

ReLUT

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Welcome!

Updates from Frankfurt University ReLUT

ReLUT is an interdisciplinary team of researchers in Frankfurt, Germany working on current and future challenges of mobility. Our research focuses on the development of economic and ecological solutions for new mobility models. In addition to the disciplines of transport planning and logistics, ReLUT combines a wide range of competencies: urban planning, social science, data science (Big Data), computer science (AI), geoinformation, law, automotive engineering, and economics.

In 2024, we have been continuing our research on combined modes of transportation for deliveries, particularly in rural areas. In April, Prof. Dennis Knese attended and presented at the Transport Research Arena held in Dublin, Ireland. Also in April, research associates Jana Busse and Katharina Dehler from ReLUT participated in the mobil.TUM 2024 conference held in Munich and presented on strategies to make side streets safer for cyclists.

We hope you enjoy reading about what we are working on. We are always open to collaboration on existing and new projects. Please contact us if you have any ideas of future endeavors.

Best wishes,



Petra Schäfer



Tobias Hagen



Anne Lange

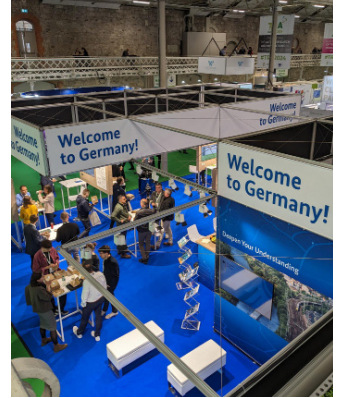


Dennis Knese

TRA

Transport Research Arena in Dublin

The Transport Research Arena (TRA) took place April 15 – 18 in the Irish Capital, Dublin. TRA is one of the biggest transport events in Europe, focusing on research and technology and covering all modes and diverse aspects of mobility. Under the theme, “Transport Transitions: Advancing Sustainable and Inclusive Mobility,” more than 4,000 participants discussed innovations for improving sustainability, safety, and increased accessibility in transport systems.



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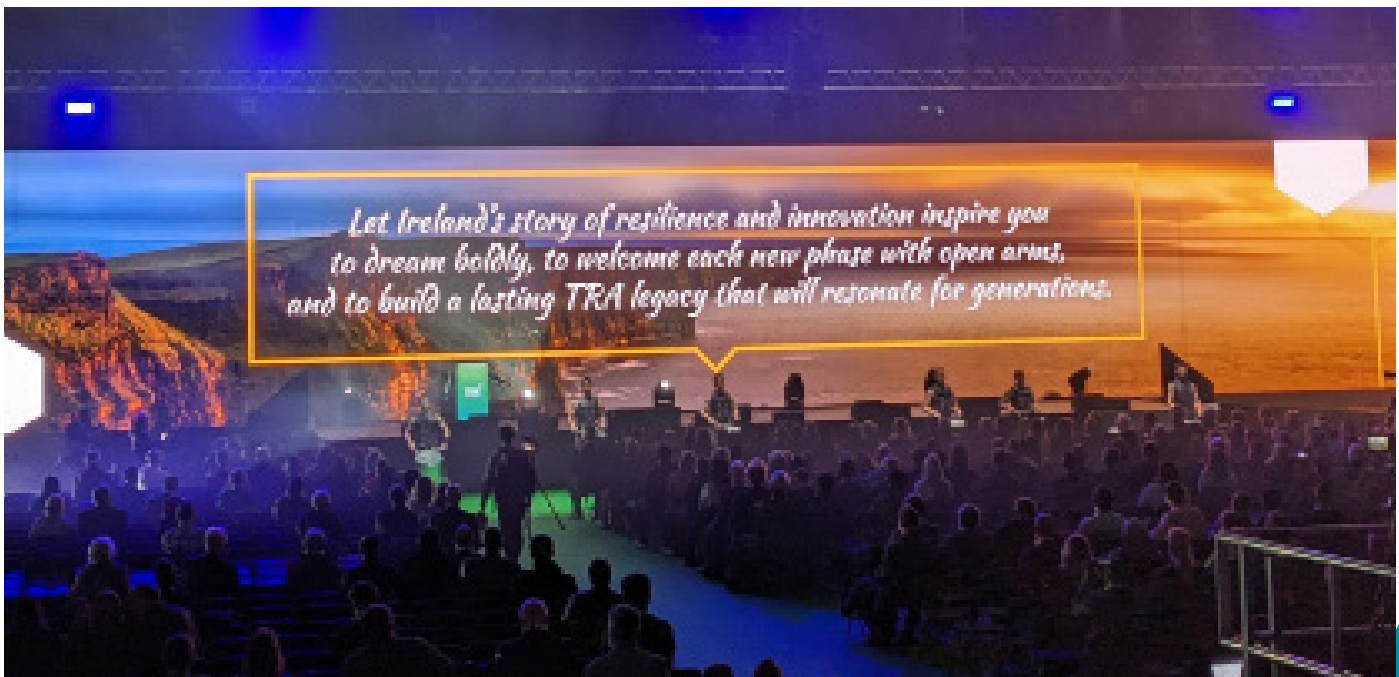
In the session “Active Travel”, Dennis Knese presented the case of walkable and cyclable streets in Frankfurt. His presentation focused on the results of the accompanying research on Oeder Weg, one of several streets in Frankfurt that have been redesigned to promote active mobility.

Prof. Knese also moderated a session on “Sustainable Urban Logistics”, in which speakers from various countries presented solutions for urban freight distribution, logistics service marketplaces, light EV applications in freight transport and insights into customer behavior.

The impressive conference program included keynote speakers from the European Commission, national governments, industry leaders and innovators in research and technology presented in the large exhibition grounds. Germany was well represented with a joint stand led by the German Federal Ministry of Digitalization and Transportation.



Prof. Dennis Knese
Professor for Sustainable Mobility and Cycling



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Kombinom-2

Results on the acceptance of ridepooling

Gefördert durch:



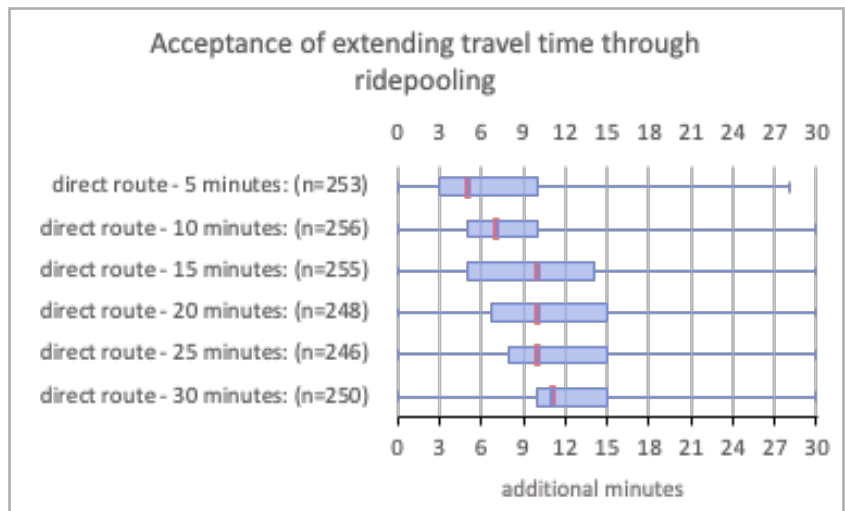
aufgrund eines Beschlusses des Deutschen Bundestages



Kombinom

The Kombinom_2 project uses a simulation-based decision support system to investigate the potential of combined transportation of people and goods in autonomous vehicles in rural areas. The form of service is characterized by on-demand transport that integrates various types of goods into the service, such as local retailers in rural areas and CEP logistics.

The bundling of different mobility purposes is essential to reduce the high use of private cars in rural areas. A flexible service offering is a prerequisite for responding quickly to mobility requests. In addition, detours caused by bundling people in the vehicle must not be too long in order not to reduce user acceptance. Current on-demand services face the challenge of interpreting changes in user behavior through routing parameters. The change of a parameter (such as the maximum detour factor) can only show changes over several weeks/months and it is also difficult to make statements about the effects. As part of the research project, we surveyed potential riders to identify the requirements and preferences for Kombinom from the user's perspective. One of the factors surveyed was the willingness to accept a longer journey time through ridepooling (see table). The graph shows that with a direct travel time of five minutes, the median for an acceptable additional travel time is also five minutes. A doubling of the travel time can therefore be interpreted as acceptable for short journeys. For an increasing direct travel time, the willingness to sit in the vehicle for longer periods of time decreases. For a direct travel time of 30 minutes, respondents are only willing to spend 1.36-times longer in the vehicle due to ridepooling (median).



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In principle, respondents are also willing to sit in the vehicle for longer to deliver or collect parcels. However, the acceptance rate for parcels is only 1.24-times longer than the travel time.

The results also showed that "privacy" plays a minor role for respondents when deciding on their choice of transportation. Respondents were asked to rank the following nine criteria in order of importance for their personal choice of transportation. Using average scores (scale 1-10), three criteria were identified as particularly important. These are "reliability/punctuality" (3.65), "journey time (total distance)" (3.66) and "flexibility of use" (3.67). In addition, some criteria were identified as being of medium importance: "cost" (5.88), "number of transfers" (5.95), "convenience" (6.09), "safety" (6.38) and "environmental friendliness" (6.47). The least important factor was "privacy" (8.27).



M. Eng.
Gerome Löw
Research Assistant



UpTrain

Hybrid teaching for continued education

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages

**INNOVET
UPTRAIN**

biib Bundesinstitut für
Berufsbildung

In the UpTrain project, two vocational training courses are being developed for the public transport sector at DQR (German qualifications framework) levels 5 and 7. The target group for the training is primarily employees in public transport companies, but also graduates who are uncertain about their studies. The study examines the use of digital and in-person learning for continuing education formats in vocational training.

During the in-service training, both face-to-face and online class meetings are offered to balance the blend of both formats of learning

and offer optimal flexibility. However, experience during the implementation phases of the training course has shown that digital teaching must also be highly geared toward the target group as some of them have been out of school-based learning for many years and find it difficult to adapt to new methods. Digital formats can only resonate positively with participants and be perceived as added value if the content is tailored to the target group. For this reason, fictitious personas were developed on the basis of which the digital teaching was designed.



Kim Möller, VDV-Akademie | stock.adobe.com

An appealing and intuitive central learning platform is required for the organization for further training, file exchange, and the connection of synchronous and asynchronous teaching. With the help of a user experience and multimedia design of the learning channel, such as the Big Picture (see figure), it was possible to create a learning environment that appeals to several learning strategies. The digital self-learning resources are supplemented by the provision of web-based training as an interactive learning resource. The “gamification” approach also allows the target group to become more actively engaged with digital teaching and promotes identification with the training.

Five tips for the development of digital teaching can be derived from the project experience:

- Digital teaching must be integrated into learning processes
- Digital teaching must be designed to appeal to learners
- Learning platforms must be clear and should provide an overview
- Digital challenges can connect participants
- Digital teaching makes it possible to acquire new knowledge „on-demand“ or to deepen knowledge already acquired

One of the results of UpTrain is the development of a workbook to be used as a guide to the introduction of digital teaching.



M. Eng.
Gerome Löw
Research Assistant

Pedaling progress on Frankfurt's side streets

From April 10-12, 2024, research associates Jana Busse and Katharina Dehler from ReLUT participated in the mobil.TUM 2024 conference held in Munich. The conference, which addressed themes of sustainable urban mobility, mobility justice, and mobility system design marked its 13th gathering of international and interdisciplinary researchers.

During the session titled „Planning the Cycling City,“ Jana Busse presented preliminary results and methodologies from ReLUT's project, „Fahrradfreundliche Nebenstraßen“ (Cycling-Friendly Side Streets). The research evaluates the impact of redesign measures implemented on three specific side streets in Frankfurt am Main, aiming to document the effects and identify areas for improvement.

The study uses a detailed methodological framework, incorporating surveys, interviews, observations, and traffic counts to assess the implications of these bike-friendly streets. Surveys covered various user groups and transportation modes to gauge changes in behavior and perceptions, while interviews with local businesses explored the economic impact of the street redesigns. Observational data helped analyze usage patterns and conflict points, and safety assessments combined both subjective experiences and objective traffic accident data. The research also reviewed traffic volume shifts and diversions.

The findings from the pilot street indicate a shift towards more sustainable mobility behaviors and acceptance of the new measures. The presentation was well-received, prompting a constructive dialogue among conference participants.

Further details on the project outcomes can be found in the final report on the first pilot street, available in German by clicking [here](#).

17th International Conference on Travel Behavior Research

July 14-18, 2024, Vienna, Austria

Siavash Saki will be presenting on Parking Search Identification in GPS data - A deep learning neural network to identify parking search routes in vehicle GPS traces and predict search duration using ground truth data gathered via a self-developed app.

<https://iatbr2024.univie.ac.at>



M. Eng.
Jana Busse
Research Assistant



M. Sc.
Katharina Dehler
Research Assistant

Upcoming events

European Transport Conference 2024

ETC 2024 - Providing mobility and access for current and future generations

September 18 - 20

University of Antwerp, Belgium

The annual European Transport Conference brings together researchers, policy makers and practitioners around ideas and visions of transport at European, national, regional and local level. The transportation profession benefits from a diverse array of expertise from research, policy and practice to achieve our mission.

This year, the following ReLUT members will be presenting:

Jonas Hamann: Increasing the Attractiveness of Park and Ride by Reducing Uncertainty with the Help of a Forecasting Model for Capacity Utilization

Nicole Reinfeld: How would people travel today if they had the same characteristics as people in 1980? – Using entropy balancing to decompose changes in observed travel behavior over time in repeated cross sections

Elisabeth Lerch: Concept for surveying traffic conflicts involving vulnerable road users at selected intersection types

Franziska Weiser: Current mobility behavior and theoretical willingness to use of residential shared electric mobility concept in medium-sized cities in Germany

To learn more about the 2024 UTC, click [here](#).



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IMPRESSUM

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PUBLISHING INFORMATION:

Frankfurt University of Applied Sciences
Fb 1 Architecture · Civil Engineering · Geomatics
Fb 3 Business and Law
Nibelungenplatz 1
60318 Frankfurt am Main
Tel. +49 (0)69 - 1533-2361
E-Mail: relut@fra-uas.de
www.relut.de
www.frankfurt-university.de