IVe Institut für Verkehrswesen

DAVeMoS

BMK Endowed Research Group for Digitalisation and Automation in the Transport and Mobility System

Newsletter

Newsletter Vol. 01/2023

DAVeMoS is an Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (*Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie*, BMK)'s Endowed Research Group with a mission to strengthen the competitiveness and knowledge building in the field of digitalisation and automation in the transport and mobility system at local, regional, national, and the EU levels.

Read more about DAVeMoS at: www.davemos.online

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Hosted by BOKU Institute for Transport Studies: www.boku.ac.at/en/rali/verkehr

Picture credit: Kate Alexander, Stoppress.co.nz. 2023

1. Uncertainy in modelling

When the COVID-19 disruption came, one of the most active discussions in my LinkedIn channel was how unreliable our transport models now are – obviously, because 90% of my LinkedIn network are transport and urban researchers and practitioners – and whether we should move away from model-informed decision-making processes.

For a second, this discussion made me wonder whether people have forgotten that models are just a simplified representation of reality which was built to help us learn, evaluate, and predict what has happened in the past and is likely to be happening in the future. Essentially, it is not that different from building a future city from Lego bricks, with a little bit of realism by simulating how different figurines would move around in this future city of ours.

By embracing that a model is a simplified representation of reality inevitably, all models are wrong in the sense that they contain some errors or inaccuracies. Still, they can be very useful for assessing the measurable impacts of decisions. This is true for two reasons: because (1) the smallest change in transport systems can have big impacts on society, and (2) there is no better way to systemati-cally measure the plausible impacts of our policies than to simulate and measure them through different scenarios in our models – granted that not everything can be measured, but some critical impacts can.

In the past, when everything was more stable, everything seemed predictable. However, after the COVID pandemic, the collapse of supply chains, the Ukrainian war, and the explosion of inflation rates, it seems that the present and future of trip-making behaviours have changed. The future feels no longer predictable. Nobody knows what to expect, nor we can see what to anticipate. The truth, however, is that life never was (!) predictable but many of us made decisions as if that was the case. *(...)*

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Limited data and accelerated research timelines mean that some prominent models or findings will inevitably be overturned or retracted. With the current climate crisis and ever-growing pushes from the industry to adopt new technologies today's questions and related decisions have changed significantly. It is not only about how far people will travel next year, but what happens to people's quality of life if we started to limit their ability to travel in order to reduce CO_2 emissions from transport-related activities. While this may not inevitably be bad for the economy, it will be different for sure. Encouraging people to change their behavior without providing information about the long-term impacts on their well-being is not appreciated by the public. This is why it is crucial to explore a new model framework as a decision support system that can help understand current behavioral changes and advise on the utilization of new technologies, such as in creating net zero targets for 2040 and beyond.

It is true that our existing model is not designed to analyze some of the existing phenomena in detail, such as remote working, e-commerce, and micromobility. However, this opens up an opportunity for us to improve our existing models by gradually integrating other types of models, such as combined transport-land-use models, PT microsimulations, agent-based or activity-based models, as well as system dynamic models. Combining these models will provide us with insights into the holistic impacts of different interventions on different groups of societies, including operators and other stakeholders related to the future of our city, while still linking to our existing decision support systems.

At the end of the day, the only thing certain in this world is change, and uncertainty is inevitable. At the same time, one of the best gifts of the human species is the ability to adapt and adopt. Therefore, advancing our model that incorporates the human ability to continuously adopt and adapt is critical for our present and future decision-making processes.

Yusak Susilo

2. Attaching activity and travel patterns to an OD matrix

Many major metropolitan areas around the world, such as Vienna, have developed their own strategic planning models. These planning models are often generated by traditional transport models, which are powerful, useful, important, and versatile in many respects. However, they also have limitations and can benefit from enrichment from different modeling platforms, such as integrating micromobility demand and travel behaviors into existing four-step models.

Linking agent-based modelling platform with the existing strategic planning model presents challenges, especially in cases like ours, where a new agent-based model needs to be developed that is consistent and can be linked with the existing planning model. One of the fundamental challenges is to link the existing Origin-Destination (OD) matrices used and produced by the existing planning model to a particular thread of behaviour, so that they can be used to estimate travel mode choices and trip purposes within the agent-based simulation platform. So regarding the final product, the question is: Is there a way to convert a collection of OD matrices into individual levels of activity chains?

To address this need, we executed steps as shown in Figure 1 to synthetically recreate the population as a response to the query. The dataset from a version of ITS Vienna's VISUM output consists of 100 different types of OD matrices that are identified by 15 different types of population groups, 15 different types of activity pairs, and 4 different types of mode options. To provide specifics on individual characteristics, activity chains, and locations travel diary data from the Mobility Activity Survey (MAS, Hartwig et al., 2022) is utilized. We use the inference method to describe the process of obtaining the MAS dataset as if it came from the sampling process based on the probability distribution of our synthetic population. At the same time, we also describe the VISUM OD matrices as if they came from our synthetic population's aggregation process.

The person characteristics data from MAS and VISUM are compatible. Therefore, to combine data from both sources, we use the VISUM population groups as a reference and take the first step by categorizing MAS data based on that. Then, we extracted activity patterns from the MAS dataset and simplified them into seven activity chain types following the algorithm shown in Figure 2.

Subsequently, we mapped the MAS population groups and their types of activity chains to the activity pairs and OD matrices from VISUM as shown in Figure 3. The inferring method is intended to maintain the stability of the flow distribution and characteristics from VISUM OD matrices. The inference method seeks to replicate the summary statistics on trip distributions that are currently accessible and were acquired from VISUM. It enriches information from VISUM with detailed travel behavioral information extracted from the MAS dataset. The result is a synthetic population of individuals who travel in a manner that is consistent with the existing summary trip statistics (OD Matrices from the existing VISUM) while also reflecting the trip complexity of the MAS dataset.

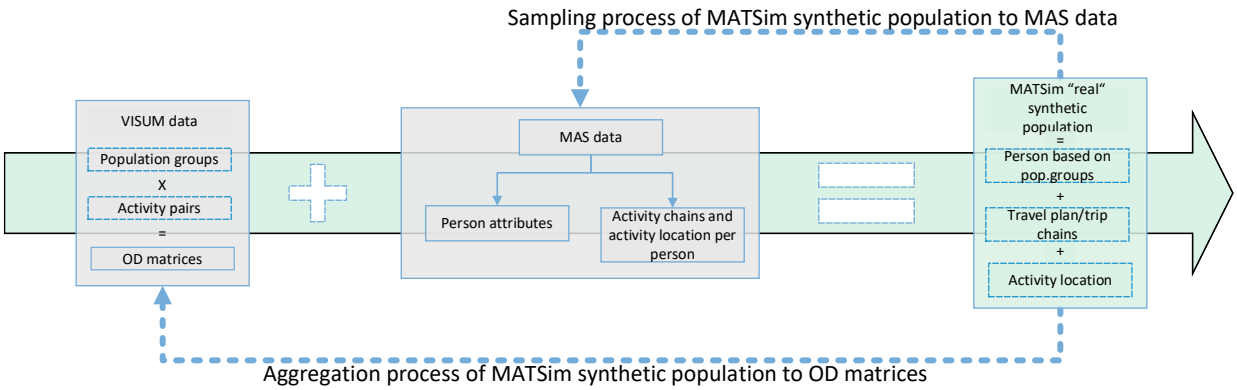

Figure 1. Synthetic population generation process

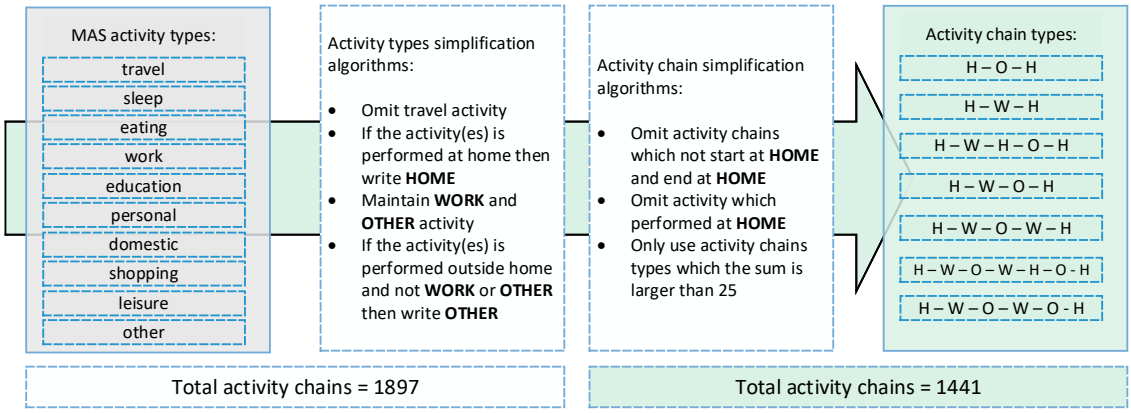

Figure 2. Activity pattern data extraction

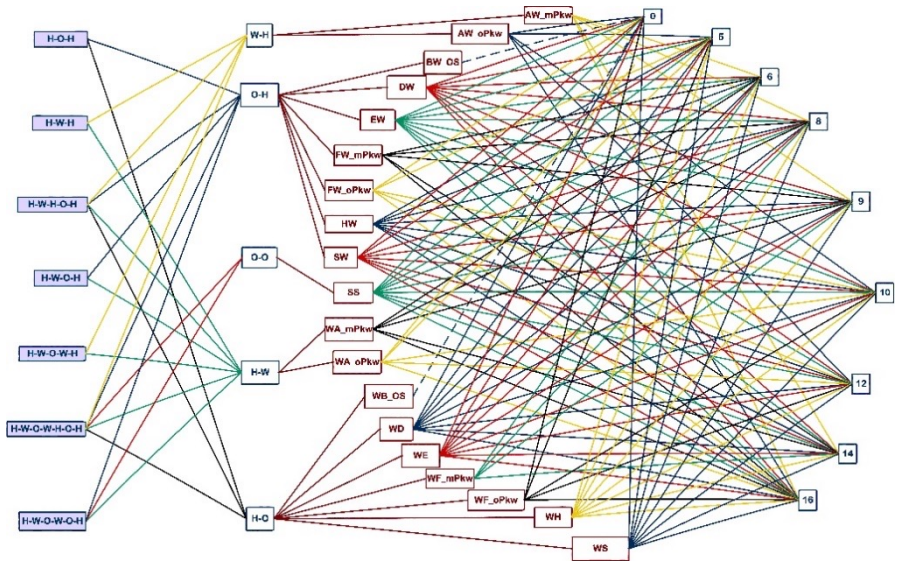

Figure 3. Activity chains and population mapping

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Yusfita Chrisnawati

3. Smarthubs project: sharing knowledge and progressing

The DAVeMoS team's participation in the Smarthubs project (www.smartmobilityhubs.eu) continues with progress made in recent months including the deployment of a large-scale mobility survey, further tool developments, and the beginning of analysis on the impact of mobility hubs on travel behavior.

On March 29th, 2023, the project consortium gathered in Bologna, Italy, for a joint symposium meeting with the MOVE21 project members (move21.eu). MOVE21 is a European Commission funded project aimed at promoting the transition toward sustainable mobility nodes in European cities for both passenger mobility and freight transport. The purpose of the meeting was to familiarize the MOVE21 team with the innovative tools developed in the Smarthubs project and share up-to-date findings on the contribution of hubs to urban mobility.

The symposium started with a welcome speech from a representative of the Metropolitan City of Bologna, followed by a brief overview of both projects. Tina Ruohonen (City of Oslo) introduced the MOVE21 project, while Karst Geurs (UT Twente) and Christoph Kirchberger (TU Wien) presented the main points of the Smarthubs integration ladder and Open Data Platform.

The meeting continued with breakout sessions, during which participants had the opportunity to learn, try out, and provide feedback on four different Smarthubs methods, including a) the augmented reality co-design game, b) the hubs' governance framework, c) the accessibility tool, and d) the multi-actor multi-criteria analysis (MAMCA) tool.

Following the sessions, the MOVE21 members discussed the potential application of these methods and tools in their work in various European cities. The symposium concluded with a poster session by the Smarthubs team, showcasing the various analysis methods and main outputs of the project thus far.

Roxani Gkavra

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4. Towards a more sustainable urban logistics system

Many cities worldwide are setting targets to reduce the negative impacts of transportation systems, such as air pollution, noise, and accidents. In this research, we focus on Stockholm's vision for 2040, which aims to have fossil-free transport solutions and reduce congestion (Stockholm Stad, 2020). Achieving these goals is challenging due to the projected increase in urban populations and e-commerce growth (Sheth et al., 2019). As a result, various concepts are being developed and implemented in the context of urban goods transportation, also known as the urban logistics system (Jamshidi et al., 2019).

This research evaluates four concepts using an indicator list for sustainability performance assessment (Andruetto et al., 2022a). The concepts under evaluation are electrification, consolidation, cargo bikes, and automation. The results of this evaluation are presented in Figure 1 (Andruetto et al., 2022b). The figure indicates that certain sustainability aspects, such as accessibility, working conditions, and land use, have not been extensively analyzed in the literature. There is a gap in taking a more holistic approach in the assessment of sustainability (Andruetto et al., 2022b). To address this, our research employs a systems thinking approach and a system dynamics method, which allow for a more comprehensive examination of sustainable urban logistics.

After evaluating the four concepts, our research focuses on city hubs as a potential solution. City hubs can reduce congestion and pollution by increasing consolidation, optimizing vehicle routing, and utilizing zero-emission vehicles (Nataraj et al., 2019). However, their implementation faces multiple barriers such as trust issues and unclear benefits, and how to overcome them is still being determined (Paddeu et al., 2018). In this research, we use a system dynamics model to investigate the potential impacts of city hubs in Stockholm and uncover the underlying mechanisms of their implementation barriers.

To investigate the impacts and understand the system's dynamics, we develop a causal loop diagram based on workshops, interviews, and the existing literature (Andruetto et al., 2022c). We then construct a quantitative system dynamics model from this causal loop diagram and calibrate it using statistical data and workshops. The model is used to identify different scenarios with the help of an expert group. These scenarios are used to explore the impacts of different policies. A simplified version of the model (in the form of a causal loop diagram) is shown in Figure 2.

One of the scenarios explored in our research is when the city hubs system does not become profitable. This situation may occur in two cases: i) if the reduction in transportation costs resulting from increased efficiency is not sufficient to offset the additional operational costs of the hubs, or ii) if the operations of the logistics service providers are already efficient and the scheme does not provide enough benefits. This research aims to understand the input values that may lead to unprofitable city hubs.

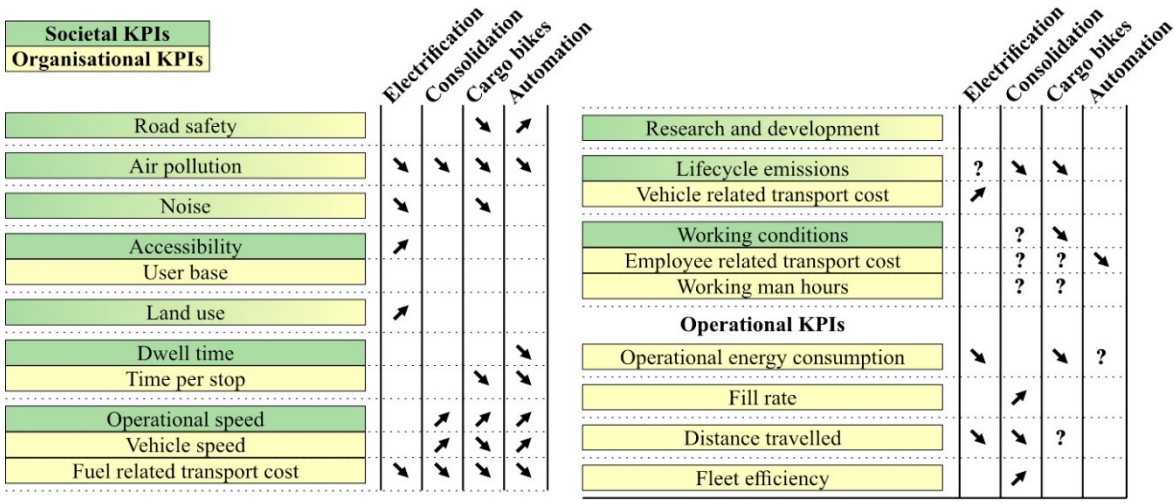

Figure 1. Sustainability performance assessment matrix, based on the literature reviewed in the report Andruetto (2022) and presented at the Transportation Research Arena in 2022 (Andruetto et al., 2022)

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Moreover, we explore the role of the receivers and shippers as stakeholders in the urban logistics system. The model investigates and simulates the impacts of the receivers' decision to change the address of their deliveries. Since the shippers' decision to use the city hub scheme could also be influential, the impacts of their decisions are also simulated in the model.

The findings of this research can be valuable for both private and public sector decision-makers, providing them with insights into the dynamic nature of city hub implementation. These dynamics can help the decision-makers to identify what policies and regulations could be successful. This knowledge can support them in making decisions that shift the urban logistics system towards greater sustainability. Moreover, it can enhance the understanding of critical leverage points within the system that can be targeted for interventions or improvements.

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Claudia Andruetto

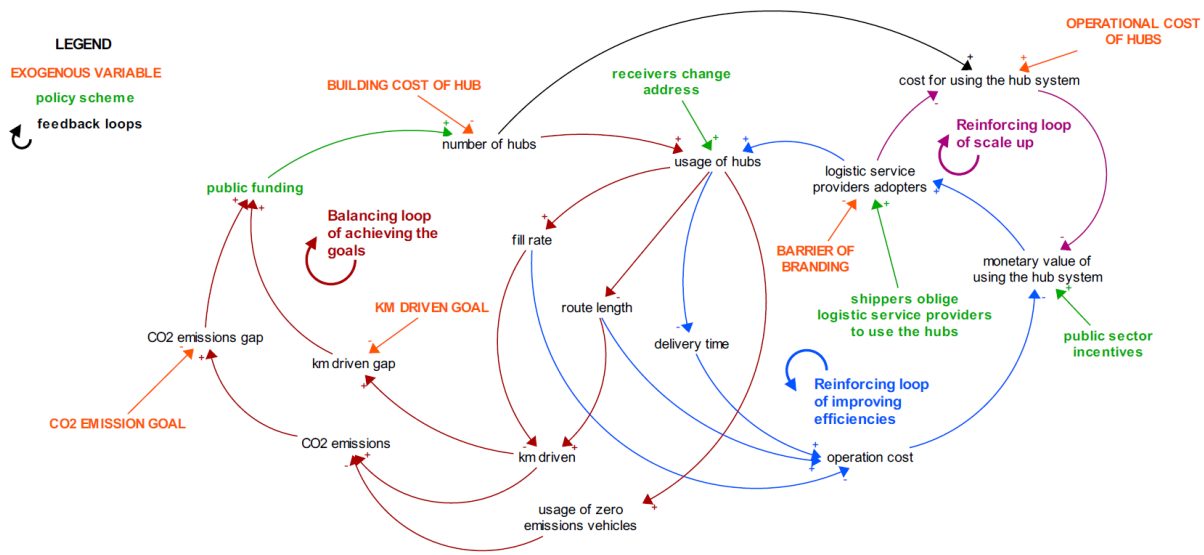

Figure 2. Simplified version of the model as a causal loop diagram. Three feedback loops are shown in the picture, along with some exogenous variables and examples of possible policy schemes. The diagram was presented at the International System Dynamics Conference in 2022 (Andruetto et al., 2022c)

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5. Expansion of DAVeMoS' virtual reality lab

Our virtual reality lab at the Institute for Transport Studies is undergoing another phase of expansion set to be completed by June 2023. The lab initially featured an e-scooter and a powerful computer with a head-mounted display (HMD) for 360-degree immersion and eye-tracking data collection. However, the wired connection between the scooter and the PC limited its use to indoor scenarios in the Unity game engine, with a temporary solution developed for our outdoor experiments.

In the second phase of development, completed at the end of last year, the lab was enhanced with a customised e-scooter stand which now allows for sideways tilting of the scooter, better mimicking the real kinematics of e-scooter riders.

In the current phase, the work focuses on the further improvement of both hardware and software. Firstly, the scooter is being equipped with standalone data collectors, which make it fast and convenient to collect movement data in an outdoor setup. This is an important addition as it allows for direct comparison of virtual and real-life settings that are necessary for establishing external validity of VR-based findings.

Additionally, the virtual counterpart is being improved. An animation will be added to better simulate the physical tilting movement of the scooter, and a new functionality will be implemented to account for the tilting angle while turning in the virtual scenario. These new features are aimed at making the use of scooter more intuitive and realistic.

Furthermore, the lab is being augmented with a bicycle simulator, which will be connected to the existing e-scooter, allowing for simultaneous use and exploitation of a multi-player setting. This serves the research objective of not only exploring the interaction between several road users but combining it with a multi-modal setup. Importantly, the customised bicycle will have the same features as the e-scooter, making it usable in outdoor testing sites as well.

Another small but important addition to the lab is the 3D projector, which will provide an alternative to HMD. Some participants may experience motion sickness with an HMD, and the use of projectors, while not as flexible or immersive, can provide an alternative. However, it is important to establish congruence between eye-tracking and head-tracking when switching from an HMD with built-in eye-tracking to a projector or a wireless HMD, in order to draw conclusions about their substitutability. This could allow for using head tracking, that is a standard feature in wider range of devices, as a proxy for eye-tracking. Our next study in April will explore these relationships in a short experiment so please feel free to get in touch with us if you would like to participate!

Martyna Fidler

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6. DAVeMoS Day 2022

In order to stimulate research exchanges and collaborations between stakeholders and researchers the 2nd DAVeMoS day was organized on Nov. 28th, 2022. Based on ongoing DAVeMoS activities, the event featured presentations and discussions among researchers and stakeholders on folowing topics members of the DAVeMoS project team are involved:

(1) Analysis of two successful demand-responsive transport systems in Salzburg
(2) What drives commuting by public transport? - Annual ticket ownership model for Austria's Eastern Region
(3) Determinants for a smart and attractive design of mobility hubs – Current developments of the international SmartHubs project
(4) Change of time use in the context of COVID-19 and progressing digitalisation
(5) Analysis of influence and usage of Super-Apps in Indonesia
(6) Using the virtual reality laboratory – Latest insights from behavioural experiments with e-scooters
(7) Demand modelling of micromobility by means of system dynamics approach
(8) Agent-based transport modelling and simulation in Austria's Eastern Region – Current state and first use cases

Around 20 people attended the event either in person or online from different institutions. Each presentation was followed by intense and fruitful discussions as well as valuable inputs for further DAVeMoS' research questions.

We are very grateful for the continued support of DAVeMoS funders, research and coordination board members, as well as friends and colleagues in the transportation research community in Austria.

Oliver Roider

7. DAVeMoS at NECTAR Cluster 4 Workshop

DAVeMoS team member Shun Su participated in the NECTAR Cluster 4 workshop organised by LAET-ENTPE (University of Lyon) on 16-17 March, which focused on active micro-mobility modelling.

During the workshop, researchers presented their latest results of behavioural studies on pedestrians, cyclists, and e-scooter riders. The topics covered spatial and temporal models of micro-mobility use, route choice, the resilience of new micro-mobility services, as well as methods of data collection and analysis. These diverse topics highlighted the complex nature of micro-mobility use and provided valuable insights for researchers and policy-makers interested in the safety and usability of these increasingly relevant transport modes.

In this workshop, Shun presented his work on the topic of "An Experimental Dataset to study the Behaviour of E-Scooter Users in Virtual Reality through Physiological Measurement".

Shun Su

8. ZuugleEU: Integration of public transport search engine into hiking path information

In May 2022, the association "Bahn zum Berg" has launched "Zuugle" (www.zuugle.at), a public transport search engine that makes thousands of hiking tours findable and also provides information on how to get there by public transport (PT). Its core feature is to combine information from classical tour databases with PT schedule information to display only those tours accessible by PT within certain parameters selected by users (i.e. travel duration). We supported this initial project by conducting accompanying scientific study on the planning pathways, information needs and public transport preferences of mountain tourists.

Early this year, the follow-up project “ZuugleEU” has started and we are conducting an accompanying scientific study again. The aim of this project is to evaluate the quality of PT in mountain areas covered by Zuugle and thus identify "blind spots" in PT coverage.

To do this, the core scientific task is to develop an indicator of relational PT quality, hence the PT quality between the multitude of origin-destination combinations covered by Zuugle (between 37 origins and around 10,000 destinations). This indicator is based on a range of PT quality features, such as trip duration, number of changes, means of transport (long-distance vs. regional trains vs. busses), intervals for return trips and relative time differences to the car.

To estimate the weight of these different elements, a stated-choice experiment will be conducted where respondents are asked to choose between different hiking tours with varying PT and hiking trail features.

Based on this indicator, the analysis covers two perspectives:

1) The perspective of city dwellers as Zuugle target group, for whom the evaluations show, which mountain areas/hiking tours are particularly accessible from their home station. These analyses represent an additional feature that can be integrated into the Zuugle website to provide users with map-based inspiration on accessible areas from their specific home town.

2) The perspective of selected tourism destinations, which will use the analysis results to gain a better picture of PT-based target groups or regions. Furthermore, the analyses of this project allow for in-depth insights into the intra-destination PT quality between tourist centres (with high hotel/accommodation density) and interesting hiking areas within the destinations (keyword on-site mobility). Their perspective will be included through joint workshops, where the analysis results and potential implications will be discussed.

Maria Juschten

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9. ZeroFlex – Flexible Mobility Point as a Module for Climate Neutrality

The central objective of the ZeroFlex project is to develop, construct and operate a flexible and highly innovative mobility point (ZeroFlex station, Figure 1) as an integral part of the dissemination of zero-emission technologies.

ZeroFlex distinguishes itself from other existing solutions on the market by four main advantages: 1) cost efficiency in construction and operation, 2) a flexible leasing model for public and private providers or infrastructure operators, 3) the resulting flexible use of individual components by customers, and consequently 4) the simplified dissemination of ZeroFlex to rural as well as urban areas. The prerequisite for ZeroFlex is an efficient and intelligent integration into the Austrian energy system and an overall integration into public and private infra-structure systems.

The project aims to develop hardware solutions for large-scale use. These solutions will be tested for their practical suitability and are intended to be rolled out on a large scale from the very beginning. Within the project, ZeroFlex stations will be developed and produced in three different sizes (small, medium, large) with expandable modules (e.g. lockers, bike boxes) and will be placed in public spaces (e.g. in Vienna, Salzburg) for the purpose of demonstration. The stations include both the fixed infrastructure and the vehicles, all from a single source.

In contrast to other existing offers, ZeroFlex stations will be built and operated in a very cost-efficient way. Furthermore, they can be expanded or reduced very flexibly to better reflect the actual demand. The business model will be a full-service leasing model for public and private customers. This will allow, for example, testing of a Zero-Flex station for one year, evaluating its use and based on the results, continuing, expanding, reducing or discontinuing its operation. If needed, the ZeroFlex stations or individual modules, which are returned, can be used again (after processing) at other locations.

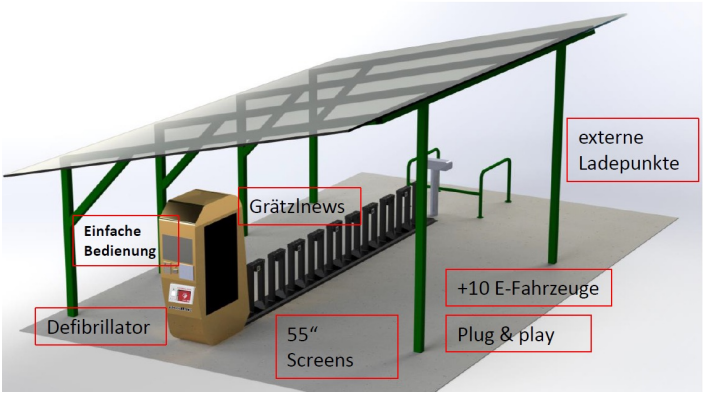

Figure 1: Schematic illustration of a ZeroFlex station

The project started on 1st March 2023 and is funded under the 5th call for proposals, Zero Emission Technologies, coordinated by the Austrian Research Promotion Agency (FFG). Our task is the accompanying scientific evaluation of the concept and the identification of possible contributions to a sustainable mobility system.

Roman Klementschitz

10. Visitors and new research team members

MARIA JUSCHTEN, M.Sc., Dr., is a postdoctoral researcher at the Institute for Transport Studies at BOKU. In 2020 she finished her PhD at BOKU on sustainable tourism mobility in mountain areas. In her current work, she uses qualitative and mixed-methods approaches to study tourism and everyday mobility behaviour in the context of transport innovations.

VICTOR FLENSBURG, M.Sc., is an industrial PhD student at the Technical University of Denmark (DTU) and employed by the Danish railway infrastructure manager, Banedanmark. His main research concerns machine learning for railway with a particular focus on demand and smart card data.

CLAUDIA ANDRUETTO is a PhD student from the Integrated Transport Research Lab in KTH, Stockholm. Her research so far includes the development of a list of indicators for sustainability performance assessment and of a qualitative system dynamics model regarding the implementation of city hubs as a practice. During her research visit to BOKU, she will explore different system dynamics applications to transport systems.

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11. TRA:WELL project for Transport and Wellbeing

DAVeMoS team members are involved in the TRA:WELL project (https://trawell.life/), a ground-breaking research initiative that aims to investigate the relationship between active and independent mobility and children's well-being, with a focus on physical activity, mental health, and cognitive development. As part of the Sparkling Science program, it is supported by the Austrian Federal Ministry of Education, Science, and Research.

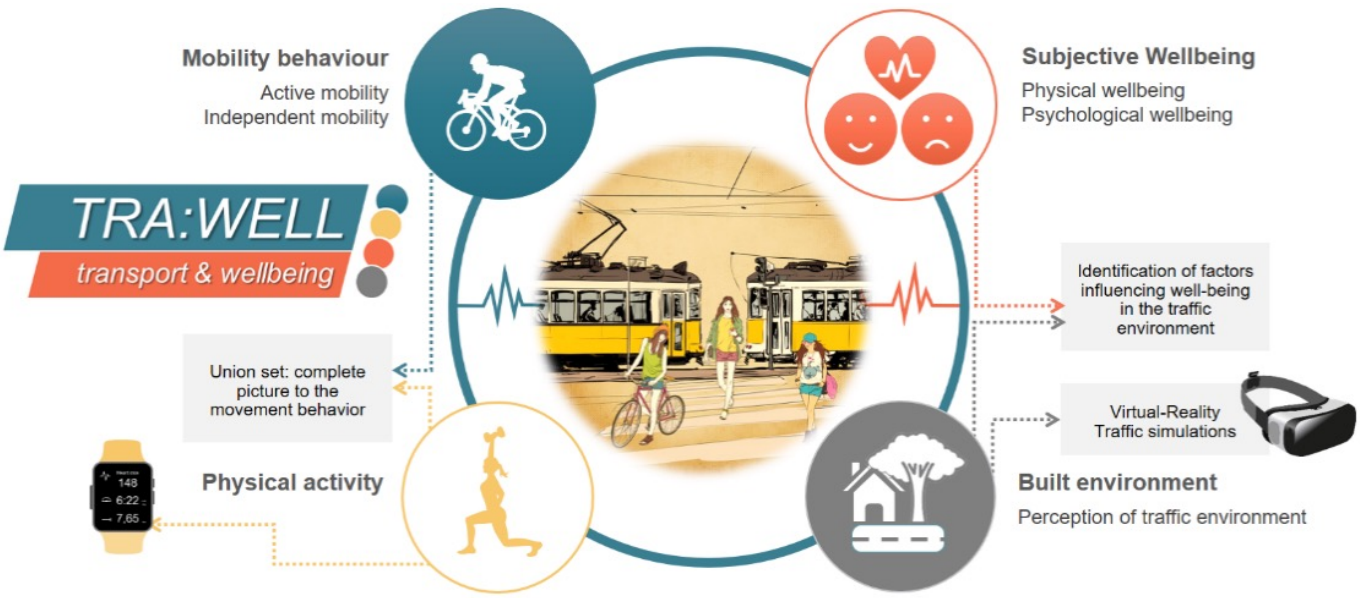
The project will be conducted in cooperation with three schools in Vienna and Korneuburg. The research will be carried out in three parts, using a mix of quantitative and qualitative methods. In the first part, a survey will be conducted using questionnaires and fitness trackers to gather data on physical activity levels and mobility behaviour. The second part will involve the investigation of motives and attitudes underlying mobility-related decisions. Students aged 10-14 years will develop methods and instruments in workshops that enable the recording of attitudes, behaviour, and well-being in the context of mobility for the target group of children. The third part will involve the analysis of subjective perceptions of the traffic area. A catalogue of criteria for a safe design of the traffic area will be developed, and virtual environments will be constructed and tested in DAVeMoS' VR lab to measure reactions to scenarios in terms of safety perception, comfort, etc.

The project is expected to generate valuable data and methods from a scientific point of view. The results will shed light on the relationship between mobility behaviour and subjective well-being and the contribution of active forms of mobility to the fulfilment of physical activity recommendations. The project will also provide in-depth insight into the child's perspective, which will be useful for parents and decision-makers. The transdisciplinary approach of the project contributes to the intersectoral cooperation of transport/mobility and health.

The TRA: WELL project is an important step towards promoting active and independent mobility among children and improving their well-being. The DAVeMoS team is proud to be part of this innovative project and looks forward to the positive results.

Shun Su

TRA:WELL Project overview:



12. DAVeMoS in IATBR Conference in Chile

After a four-year break, the 16th International Conference on Travel Behaviour Research, organized by Pontificia Universidad Católica de Chile, took place between December 11th and 15th, 2022, in Santiago. The conference hosted 164 presentations on a wide variety of topics ranging from activity modelling and policy-making to machine learning, autonomous vehicles and e-mobility. 196 people from 25 countries attended, including members of DAVeMos group Yusak Susilo, Anugrah Ilahi, Martyna Fidler and Bhavana Vaddadi. They presented four papers on travel-time-budget, online behavioural transformation, impacts of teleworking, and cognitive hazard perception analysis.

The conference days were opened by podium discussions in plenum, where attendees had the opportunity to listen to the winners of Eric Pas Dissertation Prize, Thomas Hancock and Stephen Wong and the winner of Life-Time Achievement Award, Patricia Mokhtarian, among others. In addition to the scientific sessions, the conference provided space for networking during social activities such as a visit to the vineyard at Casablanca Valley, a welcome reception or a social gathering to watch FIFA World Cup. Finally, during the closing plenary, Vienna was introduced as a next venue for the IATBR conference in 2024.

Muhamad Rizki

13. AI-CENTIVE project

AI-CENTIVE, a three-year project was started on December 1st 2022. The project consortium includes the Institute for Transport Studies at BOKU, webLyzard technology, MODUL Technology, Data Intelligence Offensive e.V., ummadum Service GmbH as well as the recently merged GeoSphere Austria. The project aims to develop AI-based incentivisation techniques to promote sustainable mobility choices among Austrian citizens with the ultimate goal of reducing carbon emissions associated with transportation.

As part of the project, diverse mobility datasets provided by the consortium partners will be merged to create a unified data ecosystem. This data will be used to train AI models that can explain and predict individuals' decision-making processes when it comes to mobility choices, taking into account factors such as weather, location, type of event, as well as accessibility and availability of different transport modes. The AI-based predictions will be leveraged to promote more sustainable mobility behaviour by designing more efficient and optimised incentive schemes. The incentivisation program will be deployed through the existing Ummadum mobile app which will later on allow to measure its effectiveness.

The overarching goal of the project is to increase public awareness on sustainable transport solutions, foster a positive attitude towards them, and enable stakeholders to make informed decisions in support of more sustainable mobility behavior among Austrian citizens in the future.

This project is funded by Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK), ICT of the Future Program.

Martyna Fidler

14. DAVeMoS at 2023 US TRB Annual Meeting in Washington DC

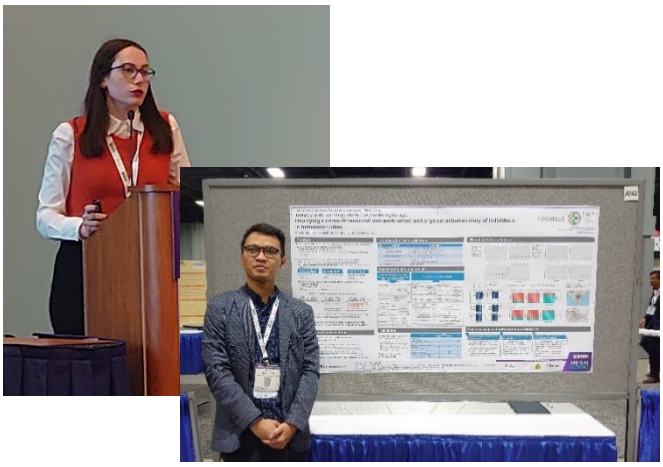
The DAVeMoS team participated in the 102nd US Transportation Research Board (TRB) Annual Meeting, which is acknowledged as the largest global gathering of transportation professionals and researchers with a focus on innovative solutions for all modes of transportation. The DAVeMoS team gave three different presentations at the conference.

Roxani Gkavra, a DAVeMoS PhD student, presented her research on decisive factors of satisfaction with demand-responsive transport (DRT) systems in rural areas in a committee focused on mobility in rural areas. Her research, based on data from two services in the region of Salzburg, Austria, emphasized the importance of trip experience factors such as vehicle cleanliness and punctuality, as well as service potential and organization factors like service availability, in overall satisfaction with DRT in rural areas.

Muhamad Rizki, another DAVeMoS PhD student, presented a poster on the advancement of Information and Communication Technology (ICT) and its impact on individuals' daily behavior, using time use diary data collections in Indonesia. The research highlighted the significant contribution of virtual activities to daily activities and their major role in multitasking.

Professor Yusak Susilo gave a presentation on the potential of virtual reality (VR) as a research tool for capturing travel behavior and its suitability for e-scooter hazard-based analysis in the stated response survey subcommittee (AEP25). These presentations demonstrate the active engagement of the DAVeMoS team in cutting-edge transportation research in areas such as rural mobility, ICT impacts, and virtual reality applications for travel behavior analysis.

Muhamad Rizki



15. FSV seminar „Traffic forecasts – possibilities and limitations“, Bad Schallerbach, Thursday and Friday, May 11th – 12th, 2023

The Endowed Professorship 'Digitalisation and Automation in the Transport and Mobility System' in collaboration with the Road - Rail - Transport Research Association (FSV) is once again organizing an expert seminar focused on the challenge of creating traffic forecasts.

The seminar will cover topics such as commonly used methods, suitable data, uncertainties, limitations, and thematic use cases related to transport forecasting. It will address questions such as: What challenges arise in the development of such forecasts? How do we deal with uncertainties? What are the limits or boundaries of traffic forecasting? How does the ceiling influence the methods, the factual scope, the forecast period or the level of detail of the predictions and its conclusions?

The seminar will be divided into three parts. The first part will feature presentations on common methods used in transport forecasting. The second part will focus on use cases involving different spatial reference values, and the last part will be dedicated to thematic use cases related to specific projects, policy implementations, or strategic implementations.

As usual, this two half-days event will consist of a mix of keynote speeches followed by reflective workshops as well as open group discussions. Ample time will be provided for idea exchange within the official program, as well as informal discussions.

Roman Klementschitz

16. IATBR 2024 call for extended abstract

17th INTERNATIONAL CONFERENCE ON TRAVEL BEHAVIOR RESEARCH (IATBR)

Vienna, Austria | July 14-18, 2024

CALL FOR EXTENDED ABSTRACTS

Transformative Travel Behaviour Research - Looking beyond Back-to-Normal

DEADLINE
15th August 2023

SUB-THEMES

- Active mobility, life-stages, and quality of life
- Adoption, adaptation, and impacts of new technologies
- Time-use and locational choices
- Psychometrics, attitudes, and perceptions
- Innovative data collection methods and alternative data sources
- Pattern recognition in decision-making processes
- Transformative policy and behavioural change
- Advanced modeling and simulation
- Other relevant topics

IMPORTANT DATES

15th August 2023	15th December 2023	15th February 2024	14th July 2024
Deadline of abstract submission	Notification of abstract acceptance	Early registration opens	Conference starts

POST-CONFERENCE PUBLICATIONS

The following journals either plan to publish post-conference special issues or already have SI on topics relevant to this conference:

- Transportation Research part A
- Transportation
- Journal Transport Geography
- Transportation Letters
- Journal Transport and Health
- Journal of Choice Modelling
- European Transport Research Review
- European Journal of Transport and Infrastructure Research

SUBMISSION LINK
https://iatbr2024.univie.ac.at

More Information :
www.iatbr2024.org
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University of Natural Resources and Life Sciences
Institute for Transport Studies
Ilse Wallentin-Haus
Peter-Jordan-St. 82/III
1190 Vienna

17. List of DAVeMoS activities (10/22 – 03/23)

In Management:

1. In the last six months, our visitor, Ms. Maria Lucia Battistini has returned to Bologna University, Italy. During the same period, DAVeMoS received a visitor, Professor Iridiastadi, from Bandung Institute of Technology, Indonesia, who stayed with us for a week.
2. there were significant changes in our team composition. Anugrah Ilahi moved to the United Arab Emirates University and Martin Hinteregger joined SCHIG mbH. On the incoming side, we welcomed Victor Flensburg, Claudia Andruetto, and Robin Palmberg, who visited us from Technical University of Denmark, BahneDanmark, KTH Stockholm, and CrossModal AB, respectively.

In Research:

1. In the last five months, the DAVeMoS team has published 3 web-of-science publications, 7 conference articles and 1 keynote presentation.
2. DAVeMoS took part in the Austria-Sweden Innovation Exchange Day, which was hosted by the Swedish Embassy in Vienna.
3. has conducted seminars and lectures in six departments at five top universities in Indonesia, focusing on mobility innovation and international research exchanges. Additionally, DAVeMoS participated in a two-day workshop on road safety and ergonomics in Indonesia.
4. Together with SmartHubs project partners, DAVeMoS organised a joint international Symposium with MOVE21 in Bologna Italy.
5. In the past six months, DAVeMoS has been involved in three new projects: AI-Centive, TRA:WELL, and Zero-Flex. Descriptions of these projects can be found in earlier sections of this newsletter.

In Education:

1. During the spring semester of 2023, DAVeMoS has started a new course that focuses on individual behavior and choice analysis.
2. A DAVeMoS' co-supervised PhD student, Bhavana Vaddadi, successfully defended her PhD thesis at KTH Stockholm, Sweden. Her thesis explored the significance of adopting a system-level perspective in evaluating innovative Mobility-as-a-Service solutions.

18. List of DAVeMoS publications (10/22 – 03/23)

Peer-reviewed journal articles:

1. Andruetto, C., Bin, E., Susilo, Y., Pernestål, A. (2023) Transition from physical to online shopping alternatives due to the COVID-19 pandemic - a case study of Italy and Sweden, Transportation Research Part A: Policy and Practice, 103644, ISSN 0965-8564.
2. Wicaksono, A,, Dharmowijoyo, D.B.E., Tanjung, L.E. and Susilo, Y.O. (2023) The reciprocal effects of physical activities and ride-sourcing on health, International Journal of Sustainable Transportation.
3. Alhassan, I. B., Matthews, B., Toner, J. P., Susilo, Y.O. (2023) Examining the effect of integrated ticketing on mode choice for interregional commuting: Studies among car commuters, International Journal of Sustainable Transportation, 17:3, 245-257.

Conference presentations:

1. Gkavra, R., Susilo, Y., Klementschitz, R. (2023) Determinants of Usage and Satisfaction with Demand Responsive Transport Systems in Rural Areas. 102nd US Transportation Research Board Annual Meeting, Washington D.C., USA.
2. Rizki, M., Susilo, Y., Joewono, T.B. (2023) Toward understanding activity-travel in the digital age: Deploying a cross-dimensional one-week virtual and physical activities diary of individuals in Indonesian cities. 102nd US Transportation Research Board Annual Meeting, Washington D.C., USA.
3. Fidler, M., Palmberg, R., Susilo, Y. and Su, S. (2022) A virtual reality study of neural and cognitive processing of road hazards. The 16th International Association in Travel Behaviour Research conference, Santiago, Chile.
4. Susilo, Y., Andruetto, C., Bin, E. and Pernestål, A. (2022) Behavioural change analysis from physical to online shopping alternatives during Covid-19 pandemic. The 16th International Association in Travel Behaviour Research conference, Santiago, Chile.
5. Ilahi, A., Susilo, Y., and Hössinger, R. (2022) The impact of Covid-19 on time use and travel time budget of physical and online activities: Three waves survey in Austria. The 16th International Association in Travel Behaviour Research conference, Santiago, Chile.
6. Vaddadi, B., Susilo, Y., and Pernestål, A. (2022) Activity and time-use diary for a neighbourhood telecommuting centre in Stockholm, Sweden. The 16th International Association in Travel Behaviour Research conference, Santiago, Chile.
7. Hinteregger, M., Gkavra, R., Susilo, Y.O. (2022) SmartHubs: Smart Mobility Hubs as Game Changers in Transport. 16th Österreiche Fachkonferenz für FußgängerInnen, “Gut zu Fuß in Stadt und Land – Fußgängerkonzepte, Bewusstseinswandel”, Korneuburg, Austria.