 06/2019 ETH Zurich	*LIMA: Long-term development for integrated mobility and land use* ● Funding: **SBB** ● Role: Investigation ● Topic: Assessing spatial restrictions for on-demand mobility services at high-demand nodes like train stations using agent-based simulation.
07/2016 - 03/2019 ETH Zurich	*Induced traffic by automated vehicles (SVI 2016/001)* ● Funding: Swiss Federal Road Administration (**ASTRA**) ● Role: Investigation (thesis project), coordination of two other researchers ● Topic: Assessing the impact of automated vehicles and on-demand mobility services for the city of Zurich, including the implementation of a detailed cost model and behavioral discrete choice model into the simulation framework MATSim.

01/2017 - 06/2017
ETH Zurich

Recent perspectives on automated mobility

- Funding: **Renault**
- Role: Investigation
- Topic: Literature review on autonomous vehicles and an early proof-of-concept for a synthetic population of Paris.