CHALLENGES OF FUTURE MOBILITY

WINTER SCHOOL FOR STUDENTS

When? **29.11. – 3.12.2021**

Where? **Online**

Link to all lectures:
https://us06web.zoom.us/j/86826948237
Passcode: 991267

WINTER SCHOOL OVERVIEW:

Date / time	Overview
29.11.2021 15.30 – 18.00	Introduction to the school • **EIT Urban Mobility RIS Hub Slovenia**, dr. Alenka Mauko Pranjić (ZAG) • **Fundamentals of the business idea development**, Veronika Jelen in Špela Rozman Dolenc (Ljubljana University Incubator)
30.11.2021 16.00 – 16.45	• **Do we know what is the quality of the air we breathe?,** prof. dr. Radmila Milačič and prof. dr. Janez Ščančar (Jožef Stefan Institute)
1.12.2021 16.00 – 17.30	• **UPSURGE - City-centred Approach to Catalyse Nature-Based Solutions through EU Regenerative Urban Lighthouse**, Tadej Žurman (POR) • **SMART CITY MARIBOR**; Špela Flegar (RRA Podravje) • **"Come with me to the spa" – improving active mobility with EIT Urban Mobility,** Anja Ilenič (ZAG)
2.12.2021	• **Human factor in autonomous driving**; prof. dr. Jaka Sodnik (UL-FE/Nervtech)

16.00 – 17.30	• **EDI experience in connected and automated driving;** dr. Kaspars Ozols (EDI - Institute of Electronics and Computer Science)
3.12.2021 16.00 – 18.00	**Idea presentation by students and award ceremony**

Lectures will be in English, with no available translations.

EIT URBAN MOBILITY RIS HUB SLOVENIA, dr. Alenka Mauko Pranjić (ZAG)

Since 2020, the Slovenian National Building and Civil Engineering Institute (ZAG) has been the contact point for the European Knowledge and Innovation Community (EIT) in the field of urban mobility.

The main activities of the EIT National Contact Point Urban Mobility RIS Hub Slovenia are intended for:

- connecting representatives of the knowledge triangle (companies, educational and research institutions) and cities into an integrated and multidisciplinary ecosystem;
- active creation of local innovation ecosystems in the field of urban mobility;
- increasing the visibility of the EIT of Urban Mobility in Slovenia;
- informing and raising awareness of the wider society about current topics and challenges facing European and Slovenian urban environments.

FUNDAMENTALS OF BUSINESS IDEA DEVELOPMENT, Veronika Jelen in Špela Rozman Dolenc (Ljubljana University Incubator)

A business idea can be developed from the problem we are facing or from an idea and then we look for the problem we want to address with that idea. We formulate the chosen idea, and then it is crucial to check it on the market before jumping in development. Validation is possible in several ways, but the most effective is a conversation with potential stakeholders (users, customers, partners, …). During validation, we obtain information about the market, customer needs, competition, … All this is necessary to consider and extract the actual problem we want to solve, what the solution should look like and what value users / customers will see in our solution. The solution does not mean the same for all potential users, so we talk about user / customer segmentation and determine who our first customer is (early adopters or test users). In the previous steps, we also learn what the minimum functionalities are, so that the first users see the advantages in using the solution and then make an MVP (minimal viable product). Only when users "grab" our MVP, we start adding functionality to perfection (by validating individual steps) and become the best on the market.

DO WE KNOW WHAT IS THE QUALITY OF THE AIR WE BREATHE?, prof. dr. Radmila Milačič and prof. dr. Janez Ščančar (Jožef Stefan Institute)

Air pollution and climate change are one of the biggest environmental threats to human health and ecosystems. Air pollutants released in one country can be transferred to the atmosphere, which affects air quality elsewhere (transboundary pollution). The lecture will present the sources of air pollution with natural and anthropogenic emissions. Current legislative requirements for the control of emissions of specific pollutants and relevant EU legislation will be provided. Selected available data on air pollution in the EU and Slovenia will be discussed. Participants will hear about analytical approaches for monitoring selected air pollutants. Finally, some possible measures to reduce air pollution will be considered.

UPSURGE - City-centred Approach to Catalyse Nature-Based Solutions through EU Regenerative Urban Lighthouse; Tadej Žurman

Air pollution and ambient pollution, carbon-related issues ranging from GHG emissions to carbon shortages in soil, the opportunities provided by NBS and the intricacies of urban ecosystems present an extremely complex set of interdependent problems and opportunities that have to be addressed as such – interactively, mutually and innovatively. Upsurge is considering all these aspects and is providing evidence-based targeted responses that will enable EU cities to transition into a more regenerative future. At its core, Upsurge is presenting the European Regenerative Urban Lighthouse, which will enable cities to unlock their regenerative potential and provide them with knowledge and guidance in regenerative transition. Supported by an innovative continuous self-check progress mechanism (Regenerative Index) and by the Clearing House as a knowledge nerve centre, Upsurge will motivate cities and other clients through its networking activities to engage and step aboard the regenerative transition under Lighthouse's leadership. Upsurge is demonstrating technical excellence through a multimodal adaptable sensing system, through integrated and integrative digitalisation environment supported by IoT and AI, several real-life demonstrations and based on extrapolated criteria conducted simulative demonstrations showcasing the viability, feasibility and implementability of proposed technical solutions. The knowledge core of Upsurge will be introduced within the quintuple helix verification model bringing together all relevant factors affecting the implementation of NBS and thus regenerative change. Quintuple helix approach will truly enable the assessment and exploration of complementary beneficial effects provided by project solutions.

SMART CITY MARIBOR, Špela Flegar (RRA Podravje)

European Commission defines a smart city as a place where digital solutions make traditional networks and services more efficient for businesses and inhabitants. The use of digital technologies also improves the management of the urban environment. Changes within the smart city relate to areas such as: water supply, urban transport, better resource use, more interactive city administration etc. [1]

Smart City Initiative in Maribor started in 2011 when several stakeholders expressed their interest to start. The important role in establishing smart city in Municipality of Maribor had project Upside, in which the Municipality of Maribor collaborated with E-institute and other partners.

The partnership between the Municipality of Maribor, the University of Maribor, other development institutions and the economy, so-called triple-helix partnership, formulated Smart City Maribor Initiative. It was established to:

- spark sustainable development,
- pursue innovation,
- develop pilot projects in the field of smart services, technology and products.

They identified eight areas of activity where urban challenges appear: competitiveness and research, health and quality of life, environment, mobility, energy, smart governance, education and creativity, internationalization of the city and the SCMI stakeholders.

A smart city strategy of Maribor is currently in the making. The strategy will include the results of workshops in which selected stakeholders participated.

The regional development Agency Podravje – Maribor will carry out the presentation in cooperation with the Styrian Technology Park.

[1] https://ec.europa.eu/info/eu-regional-and-urban-development/topics/cities-and-urban-development/city-initiatives/smart-cities_en (15. 11. 2021)

“COME WITH ME TO THE SPA” – IMPROVING ACTIVE MOBILITY WITH EIT URBAN MOBILITY, Anja Ilenič (ZAG)

Every year, air quality is a bigger problem in European cities. With an industrial revolution, automatisation, etc. air pollution and consequently living conditions are in decline. On a global as well as national level, measures are being performed daily, however the information about the air quality level for your specific location are not easy to access. Primarily, the air is monitored by stationary air quality monitors (AQM), which are sufficient to assess the average quality pollution in a specific city, but are not giving information about the air you are moving through. Therefore, a variety of mobile sensors are emerging on the market. Specifically, you will be introduced to CanAirIO and some results, observed in Slovenian cities.

HUMAN FACTOR IN AUTONOMOUS DRIVING, prof. dr. Jaka Sodnik (UL-FE/Nervtech)

Driving a vehicle is a complex task requiring drivers to make accurate perceptions and cognitions about the environment, their own driving skills, their psychophysical state as well as vehicle performance and surrounding traffic. All this information has to be processed and interpreted at a high rate of speed leading to correct decisions and actions. Automation of driving task on the other hand is progressing fast and different forms of (semi)automated vehicles (AVs) have been in operation for quite some time. There are many challenges accompanying this transition, ranging from technical and safety related issues, to the issues related to driving style and driving behavior in relation to other traffic participants. This high level performance of AVs should also be assessed in order to operate in a way that nobody is harmed, endangered and not even hindered or bothered unnecessarily. There is a need to find certain quantifications for this assessment by taking into account human behavior and capabilities to handle different traffic situations. This talk will summarize findings of several research projects focusing on human factor in autonomous driving and propose some approaches to address this problem. I will talk about driving style assessment system for human drivers which can be applied also for evaluating autonomous vehicles.

EDI experience in connected and automated driving; dr. Kaspars Ozols (EDI - Institute of Electronics and Computer Science)

In this presentation, a brief overview will be given about various technologies developed by EDI (Institute of Electronics and Computer Science from Riga, Latvia) in the field of connected and automated driving (CAD). This includes next-generation perception systems, artificial intelligence, automated emergency braking system, communication modules, etc. Also, you'll be introduced to competitions EDI has participated in, what kind of testbed they have developed and use for CAD testing, as well as what kind of CAD platforms they use for their research.

PITCHING

In the series of the lectures throughout the week, students will get an insight into the important steps and milestones that they have to be aware of when transferring the idea to the market.
Each of the students (or a group) will have 2 minutes to present their idea to the expert jury. Jury will evaluate three categories:

- presentation
- idea implementation / market fit
- applicability of the idea

Categories will be scored from 1-10. The student with the highest overall score will be awarded with a winning award.

All students with a sufficient presence at the lecture, will receive a certificate of participation.