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FINAL MOBILITY REPORT

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Date of mobility: 08.05.2023 – 10.06.2023
Home university: O. M. Beketov National University of Urban Economy in Kharkiv
Host faculty: Faculty of Transportation Engineering and Vehicle Engineering

During the mobility, the following activities were carried out: the study of available materials relating to the theoretical foundations of the modeling and management of transport systems; studying the experience of developing and creating programs of modules; obtaining new, advanced knowledge in the field of management and sustainable development in engineering education; obtaining new, advanced knowledge on the basics of developing new curricula; preparation of an article for publication at scientific and methodological conferences.

The methods and research models used by the Department of Transport Technologies and Economics were studied:

- descriptive methods: statistical parameters, correlations
- network and traffic models: graph theory, Wiedemann-model, VISSIM/VISUM software, geoinformatics – Moho algorithm, QGIS software
- multi-criteria decision models: OPA - Ordinal priority approach, WSM - Weighted Sum Model, TOPSIS - Technique for Order of Preference by Similarity to Ideal Solution
- optimization methods: A* algorithm, MPC - Model Predictive Control, linear programming

The research topics and research projects by the Research Groups were discussed and analyzed to find the possible collaboration between the Department of Transport Technology and Economics at Budapest University of Technology and Economics and the Department of Transport Systems and Logistics (http://k-tsl.com/) at O. M. Beketov National University of Urban Economy in Kharkiv.

The curriculum and structure of subjects were given by the Department, especially the subjects of the Research Group members:

- Transport information systems I-II (BSc)
- Work organization (BSc)
- Transport informatics (MSc)
- Passenger Transportation (MSc)
- Planning of Transport Databases (PhD)
- Passenger Transportation System (PhD)

Additionally, the topics of Road Safety (MSc) were also detailed.

The main topics which can be adapted to the curriculum of O. M. Beketov National University of Urban Economy in Kharkiv are:

- Classification of transportation modes – features, travel chains

- Quality of passenger transportation services, measures
- Planning of shared mobility services
- Planning of public transport services
- Structural model of transportation information systems
- Operational models of transportation organizations
- Analysis and modelling methods of transportation information systems
- Characteristics of road electromobility system, information system and services for electromobility, smart grid
- Transportation system based on autonomous vehicles, mobility service types, planning and operation of mobility services based on autonomous vehicles; impacts of AVs
- Road safety in the European Union (Safe and Sustainable Transport System, Road Traffic Crash Statistics)
- Spatial Accident Prediction Model and Black Spot Analysis

The curricula and the study program at the Faculty of Transportation Engineering and Vehicle Engineering were studied. Special attention was given to the international Transportation Engineering master course. Best practices and lessons learned about the international course were discussed. The aim of the faculty's MSc studies is to deepen the knowledge gained in the BSc studies with mostly theoretical knowledge but also with practical knowledge that is needed for an engineering graduate. The existing specializations give an opportunity to develop insight into certain areas further.

The possibility of creating a common subject was discussed. The new subject could be announced both at the Budapest University of Technology and Economics and O. M. Beketov National University of Urban Economy in Kharkiv. Lectures can be given by lecturers from both universities in a hybrid mode (online presentation). The topic of the subject can be Electromobility.

A common research was done with the Host professor, Dávid Földes PhD. The result was submitted to a conference; the paper will be published in the Conference Proceedings:
Gyulyev, N., Kush, Y., Davidich, Y., Voronko, V., Davidich, N., Földes, D. Patterns of Change in the Probability of a Road Traffic Accident by Drivers of Different Temperaments. STUE-2023: 2nd International Conference on Smart Technologies in Urban Engineering (Accepted, and presented at 8.6.2023) (http://stue.kname.edu.ua/)

Moreover, the common research titled 'Assessment of green e-commerce delivery efficiency using integrated indicator that involved transport process parameters and subjective assessment of drivers' has been launched. The plan is to submit the paper at a highly-ranked journal in the summer 2023.