



HORIZON-CL4-2021-TWIN-TRANSITION-01-01: AI enhanced robotics system for smart manufacturing (IA)

Ideas for the project:

- cognitive robotic partners as support in production
- collaborative mobile robots with AI cognitivity and speech recognition
- reconfigurable robots consisting of wireless intelligent modules
- social robots (interaction with humans based on AI and processing emotions)
- intelligent robots working with tools in machining operations
- robotics for harsh environment (radioactive, extreme temperatures, aggressive chemicals, etc.)
- task oriented swarm robotic systems (AGVs) with adaptive structure
- intelligent UAVs

Infrastructure offered:

- o More than 740 m² of laboratories
- o Infrastructure for manufacturing and testing of prototypes 1100m² (see technology at [Home \(tuke.sk\)](http://Home.tuke.sk))
- o Test bed with digital twins for optimisation of automatization processes in real time
- o Special hall for testing of UAVs

Recent projects solved, related to the issue:

1. ROBOCOM++ PROJECT, Rethinking Robotics for the Robot Companion of the Future
2. H2020 AI4EU Artificial Intelligence for European Union, www.ai4eu.org
3. H2020 - Robotics for Infrastructure Inspection and Maintenance (RIMA)
4. H2020 - The European Robotics Research Infrastructure Network - TERRINet,: Tactile floor mat in the Human - Robot Cooperation (TFM-in-HRC)
5. H2020 - The European Robotics Research Infrastructure Network - TERRINet,: Skilled and Innovative Training Approach - Dual Arm Robotics (SAITA-DAR)

Active participation in European robotics networks:

Robotic platform:

euRobotics – TUKE is the coordinator of the Topic Group “Harsh Environment Robotics”

Digital Innovation Hubs:

Robotics DIH (Robotics Hub SK - Home) part of the RIMA network

Science Park TECHNICOM part of the MIDIH network

Partners in previous research projects:

Scuola Superiore Sant Anna, CEA, SINTEF, DFKI, VTT, DTI, TNO, DLR, Università Degli Studi Di Napoli Federico II, RWTH Aachen University, Mondragon University, Otto von Guericke University Magdeburg , University of Miskolc , Óbuda University , University of Novi Sad , Cracow University of Technology , Częstochowa University of Technology , CIIRC Prague, Korean Advanced Institute of Technology, Kyushu Institute of Technology, Waseda University

Contacts with industrial partners:

CERN, Oerlikon, Minebea, Eli Beamlines, Schunk, Latécoère, SWEP, AIRBUS, Magna P, Sonaca, Siemens, Mitsubishi, Simap, Balluf, Handtmann, Spinea, Saftra Photonics

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