

COOPERATIVE TECHNOLOGY NATIONAL LABORATORY

BUILDING UP AND DEVELOPMENT OF DUAL USE INNOVATION CAPACITIES AND COMPETENCIES

The Cooperative Technology National Laboratory builds and develops dual use innovation capacities and competencies. Its main goal is the physical and content realization of an “innovation space” that plays a key role in the digitization, research and development of industry and the relating dual use industry at both national and regional levels.



MAIN RESEARCH AREAS

- Off-road unmanned ground vehicles
- Drone technology
- Network centric cooperative automation
- Bionics, robotics
- Additive manufacturing and material technology

CONSORTIUM LEADER:

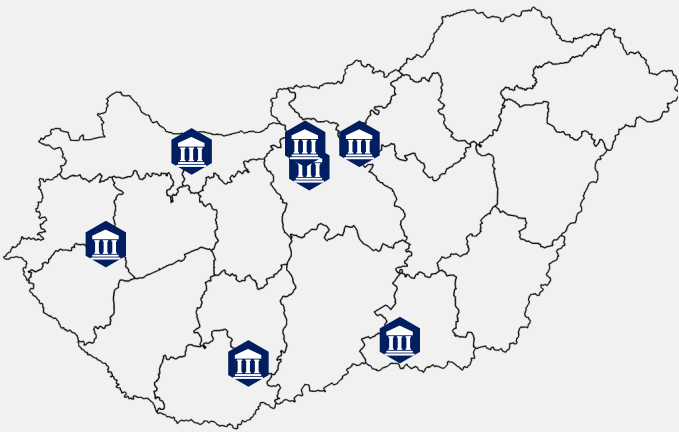
TECHTRA Technology Transfer Institute Pbc. Non-Profit Ltd.

CONSORTIUM PARTNERS:

Automotive Proving Ground Zala Ltd.
Budapest University of Technology and Economics
CollMot Robotics Ltd.
Femtonics Ltd.
Hungarian University of Agriculture and Life Sciences
HM Electronics, Logistics and Property Management Private Company Limited by Shares
Force-Modernisation and Transformation Command
Hungarian Defence Forces
MouldTech Systems Kft.

PLACES OF IMPLEMENTATION: Budapest, Gödöllő, Győr, Pécs, Szeged, Szentendre, Zalaegerszeg

Institute for Computer Science and Control
Széchenyi István University
University of Szeged
National University of Public Service
University of Pécs



BENEFITS TO BE EXPECTED FROM LABORATORY RESEARCH

- Off-road, terrestrial autonomous vehicles
- Implementation of real-time automated operation of off-road vehicles using static maps and dynamic environment sensing, implementation of a working prototype.
- Methodology for the semi-automatic generation of maps supporting static field autonomy.
- Network-centric, cooperative automation
- Common control system of ground and air autonomous platforms integrated into a cooperative network, with real-time communication, real-time detection and intervention, integration with the C2/C4 systems currently in use via standard interfaces.
- Implementation of a security application system on a real site.
- Drone technology
- Development of a small drone conforming to military standards with the option of swarm control.
- Development of a VTOL type drone with a payload of 25 kg, implementation of a working prototype.
- Scalable battery management system and control electronics applicable to drones.
- Laser drone defense prototype system.
- Robotics, bionics
- Implementation of a special body sensor product.
- AR/VR remote manipulation SW.
- Experimental implementation of exoskeleton models.
- Smart clothing pilot implementation.
- Smart clothing data integration SW.
- Additive manufacturing and material technology
- Development of comprehensive metal, polymer 3D printing and composite material technology competence.
- Application of additive technology in relation to the devices developed in the project.

TARGET GROUP

- Off-road unmanned ground vehicles
- Drone technology
- Network centric cooperative automation
- ionics, robotics
- Additive manufacturing and material technology

THE PROFESSIONAL TEAM

Scientific director:

Dr. Viktor Tihanyi (Techtra Ltd.) division leader, university associate professor at the BME, previously professional leader of several domestic and international research project consortiums, in addition to research work, he has 14 years of industrial experience in development and management positions, he has a degree in electrical engineering and mechanical engineering, his main research area the autonomous systems.

Researchers leaders:

Dr. István Varga (BME) is a doctor of the Hungarian Academy of Sciences, deputy dean of the Faculty of Transportation and Vehicle Engineering. His main research area is the modeling and management of road traffic processes. The most important results of his research work are the measurement and estimation of traffic parameters, as well as the development of new, efficient control strategies and algorithms.

Prof. Dr. György Wersényi (SZE) is a lecturer and researcher at the Telecommunications Department of SZE. His area of expertise is wireless communication technologies, communication and security problems of autonomous control systems. Doctorate in Germany, habilitation in 2013, university professor from 2016, dean of the Faculty of Mechanical, Information Technology and Electrical Engineering from 2020.

Prof. Dr. Gábor Szabó (SZTE) member of the Hungarian Academy of Sciences, university professor, ELI-HU Nkft, managing director. More than four decades of experience in basic research and in the industrial development of measuring devices based on lasers. In addition to nearly 200 international publications published in major journals in the field, he is the co-author of 32 patents.

Dr. Bálint Vanek (SZTAKI) is the senior deputy of the System and Control Theory Research Laboratory, the head of the Flight Control and Navigation Research Group. Consortium leader of the FLEXOP and FLIPASED H2020 tenders, as well as consortium member of several tenders funded by FP7, H2020, ONR and ESA, member of the Autonomous Systems National Laboratory Project Steering Board.

Prof. Dr. József Betlehem (PTE) habilitated university professor, vice chancellor of the University of Pécs. His field of research is the examination of the physical and psychological performance of nursing and medical staff working in extreme conditions, with particular attention to paramedics and paramedics working in rescue. The investigations of his working group also cover the decision-making and stress-tolerant abilities of normal individuals.

Dr. Zsolt Szalay (ZalaZONE) is the head of the research and innovation department of ZalaZONE, head of the Automotive Technology Department of the BME, associate professor, president of the Mobility Platform, member of the Innovation Board of the NKFIH, scientific director of BME research at the National Laboratory of Autonomous Systems. His main field of research is the scientific fields related to autonomous vehicles.

István Ocskay, (MH Modernization Institute), Research and Development Director, deputy commander, certified agricultural mechanical engineer (Gödöllő University of Agricultural Sciences), rank of colonel, his research topic is the need to modernize the MH combat vehicle stock, with particular regard to the question of changing the type of armored infantry fighting vehicle, numerous awards, such as Migration Management Medal, Officer Service Badge I. (after 30 years), Service Badge for Peacekeeping (ISAF), Service Medal Decorated with Laurel Wreath.

Prof. Dr. Péter Kiss (MATE) is a university professor, head of department at the Department of Vehicle Technology of the Technical Institute of the Hungarian University of Agricultural and Life Sciences. Mechanical engineer and technical development engineer. His education and research area: internal combustion engines, road and off-road vehicles, vehicle energetics and off-road driving theory. He is a member of the editorial board of the professional journals Journal of Terramechanics, Journal of Tekirdag Agricultural Faculty and Haditechnika. He is a senior board member and former president of the International Society for Terrain-Vehicle Systems (USA). He is the leader of several research projects.

Dr. Zoltán Krajnc (NKE) Broadcast engineer, engineer-teacher, officer with operational-combat qualification, aviation and air defense force major, PhD in military sciences, head of department, academic deputy dean, university professor, his research area is the specifics of air operations planning; Air Warfare Doctrines; Defense against ballistic missiles; Air component of the fight against terrorism; Development history of air defense missile technology. Project experience: TÁMOP project manager and scientific leader, KÖFOP prominent research leader, ÁROP research leader, OTKA research group leader.

Péter Weisz (HM EI), division director, computer science degree at the Budapest University of Technology, his strengths are project management and business analysis. He participated in project planning and management in many projects, among others; JUSTEUS, Dermahelp, Monsearch, Lexpert, MonSpeech.

Dr. Rózsa Balázs (Femtonics) (b. 1974) physician, physicist, doctor of neurosciences. He obtained his PhD degree in 2007 at the Hungarian Academy of Sciences' Experimental Medical Research Institute (MTA KOKI), but since 2005 he has been the head of the team developing 3-dimensional two-photon microscopes at the institute. Founding managing director and scientific director of Femtonics Kft., since 2010 group leader at MTA KOKI and Pázmány Péter Catholic University.

POSSIBLE PARTNERSHIPS

Expanding the relations with the partners on the industrial, academic and user sides.

Participation in international programmes and tenders.



<https://techtra.hu/national-laboratory-of-cooperative-technologies>

PROFESSIONAL CONTACT

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