BASt topics

Information from the Federal Highway Research Institute
Edition 2/2023

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Young Researchers Seminar 2023 in Lisbon: 1st price to Daniel Sander

The Young Researchers Seminar (YRS) offers the opportunity to young transport researchers from members of ECTRI, FEHRL, FERSI, EURNEX, HUMANIST as well as from research organisations across the US to network during a three-day seminar, aiming to improve presentation skills in written and oral scientific communication by tutorial means in a truly international scientific culture.

Two young researchers and two tutors participated at the 11th Young Researchers Seminar, held from 15 to 17 May 2023 in Lisbon, Portugal, hosted and organised by LNEC, the National Laboratory for Civil Engineering. BASt is very proud to present Daniel Sander as the winner of the best paper and presentation on "Detecting latent relations within in-depth accident data using network graphs". The study explores network graphs as a means to visualize complex relationships in accident data, based on a subsample of the GIDAS database.

Three network graphs were generated, each using a different similarity measure in combination with a local filtering procedure to highlight the connection of accident characteristics. The findings acknowledge network graphs as an effective tool for identifying latent connections among contributing factors in accident data. Thus, the method facilitates the formulation of hypotheses for detailed data analysis and by that supports the development of strategies for accident prevention.

Tim Podleschny presented on the topic "Mobility alternatives for elderly: An analysis of local incentive schemes in Germany".

Many thanks also to Tobias Panwinkler and Peter Lubrich who supported the YRS as tutors!

The next YRS has been announced for 2025. We are already very much looking forward to this event and are sure that BASt will be again represented by a considerable number of young researchers and tutors! ■

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Federal Highway Research Institute

BeProAct - Building an Ecosystem to proactively develop data-driven asset management

Society relies on critical infrastructure assets, e.g. highways/traffic management systems, built environment and water plants, to fulfil their purpose, be secure and reliable, and to avoid significant economic impact. Ideally, "Talking Assets" could predict their health status and proactively report, e.g. repair need before a potential failure. These and other benefits can be realised through data-driven asset management that is more efficient, sustainable, and safe.

Rijkswaterstaat

Among the challenges of this transformation process is the fact that many assets are at the end of their life cycle which is exacerbated by a lack of skilled labour and funds for renovation and replacement of assets. The transnational cooperation of the BeProAct project (https://beproact.nweurope.eu/) aims to lower implementation barriers through joint learning and implementation of solutions for all stakeholders. This is to achieve territorial and digital resilience: extending asset life, preventing failure, 10% cost savings on maintenance, just-in-time renovation, safer working environment and a more sustainable approach.

The project started in February 2023 and will run for 4 years, covering the strategic level to develop, custom-fit digital transformation and smart maintenance strategies, the establishment of a data enrichment cycle including demonstrators for these innovative solutions and, finally, the creating of implementable, replicable and accessible training programs and knowledge platforms.

As BeProAct is co-funded by the European Union in the Interreg North-West Europe Programme (NEW), the project partners are from the Netherlands, Belgium, Ireland, Luxembourg, France and Germany that is represented by the Autobahn GmbH and BASt. Role of BASt in this project is to develop innovative methods for a better lifetime prediction of roads by use of sensor data and latest smart data assessment technologies. Among other activities, study and demonstration sites will be set up on dura-BASt and real motorways. ■

FEHRL Cold Recycling initiative

Considering the importance of sustainability and the way to the goal "Zero CO_2 Emissions" of the EU, recycling is an important approach to achieve circular economy in pavement area of transportation. Among different types of pavement recycling, cold recycling has the benefit of enabling the use of higher percentages of recycled products with lower production temperature and complexity. It is clear that the resulted material may not have the same characteristics as the hot mixes but by integrating this technology into the recycling toolbox of national road authorities, it is possible to design and construct pavements with same or even better durability than the conventional ones but with higher rates of recycled material and decreased CO_2 footprint. During the last two decades, EU countries have performed a number of research projects on this topic not only on national level, but also commonly in EU projects. Despite of these efforts and positive experiences, the implementation rate of the newly developed technologies has still potential for improvement. Main reason is the lack of exchange of knowledge and experience between the pioneers and potentially interested countries.

In order to improve this status, BASt, together with DTI/Denmark, has taken the lead in a new FEHRL initiative on "Cold Recycling" with 16 participating research institutes, all of them FEHRL members.

The main goal of this initiative is to establish a common platform for effective exchange of information and experiences regarding the pavement recycling and a fast and safe implementation of this technology. The focus spans across the lifecycle of the material, including the material science, the production and construction, the pavement structural design and the sustainability topics (LCCA and LCA) of this technology. Regular meetings are planned to speed up the implementation of cold recycling technology. ■

The Academy at SEFI in Dublin

In mid-September 2023, the 50th annual conference of the European Society for Engineering Education (SEFI) took place in Dublin. It represents the largest network of higher education institutions in Europe involved in engineering education, but as the only major international society in this field, it is also open to input from outside the academic landscape. This year, 575 participants from 41 countries came together to spend a week discussing and exchanging ideas on this year's theme of „Engineering Education for Sustainability" in about 170 different presentations, 25 workshops, poster sessions and 17 special interest groups.

Key topic areas included Climate Change and Sustainability, Interdisciplinarity in Engineering, Virtual and Remote Education Post Covid, Student Recruitment, Learning Supports for Students, Technology for Support of Teaching and Learning, Teaching Technical and Digital Skills, and approaches to Lifelong Learning.

In the thematic area of Sustainable Development - Curriculum and Programme Approaches, the Academy presented its survey results from three 2022 surveys among students, pupils and representatives of federal authorities. In intensive discussions, contacts were made with researchers from all over Europe and the idea of the Academy was also presented to the university representatives and associations present. Possible cooperations with software companies were also intensively discussed. Networking with international experts in the field of engineering education is to be further expanded. ■

Trendline project has started

Trendline (https://trendlineproject.eu/) brings together 29 EU Member States for data collection, data analysis, delivery of Key Performance Indicators for road safety (KPIs), and for using these within road safety policies. Trendline started in October 2022 and builds on the experience of the BASELINE project in which BASt was also involved. BASELINE was intended to increase the availability of KPIs in Europe. In this context, KPIs are indicators that provide information about factors that are associated with crash and injury risks, e.g. speeding or drink driving. Another objective was the cross-national standardization of assessment methods.

Trendline will support EU Member States in the collection and harmonized reporting of KPIs. To this end, the guidelines developed in BASELINE for the collection of the 8 KPIs, originally defined by the EU Commission, will be revised. In addition, ten new experimental and complementary indicators have been defined within the Trendline project, e.g. the driving under the influence of drugs, the share of 30km/h road lane lengths in urban zones, and attitudes towards risky behavior.

Further objectives of the project are to increase the number of EU Member States using KPIs in their road safety policies as well as to build capacity to collect KPIs in countries that have little or no experience in collecting them. The findings of Trendline will enable the exchange of experiences on the use of KPIs at national level for policy making and will establish a solid basis for monitoring progress in joint road safety work at EU and Member State level, both at regional and local level.

BASt contributes to the project by providing data for 5 KPIs, among them the prevalence of driving under the influence of alcohol, protective equipment (helmets, protective clothing, child restraint systems), and distraction by smartphones while driving. In addition, experts of BASt have collaborated in working groups to develop guidelines for assessment methodology. ■

Network-wide Road Safety Assessment

Germany is currently using a crash-based procedure for network-wide road safety assessment. This approach was in line with the former EU-Directive 2008/96/EC on road infrastructure safety management. With the update of the EU-Directive (2019/1936), the German Ministry for Digital and Transport (BMDV) asked BASt to develop a new approach that additionally includes proactive indicators as well as considers the experiences from safety management practice in Germany to consider the requirements of the new Directive. A research project was set up by BASt and conducted by PTV Transport Consult GmbH. The conception of the future procedure relies on the experiences with the existing reactive assessment in combination with a modular and flexible addition of a new proactive part of the procedure. Above all, the idea of layering, i. e. the transparent overlapping of different reactive and proactive single assessments, represents the core of the new procedure. Finally, the reactive and proactive assessments result in a single classification of road sections into priority categories. ■

CNV - Copernicus Network Office „Transport“

The digital transformation holds great opportunities for many areas of the economy and society - including the area of mobility. The importance of data as a resource is growing against this background which in turn leads to new requirements for both research and the use of applications. Through its own satellite fleet, the European Earth Observation Programme Copernicus provides in-situ data as well as data from national and commercial satellites with information that offers great potential for the transport sector.

The Copernicus Network Office Transport (www.d-copernicus.de/verkehr) is the interface between infrastructure operators, research institutions, remote sensing experts and other actors associated with the field of land transportation. It supports, advises and networks all those who use or would like to use remote sensing data and services in the rail and road sector. The Copernicus Network Office Transport is located at the Federal Highway Research Institute (BASt) and is funded by the Federal Ministry of Digital Affairs and Transport.

Tasks of the Copernicus Network Office Transport are:

- Offering advise for public land transport institutions on the access and use of satellite data and services.
- Facilitating network development and maintenance (newsletter, homepage, participation in events, organisation of workshops and events).
- Publishing an analysis about the potential of satellite-based transport applications within the road and rail sector. ■

Securing skilled labour as a new research area of the BASt

Fighting the shortage of skilled workers with the help of the Academy of Sustainable Highway and Traffic Engineering.

In order to be able to meet the serious shortage of skilled workers in the transport sector also scientifically, the BASt founded a new organisational unit: the Academy for Sustainable Roads and Transport.

The tasks of the Academy are application-oriented research, scientific analysis and quality assurance of sustainable, innovative and realisable concepts for recruiting, securing and qualifying skilled workers for the highway and traffic engineering sector, with a special focus on the fields of civil and traffic engineering.

Likewise, the topic complex „Securing skilled labour“ was included in the BASt's research portfolio as the ninth profile topic. The Academy operates in the three fields of action „Developing sustainable, innovative concepts for securing skilled labour“, „Implementing Standardised Processes for the Integration of Skilled Labour“ and „Establishing Systemic Educational Co-operation for Sustainable Mobility“, which form a scientific framework for a total of 10 identified measures, such as „Think Tank“, „Postgraduate Recognition“, „Training and Further Education“ or „Development of Open Educational Resources (OER)“. The first significant results of the Academy's analyses have already been presented at national and international congresses.

In addition, other current projects are being worked on under the umbrella of the Academy, such as the establishment of a virtual academy for the teaching of subject-specific content in the third educational path or the roll-out of federal grants for study advisors, teaching materials and concepts through the academy via an innovation program. ■

Imprint

BASt topics is published irregulary and can be subscribed free of charge.

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