TRANSPORT AND TELECOMMUNICATION INSTITUTE

STUDENTS' ENGAGEMENT IN INNOVATION

Vladimirs Petrovs

Head of innovation and entrepreneurship centre

iDEA HUB

Innovative and Creative Environment at TSI for Everyone

GOALS

- To foster the implementation of student innovation proposals, which develop student innovative capabilities and entrepreneurial mind of students, incl. business skills
- Resolve important problems for the society
- Strengthen cooperation of higher education institutions and students with merchants and
- Attract private funding for the implementation of the Student innovation programme
- To give opportunities make a great startups

INTERNAL ENVIRONMENT

- **Laboratory infrastructure**
  - TERC, Telecommunications, electronics and robotics centre
  - SimLab
  - IPB & ABC Laboratory
  - DevLab
  - The Laboratory for Modelling Machinery Mechanisms and Materials
  - AdditiveLab
- **TSI research and expert infrastructure**
  - Research clusters: DA-AI, MADSYS
  - TSI scientific and research staff
- **iDEAHUB Toolkit (IT platform)**
- **The Idea Bank**

ECOSYSTEM

ACADEMIA

Project orientated study
Bsc/Msc Thesis
Student Projects
Expertise in the field

Business Ideas
Specific Requests
Support
Business expertise

INDUSTRY

From Students Ideas to Successful Business Solutions & Attractive Curriculum


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External evaluation and advisory Board of innovations development, including:

ELEKTRONIKAS UN DATORZINĀTNU INSTITŪTS — INSTITUTE OF ELECTRONICS AND COMPUTER SCIENCE

Dr. sc. comp. Modris Greitāns
- Director
- Institute of Electronics and computer science

LIKTA
LATVIJAS INFORMĀCIJAS UN KOMUNIKĀCIJAS TEHNOLOĢIJAS ASOCIĀCIJA

Andris Melnudris
- Director General
- Latvian Information and communications technology

71K EUR

Non-refundable from INDUSTRIAL PARTNERS

543K EUR

NATIONAL DEVELOPMENT PLAN 2020 | EUROPEAN UNION European Regional Development Fund

INVESTING IN YOUR FUTURE

LIAA

Andrejs Berdņikovs
- Head of LIAA Technology Business Centre
- Investment and Development Agency

Toms Grinfelds
- Chairman of the Board
- Association of Mechanical Engineering and Metalworking

Reinis Tocelovskis
- Chairman of the Board
- 3D.Cloud Company

Key Outcomes:
- Projects (R2B): 20
- Additional investments: 3
- Startups: 5

Number of participants: 700

My3D.Cloud

TSI Transport and Telecommunication Institute

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EXTERNAL ENVIRONMENT CALLS PRINCIPLES

Business and industry, including infrastructure and labs

The academic and scientific organizations

Industry Associations

Public authorities

IDEAHUB PROJECT PARTNERS

MASOC

LIAA
Latvijas Investīciju un attīstības aģentūra
Investment and Development Agency of Latvia

UWE Bristol University of the West of England

LETERA

TTS

KEMEK

ELEKTRONIKAS UN DATORZINĀTŅU INSTITŪTS
INSTITUTE OF ELECTRONICS AND COMPUTER SCIENCE

HARBOR Ltd

SIZZAPP

LATVIJAS TRANSPORTA ATTĪSTĪBAS UN IZGLĪTĪBAS ASOCIĀCIJA

PROFILE OF PLANNED INDUSTRIAL PARTNERS

involves 20 partner enterprises in the fields of:

LNK INDUSTRIES

UAV FACTORY

Baltic3D.eu

HISTO.ONE

RĪGAS STARPTAUTISKĀ AUTOOSTA

FBO RIGA
A part of Flight Consulting Group

3Dskenesana.lv

and other

CALLS PRINCIPLES

- Call opening: 2 times per Year
- Students Teams: TSI students (all level) + external students according to the rules
- Submission duration: 1 month
- Evaluation time: 2 weeks;
- Evaluation Commission: TSI Commission + Advisory Board

CALLS & PROJECT COSTS

LARGE PROJECT

Duration	6 months
Student Scholarship	200 EUR
Min-Max Students per Team	2-5
Project implementation	10 000 (fix cost)
Mentor	1

Outputs:

- TRL: 4 – 5
- Prototype
- Business model
- Scalability plan
- External supervisor

SMALL PROJECT

Duration	6 months
Student Scholarship	200 EUR
Min-Max Students per Team	2-3
Project implementation	5 000 (fix cost)
Mentor	1

Outputs:

- TRL: 3 – 4
- Demonstrator
- Business model

FIELDS OF INNOVATIONS

- Information and communication technologies
- Smart logistics and transport
- Digital Society and Transformation

APPLICATIONS

- **AI Application**
  - Co-pilots
  - Assistants
  - Recognitions
  - Optimization
  - Automation

- **Aviation Digitalization**
  - Predictive maintenance and condition monitoring
  - Connected aircraft and in-flight connectivity
  - Supply chain optimization
  - Cybersecurity and data protection
  - Flight operations and crew management

APPLICATIONS

- **Automatization**
  - Warehouse automation with small robots
  - Robotic process automation (RPA) for administrative tasks
  - Precision farming
  - Robotic assistants for elderly and disabled Individuals

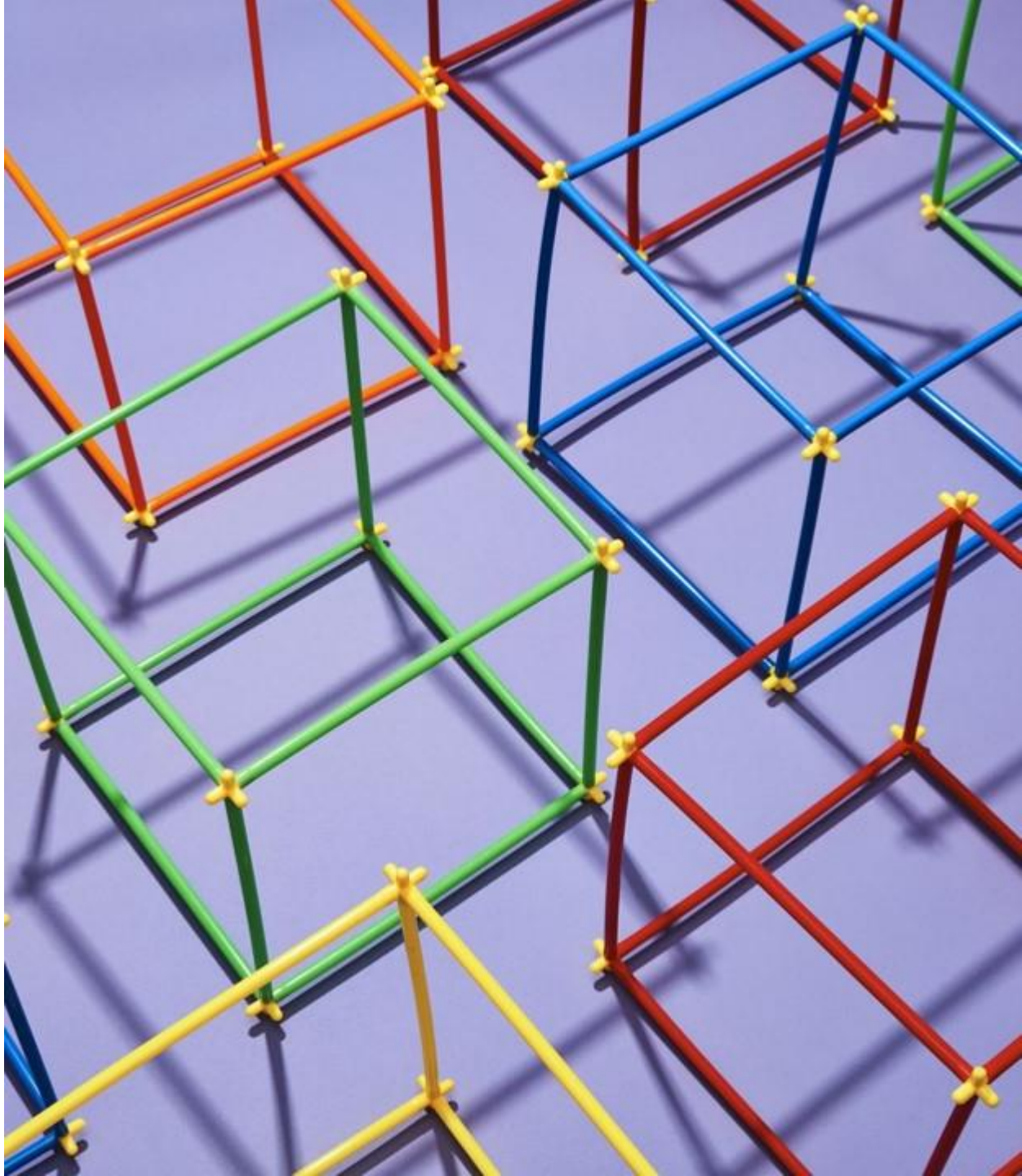
- **Smart business**
  - AI-Powered customer engagement
  - IoT-Enabled asset tracking and management
  - Predictive analytics for financial decision-making
  - Digital Health and wellness solutions

FINANCIAL SUPPORT FOR INNOVATIONS

Scholarship for 6 months for a student of a Bachelor, professional higher education, Master study programme, student of general secondary education, vocational education institutions and colleges – up to 200 euro per month

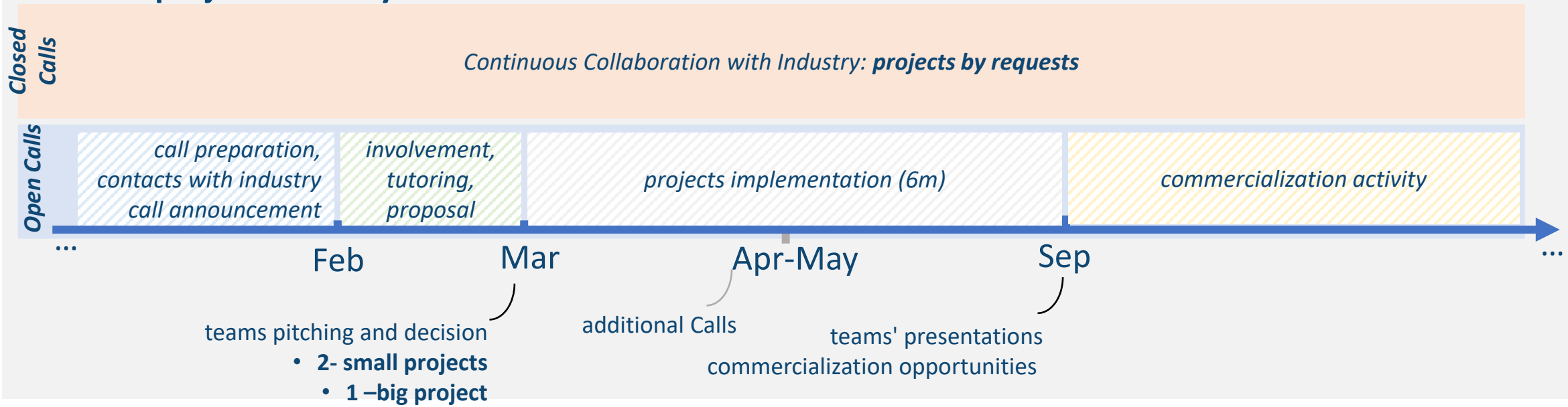
SUPPORT

- Informational events for students
- Training and motivation activities
- Idea Bank – database of ideas for innovations
- iDEAHUB Toolkit (IT platform)
- Data base of supervisors, mentors and experts
- Co-working space for student groups
- Staff for guiding students in administrative procedures
- Access to the TSI lab infrastructure
- Access to the infrastructure of the partner enterprises



CALLS

Students' projects Activity:



BANKS OF IDEAS

Solution for the energy system by Advanced Ditech

Task – To develop solar panels which make electricity, cooled by water and that water warmed and use for a house (using new or using panels). To develop capillary mats which is used for warming and cooling house, electricity heat pump for maintaining the right temperature, and mobile system for control with client account for service desk from us.

Refrigerator with robotics elements that issue pre-cooked meals at the lobbies of newly developed apartments

Task – To develop an automatic refrigerator that would issue selected meal after the electronic payment. Further functionality can be expanded with application development to look for the closest meal according to clients taste and location.

Corpus of the mobile network monitoring equipment for the safe usage and market-ready look

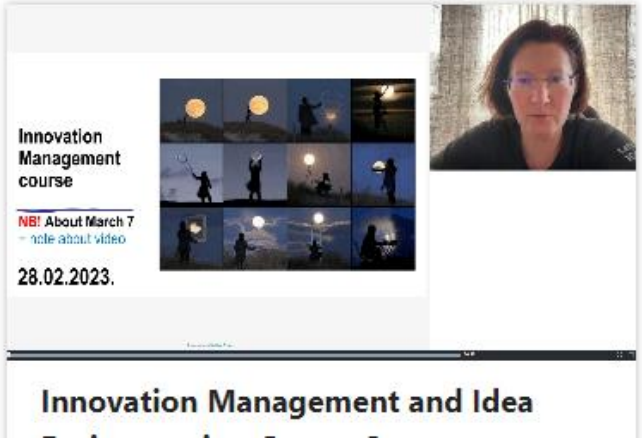
Task – To develop a corpus or hull for Global IoT mobile network operator company 1NCE Latvia SIA, that ensures optimal protection and look as well as feasability for potential production. Within the corpus 5 modems with SIM cards un Raspberry Pi should be located for monitoring and data processing purposes.

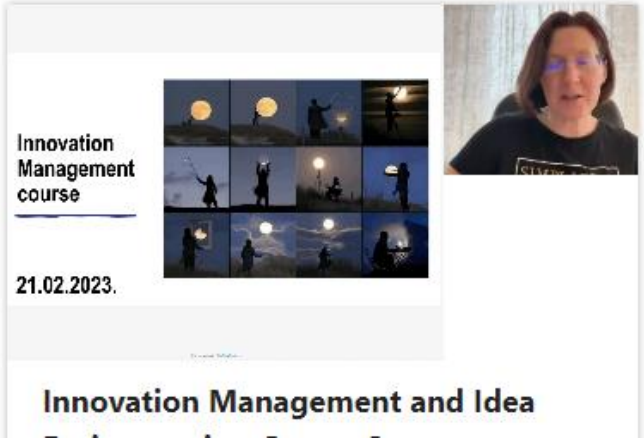
AAF LAB, LTD. Robot Barista

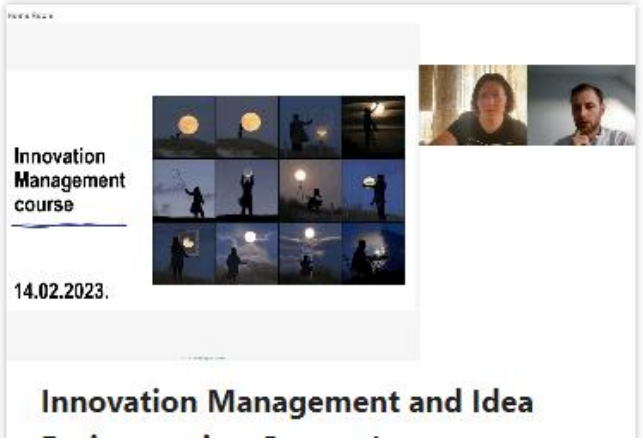
Task – to make a replacement for a coffee maker by a robot system as affordable solution with potential for MVP

Presentation

Innovation Management and Idea Brainstorming Course (online)








SUCCESS STORIES

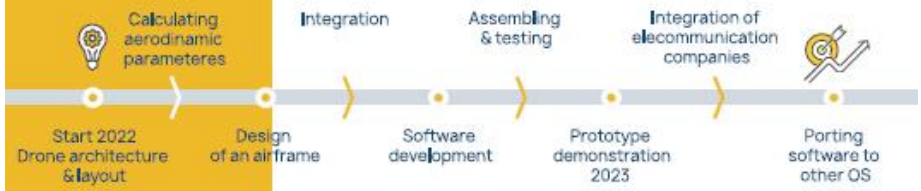
DiPROGer

TEAM

Ivans Gercevs

Viktorija Gerceva

Affordable for all sectors of the economy, DiProGer is a low-cost drone platform integrating mobile devices-based services. Platform and algorithm provides the multipurpose use, an open-source software and additional value to the phone using the device as "core"



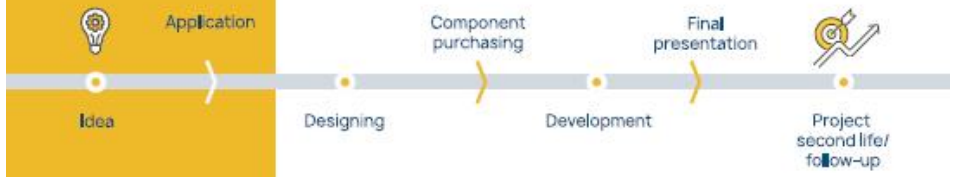
RoboScan

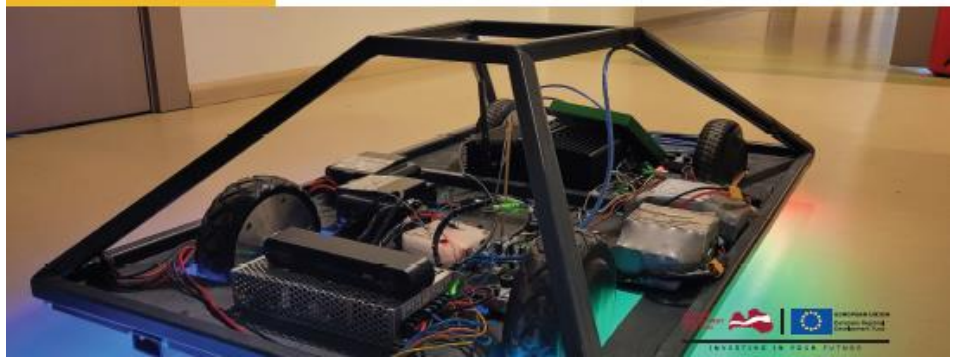
TEAM

Bogdans Grebnevs

Nikita Travins

Roboscan is a remotely controlled robotic platform that collects 3D object data. Our goal is to reduce human presence at dangerous or hardly reachable sites and allow workers to stay safe while the robot collects all the necessary information





APDoc

TEAM

Nikita Mickevics

Mihails Kica

APDoc Flexi is a student-driven cloud-based solution for flexitank containers forwarding companies. A cutting-edge platform to collect, store and report seamless photo documentation for our clients. www.apdocflexi.com

June 2022
Start of the project

November 2022
Development of the mobile application

December 2022
Development of the SRS documentation

January 2023
Acceptance test

RMP

TEAM

Kirills Kolesnikovs

Mihails Korcevskis

Daniels Matjuhovs

Ivans Barnics

Nikita Stepanovs

Chiara Hubermann

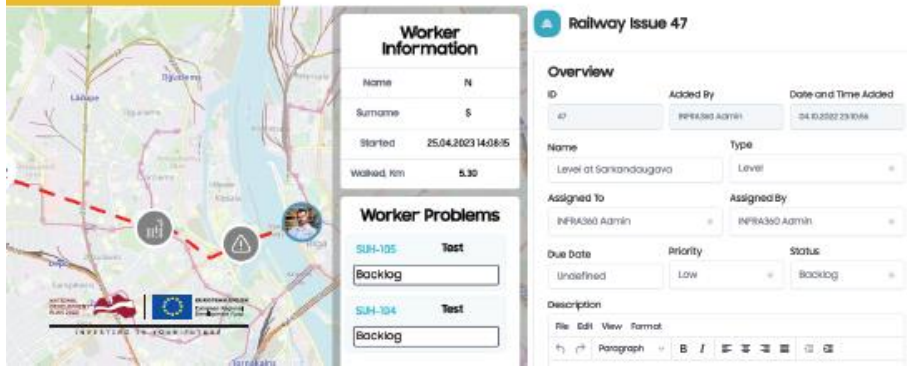
Railway Maintenance Platform is a cloud-based system to track and plan railway maintenance activities. RMP additionally allows to track the locations of railway maintenance workers and their activities

November 2022
Launch of AIRAD platform with worker tracking, reporting, issue management & analytics

December 2022
Calibration, comparison, remote control tests, measurements of precision

January 2023
Adaptation to EU rail track (1,435 mm), validation of cost-benefit

March 2023
Network of customers, tailoring the offer to the client needs



Blokkypay

TEAM


Sigita Lapina


Olegs Ivanovs


Daniil Grammatikopulo


Daniils Buts

Blokkypay is a computationally-efficient (gas-efficient) solution that allows accepting payments to smart-contract addresses, developed by students. The solution is planned to be based on existing technologies of Etherium gas optimisation: factory contract, minimal proxy contract, and CREATE2

Research & development

Proof of concept

Optimization

Busee

TEAM


Veronika Soldatyenkova


Aleksandrs Dozorin


Konstantin Dozorin


Artyom Chub

Web application pilot that allows users to track location and occupancy of public transport. Users are also able to track availability of sitting places for people with disabilities in public transport in real time

Research of existing systems & statement of general requirements

Research of the hardware & software components & linkage options

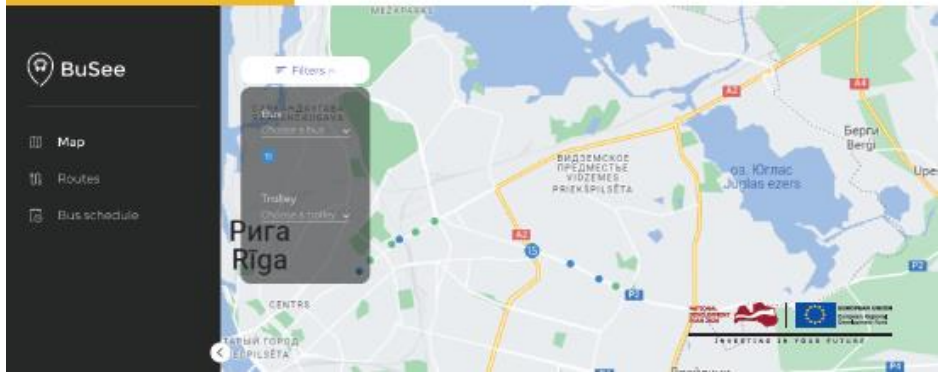
Development of the solution architecture

Acknowledgement of the User Experience requirements

Communication & negotiations with potential stakeholders

Pilot-test scenarios & experiments

Market & commercialisation research



Herble

TEAM


Eduards Zheiris


Laura Melngalve


Hermanis Petrucena


Jekabs Chudars

3D printed plant pots with an automatic watering function that controls the watering frequency and the amount of water supplied by connecting to your phone's mobile app via WiFi. The app contains individual reminders to refill the water and provides advice on plant maintenance. https://www.herble.eu/

- Market research & business plan development
- Development of plant pot prototype
- Development of an app to control the plant pot
- Release MVP
- Testing
- Commercialisation

HERBLE: SELF-WATERING PLANT POT

3D printed plant pot with 2 compartments - one for the plant with a drainage system and one for the water.

The plant pot consists of a pump, microchip and tubes

Innovatic

TEAM

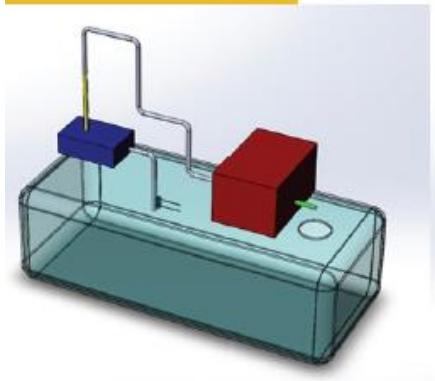

Deniss Bogdans

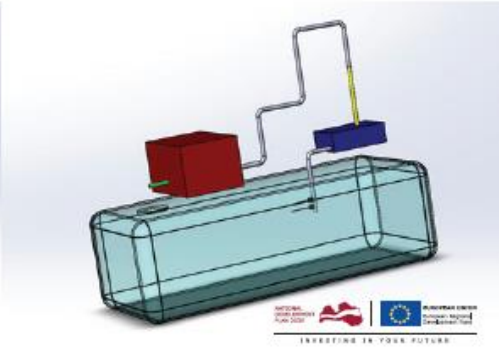

Nikita Fatunovs


Nikita Ostrovenecs

Innovatic team's aim is to create a hydro turbine with adjustable blades, to be installed in storm sewers, with an associated water quality control system and the ability to divert generated green energy to a charging station for personal devices

- Defining the main parameters of the system
- General project architecture & planning
- Choosing construction design of generator blades
- Designing parts & system components
- Creating testbench, to measure characteristics in different states & conditions
- Manufacturing parts & components to improve the system
- Integration of sensors into the system
- Programming
- Partial software development





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