

HORIZON EUROPE PARTNER SEARCH FORM

Call Topic(s): Call - Civil Security for Society: HORIZON-CL3-2026-01 Call - Cybersecurity: HORIZON-CL3-2026-02-CS-ECCC - with a particular focus on cybersecurity, hardware security; cryptography and the use of blockchain technologies

Project Type: Research & Innovation Action (RIA), Coordination and Support Action (CSA)

Are you working with any other partners on this topic?:

EXPERTISE/COMMITMENT OFFERED

Form of Participation in a Horizon Europe Project: I offer my expertise to participate as a Partner in a Horizon Europe Project

Description of Researcher/Research Team Expertise: Cyber Security and IoT (CSI) research group at FIIT STU tackles research challenges in areas of data security and privacy, cryptography, network and system security. CSI also pays special attention to the research of designing energy efficient and secure IoT devices and communication. • Research group leader – Associate Professor Pavol Helebrandt's research interests include cybersecurity, software defined networking, design and management of computer networks, all with the larger goal of making the Internet more secure and privacy friendly. • Associate Professor Ladislav Hudec - his research interests lie at security in mobile ad-hoc networks, risk analysis and security evaluation, computational intelligence in web and network security. • Professor Ivan Kotuliak - his research orientation includes the performance of communication networks, NGN network architecture, mobile and wireless networks Recently, he has been focusing on blockchain technologies and their application to common use cases in the online environment. • Associate Professor Katarína Jelemenská - her research interest lies at digital systems specification, design and verification. • Assistant Professor Ján Hudec - his research interests include architecture and design of digital systems and computer networks, embedded systems, diagnostics and test design of digital systems and processor cores on the chip, cyber and information security. • Ladislav Zemko - his research interest lies in the IoT and computer networks. He focuses primarily on LPWA networks, energy efficiency and collision prevention. • Associate Professor Dr. Xiaolu Hou - Her research focuses on hardware security of neural networks and cryptographic implementations, fault-injection and side-channel attacks, corresponding countermeasures, and security assessment and evaluation methodologies.



She has experience in cryptography, hardware security, embedded systems security, and AI security. Her previous research positions include work at NTU Singapore, the National University of Singapore, SUTD, and Acronis, where she worked on side-channel and fault vulnerabilities, countermeasures against physical attacks, secure computing, and the security of deep neural networks. She has led research projects on side-channel leakage analysis and defense in deep learning systems, implementation security of neural networks, and hardware security of neural networks. The Blockchain and FinTech (BlockFin) research group further strengthens FIIT STU's profile through expertise in blockchain technologies, distributed ledger systems, decentralized finance, smart contracts, anti-money laundering solutions, interoperability, digital assets, and blockchain applications for IoT, governance, and secure communications.

- Research group leader – Associate Professor Kristián Košťál focuses mainly on communication architectures of blockchains and fintech areas, especially blockchain and processes around the deployment of blockchain technology. His research interests are in blockchains interoperability, tokenization of things and metaverse approaches. As a fan of open technologies and open software, he is an active member in the blockchain community in Slovakia.
- Professor Volodymyr Khylenko - His research focus includes the development and application of methods and algorithms for system analysis for the field of information communications. Recently, he has focused on cybersecurity and networks control issues using blockchain technologies. He has authored and co-authored 9 monographs and more than 150 scientific publications. He has registered patents and patent applications in the USA and Germany.
- Associate Professor Michal Ries - His research interest lies at technology transfer and network performance, including Software Defined Networking (SDN), wireless and mobile networking, Internet of Things and blockchains. He focuses mainly on scalability of blockchain technologies and anti-money laundering techniques.

Keywords Specifying Your Expertise:

- Blockchain, Blockchains Interoperability, Distributed Ledger Technology, Interoperability, Asset Sharing Blockchain Platforms, Nft, Anti-Money Laundering, Payment Gateways
- Hardware Security; Cryptography; Side-Channel Analysis; Fault Attacks; Implementation Security; AI Security; Embedded Systems Security.

Activity Offered: Research, Technology, Dissemination, Training

Involvement Proposed/Added-Value to Consortia: FIIT STU offers strong added value to international research and innovation consortia through its interdisciplinary expertise in cybersecurity, IoT, embedded systems, blockchain technologies, AI security, distributed systems, and applied digital innovation. The faculty combines high-level academic research with practical industry-oriented development and long-standing participation in international collaborations and applied R&D projects. FIIT STU's added value to consortia also lies in: strong interdisciplinary collaboration between cybersecurity, AI, networking, and blockchain researchers; experience in applied and industry-oriented research; capacity to contribute to research, piloting, validation, dissemination, and training

activities; access to specialized expertise in secure embedded systems, blockchain interoperability, cyber ranges, and AI security; participation in international scientific networks and research projects; proven publication output, supervision experience, and innovation-oriented research culture. Overall, FIIT STU can act as a valuable consortium partner for European and international projects addressing cybersecurity, trustworthy AI, IoT, blockchain ecosystems, resilient digital infrastructures, secure communications, fintech innovation, and emerging digital technologies.

PROFILE OF PARTNER SOUGHT

Role: Research, Dissemination, Training

Country / Region: Leading Countries, Widening Countries, Any - Europe/North America/South America

PREVIOUS EXPERIENCE

Short Introduction of Key Areas of your previous Research/Innovation projects: The Faculty of Informatics and Information Technologies (FIIT) of the Slovak University of Technology in Bratislava (STUBA) is strongly research-oriented and successful in obtaining grants, with a high number of international cooperation projects and contracts with business partners in the fields of science and technology. At international level, STU has closed hundreds of collaboration agreements with foreign universities, faculties and research institutes. FIIT STU cooperates directly with industrial companies and social organisations, while actively participating in a number of joint research projects. Over the past decade, FIIT STU has built its research and innovation profile around several interrelated key areas that reflect both academic excellence and strong industry collaboration. It has been actively involved in a number of EU-funded projects focused on various topics including:

- o Artificial Intelligence and Data Science - with projects focusing on machine learning, natural language processing, computer vision, and intelligent decision-support systems. These initiatives often target real-world applications such as smart services, predictive analytics, and automation across sectors like healthcare, finance, and public administration. The IDSA research group focuses on innovative data intelligence and computational intelligence solutions towards building intelligent systems and applications using data-driven technologies with respect to information privacy and security.
- o Cybersecurity and Information Security - research projects in this domain address secure communication, cryptography, threat detection, privacy protection, and resilience of digital infrastructures. Many of these activities align with European

cybersecurity priorities and involve collaboration with industry and public institutions.

- o Blockchain and FinTech - connection to IoT platforms and its usability, distributed systems, data mining and machine learning, anti-money laundering techniques, scalability and resiliency, smart contracts, non-fungible tokens (NFTs), blockchains interoperability, voting and election systems based on blockchain, privacy and security in blockchains and cryptocurrencies, asset sharing blockchain platforms, metaverse projects, decentralized finances (DeFi), and others.
- o Software Engineering and Digital Systems - covering advanced software development methodologies, cloud computing, distributed systems, and DevOps practices. Projects frequently aim to improve software quality, scalability, and reliability, while integrating modern engineering approaches into both research and education.
- o Human-Centered Computing - Computer Vision and Graphics - research focuses on human-computer interaction, user experience (UX), and cognitive aspects of technology use. Projects explore how digital systems can be designed to better meet user needs, including accessibility, usability, and interaction design.
- o Computer Networks and Internet Technologies - including work on next-generation networks, Internet of Things (IoT), and smart infrastructure. These projects often contribute to the development of intelligent environments such as smart cities and Industry 4.0 solutions.
- o Automotive Innovation Lab - focuses on the development of intelligent sensors and communication architectures in the V2X environment and smart transport primarily for the purpose of research in the field of safety systems and related interconnectivity. In ongoing projects, the group focuses specifically on the area of connected vehicles and related communication architectures, monitoring the fluidity and especially road safety in line with the European Commission 's vision for Vision Zero - to achieve almost zero fatalities on European roads by 2050.
- o Capacity Building for Research Infrastructures - supporting the development and modernisation of laboratories, digital platforms, and data management systems to enhance interdisciplinary research capabilities

Have you previously participated in a Framework Programme (FP) European project?: Yes

Please select the applicable ones: Yes

Please write Project Title / Acronym: HORIZON EUROPE (2021 – 2027):

- o SK:AI:AT - The AI Factory Antenna Slovakia (SKAIAT) - HORIZON-JU-EUROHPC-2025-AIFA-01
- o IoT-ZERO: Secure Event-Driven TN–NTN Connectivity and Sensing for Near-Zero-Energy IoT (IoT-ZERO) - HORIZON-JU-SNS-2025-01
- o FAIR Liquidity Unifying Interoperable Data and AI (FLUID-AI) - HORIZON-INFRA-2025-01
- o AI Research Enhancement through Networked Agents (EOSC-ARENA) - HORIZON-INFRA-2025-01

HORIZON 2020:

- o Promotion of rural museums and heritage sites in the vicinity of European pilgrimage routes (rurAllure) - H2020-SC6-TRANSFORMATIONS-2018-2019-2020
- o Marie Skłodowska - Curie Actions – COFUND – program SASPRO 2
- o Hardware Security of Neural Networks (HARSONN)
- o Artificial intelligence for personalized

oncology (Alpology) DIGITAL EUROPE: o Sustainable Healthcare with Digital Health Data Competence (SUSA) - DIGITAL-2023-SKILLS-05

Describe briefly your role in the project and activities performed: o SKAIAT (STUBA as Partner) - project aims to establish a cutting-edge AI Factory Antenna in Slovakia as a joint initiative between the Slovak Academy of Sciences (SAV) and the Slovak University of Technology (STU), strategically aligned with the AI Factories Austria network. This initiative is designed to catalyze cross-border innovation, enhance scientific excellence, and accelerate the development and deployment of trustworthy artificial intelligence solutions in the Central European region. Building on the complementary strengths of SAV's research excellence and STU's applied engineering expertise, the AI Factory Antenna Slovakia will serve as a national innovation hub for AI technologies. Its mission is to foster interdisciplinary collaboration, promote industry-academia partnerships, and contribute to the European ecosystem for human-centric and sustainable AI. The Antenna will provide a structured platform for technology transfer, prototyping, and pilot applications across. Through this partnership, the AI Factory Antenna Slovakia will contribute to strengthening regional innovation capacity, fostering the development of AI talent and positioning Slovakia as an active player in Europe's digital and green transformation. o IoT-ZERO (STUBA as Partner) - Low-power 6G networks in the field of the Internet of Things (IoT) - develops sensing and connectivity technologies and architectures to enable the advent of (close to) zero energy devices. We target the development of breakthrough innovations in ultra-low-power and (close to) zero energy IoT systems for sustainable and scalable 6G applications. The project aims to radically enhance the energy efficiency, autonomy, and intelligence of IoT devices, while ensuring secure, resilient, and seamless connectivity across terrestrial (TN) and non-terrestrial networks (NTN). o EOSC-ARENA (STUBA as Partner) - AI: Secure and trustworthy artificial intelligence environment for science and research - the project aims to build an intelligent digital assistant that will support scientists throughout the entire research process- from literature search and hypothesis generation through data analysis to recording data provenance. The project responds to the growing need to use AI in science safely, transparently, and in accordance with European values, with one of the project's goals being to strengthen Europe's technological independence. o FLUID-AI (STUBA as Partner) - Data management and usability for AI research across European countries - the project's goal is to establish a pan-European competence center that will train and assist researchers in working with AI tools, ensure uniform technical and semantic interconnection of data and models across disciplines, and develop user-friendly platforms that simplify the use of this data. A key concept of the project is that data and AI models should be easily shareable, combinable, and reusable.

CONTACT DATA



**SLOVAK NATIONAL
HORIZON EUROPE
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www.horizont-europa.sk

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RESEARCH AREAS OF INTEREST

Pillar 1: Excellent Science: Marie Skłodowska-Curie Actions (MSCA) , Research Infrastructures

Pillar 2: Global Challenges & European Industrial Competitiveness: Cluster 1: Health, Cluster 3: Civil Security for Society, Cluster 4: Digital, Industry & Space, Cluster 5: Climate, Energy & Mobility

Horizontal & Cross-Cutting Areas: Widening Participation & Strengthening the European Research Area (WIDERA), EU Mission - Cancer

CONSENT TO INFORMATION SHARING

I agree with the publication of my contact data: Yes