DIGITAL, INNOVATION, AND GREEN TECHNOLOGY PROJECT (DIGIT PROJECT)

DIGIT
DIGITAL, INNOVATION, AND GREEN TECHNOLOGY PROJECT

REPUBLIKA HRVATSKA
Ministry of Science, Education and Youth

THE WORLD BANK
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REPUBLIC OF CROATIA

MINISTRY OF SCIENCE, EDUCATION AND YOUTH

Donje Svetice 38, Zagreb 10 000, Croatia

DIGITAL, INNOVATION, AND GREEN TECHNOLOGY PROJECT (DIGIT PROJECT)

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ESMP CHECKLIST

DIGIT.2.1.02 CHALLENGE PROGRAM

DIGIT.1.2.03 PROFESSIONALIZATION OF RESEARCH CENTERS

DIGIT 2.2.01. SEAL OF EXCELLENCE

DIGIT 2.2.02. ROUTES TO SYNERGIES

DIGIT.1.2.02. TECHNOLOGY SCOUTING

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Rev. 1 – May 2026

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Rev. 3 – September 2026

CONTENTS

INTRODUCTION **1**

A. PROJECTS DESCRIPTION **9**

DIGIT.2.1.02.001 A comprehensive AI powered early warning system for digital management of water supply security, resilience, and sustainability (AquaGuardian) 9

DIGIT.2.1.02.004 ToxiCode: Transforming Venom Peptides into Precision Therapies by Deciphering and Refining their Evolutionary Code 13

DIGIT.2.1.02.012 Accelerated mineral carbonation of secondary raw materials as a strategy for carbon storage in construction products - ACCEL 16

DIGIT.2.1.02.014 Autonomous Robotic Technology for Environmental Monitoring, Intervention and Safety (ARTEMIS) 19

DIGIT.2.1.02.016 Smart Optimization of the Electrical Distribution System through Multidisciplinary Data Analytics and AI 22

DIGIT.1.2.03.011 FSB LINK - Professionalization and Linking of FSB Research Centers with Industry 24

DIGIT.1.2.03.019 Professionalization of the Research Center for Medical Bionics (RCMB) 26

DIGIT.2.2.01.007 Dwelling at the Edge between Land and Sea (DELS) 28

DIGIT.2.2.01.013 VirusHunter (VH) - ONE TEST FOR ANY VIRUS 31

DIGIT.2.2.01.014 Energy AI - ENAI 34

DIGIT.2.2.01.016 CONVIA - Multimodal Temporal Intelligence for Real-Time Knowledge Extraction from Audio-Visual Content Streams 36

DIGIT.2.2.01.018 BRIDGE – Bidsale for Real estate Innovation and Decision-making Grounded in Equity 38

DIGIT.2.2.01.019 IgG based Early and Precise Multimodal Diagnostics for ALS (NeuroFuse) 41

DIGIT.2.2.01.020 DEEPCLIMA – DEEP TECH PLATFORM FOR AI-DRIVEN CLIMATE RISK INTELLIGENCE 44

DIGIT.2.2.01.021 Next-generation AI agent for scalable cybersecurity 46

DIGIT.2.2.01.022 GlycoDiaRisk 48

DIGIT.2.2.02.012 Bridge2Health: Developing Capacities to Bridge Health Inequalities in Vulnerable Populations using well-tailored Biological Markers 51

DIGIT.2.2.02.017 FOREST Research and Innovation NETwork for Horizon Europe Synergies (FOREST-NET) 54

DIGIT.2.2.02.019 Building the Croatian Virtual Human Twin Ecosystem for Precision Medicine – TWINPATH 57

DIGIT.1.2.02.001 AI Auditor: Multi-Agent Engagement Quality Review 60

DIGIT.1.2.02.002 EdgeArrhythmia — Hierarchical Cascaded Inference for Resource-Efficient Real-Time Arrhythmia Detection on Edge Platforms 62

DIGIT.1.2.02.003 NeuroPlay Rehab — AI-Driven Motion Tracking for Remote Rehabilitation 65

DIGIT.1.2.02.005 RoadSense - System for intelligent monitoring of road conditions 67

DIGIT.1.2.02.006 M3I – Multi-Method Machine Intelligence for Zero-Label Concept Discovery in Evolving Text Streams 69

DIGIT.1.2.02.007 CORaL – Colorectal Oncology Research via Liquid biopsy 71

DIGIT.1.2.02.009 CorrIntel AI - AI-Assisted Corrosion Assessment of Steel Structures in Coastal and Industrial Environments 73

DIGIT.1.2.02.010 Fire Safety Voltage Limitation Device for Photovoltaic Power Plants 75

DIGIT.1.2.02.011 Tinker Labs Digital Modular STEAM Platform – Proof of Concept of a Scalable Physical-Digital Learning Infrastructure 78

DIGIT.1.2.02.012 KLAK - Proof of Concept for a Gamified Quiz Platform for Measurable Digital Brand Engagement 81

DIGIT.1.2.02.013 Agentic Decision-Making for Autonomous PTZ Camera Systems 84

B. MITIGATION MEASURES 87

1. Civil Works 87

2. Equipment 93

3. Occupational Health and Safety (OHS) 95

4. Waste Management 98

5. Animal Material 100

6. Hazardous Chemicals Management 103

7. Biodiversity and Environment Protection 106

8. Community Health and Safety 108

9. Intellectual Property 110

10. Data Protection 111

11. Artificial Intelligence and Cybersecurity 113

12. Procedures and Reporting in Case of Accident 114

13. Stakeholder Engagement 115

14. Vulnerable Groups 118

15. Cultural Heritage 120

C. MONITORING AND REPORTING 122

ANNEX 1. E&S MONITORING AND REPORTING TEMPLATE 123

ANNEX 2. INCIDENT / ACCIDENT REPORT FORM 124

ANNEX 3. PUBLIC CONSULTATIONS REPORT 126

ANNEX 4. PUBLIC CONSULTATIONS REPORT, MAY 21, 2026 129

ANNEX 5. NOTE, MAY 21, 2026 130

ANNEX 6. NOTE, SEPTEMBER 18, 2026 131

Introduction

The template presented below will be revised for specific projects to reflect scope of works and E&S concerns.

The ESMP Checklist provides "pragmatic good practice", and it is designed to be user friendly and compatible with WB safeguard requirements. The checklist-type format attempts to cover typical mitigation approaches to common civil works contracts with localized impacts.

This document will help assess potential environmental impacts associated with the proposed project, identify potential environmental improvement opportunities and recommend measures for the prevention, minimization and mitigation of adverse environmental and social impacts.

ESMP Checklist is a document prepared and owned by final beneficiaries. The Beneficiaries are responsible for the implementation of the ESMP Checklist as well as any subsequent corrective measures prescribed by PIU and WB.

The ESMP Checklist shall be part of the consortium agreement between the beneficiary, and all partners.

The ESMP Checklist shall be part of all contracts for works, goods and services regarding project activities (including contracts with outsourced laboratories, to explicitly ensure that environmental and social instrument requirements are applied).

Partners, contractors, sub-contractors, service providers or suppliers are responsible for the implementation of the ESMP Checklist as well as any subsequent corrective measures prescribed by the PIU and WB.

ESMP Checklist covers multiple projects under the Calls:

- DIGIT.2.1.02. Challenge Program;
- DIGIT.1.2.03. Professionalization of Research Centers;
- DIGIT 2.2.01. Seal of Excellence under the Synergies Program;
- DIGIT 2.2.02. Routes to Synergies under the Synergies Program;
- DIGIT.1.2.02. Technology Scouting.

Significant and/or recurring non-compliance with the requirements set out in this document may result in delays in payments and/or suspension of reimbursement.

Eligible activities under Call **DIGIT.2.1.02 Challenge Program** are as follows:

1. Adaptation works and infrastructure equipping: This includes modifications and upgrades (small-scale adaptation works carried out in accordance with the Ordinance on simple and other construction works and works (OG 112/17, 34/18, 36/19, 98/19, 31/20, 74/22, 155/23) to existing facilities (research infrastructure). It covers the procurement and the installation of necessary equipment to support mission-oriented research activities, ensuring that the physical infrastructure is capable of supporting innovative solutions.

2. Research activities (mandatory): Applicants are expected to base their project proposals on at minimum a validated proof-of-concept (PoC). Eligible activities involve conducting scientific research and developing new or improved mission-oriented solutions in digital transformation, and green transition. Eligible activities include industrial research

and experimental development aimed at exploring new or existing products, processes, and services, such as prototype testing and pilot projects. Data collection and analysis support these efforts, while innovation and technology assessments evaluate the impact and scalability of emerging solutions. Together, these activities are essential for advancing technological progress and achieving the project's mission-driven objectives.

3. Capacity building and dissemination of research findings and technologies: These activities focus on strengthening the skills and knowledge necessary for the effective implementation of mission-oriented projects. They include the dissemination of research findings and technologies through workshops, training sessions, and the development of collaborative platforms to promote the practical application of research outputs.

4. Knowledge and technology transfer (mandatory): This category covers involves activities related to the transfer of intellectual property (IP), licensing, and technology to ensure that innovations reach the market. Eligible activities include managing IP-related costs, such as patent fees and licenses, as well as facilitating technology transfer agreements.

5. Market analysis and business validation (mandatory): These activities include assessing the economic viability of research outcomes, developing commercialization strategies, conducting market analyses, and preparing other relevant documents to support the transition of developed solutions to the market.

6. Promotion and visibility (mandatory): Activities aimed at raising awareness of the project and its outcomes among stakeholders and the public. This includes organizing events, and other promotional activities to showcase the project's impact and relevance.

7. Project management activities (mandatory): Covering all administrative and managerial aspects necessary for the successful execution of the project, including planning, coordination, monitoring, and reporting. This also includes procurement activities. Effective project management ensures that the project stays on track, within budget, and achieves its objectives.

Eligible activities under Call **DIGIT.1.2.03 Professionalization of Research Centers** are as follows:

1. Organizational strengthening and process optimization

- Assessment and mapping of existing internal processes,
- Developing standardized operating procedures for key functions,
- Development of internal collaboration mechanisms,
- Defining procedures for collaboration with external stakeholders,
- Establishing procedures for technology transfer and commercialization, such as frameworks, guidelines, IP protocols, etc.

2. Optimization of access to infrastructure and services

- Conducting periodic surveys to gather user feedback and improve processes and protocols (mandatory sub-activity),
- Creating a digital inventory of research equipment and/or resources such as data, technologies, etc.: it should involve developing a structured, searchable database that provides comprehensive, up-to-date information on available infrastructure and/or assets, enabling efficient management, internal planning, and improved accessibility for

all users,
- Developing and optimizing protocols for equipment use, access, and resource sharing between internal teams and external partners, or any other users, based on FAIR (Findable, Accessible, Interoperable, Reusable) principles,
- Developing and/or implementing advanced software solutions for resource optimization and utilization (e.g., pricing, service offerings, available services, online scheduling/booking systems, data-sharing platforms, monitoring, and tracking systems for usage of facilities and equipment, such as number of users and hours, etc.),
- Maintenance and upgrades of existing research infrastructure (such as servicing and maintenance of existing research equipment).

3. Capacity building and competence development

- Organizing and participating in trainings, workshops, conferences, etc., on business development, intellectual property (IP) management, technology transfer, commercialization strategies, project management and leadership skills and related topics for academic and non-academic staff,
- Engaging external advisors (local or international) to provide mentorship in collaboration and partnership development.

4. Networking and collaboration

- Promoting the Research Centre's capabilities and collaboration opportunities to the private sector (e.g., marketing materials, digital campaigns),
- Organizing and participating in conferences, workshops, networking events, and industry days to showcase the infrastructure's capabilities,
- Establishing partnerships with similar infrastructures (national, EU and/or international) to share best practices,
- Developing and implementing a database to monitor existing and new collaborations between academic institutions and the private sector,
- Regular reporting and data analysis to support the management and improvement of collaboration activities,
- Technology scouting services – identifying and connecting relevant research teams with industry,
- External services related to collaboration agreements, intellectual property management, and business model development, technology transfer, etc.

5. Promotion and visibility

- Developing marketing materials such as brochures, videos, and case studies showcasing success stories,
- Launching targeted campaigns to attract new users from academia and industry,
- Maintaining an active online presence through social media and a dedicated website,
- Publication of research papers and disseminating research findings (e.g., organizing public events, developing media content), organizing and/or participating at national and international conferences, meetings, seminars and workshops.

6. Project management

- Encompasses all administrative and managerial aspects necessary for the successful execution of the project, including planning, coordination, monitoring, and reporting. Procurement activities are also included. Effective project management ensures that the project remains on track, within budget, and meets its objectives.

Eligible activities under Call **DIGIT.2.2.01 Seal of Excellence under Synergies Program** are only activities eligible within the ERC PoC Grant and MSCA PF calls for proposals are eligible for funding under this Sub-program.

1. ERC Poc Grant - eligible activities are those aimed at verifying the innovation potential of results generated within an ERC project, including:

- Establishing proof of concept
- Testing and validating the underlying idea
- Demonstration activities
- Clarifying the innovation potential of the results
- Assessing the commercial and/or societal potential
- Identifying a pathway to market or further development
- Developing intellectual property (IPR) protection strategies
- Conducting market research and business case development
- Supporting activities for further development, uptake, or commercialization

2. MSCA Postdoctoral Fellowships (FP) - Eligible activities are those forming part of an individual research and training project for the fellow, including:

- Implementation of a research and innovation project
- Advanced training through research
- Transfer of knowledge between sectors and countries
- Development of research and transferable skills
- Secondments to partner organizations
- Placements in the non-academic sector (where applicable)
- Dissemination and exploitation of research results
- Communication activities towards stakeholders and the public
- Networking activities
- Supervision and mentoring

3. European Innovation Council Pre-Accelerator – Widening (EIC Pre-Accelerator) - eligible activities are those aimed at supporting the development, validation and market readiness of innovative deep-tech solutions, including:

- Technology validation and maturation activities
- Proof-of-concept and demonstration activities
- Development and testing of innovative products, services or solutions
- Activities supporting the transition from laboratory validation to relevant environment application (TRL advancement)
- Market validation and customer discovery activities
- Business model development and commercialization planning

- Intellectual property protection and freedom-to-operate activities
- Investor readiness and access-to-finance preparation activities
- Coaching, mentoring and capacity-building activities
- Networking and collaboration activities within innovation ecosystems
- Dissemination, communication and exploitation of project results
- Activities supporting scale-up and preparation for follow-on funding opportunities, including the EIC Accelerator

Eligible activities under Call **DIGIT.2.2.02 Routes to Synergies under Synergies Program**

1. Preparation of projects for Horizon Europe calls for proposals8:

   a. Creating a project consortium:

   – Identifying and mapping potential consortium members;

   – Consulting with Horizon Europe National Contact Points (NCPs) or external experts on partner search and consortium building;

   – Organizing or participating in networking activities aimed at connecting with potential consortium members;

   – Presenting the project idea and research infrastructure, expertise and capacity through organizing and participating in meetings, events, open days, workshops or online tools;

   – Drafting briefing materials, consortium agreement and other documents outlining governance, financial contributions, intellectual property (IP) rights, and responsibilities.

   b. Preliminary RDI activities:

   – Conducting preliminary RDI activities such as feasibility studies to identify promising project ideas, explore, and develop research topics that will be the focus of future application for Horizon Europe calls;

   – Identifying, gathering and assessing preliminary data and existing research, technologies and methodologies to support the project idea.

   c. Preparation and writing of Horizon project proposal(s):

   – Contracting and coordinating with external experts and consultants to support preparation and writing of project proposal(s);

   – Organizing meetings and work sessions for project preparation.

2. Capacity building:

   a. Building and strengthening non-scientific skills of project staff, including project management, international collaboration, knowledge transfer, RDI management, and communication;

   b. Participating in training and mentorship programs, workshops and seminars designed to enhance and build expertise in specific areas connected with project's research idea;

   c. Engaging in study visits and short-term secondments at foreign organizations to gain

hands-on learning and international experience.

3. Showcasing research infrastructure potential:

   a. Development of marketing and communication materials such as brochures, fact sheets, infrastructure promotional videos, and virtual tours, as well as online tools and content;

   b. Organizing open days, workshops, tours, and demonstration sessions;

   c. Participating in fairs, expos, innovation forums, and similar events to promote existing research infrastructure.

4. Promotion and visibility: Promoting project results to a wider audience, including academic, industrial, and public stakeholders:

   a. Promoting the project activities, outcomes and impacts;

   b. Developing marketing materials such as brochures, flyers, and posters to promote the project at events, conferences, and online.

5. Project management:

   Encompasses all administrative and managerial aspects essential for the successful execution of the project, including planning, coordination, monitoring, and reporting. Effective project management ensures that the project remains on track, stays within budget, and meets its objectives.

Eligible activities under Call DIGIT.1.2.02. Technology Scouting are:

A. Activity 1: Project preparation

During the project preparation phase, applicants are required to engage a Technology Scout who will support them in defining the innovation challenge and translating it into a concrete project concept. Activities in this phase include identifying innovation needs and challenges relevant to companies and potential solutions, mapping research expertise, conducting preliminary feasibility and market assessments, and aligning the project idea with the applicant's strategic priorities. Together with the Scout, applicants should establish cooperation with relevant experts or research organizations, clarify technical, organizational and legal requirements, and ensure that the proposed Proof-of-Concept is realistic, clearly structured, and aligned with the objectives of the Call.

B. Activity 2: Industrial research (TRL 3-4) including contract research

This activity covers prototype development and demonstration of technical feasibility in laboratory environment, in line with one of the transformational goals defined within S3 2029 Thematic Priority Areas. The activity should focus on validating the technological concept and demonstrating its feasibility through analytical, experimental, and laboratory work. This includes designing and conducting research to test the critical functions or characteristics of the proposed solution, developing and refining models or prototypes, and integrating key components or subsystems for validation in a controlled laboratory environment. Applicants should use this phase to generate experimental data, verify that the technology performs as intended, and confirm that it can progress from theoretical or conceptual stages toward practical laboratory validation. Activities may also include defining

performance metrics, testing methodologies, and documenting results to support further development or demonstration.

C. Activity 3: Innovation cycle management

This activity includes the following:

- technology scouting services, such as: business validation and analysis related to the target use, users and the market for the potential product or services, scouting of additional experts, managing of contracts, monitoring of progress and development of strategies as well as identifying new finding opportunities;
- other external services: related to market analysis, feasibility studies, and product development strategies; consulting related to the management and protection of intellectual property and a preliminary search of patent databases; and development of a commercialization plan.

D. Activity 4: Project management, promotion and visibility

This activity covers all aspects required for effective implementation and dissemination of project results, including:

- Project management: including planning, coordination, monitoring, reporting and procurement necessary for successful project execution;
- Promotion and visibility: Activities aimed at raising awareness of the project and its outcomes among stakeholders and the public. This includes marketing, organizing events, and other promotional activities to highlight the project's impact and relevance.

The checklist is structured as follows:

A. Projects Description
B. Mitigation Measures
C. Monitoring and Reporting

Part A. Project Description - constitutes a descriptive part that describes the projects specifics in terms of project objective and activities, environmental and social impact identified and the list of mitigation measures to comply with.

Part B. **Mitigation Measures** - includes the environmental and social mitigation measures structured according to the categories and aspects they address.

Part C. Monitoring and Reporting is a monitoring plan for activities during project implementation. It retains the same format required for standard World Bank ESMPs.

ESMP Checklist will be publicly disclosed and consulted by publishing on the DIGIT web page and on the beneficiary's web page for two weeks.

ESMP Checklist implementation report will be submitted to WB semi-annually if not agreed differently.

Workers code of conduct (subject to WB approval) will be a part of bidding documentation and contracts with Contractors. Code of conduct will extend to sub-contractors and be a part of Contractor's contractual agreements.

Part B and Part C of the ESMP Checklist must be included as bidding documents for contractors.

GRM related obligations are included in procurement / bidding procedures for acquiring services of technical design, supervising engineer, construction project management, occupational health and safety (OHS) specialist and every other relevant service as well as during construction as contractor and subcontractor obligations.

Project activities shall comply with the ethical provisions outlined in the Code of Ethics and uphold the highest ethical standards.

A. Projects Description

DIGIT.2.1.02.001 A comprehensive AI powered early warning system for digital management of water supply security, resilience, and sustainability (AquaGuardian)

Program	DIGIT.2.1.02 CHALLENGE PROGRAM
Reference No	DIGIT.2.1.02.001
Project Title	A comprehensive AI powered early warning system for digital management of water supply security, resilience, and sustainability (AquaGuardian)
Beneficiary	University of Zagreb – Faculty of Chemical Engineering and Technology (FCET)
Partners	– University of Zagreb Faculty of Civil Engineering – University of Zagreb Faculty of Electrical Engineering and Computing – Endress+Hauser Ltd. – Genos Ltd.
Project Objective(s)	The overall objective of the AquaGuardian project is to contribute to the digitalization of the water sector by addressing key challenges related to efficiency and safety of drinking water distribution networks, thereby fostering stronger cross sectoral collaboration and innovation driven growth. Development and implementation of an integrated, AI driven intelligent monitoring system for drinking water distribution networks that enhance water safety and public health, ensures high water quality consistence, promotes resources efficiency and supports predictive maintenance. The solution provides real time, data driven decision making which quickly identifies and mitigates risks to protect human health. The system will integrate advanced sensors, secured communications and predictive analytics to reduce water loss, support resource efficient management and improve infrastructure resilience, especially in areas sensitive to climate risks, environmental disasters or legacy conflict damage. It will also accelerate digital and green transformation of water supply systems in alignment with the EU Green Deal and the Zero Pollution Action Plan. The AquaGuardian project supports Croatia's Smart Specialization Strategy (S3) 2029 and the National Development Strategy (NDS) 2030, contributing to a green, digital and health protective transformation of drinking water services. It aligns with four S3 Thematic Priority Areas: Digital Products and Platforms (AI-based monitoring and decision systems), Smart and Clean Energy (energy efficient water management), Personalized Healthcare (health protection through safe drinking water) and Security and Dual-Use (early-warning system for prevention,

	response, and remediation of water incidents). AquaGuardian also supports NDS 2030 Development Direction 3 – Green and Digital Transition, through ecological and energy transition, sustainable infrastructure and digitalization of essential services.
Project Activities	<u>Adaptation work and infrastructure equipping:</u> Minor interior adaptation works in existing laboratories and pilot facilities. Installation of monitoring stations, electrical/mechanical connections and equipment. (pilot infrastructure in the Sisak Water Utility area; two laboratories: at the University of Zagreb at Faculty of Chemical Engineering and Technology and Faculty of Civil Engineering.) <u>Development and optimization of monitoring technologies:</u> Laboratory work with chemicals, calibration solutions and analytical instruments. <u>Advanced bioanalytical platform for proactive health risk assessment:</u> In vitro tests using non-pathogenic immortalized human cell lines (HepG2). <u>Pilot implementation and real-time data collection</u> Field installation of sensors and monitoring stations within existing water utility infrastructures. <u>AI-supported monitoring, modelling and prediction</u> UAV (drone) inspections (thermal/RGB). Deployment of geotechnical EWS sensors. <u>Development of the digital twin and system integration</u> Real-time data integration with field equipment. <u>Platform development and communication infrastructure</u> IoT communication systems and data transmission. <u>Field trials, system validation and optimization</u> Testing of the full system in operational conditions. <u>Capacity building and dissemination</u> Training on safe operation of equipment and field procedures. <u>Promotion and Visibility</u> Public communication of water-related information. <u>Project Management Activities</u> Oversight of procurement and contractors

Environmental Impacts Identified	Environmental risks are moderate in magnitude, site-specific, predictable and easily manageable. All activities take place within existing laboratory facilities and the existing operational footprint of the Sisak Water Utility, with no greenfield construction and no interventions outside already developed areas. Minor construction and installation works will be carried out indoors and are limited to small-scale laboratory adaptations and the installation of monitoring stations. These activities may generate short-term dust, noise and small quantities of non-hazardous construction waste, but no heavy machinery or excavation is foreseen, and impacts will be effectively controlled through standard good construction practices. Laboratory activities involve the use of small quantities of chemical reagents, including acids, bases, solvents and calibration solutions, all of which will be handled under established institutional procedures and national/EU chemical safety regulations. As a result, only small amounts of hazardous laboratory waste will be generated and will be disposed of through licensed waste management systems, ensuring full compliance with safety standards. Biological work is limited to the use of non-pathogenic immortalized human cell lines (HepG2) in BSL-1 conditions; no pathogens, primary tissues or high-risk biological agents will be used, and biosafety risks remain minimal and adequately controlled with routine laboratory procedures. Field deployment of sensors and monitoring equipment will occur exclusively within the existing utility infrastructure areas, without the need for land acquisition or disturbance to natural habitats, including Natura 2000 sites. These activities may generate small amounts of packaging or calibration waste and may cause minor, temporary disturbance during installation, but impacts are negligible and easily mitigated. The procurement and use of electronic monitoring equipment may produce limited amounts of electronic waste over the project lifetime; this will be managed in accordance with EU WEEE (Waste Electrical and Electronic Equipment Directive) requirements. UAV (Unmanned Aerial Vehicles) operations for leak detection and aerial inspection have no meaningful environmental impact beyond battery use and short-term presence in the airspace. The project does not introduce any new sources of pollution to air, water or soil. On the contrary, by improving monitoring, early warning and operational response, it contributes to reducing the risk of accidental contamination events and improving environmental protection.
Social Impact Identified	Minor adaptation works of research infrastructure, and installation of monitoring and auxiliary equipment within existing premises and utility areas are foreseen. Potential adverse social impacts are limited in scope and are considered manageable. Temporary nuisances may occur during the installation of pilot equipment, such as short-term noise, dust or minor traffic disruptions during the placement of prefabricated containers. Standard OHS risks may also be present, especially if external contractors are involved. They are planned to be mitigated through

	compliance with national labor regulations and the Labor Management Procedures. The Project involves the development of AI-based mathematical models for predicting conditions within the water supply system using only measured technical data. No personal data is used or processed as part of this work. Research activities may touch on topics that are sensitive to the public (e.g. water safety, contamination, infrastructure vulnerability), which will be addressed through transparent communication, stakeholder engagement and information sharing with local communities, water users and authorities.
Mitigation Measures Categories	
Civil Works (1.)	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Animal Material (5.)	
Hazardous Chemicals Management (6.)	
Biodiversity and Environment Protection (7.)	
Community Health and Safety (8.)	
Intellectual Property (9.)	
Data Protection (10.)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.1.02.004 ToxiCode: Transforming Venom Peptides into Precision Therapies by Deciphering and Refining their Evolutionary Code

Program	DIGIT.2.1.02 CHALLENGE PROGRAM
Reference No	DIGIT.2.1.02.004
Project Title	ToxiCode: Transforming Venom Peptides into Precision Therapies by Deciphering and Refining their Evolutionary Code
Beneficiary	University of Zagreb – Faculty of Food Technology and Biotechnology (FFTB)
Partners	– University of Zagreb Faculty of Food Technology and Biotechnology (FFTB, RO) – Institute Ruđer Bošković (IRB, RO) – In Silico d.o.o. (In silico, SME) – Impuls savjetovanje d.o.o. (Impuls, SME)
Project Objective(s)	Overall Objective(s) To develop and validate an innovative, AI-driven generative platform for the de novo design of therapeutic peptides. To establish a paradigm-shifting, digitally-native R&D pipeline that accelerates the discovery of novel biotechnological solutions, contributing directly to digital transformation and green transition goals. To create a fully integrated R&D solution able to cut discovery times by up to 50%, reduce animal use and environmental impact by at least 70%, and place Croatia and the EU on a competitive trajectory in the rapidly expanding peptide therapeutics and synthetic biology markets. Specific Objective(s) The project achieves its mission through five research objectives (Months 1-36): (Months 1-12): Develop a proprietary knowledge graph integrating global public data (UniProt, ToxProt, STRING) with local, ethically sourced datasets (e.g., novel Croatian proteomics via King's College London partnership). (Months 6-20): Build and validate a hybrid LLM+GNN predictive engine capable of accurately scoring peptide-target interactions, achieving ROC-AUC > 0.9 on validation datasets. (Months 16-30): Develop constrained generative AI framework for de novo peptide design, targeting generation of at least 2,000 candidate peptides and computational optimization for efficacy, safety, and manufacturability. (Months 20-36): Experimentally validate and characterize selected peptide candidates via chemical synthesis and a comprehensive suite of enzymatic, in vitro, and cell-based assays, targeting at least three

	candidates advancing to precommercial validation. (Months 24-36): Translate validated expertise into a market-ready, scalable platform, with dissemination activities, technology transfer actions, and commercialization strategy integrated. (*It is relevant to highlight that this objective aims for milestone achievement including the Platform validated at TRL-5, and at least three industry collaborations and/or LOIs established)
Project Activities	– Minor interior civil works for installation of new analytical instruments (Tandem MS/MS, SPPS robot), generating small amounts of construction waste and short-term indoor dust/noise. – Procurement of research equipment includes an Automated SPPS Robot, Flow Cytometer, Tandem Mass Spectrometer (MS/MS), High-Resolution Fluorescence Microscope, and relevant IT equipment. – Chemical safety and hazardous waste from Solid Phase Peptide Synthesis (SPPS), solvents and reagents, and chromatography waste streams. – Biological and cell-culture waste from in vitro and cell-based assays, requiring BSL-1/2 procedures and proper segregation and disposal. – Marine sampling impacts (minimal) related to ethically approved low-impact collection of local invertebrate species; biodiversity risks considered low and strictly mitigated. – Standard OHS risks associated with chemical synthesis, handling reagents, operating flow cytometers, mass spectrometers and pressure/vacuum systems. – E-waste generation due to procurement of complex laboratory and IT equipment (MS/MS, flow cytometer, AI/HPC systems). – Energy consumption impacts from cloud computing and local HPC resources for AI model training. – Data security risks (limited) linked to handling biological/chemical datasets—no personal data are used, full GDPR compliance confirmed.
Environmental Impacts Identified	The project presents moderate environmental risk due to minor interior adaptation works, the use of chemicals and solvents in Solid Phase Peptide Synthesis (SPPS), and the generation of chemical and biological laboratory waste during in vitro and cell-based assays. Additional impacts include low-intensity marine sampling, operation of specialized laboratory equipment such as the Flow Cytometer and Tandem Mass Spectrometer (MS/MS), and increased energy use linked to High-Performance Computing (HPC) resources for Artificial Intelligence (AI) model training. All activities take place within existing laboratory facilities under established chemical safety measures, Biosafety Level 1 and 2 (BSL-1/BSL-2) procedures, and hazardous-waste management protocols. Identified impacts are localized, predictable and effectively mitigated through standard laboratory safety practices and strict biodiversity protection measures. The project has no interaction with protected areas, no outdoor emissions and no expected impacts on surrounding communities. The project includes minimal-impact marine

	sampling of local non-protected invertebrate species, conducted outside protected areas and under strict ethical and biodiversity-preservation protocols. Sampling is small in scale, does not affect species populations or habitats, and is fully compliant with national and EU regulations. Marine sampling does not cause pollution or species disturbance, as it is small-scale, non-destructive, limited to non-protected invertebrates, and conducted under strict ethical and biodiversity-preservation protocols.
Social Impact Identified	Minor adaptation works are planned mainly for the installation of the Tandem Mass Spectrometer and SPPS Robot in existing laboratories. Expected and standard OHS risks are related to chemical synthesis (A4), handling reagents (A5), and operating new high-tech research equipment. Data security risks (limited) linked to handling biological/chemical datasets-no personal data are used, full GDPR compliance confirmed. A digitally-native generative Artificial Intelligence (AI) platform for the de novo design of venom-inspired therapeutic peptides, leveraging a hybrid Large Language Model (LLM) and Graph Neural Network (GNN) is to be established. The AI system primarily uses biological, chemical, and proteomics data without any personal data. The Project carries moderate social risk due to the minor adaptation works of existing facility, equipment installation, development of AI platform for the de novo design of venom-inspired therapeutic peptides and standard OHS risks.
Mitigation Measures Categories	
Civil Works (1.)	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Animal Material (5.)	
Hazardous Chemicals Management (6.)	
Biodiversity and Environment Protection (7.)	
Community Health and Safety (8.)	
Intellectual Property (9.)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.1.02.012 Accelerated mineral carbonation of secondary raw materials as a strategy for carbon storage in construction products - ACCEL

Program	DIGIT.2.1.02 CHALLENGE PROGRAM
Reference No	DIGIT.2.1.02.012
Project Title	Accelerated mineral carbonation of secondary raw materials as a strategy for carbon storage in construction products - ACCEL
Beneficiary	University of Zagreb Faculty of Civil Engineering
Partners	– Croatian Geological Survey (HGI) – Indeloop – Nexe – Beton Lučko (BL) – Urbanex
Project Objective(s)	The core research objective of ACCEL is to transform 50-100% of underutilised regional secondary raw materials into at least 2 net-zero construction products by permanently sequestering 10% CO_2 through accelerated mineral carbonation. This approach not only enables long-term carbon storage, but also creates value-added products from waste, contributing to the decarbonisation and circular economy of the construction sector. Specific objectives of the project are: SO1 – within 1 year of the project, identify at least 3 secondary raw materials with at least 30% CO2 storage capacity and sufficient availability to replace 30% of supplementary cementitious materials used in Croatia (approx. 60,000 tons/year), SO2 – within 3 years of the project, design at least two construction products based on carbonated secondary raw materials with equivalent technical performance and at least 70% lower attributed CO2 emissions compared to conventional products on the market, validated through the objective Life Cycle Assessment (LCA), SO3 – within 3 years of the project, conduct market needs analysis (current and within 5 years), based on this analysis create commercialization strategy of developed construction products, targeting at least 20% market uptake of currently produced chosen products with equivalent technical performance, SO4 – at the end of the project, propose at least one viable business model covering the entire value chain and the production logistics (consisting of secondary raw material producer with adequate quantity of raw material, accelerated carbonation procedure and construction product manufacturer producing targeted construction product), SO5 – throughout the project, organize 3 dedicated workshops with at

	least 30 participants, to build awareness and foster collaboration among all stakeholders in the construction value chain about consumer responsibility, while showcasing ACCEL as a leading example of collaborative, multi-stakeholder innovation.
Project Activities	Activity 1 Infrastructure equipping (A1) Only small pieces of equipment will be acquired, while the rest of the costs connected to the equipment are rather maintenance and consumables, which are used to ensure that the tests are performed according to the established protocols in cooperation with EU leading institutions. Activity 2 Research activities (A2) The core research objective of ACCEL is to transform 50-100% of underutilized regional secondary raw materials into at least 2 net-zero construction products by permanently sequestering 10% CO_2 through accelerated mineral carbonation. Activity 3 Capacity building and dissemination of research findings and technologies (A3) Activity 4 Knowledge and technology transfer (A4) Activity 5 Market analysis and business validation (A5) Activity 6 Promotion and visibility (A6) Activity 7 Project management (A7)
Environmental Impacts Identified	The environmental risk is assessed as Moderate. Project activities are primarily laboratory-based and focus on research, testing, and validation of accelerated mineral carbonation processes using secondary raw materials, without civil works or field interventions in sensitive areas. Potential environmental risks are mainly associated with the handling, testing, and processing of secondary raw materials and laboratory-scale carbonation experiments, including potential generation of non-hazardous waste streams, limited use of chemicals for material characterization, and occupational exposure to fine particulate matter and CO_2 in controlled laboratory settings. These risks are site-specific, predictable, and manageable, and can be effectively mitigated through the application of standard laboratory safety procedures, proper waste management practices, and compliance with national environmental, OHS, and chemical safety regulations. The project is expected to deliver net positive environmental impacts, including reduced CO_2 emissions and diversion of construction and industrial waste from landfilling, which outweigh the limited and temporary environmental risks during implementation.

Social Impact Identified	From a social perspective, the project is assessed as Moderate Risk, primarily due to its laboratory research activities that include material pre-screening - identifying and prioritizing secondary materials, physical and chemical characterization of chosen materials, AI-driven data integration and predictive modelling – building a decision-making framework to classify and rank waste materials, carbonation potential assessment - quantifying CO_2 uptake capacity under controlled conditions. OHS risks are considered manageable and within the normal range for R&D projects. Purchase of equipment is limited to small pieces as all activities are planned to be carried out in the established laboratories.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Hazardous Chemicals Management (6.)	
Biodiversity and Environment Protection (7.)	
Intellectual Property (9.)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.1.02.014 Autonomous Robotic Technology for Environmental Monitoring, Intervention and Safety (ARTEMIS)

Program	DIGIT.2.1.02 CHALLENGE PROGRAM
Reference No	DIGIT.2.1.02.014
Project Title	Autonomous Robotic Technology for Environmental Monitoring, Intervention and Safety (ARTEMIS)
Beneficiary	University of Zagreb Faculty of Electrical Engineering and Computing
Partners	– Centre of Excellence MARBLE – University of Rijeka, Faculty of Maritime Studies – ISKRA Shipyard 1 LLC – Visage Technologies L.t.d. – DOK-ING d.o.o.
Project Objective(s)	Overall objective is development of a green, autonomous surveillance and preservation system to be deployed in protected areas. The project consists of two main scenarios related to protected maritime and land areas, connected by a common infrastructure of energy, communication, situational awareness, surveillance, and manipulation systems. Specific objectives are: – Autonomous USV platform – Autonomous UGV platform – Perception system capable of perceiving different situations in the environment Control system for USV – Control system for UAV – Cooperative UAV exploration and mapping system – UAV recharging platform – Manipulation system for picking up different objects – Green energy base stations for recharging autonomous land and maritime vehicles – Secure and reliable communication for heterogeneous robot units. – Radio signal triangulation
Project Activities	– Research activity: - WP1 Requirements and specifications location is at applicant and partner headquarters (Zagreb, Rijeka, Šibenik) - WP2 USV and UGV platform preparation - Location is at Iskra and Dok-ing facilities. Iskra shipyard (located in Šibenik) will be in charge of producing USV, Dok-ing (located in Zagreb) for producing UGV. There will be no hazardous substances used. - WP3 Environmental perception and secure communication – Location will be Rijeka and Zagreb at headquarters of applicant and partners. Several experimental videos will be gathered in protected areas (Krka, Kornati, Lonjsko polje)

	- WP4 Methods for controlling robots – Location will be Rijeka and Zagreb at headquarters of applicant and partners. - WP5 Energy management - Location will be Zagreb, Rijeka and Šibenik at headquarters of applicant and partners. - WP6 Integration - Location is at Iskra and Dok-ing facilities. Iskra shipyard (located in Šibenik) will host integration of systems on USV, Dok-ing (located in Zagreb) will host integration of systems on UGV - WP7 Validation – Initial validation of USV will be done in Iskra facilities in Šibenik and UniRi facilities in Rijeka, while final will include validation in Krka and Kornati National Parks. Initial validation of UGV will be done in Dok-ing facilities, as well as new applicant outdoor testing arena, while final validation will include Lonjsko polje nature park and Krka National Park. – Adaptation works and infrastructure equipping - Location will be applicant facilities in Zagreb – Capacity building and dissemination of research findings and technologies – Knowledge and technology transfer – Market analysis and business validation – Promotion and visibility – Project management
Environmental Impacts Identified	The environmental risk of the project is assessed as moderate. Project activities primarily involve research, development, testing and validation of autonomous robotic systems, with limited adaptation works and equipment installation in existing facilities. Environmental risks are mainly associated with field testing in protected natural areas, including the use of unmanned aerial, ground and surface vehicles, temporary disturbance to habitats, noise, and potential unintended interactions with sensitive ecosystems. Additional risks relate to equipment testing, battery systems, and laboratory activities, which may generate limited amounts of waste and require proper handling of materials, as well as data security and privacy considerations linked to drone operations and monitoring systems. These risks are site-specific, temporary, and reversible, and can be effectively managed through adherence to permitting requirements, coordination with protected area authorities, implementation of biodiversity protection measures, and application of established environmental, safety, and monitoring procedures.
Social Impact Identified	Identified social impacts are related to OHS due to laboratory research, equipment installation and field work. The project involves data protection issues of videos collected during experiments taken in public space that may contain vehicles and people. The measure regarding AI should be implemented during development of autonomous surveillance and preservation system to be deployed in protected areas.

Mitigation Measures Categories
Equipment (2.)
Occupational Health and Safety (OHS) (3.)
Waste Management (4.)
Animal Material (5.)
Hazardous Chemicals Management (6.)
Biodiversity and Environment Protection (7.)
Community Health and Safety (8.)
Intellectual Property (9.)
Data Protection (10.)
Artificial Intelligence and Cybersecurity (11.)
Procedures and Reporting in Case of Accident (12.)
Stakeholder Engagement (13.)

DIGIT.2.1.02.016 Smart Optimization of the Electrical Distribution System through Multidisciplinary Data Analytics and AI

Program	DIGIT.2.1.02 CHALLENGE PROGRAM
Reference No	DIGIT.2.1.02.016
Project Title	Smart Optimization of the Electrical Distribution System through Multidisciplinary Data Analytics and AI
Beneficiary	Faculty of Science, University in Zagreb – PMF
Partners	– Faculty of electrical engineering and computing, University in Zagreb – FER – Adnet d.o.o. za inženjerstvo, proizvodnju i trgovinu – HEP – Operator distribucijskog sustava d.o.o. – HEP ODS
Project Objective(s)	Innovative Software Solution for Optimization of the EDS Improvement of the DSOs business processes
Project Activities	WP1 – Infrastructure Setup and Data Integration WP2 – Research activities WP2.1 - Data Integration and Modeling WP2.2 –AI and Advanced Analytics Development WP2.3 – Prototype Development and Validation WP2.4 - Business Case Definition WP3 – Knowledge and Technology Transfer WP4 – Capacity Building and Dissemination WP5 - Market analysis and business validation WP6 - Promotion and visibility WP7 – Project Management and Coordination
Environmental Impacts Identified	Environmental risks associated with the project are assessed as Low. Project activities are exclusively digital and software-oriented and are implemented within existing institutional facilities and a local data center. The project does not involve civil works, land acquisition, field activities, laboratory work involving chemicals or biological materials, nor any interventions in protected natural areas. The only identifiable environmental aspects are related to electricity consumption associated with the operation of high-performance computing infrastructure (GPU server) and the potential generation of electronic waste at the end of the equipment life cycle. No direct emissions to air, water or soil are generated, and no impacts on biodiversity, water bodies, soil or natural habitats are expected. Environmental impacts are therefore indirect, limited in scale and fully contained within existing developed infrastructure.

Social Impact Identified	From a social perspective, the project is assessed as Moderate Risk, primarily due to its systemic and cross-sectoral nature, rather than direct physical or community-level impacts. Project activities include work in an IT laboratory environment and the operation of high-performance computing infrastructure, which implies the presence of standard occupational health and safety (OHS) risks typical for IT and server-room environments. These risks are not exceptional in nature but are relevant within the overall social risk profile. The project applies advanced artificial intelligence and machine learning methods, including deep learning, time-series forecasting and clustering, to predict system behavior and optimize electricity distribution operations. In addition, socio-environmental analytics are introduced through the integration of meteorological, demographic and behavioral data into technical grid models. This multidisciplinary data integration represents a step change beyond conventional DSO analytics, which traditionally operate within isolated technical domains. Although no personal data are processed, and all datasets provided by HEP ODS are fully anonymized and aggregated at the level of feeders or substations, the project still operates at the interface between digital decision support systems and critical energy infrastructure. Potential social relevance therefore stems from the indirect influence of AI-based analytics on operational decision-making, grid resilience, service reliability and public trust, rather than from direct interaction with individuals or communities. No project activity requires interaction with individuals or groups of people, and no stakeholder displacement, access restriction or direct social disturbance is anticipated.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Intellectual Property (9.)	
Data Protection (10.)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.03.011 FSB LINK - Professionalization and Linking of FSB Research Centers with Industry

Program	DIGIT.1.2.03 PROFESSIONALIZATION OF RESEARCH CENTERS
Reference No	DIGIT.1.2.03.011
Project Title	FSB LINK - Professionalization and Linking of FSB Research Centers with Industry
Beneficiary	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture
Project Objective(s)	The overall objective of FSB LINK is to improve research infrastructure management at FSB, both through process optimization, digitalization, and raising capacity of staff; and intensify and professionalize the collaboration of FSB's research centers CRTA and ORCHID, and other FSB research groups, with the private sector. This holistic managerial approach and the implementation of the project's activities will lead to the increase of project- and business-oriented skills of both administrative and supporting staff, minimization of the administrative burden and optimization of equipment utilization. The long-term impact of the project is a change of mindset of researchers towards innovation and technology transfer measured through a significant increase of intellectual property applications filled, technology transfers realized and increase of collaboration projects and services realized with the private sector.
Project Activities	Activity 1. Organizational strengthening and process optimization FSB will establish clear and standardized procedures for internal and external collaborations, ensuring transparency and legal certainty in cooperation with industry. The activity builds on the ongoing process mapping (launched in 2023 and intensified within the ERP implementation in 2025) and the existing Intellectual Property (IP) regulations and practices already developed in cooperation with CTT Ltd. Activity 2 Optimization of access to infrastructure and services Activity 3 Capacity building and competence development Activity 4 Networking and collaboration
Environmental Impacts Identified	Environmental risk is low. The project supports basic servicing and annual maintenance of existing equipment (robots, CNC, 3D printers, towing tank), which generates small quantities of technical waste and requires limited use of lubricants and replacement consumables. All operations remain within established institutional OHS and licensed waste disposal procedures. However, due to the direct manipulation of materials during equipment servicing, preparation of a short ESCOP is recommended in order to

	document PPE use, storage of technical consumables, waste segregation and take-back arrangements for spent parts.
Social Impact Identified	Risks are low but relate to inclusiveness, stakeholder participation, and data protection. There is a possibility of low engagement from external stakeholders or uneven participation across different groups. This will be addressed through proactive outreach. Strict procedures will be enforced to ensure compliance with GDPR. Although the stakeholders have not been engaged during project preparation the stakeholder engagement during project implementation is well elaborated. The risk regarding the social aspect is assessed as low.
	Mitigation Measures Categories
	Equipment (2.)
	Occupational Health and Safety (OHS) (3.)
	Waste Management (4.)
	Intellectual Property (9.)
	Data Protection (10.)
	Procedures and Reporting in Case of Accident (12.)
	Stakeholder Engagement (13.)

DIGIT.1.2.03.019 Professionalization of the Research Center for Medical Bionics (RCMB)

Program	DIGIT.1.2.03 PROFESSIONALIZATION OF RESEARCH CENTERS
Reference No	DIGIT.1.2.03.019
Project Title	Professionalization of the Research Center for Medical Bionics (RCMB)
Beneficiary	University of Split, Faculty of Science
Project Objective(s)	To professionalize and strengthen the management, accessibility, and sustainability of the Research Center for Medical Bionics (RCMB), positioning it as a nationally relevant and internationally competitive hub for clinical and translational research in medical bionics, with a particular focus on hearing and neuroelectronics. The impact of the project will be reflected in the recognition of RCMB as a nationally relevant and internationally competitive hub for clinical and translational research in medical bionics.
Project Activities	WP1 – Capacity Building and Professionalization WP2 – Networking and Collaboration WP3 – Technology Transfer and Innovation Exploitation WP4 – Promotion and Visibility WP5 – Project Management
Environmental Impacts Identified	The project involves small volumes of hazardous substances and BSL-2 laboratory activities, but all activities occur within an existing licensed laboratory environment under established SOPs, certified waste handling, and institutional OHS controls. However, due to the direct manipulation of hazardous materials (e.g. solvents, solder alloys, Li-ion cells) within BSL-2 laboratory workflows, PPE requirements, waste segregation (chemical / e-waste / battery), ventilation controls and spill response arrangements.
Social Impact Identified	The project activities include laboratory research (BSL-2). Personal data will be collected with explicit informed consent, GDPR DPIA if needed. Vulnerable groups involved are people with hearing loss. During project preparation prior consultations with clinical partners and internal university consultations were held. The stakeholder groups and methods of engagement during project implementation are well elaborated. The risks regarding the social aspect are assessed as moderate due to the terminal use of laboratory animals, which requires strict compliance with animal welfare, ethical standards, and applicable regulatory requirements, OHS risks related to BSL-2 laboratory, involvement of vulnerable groups. However, the financing will primarily support staff,

	training, and capacity building. Overall ES risk is moderate.

Mitigation Measures Categories
Equipment (2.)
Occupational Health and Safety (OHS) (3.)
Waste Management (4.)
Animal Material (5.)
Hazardous Chemicals Management (6.)
Intellectual Property (9.)
Data Protection (10.)
Procedures and Reporting in Case of Accident (12.)
Stakeholder Engagement (13.)
Vulnerable Groups (14.)

DIGIT.2.2.01.007 Dwelling at the Edge between Land and Sea (DELS)

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.007
Project Title	Dwelling at the Edge between Land and Sea: An isotope reading of breeding and fishing from the Po Delta to the Adriatic shores, 1st–16th c. CE
Beneficiary	Institute for Anthropological Research
Project Objective(s)	**Overall Objective(s)** To investigate human subsistence strategies and ways of living at the interface between land and sea from the 1st to the 16th century CE, using isotopic and biomolecular analysis of archaeological faunal remains. To provide new scientific insights into historical breeding and fishing practices in the Po Delta and Adriatic region through advanced analytical techniques. **Specific Objective(s)** The project will: - Apply isotopic analysis to reconstruct diet, mobility, and environmental interactions of past populations. - Use ZooMS and related biomolecular methods to identify faunal remains and refine species attribution. - Integrate zooarchaeological, environmental, and biochemical data to better understand long-term human-environment interactions; including ecological adaptation across wetland and coastal landscapes. - Contribute to scientific knowledge and dissemination in the fields of archaeology, bioarchaeology, and environmental history.
Project Activities	WP1 – Faunal Sampling & Zooarchaeological Analysis WP2 – Zooarchaeology by Mass Spectrometry (ZooMS) peptide fingerprinting to refine taxonomic identification WP3 – Multi-Isotope Analyses WP4 – Project Management and Dissemination WP5 – Data Integration & GIS-Based Spatial Modelling All laboratory activities (zooarchaeological, proteomic and isotopic) will be conducted at the Institute for Anthropological Research in Zagreb, using specialised facilities for bioarchaeological and biomolecular analyses. The project applies well-established, minimally invasive analytical techniques (e.g. ZooMS and stable isotope analysis), following standard international protocols and best practices. Sampling

	is limited to very small quantities of material and prioritises already fragmented or non-diagnostic areas to preserve the integrity of archaeological specimens.
Environmental Impacts Identified	The project is associated with a low environmental risk. All activities are limited to laboratory-based analysis of archaeological faunal remains conducted within existing institutional facilities. The project does not involve civil works, emissions, discharges, or significant waste generation, nor does it include the use of hazardous substances or high-risk laboratory procedures. Energy and resource consumption are minimal and within standard operational levels. There is no interaction with natural habitats, protected areas, or biodiversity, as no fieldwork or environmental sampling is conducted. The only specific consideration relates to minimally invasive sampling of archaeological materials, which is carried out under appropriate permits and in accordance with cultural heritage protection requirements. Sampling follows a conservation-first approach, including case-by-case authorisation by competent institutions and authorities, use of minimally invasive techniques, and full documentation to ensure traceability and preservation of material integrity. Given the low risk profile, no standalone environmental assessment instrument is required. However, the project will implement the applicable measures from the generic ESMP Checklist, including those related to occupational health and safety, handling of biological (archaeological) material, and cultural heritage protection.
Social Impact Identified	The project carries low social risk, as it is limited to laboratory-based research without interaction with communities, human subjects, or vulnerable groups, and without impacts on community health and safety or personal data processing. The research involves the analysis of archaeological faunal remains, requiring careful handling of cultural heritage and biological materials in accordance with applicable legal frameworks and institutional procedures. All sampling and analysis activities are subject to formal authorisation by responsible institutions and competent heritage authorities, ensuring compliance with cultural heritage protection regulations. Associated occupational health and safety risks are minimal and managed through established institutional procedures. Potential impacts are low in scale and confined to controlled laboratory conditions, while positive impacts relate to scientific advancement and knowledge dissemination. The project is aligned with the principles of the MSCA Green Charter through sustainable research practices. Given the overall low-risk profile and absence of significant impacts, social risks will be addressed through the implementation of applicable measures from the generic ESMP Checklist, including specific measures to manage minor risks related to cultural heritage.

Mitigation Measures Categories
Occupational Health and Safety (OHS) (3.) Applicable: **1–3, 5–13, 17–19, 21–24**
Waste Management (4.) Applicable: **1–3, 10–14**
Animal Material (5.) Applicable: **1–2, 4–5, 10–18, 20–26**
Community Health and Safety (8) Applicable: **1–2, 4–5, 11–13**
Intellectual Property (9)
Procedures and Reporting in Case of Accident (12.)
Stakeholder Engagement (13.) Applicable: **1–7, 9, 11–13**
Cultural Heritage (15.)

DIGIT.2.2.01.013 VirusHunter (VH) - ONE TEST FOR ANY VIRUS

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.013
Project Title	VirusHunter (VH) - ONE TEST FOR ANY VIRUS
Beneficiary	BioDetect Solutions
Project Objective(s)	The overall objective of the VirusHunter project is to develop and validate a next-generation diagnostic platform capable of detecting all clinically relevant viruses in a single, unbiased test, including novel and emerging pathogens. The project aims to advance VirusHunter from proof-of-concept stage (TRL 4) to a clinically validated prototype ready for further commercial development (TRL 5–6). VirusHunter is based on a novel membrane-bait technology that displays human host-cell receptors for direct viral capture from patient samples, followed by high-resolution mass spectrometry identification. Unlike conventional diagnostics that rely on predefined viral targets, the VirusHunter platform enables sequence-independent detection and therefore significantly improves preparedness for future outbreaks and emerging infectious diseases. Specific objectives of the project are: • Optimization of manufacturing processes and stability of VirusHunter membrane-based baits. • Integration of bait technology into a standardized and scalable diagnostic workflow. • Validation of analytical and clinical performance in selected diagnostic use cases. • Benchmarking of the platform against current standard-of-care diagnostic technologies. • Development of intellectual property protection strategy and regulatory roadmap. • Validation of business model and market-access strategy through collaboration with healthcare stakeholders and early adopters. • Strengthening European resilience against viral outbreaks through rapid and accurate diagnostics.
Project Activities	**Project Activities** • Optimization and laboratory-scale production of membrane-based viral capture baits. • Stability testing and quality assurance of biological and analytical components. • Development and standardization of sample preparation and virus-capture workflows. • Integration of high-resolution mass spectrometry for virus identification. • Analytical validation using clinical and laboratory samples.

	• Comparative benchmarking against PCR and other standard viral diagnostic methods. • Data analysis, algorithm optimization and interpretation of diagnostic outputs. • Intellectual property management and preparation of regulatory documentation. • Market analysis, stakeholder engagement and business-model validation. • Dissemination, communication and commercialization preparation activities. • Project management and coordination.
Environmental Impacts Identified	The environmental risk associated with the VirusHunter project is assessed as moderate. Project activities are primarily laboratory-based and implemented within existing research and diagnostic facilities, without construction works, land acquisition, or interventions in environmentally sensitive areas. Potential environmental impacts are mainly related to the use of biological samples, laboratory reagents, solvents, consumables, and operation of analytical equipment such as high-resolution mass spectrometers. Laboratory activities may generate limited quantities of hazardous chemical and biological waste, including contaminated consumables and reagents, which will be managed through established institutional biosafety and hazardous-waste disposal procedures in compliance with Croatian and EU regulations. The project may also contribute to limited electronic waste generation associated with laboratory and IT equipment over the equipment lifecycle, as well as indirect environmental impacts related to electricity consumption from analytical instrumentation and data-processing infrastructure. These impacts are localized, predictable, and manageable through existing laboratory safety and waste-management systems. No significant emissions to air, soil, or water are expected. The project is anticipated to have an overall positive societal and environmental contribution by enabling faster identification of viral infections, improving outbreak preparedness, reducing unnecessary treatments, and supporting more efficient public-health responses.
Social Impact Identified	The social risks are assessed as moderate due to unresolved issues related to the scope of sample collection (the of use commercially available cell lines and clinical samples), inclusion of potentially vulnerable groups, and lack of clarity around ethical protocols, consent, GDPR compliance, and secondary use of samples. The OHS risks should be addressed regarding the work in BSL-II laboratory.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	

Waste Management (4.)
Hazardous Chemicals Management (6.)
Community Health and Safety (8.)
Intellectual Property (9.)
Data Protection (10.)
Artificial Intelligence and Cybersecurity (11.)
Procedures and Reporting in Case of Accident (12.)
Stakeholder Engagement (13.)

DIGIT.2.2.01.014 Energy AI - ENAI

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.014
Project Title	Energy AI - ENAI
Beneficiary	Green Energy Pal d.o.o.
Project Objective(s)	The LLM-based solution is developed to serve both energy end-users & companies across the energy supply chain. Energy end-users will better understand their energy behaviour, make informed choices, receive tailored suggestions for energy-related actions & investment opportunities, & benefit from automatic optimisation of energy usage. Energy companies will enhance internal processes, gain deeper insight into customer behaviour, & offer more services to their clients. In addition, headquarters of multi-branch companies will be able to manage & support their branches more effectively while gaining a complete overview of energy performance across all sites.
Project Activities	Project activities focus on the development and validation of ENAI, an AI-based energy management system built on the existing Enpulse platform. The project includes software development, integration of Large Language Models, data processing, laboratory testing and pilot deployment with selected users (households, SMEs, and energy companies). Activities will take place mainly in Croatia, at company premises and in controlled lab environments, with pilot testing in real-life settings. The project represents industrial research and experimental development in AI, digital energy systems and software engineering. No hazardous materials, emissions or significant physical interventions are involved.
Environmental Impacts Identified	The environmental risk associated with the ENAI project is assessed as low. Project activities are primarily digital, office-based, and implemented within existing ICT and pilot infrastructure, without industrial production, major construction works, or interventions in environmentally sensitive areas. Potential environmental impacts are limited to indirect electricity consumption associated with cloud-based computing, AI processing, digital infrastructure, servers, and software testing environments. Minor environmental impacts may also arise from procurement, installation, and lifecycle management of ICT equipment, sensors, metering devices, and related electronic components used during pilot deployment activities. Limited electronic waste generation may occur through replacement or disposal of standard IT and electronic equipment. Small-scale installation activities at pilot sites are expected to be non-invasive and implemented within existing facilities, without significant physical alterations, emissions, soil disturbance, biodiversity impacts, or risks to water quality. The project does not involve hazardous

	substances, pathogenic materials, ionising radiation, or environmentally hazardous industrial processes. Overall, the project is expected to contribute positively to environmental sustainability through improved energy efficiency, optimisation of energy consumption and storage, support for renewable-energy integration, and reduction of operational energy demand for households, SMEs, and energy operators.
Social Impact Identified	The project includes laboratory activities in the form of IT and software testing in controlled environments involving only data processing, simulation, and system validation. Potential risks are related to data privacy, cybersecurity, and user trust in AI systems. human oversight. Field work includes pilot installation and testing of ENAI and Enpulse equipment at selected sites (households, SMEs, and partner facilities) in Croatia to validate system performance, collect real-world data, and gather user feedback in a relevant environment. Due to risks relating to AI system, data protection and field work involving households the overall social risks are assessed as low.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Community Health and Safety (8.)	
Intellectual Property (9.)	
Data Protection (10.)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.2.01.016 CONVIA - Multimodal Temporal Intelligence for Real-Time Knowledge Extraction from Audio-Visual Content Streams

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.016
Project Title	CONVIA - Multimodal Temporal Intelligence for Real-Time Knowledge Extraction from Audio-Visual Content Streams
Beneficiary	3MI lab d.o.o.
Project Objective(s)	The purpose of this project is to advance CONVIA from a research prototype into a validated, operational technology, and to demonstrate that this capability has tangible commercial value in two high-need markets. The project therefore has two intertwined ambitions: to raise the maturity of the technology itself, and to develop a credible, evidence-based business foundation that prepares the team for subsequent investment and scale. The technological goal of CONVIA is to turn unstructured multimedia data into structured, verifiable knowledge streams that users can trust and act upon. The technology development effort addresses a specific challenge: transforming CONVIA from a laboratory prototype capable of processing curated multimedia datasets in controlled conditions into a production system that reliably processes continuous real-world content streams while maintaining accuracy, speed, and stability under operational constraints. This transformation requires advancing the system from TRL 4 to TRL 6 over 24 months through systematic engineering, validation and optimization.
Project Activities	CONVIA is a 24-month industrial research and experimental development project focused on the design, development, validation and pilot deployment of an advanced multimodal artificial intelligence platform for real-time knowledge extraction from audio, video and textual content streams. The project includes applied AI research, machine learning model development, multimodal data processing, temporal knowledge graph development, software engineering, cloud-based system integration, and pilot validation in Web3 and financial intelligence use cases. Project activities will be carried out primarily at Beneficiary's permises, in standard office-based research and software development environments, supported by secure cloud computing infrastructure (Azure/AWS).
Environmental Impacts Identified	The environmental risk associated with the CONVIA project is assessed as low. Project activities are entirely digital, office-based, and implemented within existing ICT and cloud-computing infrastructure, without civil works, industrial production, laboratory testing, hazardous substances, or environmentally hazardous physical processes. Potential environmental impacts are limited to indirect electricity consumption associated with AI model training, multimodal data

	processing, cloud computing, servers, networks, and digital infrastructure used during software development, testing, and deployment activities. Limited electronic waste generation associated with routine ICT equipment lifecycle management may also occur, although no significant procurement of specialised hardware is foreseen. The project does not involve emissions to air, wastewater generation, hazardous chemicals, biological materials, fieldwork, biodiversity impacts, protected areas, or contamination risks to soil or groundwater. All activities are expected to remain within the standard environmental footprint of software engineering and cloud-based AI development. Overall, the project is expected to contribute positively to digital innovation and responsible AI development through advanced knowledge-extraction technologies, support for trustworthy information processing, and promotion of efficient AI-enabled digital services.
Social Impact Identified	The project involves pilot deployment of an advanced multimodal artificial intelligence platform for real-time knowledge extraction from audio, video and textual content streams. Due to use various media content data protection risks must also be considered. The social risks are assessed as low.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.2.01.018 BRIDGE – Bidsale for Real estate Innovation and Decision-making Grounded in Equity

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.018
Project Title	BRIDGE – Bidsale for Real estate Innovation and Decision-making Grounded in Equity
Beneficiary	VendueTech j.d.o.o.
Project Objective(s)	**Technology Development Objectives** The project's main technological goal is to advance Bidsale by developing a highly accurate, domain-independent HTML and Markdown extraction module for auction data. Currently at TRL 4 after laboratory tests with the University of Zagreb (FER), the module will progress to TRL 6 through pilot testing in real auction environments, paving the way for operational deployment and commercialization. Building on these solutions, the project aims to: – Enhance the existing large language model (LLM)-based extractor to reliably convert unstructured HTML/MD auction data into structured JSON across multiple auction domains through supervised finetuning using an adapter module for storing trained per-domain weights by using constrained decoding, e.g., outlines library or similar to produce valid JSON. – Validate the extractor's performance through in-domain, multi-domain, and out-of-domain experiments, targeting >95% accuracy in key field extraction for new and existing auction platforms. – Optimize model performance for nested JSON structures and long HTML inputs, overcoming limitations identified in current SOTA web scraping tools. **Business Validation and Development Objectives** The business objectives focus on validating the market readiness and commercial viability of the advanced extractor module: – Test the extractor in relevant auction environments across multiple European domains (Croatia, Spain, Italy, Germany, Sweden, and Poland). – Engage with pilot clients and SMEs to integrate the extractor into their ETL processes and measure operational efficiency gains. – Assess the potential for subscription-based or SaaS deployment of the technology, including scalability, costeffectiveness, and user adoption.
Project Activities	The BRIDGE project (Bidsale for Real estate Innovation and Decision-making Grounded in Equity) is a 24-month deep-tech R&D initiative. The project advances the Bidsale AI-powered SaaS platform from TRL 4 to TRL 6, enabling cross-border access to European distressed property

	auctions. All activities are entirely digital and software-based, conducted remotely using cloud and EU HPC infrastructure. Activities include: LLM-based data extraction and NLP processing; predictive analytics model development (XGBoost, LSTM, Monte Carlo); UI/UX development; and two validation pilots (Croatia-Italy judicial auction pilot; Germany-Spain institutional user pilot). There are no physical interventions, laboratory experiments, use of hazardous substances, civil works, or field research.
Environmental Impacts Identified	The environmental risk associated with the BRIDGE project is assessed as low. Project activities are primarily digital, office-based, and implemented within existing ICT and high-performance computing (HPC) infrastructure, without construction activities, industrial production, laboratory research, hazardous substances, or environmentally hazardous physical processes. Potential environmental impacts are limited to indirect electricity consumption associated with AI model training, cloud computing, distributed HPC processing, large-scale simulations, data aggregation, and digital infrastructure used for development and validation activities. Minor electronic waste generation related to standard ICT equipment lifecycle management may also occur. These impacts are localized, predictable, and manageable through standard ICT operational procedures and use of energy-efficient infrastructure where feasible. The project does not involve emissions to air, hazardous chemicals, biological materials, wastewater generation, fieldwork, biodiversity impacts, or contamination risks to soil or groundwater. Pilot activities are digital and institutional in nature and do not require physical infrastructure modifications or environmentally sensitive interventions. Overall, the project is expected to contribute positively to digital innovation, transparency, and efficiency in European real-estate and financial markets through development of explainable AI tools, automation of due diligence processes, and improved accessibility of cross-border judicial auction systems.
Social Impact Identified	Due to the project activity of advancing the project advances the Bidsale AI-powered SaaS platform from TRL 4 to TRL 6 the AI and cybersecurity risks should be addressed. The data protection risks are closely linked to project activities using the existing data from property auction market. Overall social risks are assessed as low.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Intellectual Property (9)	
Data Protection (10)	

Artificial Intelligence and Cybersecurity (11.)
Procedures and Reporting in Case of Accident (12.)
Stakeholder Engagement (13.)

DIGIT.2.2.01.019 IgG based Early and Precise Multimodal Diagnostics for ALS (NeuroFuse)

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.019
Project Title	IgG based Early and Precise Multimodal Diagnostics for ALS (NeuroFuse)
Beneficiary	dAIgnostics
Project Objective(s)	The overall objective of the NeuroFuse project is to develop and validate an AI-enabled, minimally invasive diagnostic platform for early and precise detection of Amyotrophic Lateral Sclerosis (ALS), based on the functional response of neural cells to patient-derived IgG antibodies. The project aims to advance the existing proof-of-concept technology from TRL 4 to an integrated TRL 6 prototype suitable for future clinical and commercial validation. NeuroFuse combines multimodal biomarker analysis with advanced AI-driven data fusion to support earlier diagnosis, improved patient stratification and better selection of patients for clinical trials. The platform integrates calcium signalling dynamics, reactive oxygen species generation and vesicular/lysosomal activity using the NIMOCHIP™ microfluidic platform and dedicated AI pipelines. A Bayesian fusion engine combines outputs into a probabilistic diagnostic score with uncertainty quantification and explainable logic. Specific objectives of the project are: • Validation of multimodal ALS biomarker workflows using rodent and human iPSC-derived neural cell models. • Optimization of microfluidic fluorescence acquisition and image-analysis workflows. • Development and validation of AI pipelines and Bayesian fusion models for explainable multimodal diagnostics. • Generation of multimodal datasets for ALS-related biomarker analysis. • Integration of laboratory, imaging and AI components into a TRL 6 prototype. • Definition of the IVDR regulatory roadmap and quality assurance framework. • Consolidation of intellectual property strategy and freedom-to-operate analysis. • Preparation for post-project investment, commercialization and scale-up. • Establishment of a scalable diagnostic platform adaptable to other neurodegenerative and neuroinflammatory diseases.
Project Activities	**Project Activities** • Collection and processing of venous blood samples and patient-

	derived IgG fractions. • Biomedical and cell-culture laboratory research using rodent and commercially available human iPSC-derived neuronal and astrocyte cell models. • Microfluidic fluorescence acquisition and live-cell imaging using the NIMOCHIP™ platform. • Multimodal biomarker analysis, including calcium dynamics, ROS generation and vesicular/lysosomal activity. • AI-based data processing, Bayesian fusion modelling and explainable diagnostic reporting. • Validation of analytical workflows and prototype performance. • Stakeholder validation with clinicians, laboratories and research partners. • Intellectual property, regulatory and investment-readiness activities. • Dissemination, communication and project-management activities.
Environmental Impacts Identified	The environmental risk associated with the NeuroFuse project is assessed as moderate due to the laboratory handling of human biological material, patient-derived IgG antibodies, neural cell models, biochemical assays, and analytical reagents within biomedical research environments. Project activities are laboratory-based and implemented within existing biomedical laboratory and cloud-computing infrastructure in Croatia, without civil works, field sampling, interventions in protected areas, or industrial production activities. Potential environmental impacts are related to the generation of biomedical and laboratory waste through blood-sample handling, cell-culture activities, fluorescence assays, live-cell imaging workflows, and routine laboratory consumables. Additional impacts may arise from the use of chemical reagents, ROS-related assays, and indirect electricity consumption associated with laboratory equipment, microfluidic platforms, imaging systems, and cloud/GPU computing infrastructure. Laboratory activities may involve biosafety-related procedures and occupational exposure risks associated with handling human-derived biological material and cell models. All identified impacts are localized, predictable, and manageable through existing biosafety, laboratory safety, PPE, containment, and authorised waste-management procedures in compliance with Croatian and EU regulations. The project does not involve pathogenic organisms, ionising radiation, protected species, activities affecting biodiversity and natural habitats, or large-scale live animal experiments. No significant emissions to air, water, or soil are expected. Overall, the project is expected to deliver positive long-term societal impacts by enabling earlier ALS diagnostics, reducing diagnostic delays, improving patient stratification, and supporting future advances in neurodegenerative disease diagnostics.

Social Impact Identified	Social risks are related to venous blood sampling, handling of human biological material, processing of health data and use of AI decision-support outputs. OHS risks are related to work in BSL-2 laboratory including routine biomedical laboratory work, handling of human biological material, venipuncture at clinical site, use of reagents and fluorescence indicators, sharps and microfluidic equipment. Overall social risks are assessed as moderate.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Animal Material (5.)	
Hazardous Chemicals Management (6.)	
Community Health and Safety (8.)	
Intellectual Property (9.)	
Data Protection (10.)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	
Vulnerable Groups (14.)	

DIGIT.2.2.01.020 DEEPCLIMA – DEEP TECH PLATFORM FOR AI-DRIVEN CLIMATE RISK INTELLIGENCE

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.020
Project Title	DEEPCLIMA – DEEP TECH PLATFORM FOR AI-DRIVEN CLIMATE RISK INTELLIGENCE
Beneficiary	ALTACON d.o.o.
Project Objective(s)	The DEEPCLIMA project has two core aims: 1. To build and validate a next-generation AI platform that predicts and explains climate risks in real time, 2. To validate a scalable business model that enables strong market entry and long-term commercial growth. The project will mature the technology from TRL 4 to TRL 6.
Project Activities	DEEPCLIMA is a deep-tech climate development project. Cloud-based and executed entirely in Croatia (Rijeka and Zagreb/remote EU infrastructure), with no physical construction or field interventions. Activities are organised across four work packages: • WP1 develops the physics-informed AI kernel (PINNs, GNNs, spatio-temporal transformers) and data fusion pipelines using open climate datasets (CMIP6, ERA5, Copernicus/Sentinel). • WP2 integrates the AI kernel into a multi-hazard digital twin, builds the explainable user interface, and conducts institutional and public pilot validations. • WP3 validates the business model, conducts market interviews, prepares investor materials and ensures regulatory alignment (EU AI Act, CSRD, SFDR, EU Taxonomy). • WP4 covers project management, dissemination, and open-science compliance via Zenodo and Climatig.com. Research type is applied industrial research with strong innovation elements, building on computational modelling, machine learning, and geospatial science. No hazardous substances or materials are used. No MSDS annexes are required.
Environmental Impacts Identified	The environmental risk associated with the DEEPCLIMA project is assessed as low. Project activities are entirely computational, cloud-based, and implemented within existing office and EU-hosted digital infrastructure, without construction works, industrial production, laboratory research, hazardous substances, or field interventions. Potential environmental impacts are limited to indirect electricity consumption associated with cloud computing, AI model training, geospatial processing, digital twin simulations, servers, and data-

	processing infrastructure used during software development and pilot validation activities. Minor environmental impacts may also arise from standard ICT equipment use and lifecycle-related electronic waste generation. These impacts are localized, predictable, and consistent with standard ICT and AI-development activities. The project does not involve hazardous materials, emissions to air, wastewater generation, biodiversity impacts, protected areas, contamination risks to soil or groundwater, or environmentally hazardous industrial processes. No fieldwork or physical installations are planned. The project is fully aligned with EU "Do No Significant Harm" (DNSH) principles and supports climate adaptation objectives through AI-enabled climate-risk intelligence and digital resilience tools. Overall, the project is expected to contribute positively to environmental sustainability and climate resilience by improving access to climate-risk analytics, supporting evidence-based adaptation planning, enhancing transparency of climate-risk assessment models, and strengthening preparedness for floods, heatwaves, droughts, and landslides.
Social Impact Identified	The project isa a deep-tech innovation project developing an advanced AI platform for predictive climate risk intelligence. Although no personal data of citizens is collected the project uses anonymised user interactions on RiskyHome.com so data protection risks should be managed. The overall social risks are assessed as low.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.2.01.021 Next-generation AI agent for scalable cybersecurity

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.021
Project Title	Next-generation AI agent for scalable cybersecurity
Beneficiary	Secure Block d.o.o.
Project Objective(s)	The objective of this project is to develop and validate an autonomous AI penetration testing agent capable of independently executing security assessments within corporate environments and without the need for specialized cybersecurity expertise. The agent will empower non-expert IT personnel to perform full-scale penetration tests and remediation options, significantly reducing costs and improving security resilience across industries. The proposed innovation directly addresses this need by lowering the entry barrier for conducting internal security tests, reducing dependency on external consultants and supporting compliance with NIS2 and other EU cybersecurity regulations.
Project Activities	The project proposes an AI-driven, fully automated penetration-testing agent as a standalone module or an add-on to our proprietary PentestPad platform. The agent functions as a virtual pentest specialist: it ingests contextual inputs (architecture, tech stack, imported scanner outputs), autonomously plans and executes internal security tests, confirms findings with reproducible proof-of-concepts, and generates compliance-grade remediation reports, all without requiring deep security expertise from the operator. The majority of European SMEs and many larger organisations lack in-house offensive security expertise, rely on expensive external consultants, and struggle to run regular, compliant security assessments (NIS2, DORA). This creates persistent exposure to preventable risks. Our agent combines structured security logic, dynamic test orchestration and orchestration of safe attack simulations, plus explainable AI reasoning to prioritize and validate findings. Unlike generic assistants, it is purpose-built for end-to-end pentesting: from scope definition through automated discovery, exploit verification (non-disruptive PoC), and tailored remediation guidance. Crucially, the system enforces safety constraints and audit trails to prevent dangerous operations and to meet regulatory requirements. The solution integrates modular parsers, a rule-based engine, an AI reasoning layer for adaptive test planning, and a secure execution sandbox. The agent makes cybersecurity available for hundreds of thousands of EU SMEs, reduces time-to-test and cost, increases testing cadence, and strengthens digital resilience. Commercialization pathways include SaaS subscriptions, on-premise solutions for MSSPs, and licensing to integrators. The project aligns with EU priorities on cybersecurity, digital transformation and SME

	competitiveness by enabling compliant, repeatable, and scalable internal security testing.
Environmental Impacts Identified	The environmental risk associated with the Next-generation AI agent for scalable cybersecurity project is assessed as low. Project activities are primarily digital, office-based, and implemented within existing ICT and secure cloud-computing infrastructure, without construction activities, industrial production, laboratory research, hazardous substances, or environmentally hazardous physical processes. Potential environmental impacts are limited to indirect electricity consumption associated with AI model execution, secure sandbox environments, cloud computing, automated security-testing infrastructure, servers, and digital data-processing systems used during software development, testing, and deployment activities. Minor electronic waste generation associated with standard ICT equipment lifecycle management may also occur. These impacts are localized, predictable, and consistent with standard software-engineering and cybersecurity-development activities. The project does not involve hazardous chemicals, emissions to air, wastewater generation, biological materials, fieldwork, biodiversity impacts, or contamination risks to soil or groundwater. The solution is software-based and operates within controlled digital environments designed for secure and non-disruptive testing activities. Overall, the project is expected to contribute positively to digital resilience and cybersecurity preparedness by enabling safer, more accessible, and scalable security testing for SMEs and organizations, thereby strengthening compliance with European cybersecurity and digital-transformation objectives.
Social Impact Identified	The project involves the research, development, and validation of an autonomous AI-powered penetration testing agent (software) and AI and data protection risks should be managed. The OHS risks are limited to IT laboratory activities. Overall social risks are assessed as low.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.2.01.022 GlycoDiaRisk

Program	DIGIT.2.2.01 SEAL OF EXCELLENCE
Reference No	DIGIT.2.2.01.022
Project Title	GlycoDiaRisk
Beneficiary	Glycanage
Project Objective(s)	The overall objective of the GlycoDiaRisk project is to develop and validate the first glycomics-based clinical diagnostic solution for ultra-early risk detection and assessment of type 2 diabetes (T2D), based on advanced plasma glycan profiling. The project aims to advance the GlycoDiaRisk technology toward a laboratory-developed test (LDT) prototype validated in a realistic hospital environment, achieving TRL 6 and preparing the foundation for future clinical validation and regulatory approval. The GlycoDiaRisk platform leverages highly sensitive glycan-based biomarkers capable of detecting and quantifying diabetes risk up to a decade before clinical symptoms appear, significantly expanding the preventive intervention window and enabling personalized healthcare approaches. The project addresses the limitations of conventional diagnostics, which typically identify metabolic dysfunction only after irreversible disease progression has occurred. Specific objectives of the project are: • Development and optimization of glycan-based biomarker workflows for ultra-early T2D risk detection. • Validation of analytical and diagnostic performance in realistic clinical and hospital settings. • Development of a laboratory-developed test (LDT) prototype suitable for clinical implementation. • Integration of advanced glycomics analysis and data-processing workflows. • Benchmarking against conventional diabetes biomarkers and diagnostic approaches. • Preparation of regulatory, commercialization and clinical-validation pathways. • Strengthening the adoption potential of glycan-based diagnostics within healthcare systems. • Supporting preventive and personalized medicine approaches for metabolic diseases.
Project Activities	**Project Activities** • Collection, preparation and analysis of plasma samples for glycan profiling. • Glycomics laboratory research and biomarker validation activities.

	• Development and optimization of analytical workflows for glycan-based diagnostics. • Data analysis and interpretation of glycomic biomarker signatures. • Validation of diagnostic performance in realistic hospital and clinical environments. • Comparative benchmarking against standard diabetes diagnostic markers such as glucose and HbA1c. • Development of laboratory-developed test (LDT) prototype. • Regulatory preparation, commercialization planning and business validation activities. • Dissemination, communication and stakeholder engagement activities. • Project management and coordination.
Environmental Impacts Identified	The environmental risk associated with the GlycoDiaRisk project is assessed as moderate. Project activities are primarily laboratory-based and implemented within existing biomedical and analytical laboratory infrastructure, without civil works, land acquisition or activities in environmentally sensitive areas. Potential environmental impacts are mainly related to the use of laboratory reagents, solvents, consumables and biological samples during plasma glycan analysis and biomarker validation activities. Laboratory activities may generate limited quantities of hazardous chemical and biomedical waste, including contaminated consumables and analytical reagents, which will be managed through established laboratory biosafety and hazardous-waste disposal procedures in compliance with Croatian and EU regulations. Additional indirect environmental impacts may arise from electricity consumption associated with analytical instrumentation, laboratory equipment and digital data-processing infrastructure. These impacts are localized, predictable and manageable through standard laboratory safety and waste-management practices. The project does not involve field activities, protected species, pathogenic organisms, ionising radiation or interventions affecting biodiversity and natural habitats. No significant emissions to air, soil or water are expected. The project is expected to contribute positively to public health and healthcare sustainability through earlier diabetes prevention and reduction of long-term disease burden.
Social Impact Identified	The project activities include the use of human plasma samples sourced from established European biobanks under formal research agreements. All samples and associated scientific data are anonymized prior to use. Besides personal data protection and handling human plasma samples, the risks are related to clinical score, there is a risk of algorithmic inaccuracy impacting future clinical end-users. This is mitigated through rigorous internal testing, external comparative benchmarking by independent endocrinologists, and active engagement with regulatory

	advisors. The activities are conducted in Standard Biosafety Level 1/2 (BSL-1/BSL-2) environments for handling human plasma samples, utilizing standard institutional precautions for biological materials. The risks regarding the social aspect are assessed as moderate.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Hazardous Chemicals Management (6.)	
Community Health and Safety (8.)	
Intellectual Property (9.)	
Data Protection (10.)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.2.2.02.012 Bridge2Health: Developing Capacities to Bridge Health Inequalities in Vulnerable Populations using well-tailored Biological Markers

Program	DIGIT.2.2.02 ROUTES TO SYNERGIES
Reference No	DIGIT.2.2.02.012
Project Title	**Bridge2Health: Developing Capacities to Bridge Health Inequalities in Vulnerable Populations using well-tailored Biological Markers**
Beneficiary	Institute for Anthropological Research
Project Objective(s)	The overall objective of the Bridge2Health project is to strategically reposition the Institute for Anthropological Research (IAR) from a research participant into a leading international coordinator within the European Research Area (ERA), with a focus on reducing health inequalities in vulnerable populations through advanced biological-marker research and international research collaboration. The project combines strategic networking, institutional capacity building, infrastructure optimization, and international consortium development to strengthen IAR's competitiveness for future Horizon Europe participation and leadership. Bridge2Health builds upon existing ERDF-funded research infrastructure and expertise in anthropological, genomic, proteomic, and public-health research focused on vulnerable populations, including children, elderly persons, and minority communities. Specific objectives of the project are: • Establishment of high-level international research consortia aligned with Horizon Europe priorities. • Strengthening institutional capacities in grant management, proposal development, ethical AI use, and FAIR data principles. • Enhancement of international visibility of IAR's advanced laboratory infrastructure and anthropological datasets. • Development of preliminary proteogenomic and biomarker-based feasibility studies for future Horizon Europe proposals. • Promotion of interdisciplinary and translational approaches to health inequalities and precision medicine. Strengthening long-term sustainability and international integration of Croatian research infrastructure and expertise within the ERA.
Project Activities	**Project Activities** • Promotion of the Bridge2Health initiative through conferences, brokerage events, and international networking. • Consortium establishment and Horizon Europe proposal preparation activities. • Preliminary feasibility studies and biomarker-related laboratory analyses. • Advanced grant-writing, FAIR data management, and ethical AI

	upskilling workshops. • International secondments and knowledge-transfer activities with European partner institutions. • Development of Virtual 360° laboratory tours and digital infrastructure visibility platforms. • Strategic outreach, dissemination, stakeholder engagement, and institutional positioning activities. Project management, coordination, and financial administration.
Environmental Impacts Identified	The environmental risk associated with the Bridge2Health project is assessed as low to moderate. Project activities are primarily focused on strategic planning, networking, institutional capacity building, dissemination, and limited-scale laboratory feasibility studies implemented within existing research infrastructure, without civil works, industrial activities, or interventions in protected or environmentally sensitive areas. Potential environmental impacts are limited to routine laboratory use of small quantities of biological samples, standard laboratory chemicals and solvents, generation of minor amounts of laboratory and electronic waste, and indirect electricity consumption associated with digital infrastructure, laboratory equipment, sequencing platforms, analytical instrumentation, and computational activities. Laboratory feasibility studies may involve handling of biological material and operation of advanced proteogenomic and analytical workflows, including mass spectrometry and sequencing equipment. All identified impacts are localized, predictable, and manageable through existing institutional laboratory safety procedures, biosafety practices, and authorised waste-management systems. The project does not involve pathogenic organisms, high-risk biosafety procedures, field sampling in protected areas, ionizing radiation, or activities expected to generate significant emissions to air, soil, or water. Overall, the project is expected to contribute positively to healthcare research capacity, public-health preparedness, and long-term reduction of health inequalities in vulnerable populations.
Social Impact Identified	Social risks are related to personal data protection of the participants. The project addresses health disparities of vulnerable populations but with focus on generating the scientific knowledge and infrastructure necessary to bridge these gaps. Research activities will be conducted in the existing standard laboratory and thus comply with the standard OHS risks. The social risks are assessed as moderate.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Community Health and Safety (8)	
Intellectual Property (9)	
Data Protection (10)	

Artificial Intelligence and Cybersecurity (11.)
Procedures and Reporting in Case of Accident (12.)
Stakeholder Engagement (13.)

DIGIT.2.2.02.017 FOREST Research and Innovation NETwork for Horizon Europe Synergies (FOREST-NET)

Program	DIGIT.2.2.02 ROUTES TO SYNERGIES
Reference No	DIGIT.2.2.02.017
Project Title	**FOREST Research and Innovation NETwork for Horizon Europe Synergies (FOREST-NET)**
Beneficiary	Croatian Forest Research Institute
Project Objective(s)	The overall objective of the FOREST-NET project is to prepare a strong international consortium for successful participation in Horizon Europe by strengthening the Croatian Forest Research Institute's coordination capacities, internationalisation, research infrastructure utilisation, and ability to develop competitive collaborative research proposals. The project addresses the need to increase the Croatian Forest Research Institute's institutional readiness for coordinating Horizon Europe projects and to improve the visibility and European integration of its research infrastructure and scientific expertise. Through consortium development, proposal preparation, capacity building, preliminary research and innovation activities, and targeted networking, FOREST-NET will create the organisational and scientific conditions for future participation in European collaborative research. Specific objectives of the project are: • To establish an international consortium aligned with relevant Horizon Europe priorities and research areas. • To develop a competitive Horizon Europe project proposal for submission. • To strengthen the institutional capacities of the Croatian Forest Research Institute in proposal preparation, project coordination, budgeting, and international cooperation. • To enhance the visibility and future utilisation of the Institute's research infrastructure and scientific expertise. • To implement preliminary research and innovation activities supporting the development of the Horizon Europe project concept. • To promote long-term cooperation with European research organisations, universities, SMEs, and other relevant stakeholders. The project will contribute to the long-term internationalisation and sustainability of the Croatian Forest Research Institute by linking its existing scientific expertise and research infrastructure with future Horizon Europe opportunities.

Project Activities	**Project Activities** • Preparation of a Horizon Europe project proposal through the identification and engagement of potential consortium partners, bilateral meetings, study visits, networking activities, proposal-writing workshops, and consultation with the Croatian National Contact Point. • Development of preliminary research and innovation activities across the Institute's scientific departments to support the scientific concept and demonstrate the potential of the available research infrastructure. • Capacity building through specialised Horizon Europe training, mentoring, proposal-writing support, and internal knowledge transfer. • Organisation of activities for showcasing the Croatian Forest Research Institute's research infrastructure, scientific expertise, and technological capacities to potential European partners. • Promotion and visibility through conferences, networking events, communication activities, and targeted stakeholder engagement. • Engagement of external expertise to support the preparation and improvement of the Horizon Europe proposal. • Project management, coordination, reporting, and financial administration.
Environmental Impacts Identified	The project is assessed as Low Environmental Risk. The project primarily involves the preparation of a Horizon Europe proposal, capacity building, networking, and preliminary RDI activities using existing research infrastructure. The planned laboratory and field activities may involve limited and manageable environmental risks related to the use of laboratory chemicals, reagents, biological materials, and the generation of laboratory waste. These risks can be adequately managed through existing institutional procedures, applicable environmental legislation, safe handling of chemicals, and appropriate waste management practices. No significant or long-term adverse environmental impacts are anticipated.
Social Impact Identified	Overall social risk is assessed as Low. The project includes limited, low-risk laboratory research activities to support the preparation of the future Horizon Europe proposal. The project does not include field research or field sampling activities. Preliminary research and innovation (RDI) activities will be limited in scope and conducted using existing laboratories and scientific equipment. Social risks are limited to standard workplace health and safety practices
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	

	Waste Management (4.)
	Intellectual Property (9.)
	Data Protection (10.)
	Procedures and Reporting in Case of Accident (12.)
	Stakeholder Engagement (13.)

DIGIT.2.2.02.019 Building the Croatian Virtual Human Twin Ecosystem for Precision Medicine – TWINPATH

Program	DIGIT.2.2.02 ROUTES TO SYNERGIES
Reference No	DIGIT.2.2.02.019
Project Title	**Building the Croatian Virtual Human Twin Ecosystem for Precision Medicine – TWINPATH**
Beneficiary	Institute for Medical Research and Occupational Health (IMI)
Project Objective(s)	The overall objective of the TWINPATH project is to prepare the Institute for Medical Research and Occupational Health (IMI) to lead a competitive multinational consortium and submit a high-quality Horizon Europe proposal for the establishment of a European Virtual Human Twin Ecosystem for Precision Medicine. The project aims to strengthen IMI's institutional coordination capacity, international collaborations, research infrastructure, technology uptake and ability to prepare and coordinate future European research and innovation projects. TWINPATH builds on the infrastructure and capacities developed through the ERDF-funded project KK.01.1.1.02.0007 and addresses the existing gap related to dynamic, perfusion-based experimental systems and their integration with virtual access and AI-ready data workflows. Specific objectives of the project are: • To establish an internationally competitive European consortium on Virtual Human Twins for integrated clinical decision support in prevention and diagnosis. • To prepare a high-quality Horizon Europe proposal for the call HORIZON-HLTH-2027-03-TOOL-04. • To strengthen IMI's scientific and technological readiness through the establishment of a microphysiological systems module and a virtual EU-wide remote-access layer. • To strengthen IMI's institutional capacity for the coordination of Horizon Europe proposals and projects. • To enhance the utilisation and international visibility of IMI's research infrastructure and scientific expertise. • To develop harmonised standard operating procedures and an AI-ready, interoperable multimodal data pipeline. • To establish long-term cooperation with universities, hospitals, research organisations, SMEs, technology developers and other relevant stakeholders. The project will create a sustainable institutional basis for future European research collaborations by integrating existing laboratories, scientific

	expertise, enabling technologies, trained personnel, governance procedures and international partnerships. The MPS module and related virtual access infrastructure are intended to remain available for future biomedical research and external users beyond the project duration.
Project Activities	• Strategic project coordination and management, including internal governance, procurement, quality assurance, monitoring, reporting, risk management, ethics compliance and sustainability planning. • Establishment of a European consortium through partner mapping, bilateral meetings, workshops, brokerage activities, networking and consultations with National Contact Points and external experts. • Preparation of a competitive Horizon Europe proposal for the call HORIZON-HLTH-2027-03-TOOL-04. • Establishment of a first microphysiological systems (MPS) module to introduce dynamic, perfusion-based culture capabilities within IMI's existing research infrastructure. • Development of a virtual EU-wide remote-access layer connecting IMI's infrastructure with collaborating laboratories. • Preparation of harmonised standard operating procedures, an interoperable AI-ready multimodal data pipeline and GLP-compliant study-design documentation. • Capacity building through training, mentoring and knowledge transfer in Virtual Human Twin research, Horizon Europe proposal preparation, consortium governance, project management, research-data governance, quality assurance and regulatory compliance. • Organisation of stakeholder engagement, infrastructure demonstration activities, guided instrumentation training and an SME innovation-voucher scheme. • Implementation of dissemination, communication and exploitation activities, including a Visibility, Dissemination, Communication and Exploitation Plan and a business case for future infrastructure use. • Project management, coordination, reporting and financial administration. The application specifies that the project does not include clinical interventions, patient recruitment or the collection of new human biological samples or personal data. Any existing biological materials, organoids or datasets used for preliminary feasibility work must originate from legally authorised sources and be handled in accordance with applicable ethical approvals, GDPR and Croatian legislation

Environmental Impacts Identified	The project is assessed as Low Environmental Risk. The project will use existing laboratory infrastructure and does not involve construction, land-use change, or significant emissions. Limited environmental risks may arise from the use of laboratory chemicals and biological materials, generation of chemical and biological waste, and the operation of the MPS equipment, including energy and water consumption. These risks are expected to be localized, manageable and addressed through existing institutional procedures, applicable legislation, laboratory safety measures and proper waste management.
Social Impact Identified	Overall social risk is assessed as Low. The project does not involve direct research participation, patient recruitment, new collection of human biological samples or processing of identifiable patient data. Any human-derived cell or organoid models used for limited feasibility activities will originate from legally authorised, documented and appropriately de-identified or commercial sources, and no tissue or organ bioprinting is planned. Installation activities will include delivery, positioning, connection, commissioning and qualification of the microfluidic/MPS equipment within IMI's existing laboratory infrastructure.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Hazardous Chemical Management (6.)	
Intellectual Property (9.)	
Data Protection (10.)	
Artificial Intelligence and Cybersecurity (11).	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.001 AI Auditor: Multi-Agent Engagement Quality Review

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.001
Project Title	AI Auditor: Multi-Agent Engagement Quality Review
Beneficiary	Tickmark Software d.o.o
Project Objective(s)	Overall objective: To strengthen the innovation capacity and long-term competitiveness of Tickmark Software d.o.o. by researching and validating a multi-agent AI system for audit engagement quality control through industrial research and contractual collaboration with a research organization, thereby enabling the development of a commercially scalable AI-powered audit quality assurance product and contributing to the digital transformation of the professional audit sector. Specific objectives: SO1: To experimentally design and validate a benchmarking and evaluation framework for assessing the reliability, consistency, explainability, and operational usefulness of multi-agent AI outputs in audit quality assurance scenarios governed by International Standards on Auditing (ISA), and to identify the most effective orchestration, prompting, and context-handling strategies through controlled research experiments conducted in collaboration with the Faculty of Engineering. SO2: To produce a validated proof-of-concept demonstrating the technical feasibility of AI-assisted audit engagement quality review at TRL 3-4, forming the scientific and technical basis for subsequent private investment in TRL 5-7 development and commercial product launch. Outcome indicator A1: Value of private investment in research and development after project completion - target value: 100,000 EUR within three years of project completion. Based on current profitability (net profit 71,661 EUR in 2025) and projected revenue growth, Tickmark intends to invest its own funds in follow-on TRL 5-7 development covering personnel costs for continued AI development, cloud infrastructure for model refinement, and costs of commercial platform integration.
Project Activities	Activity 1 - Project Preparation Activity 2 - Industrial Research (TRL 3-4) including Contract Research Activity 3 - Innovation Cycle Management Activity 4 - Project Management, Promotion and Visibility
Environmental Impacts Identified	The project primarily involves software and AI research and development, including the development, testing, and validation of a multi-agent AI system for audit engagement quality assurance in existing office, IT/computing, and controlled laboratory environments. The project relies on existing IT and cloud-based infrastructure and does not involve civil works, hazardous equipment or materials, significant waste generation, or

	activities affecting natural habitats or local communities. Environmental impacts are expected to be low and primarily associated with electricity and computing resource consumption.
Social Impact Identified	Social risks are also considered low and primarily relate to standard labour and occupational health and safety conditions, data protection and confidentiality in the processing of anonymized audit engagement documentation, and the responsible development and use of AI. The AI solution is designed as a decision-support and quality assurance tool that supports rather than replaces professional auditor judgment, with human oversight of AI-generated outputs.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. Accordingly, the project is subject to the General ESMP Checklist to ensure that these aspects are appropriately managed throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.002 EdgeArrhythmia — Hierarchical Cascaded Inference for Resource-Efficient Real-Time Arrhythmia Detection on Edge Platforms

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.002
Project Title	EdgeArrhythmia — Hierarchical Cascaded Inference for Resource-Efficient Real-Time Arrhythmia Detection on Edge Platforms
Beneficiary	ZadarSmartCity d.o.o.
Project Objective(s)	Objective 1: Enhancing Company Competitiveness The project aims to transform ZSC d.o.o. from a consulting firm into an innovative digital health product developer. This is achieved by creating proprietary, high-value software-on-hardware intellectual property. Specifically, the company is developing a specialized runtime software engine optimized for resource-constrained embedded systems. By successfully reaching a laboratory-validated proof-of-concept (TRL 4), the company establishes a robust technological foundation in the global remote patient monitoring market. This foundational software, which enables medical-grade diagnostics on low-power microcontrollers, positions the company for future B2B business models and long-term software licensing agreements with international medical hardware manufacturers. Objective 2: To establish a structured research collaboration between ZSC d.o.o. and a research organization, generating transferable knowledge and a basis for future IP development. The project establishes a formal research partnership between ZSC d.o.o. and a Research Organization to accelerate the development of the EdgeArrhythmia software architecture. This collaboration utilizes specialized laboratory infrastructure to refine machine learning models and implement uncertainty calibration methods (such as conformal prediction and deep ensembles). Guided by the Technology Scout, this framework ensures the transfer of advanced TinyML knowledge and the integration of these software-defined diagnostic modules onto physical hardware. Furthermore, this partnership drives the formulation of a comprehensive intellectual property governance strategy, ensuring that the optimized production source code, neural network weight matrices, and localized decision-making heuristics are legally secured as trade secrets, forming the core assets for future B2B software licensing. Expected outputs The EdgeArrhythmia project will deliver tangible technical and scientific achievements that prove the system functions reliably in real-world conditions. The core technical output is the functional "brain" of the device: an optimized software package that runs a three-tier system for

	detecting cardiac arrhythmias, tested and ready for deployment on small processors. It is important to emphasize that this project is centered on software innovation specifically optimized for dedicated hardware. The software acts as an advanced intelligence governing the physical device, enabling it to continuously process complex 12-channel ECG signals without an internet connection, relying solely on its own processor while maintaining minimal battery consumption.
Project Activities	Activity 1: Technical Scouting and Innovation Advisory Activity 2: Research, Development, and Prototype Optimization Activity 3: Contract Research, Market Analysis, and Innovation Advisory Activity 4: Project Management, Promotion, and Visibility
Environmental Impacts Identified	The project primarily involves software and AI research and development, including AI model training, ECG data analysis, software optimization, software-on-hardware integration, and experimental testing and validation in existing office, IT/computing, and controlled laboratory facilities. The project uses computing and cloud infrastructure, embedded development platforms, and specialized measurement and testing equipment. No civil works, hazardous materials, biological samples, medical procedures, clinical trials, direct patient participation, or collection of new patient data are involved. The research uses pre-existing, fully anonymized and de-identified clinical ECG datasets in accordance with applicable data protection requirements, including GDPR. Environmental impacts are expected to be low and primarily associated with electricity and computing resource consumption.
Social Impact Identified	Social risks are also considered low and primarily relate to standard labour and occupational health and safety conditions, data protection and privacy, and the responsible development and use of AI in a healthcare context. The project is limited to proof-of-concept development and laboratory validation and does not involve autonomous clinical decision-making or deployment in real-world patient care.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. Accordingly, the project is subject to the General ESMP Checklist to ensure that these aspects are appropriately managed throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	

Procedures and Reporting in Case of Accident (12.)
Stakeholder Engagement (13.)

DIGIT.1.2.02.003 NeuroPlay Rehab — AI-Driven Motion Tracking for Remote Rehabilitation

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.003
Project Title	NeuroPlay Rehab — AI-Driven Motion Tracking for Remote Rehabilitation
Beneficiary	IDDQD d.o.o.
Project Objective(s)	The goal of the NeuroPlay Rehab project is to develop and validate an AI-driven remote rehabilitation platform that enables physiotherapists to supervise and evaluate patient home exercises in real time using only a standard smartphone. The project aims to demonstrate that affordable consumer devices combined with advanced AI body-pose estimation can provide clinically meaningful rehabilitation support, improving the quality, accessibility, and efficiency of physiotherapy services. The project specifically seeks to: – validate AI-based movement tracking for rehabilitation exercises at TRL 3–4; – improve patient adherence and exercise quality during the home-rehabilitation phase; – enable therapists to remotely monitor patient progress and provide corrective feedback; – reduce pressure on overloaded rehabilitation systems and waiting lists, – establish a Croatian-owned digital health technology platform with future commercial and research potential.
Project Activities	Project activities include: A1 Project preparation A2 Industrial research at TRL 3–4 (AI/ CV core + contract research with RO) A3 Innovation cycle management (UX/UI, user testing, IP, legal) A4 Project management, promotion and visibility.
Environmental Impacts Identified	The project primarily involves software and AI research and development activities, including computer vision, AI-based pose estimation, motion analysis, and laboratory-based testing and validation using existing IT/computing, biomechanics, and motion-capture facilities. No civil works, hazardous substances, biological samples, clinical trials, or medical procedures are involved. Environmental impacts are expected to be low and primarily associated with electricity and computing resource consumption.

Social Impact Identified	Social risks are also considered low and primarily relate to standard occupational health and safety (OHS) conditions in office and laboratory environments, data protection and privacy, informed consent, and the responsible development and use of AI. The project includes limited feasibility and usability testing with a physiotherapist and a small group of test users, with written informed consent and GDPR-compliant processing of health-related personal data under the Research Organisation's ethics framework.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. Accordingly, the project is subject to the General ESMP Checklist to ensure that these aspects are appropriately managed throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.005 RoadSense - System for intelligent monitoring of road conditions

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.005
Project Title	RoadSense - System for intelligent monitoring of road conditions
Beneficiary	DTX Technologies d.o.o.
Project Objective(s)	The overall project objective is to validate the technical and commercial feasibility of an acoustic traffic monitoring platform integrating IoT sensing, machine learning signal processing, and digital twin creation, through a structured proof of concept developed in collaboration between the company and a contracted research organisation, thereby increasing the company's innovation capacity and market readiness for a novel intelligent transportation product. Specific objectives are: (i) To improve R&D capacities by building internal R&D competence in acoustic signal processing, AI-based traffic event classification, and digital twin architecture by conducting industrial research at TRL 3–4 in partnership with a research organisation, establishing the technical foundation for continued private investment in product development beyond the project period. (ii) To improve market readiness of R&D results - to advance the RoadSense concept from theoretical design to a demonstrated and documented proof of concept with defined technical validation criteria, and at least one identified end-user willing to participate in a subsequent pilot deployment — thereby proving the concept's commercial exploitability and readiness for the next stage of the innovation cycle. (iii) To establish a structured and contractually formalised research collaboration between the enterprise and a research organisation that generates shared knowledge outputs, lays the groundwork for continued joint R&D activity after project completion,
Project Activities	A1 Identification of innovation challenge and project preparation A2 Industrial research A2.1. Research on IoT devices for acoustic event detection and classification A2.2. Research on the extension of IoT devices for determining the state of roads A2.3. Microlocation phenomena and traffic modeling A3 Innovation cycle management IP strategy and market needs development (prototype exploitation strategy) A4 Project management, dissemination and visibility
Environmental Impacts	The project primarily involves research and development activities related to IoT acoustic sensing, electronic prototype development, AI and

Identified	machine-learning-based signal processing, cloud-based data processing, and digital twin technologies for transport applications. Activities are conducted in existing office, IT/computing, and IoT laboratory facilities and include the development and laboratory testing of IoT prototypes using standard electronic components, PCBs, acoustic sensors, and communication modules. No civil works, hazardous materials, significant emissions, or activities affecting protected or environmentally sensitive areas are involved. Environmental impacts are expected to be low and primarily associated with electricity and computing resource consumption and small-scale use of electronic components and prototype materials.
Social Impact Identified	Social risks are also considered low and primarily relate to standard occupational health and safety (OHS) conditions in office and IoT laboratory environments, data protection and data governance, and the responsible development and use of AI. The project is limited to TRL 3–4 laboratory research and prototype validation and does not involve field deployment or direct impacts on road users or local communities during project implementation.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Equipment, Occupational Health and Safety (OHS), Waste Management, Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. These measures are particularly relevant given the development and laboratory testing of a physical IoT prototype involving electronic components, PCBs, acoustic sensors, and related prototype materials, as well as the use of AI/ML and cloud-based technologies. Accordingly, the project is subject to the General ESMP Checklist to ensure that the identified environmental and social aspects are appropriately managed and monitored throughout project implementation.
Mitigation Measures Categories	
Equipment (4.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.006 M3I – Multi-Method Machine Intelligence for Zero-Label Concept Discovery in Evolving Text Streams

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.006
Project Title	M3I – Multi-Method Machine Intelligence for Zero-Label Concept Discovery in Evolving Text Streams
Beneficiary	3MI lab d.o.o.
Project Objective(s)	Overall objective To validate a replicable methodology for zero-label concept discovery in evolving text streams, enabling SMEs to deploy advanced NLP analytics without costly manual annotation. Impact indicator O1: Number of product innovations introduced (target: 1 — the M3I zero-label NLP pipeline, to be introduced within 3 years post-project). Specific objective: Achieve TRL 4 proof-of-concept for unseen-concept detection under simulated concept drift, validated via a reproducible evaluation protocol. The pipeline targets an F1-score in the order of 0.60 on the controlled synthetic benchmark; the primary success criterion is a measurable, statistically meaningful improvement over the supervised-only baseline rather than attainment of an absolute score. Outcome indicator B1: Number of technology transfers realized (target: 1 — transfer of the validated M3I pipeline methodology and evaluation protocol from FER to 3MI lab d.o.o.). Expected outputs O1: M3I proof-of-concept software pipeline (weak supervision + embedding clustering + LLM-assisted labelling modules). O2: Reproducible evaluation protocol with benchmark scripts and data. O3: Technical validation report documenting TRL 3→4 advancement with benchmark results. O4: Innovation management report with exploitation roadmap and IP strategy.
Project Activities	Activity 1 – Project Preparation: Technology scouting and innovation challenge definition (M0). Activity 2 – Industrial Research: Design, implementation, and experimental validation of the M3I pipeline at TRL 3-4, with research support from FER (M1-M11). Activity 3 – Innovation Cycle Management: IP assessment, exploitation planning, and market pathway analysis (M2-M12). Activity 4 – Indirect Costs: Flat-rate 7% of Activity 2 eligible costs for project management and administration (M1-M12).
Environmental Impacts Identified	The project consists exclusively of software and AI research and development activities involving natural language processing (NLP), machine learning, weak supervision, embedding-based clustering, LLM-

	assisted labelling, and concept-drift analysis. Research and experimental validation are conducted in existing office and IT/computational laboratory environments using the applicant's and the contracted Research Organisation's (FER) existing computational infrastructure. No civil works, physical prototyping, hazardous materials, biological samples, or environmentally sensitive activities are involved. Environmental impacts are expected to be low and primarily associated with electricity and computing resource consumption.
Social Impact Identified	Social risks are also considered low and primarily relate to standard occupational health and safety (OHS) conditions associated with office and computer-based work, data protection and privacy, and the responsible development and use of AI. Although the project does not process personal data, text corpora used in development and evaluation are pre-anonymised using established NER-based redaction. Data handling procedures follow GDPR principles of data minimisation and purpose limitation, while FER's access to project data is governed by the contractual research agreement, including confidentiality and data-handling provisions. The project does not involve profiling or automated decision-making concerning natural persons.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Equipment, Occupational Health and Safety (OHS), Waste Management, Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. These measures are particularly relevant given the development and laboratory testing of a physical IoT prototype involving electronic components, PCBs, acoustic sensors, and related prototype materials, as well as the use of AI/ML and cloud-based technologies. Accordingly, the project is subject to the General ESMP Checklist to ensure that the identified environmental and social aspects are appropriately managed and monitored throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.007 CORaL – Colorectal Oncology Research via Liquid biopsy

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.007
Project Title	CORaL – Colorectal Oncology Research via Liquid biopsy
Beneficiary	Omics d.o.o.
Project Objective(s)	Project objective is to develop and validate an integrated multi-modal cfDNA nanopore signal decomposition pipeline at TRL 4, establishing Omics as a specialised European provider of liquid biopsy analytical infrastructure and enabling commercially sustainable post-project R&D continuation. Specific objective 1: Advance the project from TRL 2 to TRL 4 by delivering a validated, reproducible multi-modal cfDNA pipeline and SOP on real clinical samples. Outcome indicator: TRL 4 confirmed — cross-validated classifier documented, SOP delivered, and PoC report submitted by month 12. Specific objective 2: Establish the commercial and IP foundation for post-project exploitation of project results. Specific objective 3: Generate the prior evidence base required for follow-on R&D funding and institutional visibility.
Project Activities	1) Wet-lab protocol development and optimisation — cfDNA isolation, library preparation, and nanopore sequencing on PromethION; 2) Bioinformatic pipeline development and in silico validation on public datasets; 3) Pipeline validation and feature engineering on real POD5 data; 4) ML classification, cross-validation, and feature analysis; 5) Market research and stakeholder mapping; 6) IP assessment and commercial pathway documentation.
Environmental Impacts Identified	The project involves molecular biology laboratory research, nanopore sequencing, bioinformatic analysis, and AI/ML-based computational activities. Environmental risks are primarily associated with standard molecular biology laboratory operations, including the use of chemical reagents and the generation of biological and chemical laboratory waste, laboratory consumables, and limited quantities of laboratory wastewater. Chemical reagents used include chaotropic salts, ethanol, proteinase K, and other standard molecular biology reagents. No pathogenic organisms, GMOs, radioactive substances, or ionizing radiation are involved. Laboratory activities are conducted in an existing standard molecular biology laboratory operating under BSL-1-equivalent conditions and do not require enhanced biosafety containment. Chemical reagents are handled by trained personnel in accordance with applicable safety requirements, SDS/MSDS documentation, and institutional procedures,

	while biological and chemical waste and laboratory wastewater are managed through established institutional waste management and biosafety protocols.
Social Impact Identified	Social risks are primarily related to occupational health and safety (OHS) associated with laboratory work and the handling of human biological material and chemical reagents, as well as ethical and data protection considerations related to the collection and processing of human biological samples and personal health-related data. These risks are managed through mandatory laboratory safety training, appropriate PPE, institutional OHS and biosafety procedures, ethics committee approval prior to sample collection, individual informed consent, pseudonymisation, GDPR-compliant data management, and secure and encrypted processing of pseudonymised sequencing data. Appropriate measures are also required to ensure confidentiality, cybersecurity, responsible use of AI/ML, and protection of intellectual property generated through the research activities.
Categorization of the Risk	MODERATE Based on the environmental and social screening, the project is classified as Moderate E&S Risk. While no significant or irreversible adverse environmental or social impacts are anticipated, the project involves identifiable and manageable risks associated with laboratory OHS and biosafety, the use and management of hazardous chemicals, biological and chemical waste management, human biological samples, personal health data, and AI-enabled data processing. These risks require specific mitigation, monitoring, and compliance measures throughout project implementation. Accordingly, the project is subject to the General ESMP Checklist, with applicable measures covering Occupational Health and Safety (OHS), Waste Management, Hazardous Chemicals Management, Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. These measures are considered proportionate to the nature and scale of the identified risks and will ensure their appropriate management and monitoring throughout project implementation
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Hazardous Chemical Management (7).	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.009 CorrIntel AI - AI-Assisted Corrosion Assessment of Steel Structures in Coastal and Industrial Environments

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.009
Project Title	CorrIntel AI - AI-Assisted Corrosion Assessment of Steel Structures in Coastal and Industrial Environments
Beneficiary	AlphaWave d.o.o.
Project Objective(s)	Overall objective of the project is to increase AlphaWave's innovativeness and competitiveness by developing and validating an AI-based corrosion assessment tool for steel structures in coastal and industrial environments through structured academic collaboration with a research organization, thereby establishing the technical and commercial foundations for a new product innovation in the Croatian and regional infrastructure inspection market. First specific objective is to strengthen AlphaWave's internal R&D capacity in AI-based materials inspection by conducting a TRL 3-4 industrial research proof-of-concept, combining accelerated corrosion testing, optical microscopy, computer vision, and machine learning, and by generating validated technical knowledge (labeled dataset, trained U-Net model, corrosion severity classification system) that will underpin continued private investment in R&D beyond the project.
Project Activities	Project activities are: – Project Management and Dissemination – Corrosion Testing and Dataset Creation – AI Model Development; Validation – Innovation Cycle Management and Commercialization Pathway.
Environmental Impacts Identified	The project consists of laboratory-based materials testing and software/AI research activities involving accelerated corrosion testing of steel specimens, specimen preparation and cleaning, gravimetric mass-loss measurements, optical microscopy, image analysis, AI/ML model development, and prototype software workflow development. No civil works, biological samples, animal research, pathogenic organisms, ionising radiation, or environmentally sensitive activities are involved. Environmental risks are limited and primarily associated with the use of small quantities of salt solutions and standard laboratory reagents and cleaning solutions, as well as the potential generation of limited quantities of spent solutions, corrosion residues, and other laboratory waste. All chemicals and resulting waste will be handled, segregated, stored, and disposed of in accordance with established laboratory procedures, applicable SDS/MSDS requirements, and institutional waste management protocols. No direct discharge of untreated laboratory liquids or potentially contaminated residues into the environment is planned.

Social Impact Identified	Social risks are low and primarily related to standard occupational health and safety (OHS) considerations associated with laboratory work, including the handling of steel specimens, laboratory reagents, glassware, and laboratory equipment, as well as considerations related to the responsible development and use of AI-assisted inspection technologies. These risks are considered minor and manageable through established laboratory SOPs, appropriate PPE, trained personnel, safe chemical handling practices, and applicable OHS requirements. The project does not involve sensitive personal data or direct engagement with vulnerable groups. Relevant professional stakeholders have been engaged through structured interviews, consultations, and collaboration with researchers and the Technology Scout, with further engagement planned during project implementation.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Waste Management, Hazardous Chemicals Management, Intellectual Property, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. Accordingly, the project is subject to the General ESMP Checklist to ensure that the identified environmental and social aspects are appropriately managed and monitored throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Hazardous Chemical Management (6.)	
Intellectual Property (9)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.010 Fire Safety Voltage Limitation Device for Photovoltaic Power Plants

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.010
Project Title	**Fire Safety Voltage Limitation Device for Photovoltaic Power Plants**
Beneficiary	ITRS d.o.o.
Project Objective(s)	The overall project objective is to increase fire safety in photovoltaic power plants through the development and market application of a novel hardware assembly for autonomous DC voltage limitation, applicable also to existing installations without the need for module-level electronics. Specific objective of the project is the development and laboratory validation of a functional prototype of a fire-safety voltage limitation assembly for PV modules, capable of autonomously detecting emergency conditions and limiting module voltage to a safe level within the prescribed time frame, independently of the inverter and communication infrastructure.
Project Activities	A1. Project Preparation A2. Industrial Research A2.1. Analysis of the electrical characteristics of PV modules under high-frequency excitation A2.2. Development of a theoretical model for AC signal propagation through PV modules A2.3. Modelling of the DCB circuit A2.4. Simulation of the PV panel system, AC signal and DCB within a single DC circuit using Simulink Electrical at ITRS A2.5. Validation of simulation results and preparation of real components for the production of a printed circuit board to be tested in FER laboratories A2.6. Laboratory testing under controlled conditions at FER A2.7. Measurement of attenuation, phase shift and other characteristics of the signal used to control the DCB A2.8. Testing the impact of partial shading of PV modules A2.9. Processing and interpretation of experimental data A2.10. Validation of the initial hypothesis and proof of concept A2.11. Preparation of the final research report A3. Innovation Cycle Management A4. Project Management, Communication and Visibility
Environmental Impacts Identified	The project consists of laboratory-based electrical engineering research activities involving photovoltaic (PV) system modelling, electrical simulations, DC circuit breaker prototype development, high-frequency signal propagation testing, electrical measurements, and experimental validation of a fire-safety voltage limitation device for photovoltaic power

	plants under controlled laboratory conditions. No civil works, biological samples, animal research, pathogenic organisms, ionising radiation, or environmentally sensitive activities are involved. Environmental risks are limited and primarily associated with the generation of small quantities of electronic waste, including printed circuit board components, cables, connectors, prototype parts, packaging materials, and other laboratory waste generated during prototype development and testing. All electronic components and generated waste will be handled, segregated, stored, and disposed of in accordance with established laboratory procedures, applicable waste management requirements, and institutional protocols for electrical and electronic waste. No significant emissions, hazardous chemical use, or direct discharge of untreated materials into the environment is planned.
Social Impact Identified	Social risks are low and primarily related to standard occupational health and safety (OHS) considerations associated with electrical engineering laboratory work, including the testing of photovoltaic modules, DC electrical circuits, prototype electronic devices, and laboratory measurement equipment. Potential risks include electrical shock, electrical arcing, short circuits, overheating, and accidental equipment failure. These risks are considered minor and manageable through established laboratory procedures, appropriate PPE, trained and authorized personnel, safe electrical testing practices, equipment maintenance and calibration procedures, and applicable OHS requirements. The project does not involve sensitive personal data, direct engagement with vulnerable groups, or activities affecting local communities. Relevant professional stakeholders have been engaged through cooperation between ITRS, FER, and the Technology Scout, including technical consultations, definition of the innovation challenge, and development of the research methodology, with further stakeholder engagement planned during project implementation.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Waste Management, Equipment Management, Intellectual Property, Data Protection, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. Accordingly, the project is subject to the General ESMP Checklist to ensure that the identified environmental and social aspects are appropriately managed and monitored throughout project implementation.
Mitigation Measures Categories	
Equipment (2.)	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	

	Intellectual Property (9.)
	Data Protection (10).
	Procedures and Reporting in Case of Accident (12.)
	Stakeholder Engagement (13.)

DIGIT.1.2.02.011 Tinker Labs Digital Modular STEAM Platform – Proof of Concept of a Scalable Physical-Digital Learning Infrastructure

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.011
Project Title	Tinker Labs Digital Modular STEAM Platform – Proof of Concept of a Scalable Physical-Digital Learning Infrastructure
Beneficiary	Tinker Labs d.o.o.
Project Objective(s)	The overall objective of the project is to validate the proof of concept of the Tinker Labs Digital Modular STEAM Platform as a scalable physical-digital learning infrastructure that enables the company to standardize, expand and commercialize its interdisciplinary STEAM methodology. The project addresses a key strategic challenge for Tinker Labs: the current development and delivery of new STEAM lessons depend on separate tools, materials, instructions and preparation processes for each activity, which limits scalability, increases operational complexity and makes it more difficult to ensure consistent quality across franchise locations, schools, educational centres and home users. The objective is therefore to prove that a digital platform can become the central layer for designing, managing and distributing modular STEAM lessons, while a universal physical base and interchangeable modules serve as the experimental layer for hands-on learning. Within the project, Tinker Labs will validate whether the same physical-digital architecture can support a representative set of different STEAM lessons across science, technology, engineering, arts and mathematics. The project will also test whether digital lesson templates, QR-guided instructions, safety guidance, learning outcomes, module configuration and educator support materials can reduce preparation complexity and enable repeatable delivery of lessons in different environments. A further objective is to assess the platform's dual commercialization potential. First, the solution should support the scaling of the Tinker Labs franchise model by providing a standardized infrastructure for lesson development and delivery. Second, it should create the basis for a standalone edtech product that can later be offered to schools, educational centres, parents, distributors and other market users as a long-term, reusable and upgradable STEAM learning solution. By the end of the project, Tinker Labs aims to obtain technical, pedagogical and market validation evidence needed to decide on further development, commercialization and scaling of the platform toward higher TRL levels.
Project Activities	The first activity group relates to project preparation and innovation challenge definition.

	The second and central activity group relates to industrial research and contract research. Within this phase, Tinker Labs and the research organization will define the physical-digital architecture of the platform, including the logic of the digital lesson platform, the structure of lesson data, the connection between digital content and physical modules, and the technical requirements for the universal modular base. A proof-of-concept version of the digital platform structure will be developed, including lesson templates, QR-guided instructions, safety guidance, learning outcomes, module configuration and educator support elements. In parallel, a functional research prototype of the universal physical base and a representative set of interchangeable modules will be developed and prepared for validation. This activity will also include laboratory and controlled-environment testing of the core platform concept. The research organization will support the definition and implementation of testing methodology for modularity, compatibility, stability, safety, repeated use and usability of the physical-digital system. The purpose of this activity is not to develop a final commercial product, but to generate evidence that the same digital platform and modular physical infrastructure can support different STEAM lesson types in a repeatable and scalable way. The third activity group relates to innovation cycle management and validation of user and market relevance. The fourth activity group includes project management, coordination, reporting, promotion and visibility.
Environmental Impacts Identified	The project consists of educational technology research and development activities involving digital platform design, development of digital learning content, prototype development and controlled validation of a modular physical-digital STEAM learning concept. The project does not include civil works, hazardous chemicals, biological materials, animal research, pathogenic organisms, radioactive materials, or environmentally sensitive activities. Environmental impacts are limited to minor quantities of non-hazardous prototyping waste, packaging materials and potential small amounts of electronic waste generated during prototype preparation and testing. These materials will be minimized, reused or recycled where feasible, and managed through established institutional waste management procedures. The project is classified as a low environmental risk.
Social Impact Identified	Social risks are primarily related to data protection, stakeholder engagement, informed consent, and responsible participation in validation activities involving educators, franchise partners, schools, parents and potentially children as end users of the future educational solution. Any involvement of children or other potentially vulnerable participants will require appropriate supervision, consent procedures and GDPR-compliant handling of personal data. Occupational health and safety risks

	are limited to standard risks associated with IT-based work, prototype handling and educational validation activities and will be managed through standard OHS procedures. The project does not involve activities with significant community health and safety risks, vulnerable populations research, or any activities prohibited under the DIGIT exclusion criteria. The project is classified as a low social risk.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Waste Management, Intellectual Property, Data Protection, Procedures and Reporting in Case of Accident, Stakeholder Engagement, and Vulnerable Groups. Accordingly, the project is subject to the General ESMP Checklist to ensure that these aspects are appropriately managed throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Waste Management (4.)	
Intellectual Property (9)	
Data Protection (10)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	
Vulnerable groups (14.)	

DIGIT.1.2.02.012 KLAK - Proof of Concept for a Gamified Quiz Platform for Measurable Digital Brand Engagement

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.012
Project Title	KLAK - Proof of Concept for a Gamified Quiz Platform for Measurable Digital Brand Engagement
Beneficiary	Boom Bush Boo d.o.o.
Project Objective(s)	The overall objective of the project is to validate the technical and market feasibility of KLAK, a mobile gamified quiz platform for measurable digital brand engagement. The project aims to prove whether a quiz-based, gamified mobile experience can generate repeated user engagement and provide brands with a measurable, content-integrated and non-intrusive digital communication format. The project is designed as a Proof-of-Concept activity at TRL 3–4 and focuses on the development and validation of a research MVP/prototype, rather than on the development of a final commercial application. The objective is to generate clear technical, user and market validation evidence that will support a go / pivot / no-go decision for further development. The specific objectives of the project are: 1. To develop a functional research MVP/prototype of the KLAK mobile platform, including key functionalities such as user registration, quiz access, quiz playing, scoring, leaderboards, basic reward logic, basic brand integration and basic user behaviour analytics. 2. To validate the technical feasibility of the MVP in a controlled environment, based on predefined technical criteria related to platform functionality, stability, data collection and integration of core gamification elements. 3. To test whether the gamified quiz format can generate repeated user engagement, measured through indicators such as quiz completion rate, repeated visits, number of quizzes played per user and user satisfaction. 4. To assess the acceptance of non-intrusive brand integration within the quiz experience, including users' perception of relevance, clarity and acceptability of brand-related elements. 5. To validate early market interest from potential brand partners, advertisers, media or agencies through structured interviews or discussions and feedback on possible future cooperation and commercial use. 6. To prepare a validation report, identify key risks and recommendations, define a preliminary commercialisation pathway and make a clear go / pivot / no-go decision for the further development of KLAK.

Project Activities	Activity 1: Project preparation will cover the Technology Scout support for defining the innovation challenge, proof-of-concept scope, research cooperation framework and readiness for implementation. Activity 2: Industrial research (TRL 3-4) including contract research will be the core R&D activity and will include the development and controlled validation of the KLAK research MVP/prototype, including technical requirements, prototype architecture, quiz scenarios, scoring, leaderboards, reward logic, brand integration, analytics, technical testing and controlled user testing. Activity 3: Innovation cycle management will cover market analysis, validation of potential application areas, structured feedback from potential partners. Activity 4: Project management, promotion and visibility will cover coordination, administration, reporting, risk monitoring, communication between the applicant and FERIT Osijek, project documentation and required visibility activities.
Environmental Impacts Identified	The project consists exclusively of software research and development activities related to the design, development and controlled validation of a mobile and web-based gamified quiz platform for measurable digital brand engagement. Activities include software prototype development, analytics verification, controlled user testing and market validation using standard office environments, cloud resources and IT infrastructure. No civil works, infrastructure development, hazardous materials, laboratory activities, biological samples, animal research, radioactive materials or environmentally sensitive activities are involved. Environmental impacts are limited to negligible indirect impacts associated with standard office operations and IT equipment use, including normal electricity consumption and minor office waste managed through existing institutional procedures. The project is classified as a Low Environmental Risk.
Social Impact Identified	Social risks are primarily related to responsible digital engagement, user participation, data protection and cybersecurity aspects associated with voluntary user testing, user feedback collection, user registration and limited behavioural analytics data collected for concept validation purposes. These risks will be managed through data minimisation principles, informed consent procedures, GDPR-compliant processing, appropriate cybersecurity practices and transparent stakeholder communication. Intellectual property related to software development, platform architecture, digital content and project results will be appropriately managed and protected. If artificial intelligence tools are used during project implementation, their use will remain supportive, supervised by project staff and aligned with responsible AI principles and applicable EU requirements. Occupational health and safety risks are limited to standard office and computer-related risks and will be managed through applicable workplace safety procedures. The project is classified as a Low Social Risk.

Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. Accordingly, the project is subject to the General ESMP Checklist to ensure that these aspects are appropriately managed throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

DIGIT.1.2.02.013 Agentic Decision-Making for Autonomous PTZ Camera Systems

Program	DIGIT.1.2.02. TECHNOLOGY SCOUTING
Reference No	DIGIT.1.2.02.013
Project Title	Agentic Decision-Making for Autonomous PTZ Camera Systems
Beneficiary	Meet Intelligent Innovations d.o.o.
Project Objective(s)	Overall objective: To advance the state of the art in autonomous decision-making for pan-tilt-zoom (PTZ) camera control by designing, implementing, and experimentally validating an agentic architecture that replaces preset-based round-robin rotation with context-aware, autonomous reasoning, and to demonstrate, through rigorous laboratory validation, its relevance to the unmet operational needs of municipal infrastructure operators and security system integrators. The project is implemented through a structured, arm's length industry–academia collaboration that strengthens the Applicant's R&D capacity, generates transferable know-how, and contributes to Croatia's smart specialisation priorities in digital products and platforms. Specific objectives: The project is organised around three research questions (RQ1–RQ3) that structure the industrial research activity and are elaborated in the Scientific and technological soundness section. The specific objectives below operationalise these research questions into measurable project outcomes. SO1 — Architectural validation (RQ1) SO2 — Adaptive scheduling (RQ2) SO3 — LLM-augmented decision-making (RQ3) SO4 — Industry–academia collaboration SO5 — Proof-of-concept demonstration SO6 — Market and deployment validation
Project Activities	A1 — Project preparation with Technology Scout A2 — Industrial research (TRL 3–4) including contract research: Core research activity covering architectural formalisation, baseline and simulator development, agentic implementation with adaptive scheduling and LLM-augmented decision-making, and experimental evaluation across the simulation environment and the FPMI testbed. Implemented jointly by the Applicant and FPMI under a contract research agreement. A3 — Innovation cycle management:

	Innovation advisory and support services comprising two components. First, ongoing Technology Scout monitoring and strategy adjustment throughout implementation, together with an external market analysis of municipal and cross-sector demand for context-aware autonomous camera systems, producing a market analysis report informing the post-project development pathway. Second, an IP cycle management service conducted in parallel with Activity 2, comprising a state-of-the-art and freedom-to-operate analysis of the agentic architecture and its key components, conducted with Technology Scout support, producing a structured IP management recommendation that informs the registration of an EU trademark for the product identity (contributing to indicator B2) while maintaining trade secret protection for proprietary implementation know-how. Output: market analysis report and IP management recommendation (O7). A4 — Project management, promotion and visibility
Environmental Impacts Identified	The project consists of software-based artificial intelligence research and development activities related to the design, implementation and controlled validation of an agentic decision-making architecture for autonomous PTZ camera systems. Activities include computer vision research, adaptive scheduling, large language model-assisted decision-making, software prototype development, simulation, experimental validation and testing in a controlled IT laboratory/testbed environment using existing PTZ camera equipment, cloud resources and HPC infrastructure. No civil works, infrastructure development, hazardous materials, biological samples, animal research, radioactive materials or environmentally sensitive activities are involved. Environmental impacts are limited to indirect impacts associated with standard electricity consumption of existing computing infrastructure and test equipment, as well as normal office operations. The project is classified as a Low Environmental Risk.
Social Impact Identified	Social risks are primarily related to responsible artificial intelligence governance, data privacy, cybersecurity and management of video-related data due to the development and future application of an autonomous camera decision-making system in smart-city and infrastructure monitoring environments. The system is designed to detect events and support operational decision-making rather than identify individuals; no facial recognition or biometric identification functionalities are included. These risks will be managed through privacy-by-design principles, data minimisation, restricted access, controlled data processing environments, GDPR-compliant procedures and responsible AI practices. Intellectual property related to the agentic architecture, software implementation, research results and project know-how will be appropriately managed and protected. Occupational health and safety risks are limited to standard office and IT laboratory activities, including safe use of computer equipment, test infrastructure and ergonomic

	considerations, and will be managed through applicable workplace safety procedures. The project is classified as a Low Social Risk.
Categorization of the Risk	LOW Based on the environmental and social screening, the project is classified as Low E&S Risk, with no significant adverse environmental or social impacts anticipated. Nevertheless, certain aspects require proportionate management and monitoring measures, including Occupational Health and Safety (OHS), Intellectual Property, Data Protection, Artificial Intelligence and Cybersecurity, Procedures and Reporting in Case of Accident, and Stakeholder Engagement. Accordingly, the project is subject to the General ESMP Checklist to ensure that these aspects are appropriately managed throughout project implementation.
Mitigation Measures Categories	
Occupational Health and Safety (OHS) (3.)	
Intellectual Property (9)	
Data Protection (10)	
Artificial Intelligence and Cybersecurity (11.)	
Procedures and Reporting in Case of Accident (12.)	
Stakeholder Engagement (13.)	

B. Mitigation Measures

1. Civil Works

Category	CIVIL WORKS
Aspect	**Proposed mitigation measures**
Scope of Works and Legal Compliance	1. Civil works shall be limited to existing buildings and/or plots under the legal use of the project beneficiary.
	2. Civil works shall not involve land acquisition, involuntary resettlement, or physical or economic displacement of people
	3. The scope, location, scale, and duration of civil works shall be clearly defined and documented prior to implementation.
	4. All applicable national construction, environmental, and occupational safety regulations shall be complied with.
	5. All required permits, approvals, and notifications shall be obtained prior to the commencement of works, where applicable.
	6. Civil works shall be carried out exclusively by licensed and authorized contractors.
Site Planning, Organization, and Access Control	7. Construction sites shall be clearly demarcated and physically separated from areas accessible to staff, students, patients, or visitors.
	8. Access to construction areas shall be restricted to authorized personnel only.
	9. Construction activities shall be scheduled to minimize disruption to normal facility operations.

Category	CIVIL WORKS
Aspect	**Proposed mitigation measures**
	10. Safe pedestrian routes and emergency evacuation paths shall be maintained at all times.
	11. Temporary utilities (electricity, water, IT) shall be safely installed, clearly marked, and regularly inspected.
Occupational Health and Safety (OHS)	12. A site-specific Occupational Health and Safety Plan shall be prepared and implemented by the contractor.
	13. All workers shall receive appropriate OHS training prior to engaging in construction activities.
	14. Personal protective equipment (PPE) appropriate to the task shall be provided and used at all times.
	15. High-risk activities (e.g. work at height, electrical works, confined spaces) shall be subject to additional control measures and supervision.
	16. Construction activities carried out in operational laboratories or technical areas shall be subject to enhanced safety procedures.
	17. All subcontractors and their employees are required to comply with the same occupational health and safety (OHS) and labor standards as the main contractors, and compliance will be subject to regular monitoring and inspections.
Community Health, Safety, and Protection of Users	18. Construction activities shall not pose risks to the health and safety of staff, students, patients, visitors, or the surrounding community.
	19. Measures shall be implemented to prevent unauthorized access by third parties, including vulnerable persons.

Category	CIVIL WORKS
Aspect	**Proposed mitigation measures**
	20. Additional protection measures shall be applied in facilities used by vulnerable groups (e.g. patients, persons with disabilities).
	21. Facility users shall be informed in advance about the scope, timing, and duration of construction works.
Noise, Dust, and Air Emissions Management	22. Measures shall be implemented to limit construction noise to legally permissible levels.
	23. Noisy activities shall be restricted to defined working hours
	24. Dust generation shall be minimized through appropriate measures such as wetting, covering of materials, and enclosure of work areas.
	25. Construction materials prone to dust generation shall be stored and transported in a manner that prevents dispersion.
	26. Air emissions from machinery and equipment shall be minimized through proper maintenance and operation.
Soil and Water Protection	27. Measures shall be implemented to prevent contamination of soil during construction activities.
	28. Storage of fuels, oils, paints, solvents, and chemicals shall be carried out on impermeable surfaces with secondary containment.
	29. Direct discharge of wastewater, sludge, or contaminated liquids into soil, drainage systems, or water bodies shall be prohibited.
	30. Construction activities shall be managed to prevent pollution of surface water and groundwater.

Category	CIVIL WORKS
Aspect	**Proposed mitigation measures**
	31. Spill prevention and response procedures shall be available at the construction site.
Waste Management	32. A construction waste management approach shall be implemented, including waste minimization and segregation.
	33. Construction waste shall be temporarily stored in designated areas in a safe manner.
	34. Hazardous construction waste, if generated, shall be handed over to licensed waste management operators.
	35. Records of waste generation, transport, and disposal shall be maintained.
Protection of Existing Assets and Infrastructure	36. Existing buildings, equipment, installations, and utilities shall be protected from damage during construction works.
	37. Construction activities shall not compromise the structural integrity or safety of buildings
	38. Any damage to existing assets shall be promptly repaired and reported to the responsible authority.
Emergency Preparedness and Incident Management	39. Emergency response procedures covering fire, injuries, spills, and other incidents shall be defined and communicated to workers.
	40. Emergency contact details shall be clearly displayed at the construction site.
	41. All accidents, near-misses, and incidents shall be recorded and reported in accordance with project procedures.

Category	CIVIL WORKS
Aspect	**Proposed mitigation measures**
	42. Environmental incidents involving pollution of air, soil, or water shall trigger immediate corrective and remedial actions.
Completion of Works and Site Restoration	43. Upon completion of construction works, all debris, waste, and temporary facilities shall be removed from the site.
Discrimination against women/vulnerable groups in the hiring process of workers and during project implementation	44. The project will adopt accessible communication measures to ensure inclusion of vulnerable groups. This includes provision of sign language interpretation, alternative text, captions, or other appropriate communication aids as needed.
	45. All activities involving children will comply with EU requirements for safeguarding in research, including the handling of images and personal identifying information. Any data collection or dissemination will ensure the privacy and protection of child participants
	46. Any future project activities involving children will require documented parental or legal guardian consent prior to participation.
	47. Project staff and contractors will receive training on interacting appropriately with vulnerable groups, including children and persons with disabilities, ensuring respect, dignity, and safety at all times.
	48. Mechanisms will be in place to monitor compliance with safeguarding requirements and accessible communication provisions. Any concerns or incidents involving vulnerable groups will be documented and addressed promptly.
	49. Access to safe GRM for workers (Contractor GRM) must be ensured and other grievance mechanisms (unions, arbitration). The workers have to be explicitly informed of their rights and GRM.

Category	CIVIL WORKS
Aspect	**Proposed mitigation measures**
	50. Wages and contract conditions offered to all staff should be in keeping with Croatian labor laws or higher set standards which should be competitive in all categories of workers including foreign workers.
Labor influx	51. All Information materials regarding workers' rights, safety, Code of Conduct and information on GRM availability and access must be provided in local language and language accessible to foreign workers
	52. All workers, including foreign workers, must undergo mandatory training on occupational health and safety, workers' rights, and procedures in case of accidents or non-compliance
	53. Workers should be hired through national employment service to avoid hiring "at the gate" and therefore to discourage spontaneous influx of job seekers. The contractors employing the foreign workers directly should guarantee that foreign workers are provided with working conditions and accommodation that comply with both national laws and ESS2 (fair recruitment): employment contracts are comprehensible, equitable, and transparent, and are given in a language that the worker can understand. The foreign workers should be informed about their rights and responsibilities, as well as the resources they can access if they encounter exploitation or discrimination. All contractors and their sub-contractors must respect and implement the World Bank Group Code of Ethics. Any such complaint or shared information shall be subject of Ethics Review by the DIGIT project.
	54. Accommodation must meet the minimum space, sanitation, and safety standards set by national regulations and do independent inspections confirm compliance with hygiene, occupancy limits, heating, ventilation, and fire safety standards.

2. Equipment

Category	EQUIPMENT
Aspect	**Proposed mitigation measures**
Equipment Selection and Procurement	1. Equipment shall be appropriate for the approved project activities and aligned with the defined project scope.
	2. Procurement of equipment shall comply with applicable national legislation and World Bank procurement requirements.
	3. Preference shall be given, where feasible, to equipment with higher energy efficiency, durability, and lower environmental footprint.
Delivery, Handling, and Installation	4. Equipment shall be delivered, handled, and stored in accordance with manufacturer instructions.
	5. Installation and commissioning shall be carried out by qualified and authorized personnel.
	6. Functional testing shall be completed prior to operational use of the equipment.
Safe Use and Operational Control	7. Equipment shall be operated only for its intended purpose and within defined operational limits.
	8. Operating instructions and user manuals shall be available to all authorized users.
	9. Access to specialized or high-risk equipment shall be restricted to trained and authorized personnel.
Digital, Automated, and AI-Enabled	10. Digital and automated equipment shall be configured to ensure secure, reliable, and controlled operation.

Category	EQUIPMENT
Aspect	**Proposed mitigation measures**
Equipment	11. AI-enabled equipment shall be implemented in line with approved project objectives and ethical principles, with appropriate human oversight.
Maintenance, Asset Management, and Decommissioning	12. Preventive maintenance and servicing shall be performed in accordance with manufacturer recommendations.
	13. An inventory of procured equipment shall be maintained, and responsibilities for equipment management clearly assigned.

3. Occupational Health and Safety (OHS)

Category	OCCUPATIONAL HEALTH AND SAFETY (OHS)
Aspect	**Proposed mitigation measures**
OHS Management and Responsibilities	1. The project shall comply with applicable occupational health and safety legislation and institutional OHS procedures.
	2. OHS roles and responsibilities for project activities shall be clearly assigned within the project team.
	3. Project-specific occupational health and safety risks shall be identified prior to the start of project activities and reviewed periodically.
	4. Non-routine or high-risk research activities shall be subject to a documented risk assessment before implementation.
Laboratory and Research Activities	5. Laboratory and research activities shall be conducted in accordance with approved laboratory safety procedures.
	6. Access to laboratories and research facilities shall be restricted to authorized and trained personnel only.
	7. Project personnel shall be informed of health and safety risks associated with their specific research activities.
	8. Access to laboratories shall be subject to appropriate supervision, particularly for students, early-career researchers, and new staff.
	9. New project personnel shall receive site-specific safety induction prior to engaging in laboratory or research activities.
Biosafety and Exposure Prevention	10. Activities involving biological and human-derived material shall be conducted in accordance with approved biosafety procedures, ethical approvals and applicable data protection requirement.

Category	OCCUPATIONAL HEALTH AND SAFETY (OHS)
Aspect	**Proposed mitigation measures**
	11. Measures shall be applied to minimize exposure to hazardous substances during routine project activities.
	12. Biosafety procedures shall include defined containment, hygiene, decontamination, traceability, and controlled handling practices relevant to the project activities.
	13. Emergency procedures related to biological exposure shall be known to laboratory personnel.
Field Work and Non-Routine Activities	14. Field work and sampling activities shall be planned to minimize risks to project staff.
	15. Site-specific risks shall be assessed prior to field activities, and appropriate preventive measures applied.
	16. Pilot-scale experiments and experimental setups shall be conducted under controlled conditions and appropriate supervision.
	17. Changes to experimental procedures shall be reviewed from an OHS perspective prior to implementation.
Ergonomics and Digital Work	18. Ergonomic risks related to laboratory, desk-based, and computer-intensive work shall be identified and mitigated.
	19. Measures shall be implemented to reduce ergonomic and work-related strain associated with prolonged laboratory or computer-based activities.
Clinical and Human-Subject Activities	20. Activities involving patients or human subjects shall follow approved protocols, including informed consent procedures.
Incident Reporting and Training	21. Procedures for reporting occupational incidents and near-misses related to project activities shall be in place and communicated to staff.

Category	OCCUPATIONAL HEALTH AND SAFETY (OHS)
Aspect	**Proposed mitigation measures**
	22. Project personnel shall receive appropriate OHS training relevant to their assigned tasks.
	23. Reported incidents and near-misses shall be reviewed to identify corrective and preventive actions.
Communication and language accessibility	24. Important information and particularly related to safety must be presented in language(s) accessible to these researchers and staff.

4. Waste Management

Category	WASTE MANAGEMENT
Aspect	**Proposed mitigation measures**
Waste Identification and Segregation	1. The project shall identify all waste streams generated through laboratory, research, and pilot activities, including chemical, biological, and electronic waste.
	2. Laboratory waste shall be segregated at the point of generation according to hazard classification and laboratory biosafety procedures.
	3. Non-hazardous laboratory waste shall be collected and disposed of through authorized institutional or municipal systems.
Hazardous Chemical Waste Management	4. Hazardous chemical waste shall be handled separately, stored in compatible and clearly labeled containers, and managed in accordance with safety data sheets (SDS).
	5. Temporary storage of hazardous chemical waste shall be limited in time and carried out in designated, secured areas with appropriate containment.
	6. Disposal of hazardous chemical waste shall be carried out exclusively through licensed waste management operators.
Biological and Biosafety Waste Management	7. Biological and potentially infectious waste shall be segregated, contained, and treated or disposed of in accordance with applicable biosafety regulations.
	8. Sharps, contaminated materials, and biohazardous waste shall be collected in appropriate puncture-resistant and clearly marked containers.
	9. Temporary storage of biological waste shall be limited in time and managed in designated biosafety-compliant areas.

Category	WASTE MANAGEMENT
Aspect	**Proposed mitigation measures**
Biological and Biosafety Waste Management	10. Waste electrical and electronic equipment (WEEE) generated by laboratory activities shall be managed separately from other waste streams.
	11. Data-containing equipment shall undergo secure data removal prior to disposal or transfer.
Training, Documentation, and Oversight	12. Laboratory staff involved in waste handling shall receive appropriate training on waste segregation, labeling, and safe handling procedures.
	13. Records of hazardous laboratory waste disposal shall be maintained in accordance with institutional and legal requirements.
	14. Waste management practices shall be periodically reviewed to ensure continued compliance with laboratory safety and environmental requirements.

5. Animal Material

Category	ANIMAL MATERIAL
Aspect	**Proposed mitigation measures**
Ethical Approval and Compliance	1. Activities involving animals or animal-derived biological material shall be conducted only after obtaining all required ethical approvals and permits from competent authorities, and in accordance with the principles of Replacement, Reduction, and Refinement (3R).
	2. The use of animal material shall comply with applicable national legislation, EU standards, institutional ethical policies, and follow humane procedures to minimize suffering.
	3. Ensure that any procedures involving laboratory animals, including terminal procedures in laboratory rodents where applicable, are conducted exclusively under approved ethical permits and in accordance with institutional animal welfare protocols.
Source and Traceability	4. Animal material shall be obtained exclusively from authorized and legally compliant sources.
Ethical Use of Animals and Application of the 3Rs Principle	5. No protected species or species listed on the IUCN Red List shall be sampled or used unless ethically approved, minimal, and targeted sampling is conducted, and it is conclusively demonstrated that such sampling has a negligible impact on the individual or on biodiversity. Sampling must not result in death, significant harm, or major stress or disturbance to the organism.
	6. Other non-mammalian species may be sampled only in very small laboratory quantities.
	7. All activities shall adhere to the 3Rs principles (Replacement, Reduction, Refinement), and where feasible, AI-driven platforms and alternative models should be used to minimize reliance on live animal-derived samples.
	8. Whenever possible, experiments shall incorporate alternative models, such as organoids or in vitro systems, to reduce the use of live animals.
	9. Procedures involving live animals shall be performed humanely according to approved protocols.

Category	ANIMAL MATERIAL
Aspect	**Proposed mitigation measures**
Documentation	10. Documentation on the origin and traceability of animal material shall be maintained. Records shall include information on ethical approvals, compliance with humane procedures, and justification for the use of animal material.
Handling and Use	11. Animal and biological material shall be handled in accordance with approved laboratory safety and biosafety procedures.
	12. Access to areas where animal material is handled shall be restricted to authorized and trained personnel only.
	13. Animal material shall be used strictly for the purposes defined in the approved project protocols.
	14. Areas where animal or biological material is handled shall be subject to defined access control and zoning procedures, where relevant.
	15. Procedures shall be in place to ensure integrity, labeling, and identification of biological samples throughout their use.
	16. Mixing or misidentification of samples shall be prevented through defined handling protocols.
Biosafety and Containment	17. Appropriate biosafety levels and containment measures shall be applied based on the nature of the animal or biological material.
	18. Measures shall be implemented to prevent cross-contamination between samples, experiments, or laboratories.
	19. Relevant decontamination procedures shall be defined and applied.

Category	ANIMAL MATERIAL
Aspect	**Proposed mitigation measures**
	20. Project activities involving animal or biological material shall be classified according to the applicable biosafety level prior to implementation.
	21. Any change in the nature or risk level of biological material shall trigger a review of biosafety measures.
Storage and Internal Transport	22. Animal and biological material shall be stored under controlled conditions appropriate to the material type, with secured and access-controlled storage areas.
	23. Internal transport of animal material within facilities shall follow defined biosafety and containment procedures.
Training and Incident Management	24. Personnel involved in handling animal material shall receive appropriate training on ethical, biosafety, and handling procedures. Personnel shall receive training not only on biosafety and handling procedures but also on ethical treatment of animals and application of 3R principles.
	25. Procedures shall be in place to respond to and record incidents involving animal or biological material.
	26. Emergency biosafety procedures shall be defined for accidental exposure, spills, or loss of biological material.

6. Hazardous Chemicals Management

Category	HAZARDOUS CHEMICALS MANAGEMENT
Aspect	**Proposed mitigation measures**
Regulatory Compliance and Chemical Inventory	1. The project shall comply with applicable national legislation, EU regulations (e.g. REACH/CLP), and institutional chemical safety procedures.
	2. All hazardous chemicals used within the project shall be identified and listed in a project-specific chemical inventory.
	3. Safety Data Sheets (SDS) shall be available and accessible for all hazardous chemicals used in project activities.
Procurement and Authorization of Hazardous Chemicals	4. Hazardous chemicals shall be procured only for approved project activities and in quantities necessary for their intended use.
	5. Use of restricted or particularly hazardous substances shall require prior authorization in accordance with institutional procedures.
Handling and Use of Hazardous Chemicals	6. Hazardous chemicals shall be handled strictly in accordance with approved laboratory safety procedures and SDS instructions.
	7. Access to hazardous chemicals shall be restricted to trained and authorized personnel only.
	8. Chemical handling procedures shall aim to minimize exposure risks during routine project activities.
	9. Hazardous chemicals (e.g., strong acids and bases) and compressed gases used in laboratory procedures must be handled according to established safety protocols, including the use of fume hoods, proper storage, securing of gas cylinders, leak checks, and communication of Material Safety Data Sheets (MSDS) to staff. Personnel must be trained, and safety procedures strictly followed to prevent exposure and

Category	HAZARDOUS CHEMICALS MANAGEMENT
Aspect	**Proposed mitigation measures**
	accidents
Storage and Labeling	10. Hazardous chemicals shall be stored in designated, secure areas appropriate to their hazard classification.
	11. Containers of hazardous chemicals shall be clearly labeled with content, hazard information, and relevant warnings.
	12. Incompatible chemicals shall be stored separately to prevent hazardous reactions.
Exposure Prevention and Operational Controls	13. Appropriate operational controls (e.g. fume hoods, containment practices) shall be used when handling hazardous chemicals.
	14. Chemical handling activities shall be planned to reduce the likelihood of spills, releases, or accidental exposure.
Incident Prevention and Emergency Response	15. Procedures shall be in place to respond to accidental spills, exposure, or other incidents involving hazardous chemicals.
	16. Project personnel shall be informed of emergency procedures related to hazardous chemical use.
	17. Incidents involving hazardous chemicals shall be recorded and reviewed in accordance with project procedures
Training and Competency	18. Personnel involved in handling hazardous chemicals shall receive appropriate training on chemical safety and risk prevention.
	19. Refresher training shall be provided where required by institutional or project procedures.

Category	HAZARDOUS CHEMICALS MANAGEMENT
Aspect	**Proposed mitigation measures**
Monitoring and Review	20. Compliance with hazardous chemicals management procedures shall be periodically reviewed during project implementation.
	21. Chemical management procedures shall be updated if the scope or nature of chemical use changes.

7. Biodiversity and Environment Protection

Category	BIODIVERISTY AND ENVIRONMENT PROTECTION
Aspect	**Proposed mitigation measures**
Protection of Natural Habitats and Sensitive Areas	1. Project activities shall not involve the conversion, degradation, or significant disturbance of critical natural habitats, legally protected areas, or areas of high biodiversity value, and shall be designed to avoid any adverse impacts on natural habitats.
	2. Project activities conducted in protected or environmentally sensitive areas shall be carried out only with prior authorization from competent authorities.
	3. Activities in protected areas shall comply with site-specific management plans and protection requirements.
	4. Ensure minimal human presence in the field by using automated, autonomous, or remote systems wherever feasible, in order to reduce disturbance to wildlife and habitats.
	5. Apply environmentally sensitive planning of movement and activities, based on environmental assessments, to avoid sensitive areas and zones with high wildlife activity.
	6. Use low-noise, low-emission equipment and vehicles, and limit their operation to the minimum necessary.
	7. Implement measures for the detection and avoidance of wildlife during activities, including adaptation or temporary suspension of operations when animals are present.
	8. Plan and carry out activities during environmentally appropriate time periods, avoiding sensitive phases of wildlife life cycles such as nesting, breeding, or feeding periods.
Environmental Screening of Project Activities	9. Prior to conducting field work, sampling, or pilot activities, potential impacts on local biodiversity and ecosystems shall be considered and avoided where feasible.
	10. Field activities shall be limited in scope, duration, and spatial extent to minimize disturbance to flora, fauna, and natural habitats

Category	BIODIVERISTY AND ENVIRONMENT PROTECTION
Aspect	**Proposed mitigation measures**
Biological Sampling and Use of Natural Resources	11. Collection of biological samples from the environment shall be conducted only where permitted and in compliance with applicable environmental regulations and permits.
	12. Project activities shall not involve the use of endangered, protected, or threatened species unless explicitly authorized by competent authorities.
	13. Collection of marine organisms or biological material shall be limited to the minimum quantity necessary to achieve project objectives.
	14. Sampling methods shall be selected to minimize harm to organisms and disturbance to marine habitats.
Prevention of Ecological Risks	15. Introduction or spread of invasive alien species through project activities shall be avoided through appropriate preventive measures.
	16. Measures shall be applied to prevent accidental release of biological material or substances that could negatively affect ecosystems.
	17. Use of recording, monitoring, or survey equipment (e.g. cameras, drones, acoustic devices) shall not cause disturbance to wildlife or sensitive habitats.
Environmental Good Practice, Monitoring, and Awareness	18. Environmental good practices shall be applied during field and pilot activities to prevent soil, vegetation, or water body disturbance beyond the immediate project needs.
	19. Any unexpected environmental impacts or damage to biodiversity observed during project implementation shall be reported and addressed in accordance with project procedures.
	20. Project teams involved in field or environmental activities shall be informed of relevant environmental protection requirements and good practices.

8. Community Health and Safety

Category	COMMUNITY HEALTH AND SAFETY
Aspect	**Proposed mitigation measures**
General Community Risk Prevention	1. Project activities shall be designed and implemented to avoid creating health or safety risks for surrounding communities and non-project personnel.
	2. Project activities shall not result in increased exposure of community members to project-related hazards beyond what is unavoidable for implementation.
	3. Use of drones, cameras, acoustic devices, or other recording and monitoring equipment shall be conducted in a manner that avoids disturbance to wildlife, risks to community safety, and violations of applicable privacy or protected area regulations.
Presence in Public or Semi-Public Spaces	4. Where project activities take place in public or semi-public spaces (e.g. campuses, ports, coastal areas, public facilities), measures shall be applied to ensure the safety of non-project personnel.
	5. Access to areas where project activities pose potential risks to the public shall be controlled or clearly communicated, as appropriate.
Field, Pilot, and Demonstration Activities	6. Field work, pilot testing, and demonstration activities shall be conducted in a manner that minimizes risks, disturbance, or nuisance to local communities.
	7. Project field and pilot activities shall be conducted in a manner that minimizes nuisance, including noise or disturbance, to nearby communities and sensitive environments.
	8. Temporary project activities shall not interfere with essential community services, livelihoods, or normal use of public spaces.
Interaction with Communities	9. Project personnel shall conduct interactions with community members in a respectful manner and in line with applicable institutional and project rules.

Category	COMMUNITY HEALTH AND SAFETY
Aspect	**Proposed mitigation measures**
	10. Activities or research outputs that may affect public understanding of health, safety, or environmental risks shall be addressed through transparent communication and timely information sharing.
Incident Response and Complaints	11. Procedures shall be in place to respond to incidents related to community health and safety arising from project activities.
	12. Community-related complaints or concerns shall be received, recorded, and addressed through the project's grievance mechanism.
Cross cutting obligations	13. Project activities shall comply with all applicable community health and safety–related measures defined elsewhere in this checklist, including those related to biodiversity protection, hazardous materials, animal and biological material handling, data protection, and other project-specific risk management measures.

9. Intellectual Property

Category	INTELLECTUAL PROPERTY
Aspect	**Proposed mitigation measures**
Legal Compliance and Ownership	1. Appropriate intellectual property protection measures (e.g. copyright registration, patents, trade secrets) shall be identified and implemented where applicable.
	2. All project activities shall comply with the Act on Copyright and Related Rights (OG 111/21) and other applicable intellectual property legislation.
Identification and Protection of Intellectual Property	3. Intellectual property generated through project activities shall be identified and assessed for appropriate protection measures, such as copyright, patents, trade secrets, or other forms of protection, where applicable.
	4. Appropriate steps shall be taken to protect intellectual property prior to public disclosure, publication, or dissemination of project results.
Commercialization and Knowledge Transfer	5. All innovations generated under the project, including software tools, numerical models, technical reports, methodologies, or design code recommendations, shall be evaluated for their potential commercialization or transfer to practice.
	6. Commercialization or exploitation of project results shall be conducted in accordance with applicable intellectual property rules and institutional technology transfer procedures.

10. Data Protection

Category	DATA PROTECTION
Aspect	**Proposed mitigation measures**
Data Protection	1. The General Data Protection Regulation in Croatia is based on the General Data Protection Regulation (GDPR) of the European Union and ensures the protection of privacy and personal data of citizens. All entities processing personal data, whether in the public or private sector, are required to align their activities with the provisions of the law and implement data protection measures to prevent misuse or insecurity of data including secure storage, processing, transfer, retention, anonymization, and destruction of personal and health-related data.
	2. The GDPR principles of data minimization and proportionality shall be strictly applied.
	3. Only personal data strictly necessary for achieving the specific research or project objectives shall be collected. Any additional or unrelated data collection is prohibited.
	4. Regular review of collected data will be conducted to ensure relevance, necessity, and compliance with the principle of proportionality. Unnecessary data will be deleted immediately.
Informed Consent and Voluntary Participation	5. Strict procedures, encryption, access controls, and staff training must be enforced to ensure compliance.
	6. Consent protocols must be in full compliance with EU Regulation 536/2014 and the General Data Protection Regulation (GDPR).
	7. Participation in research shall be entirely voluntary and documented informed consent shall be obtained in advance.
	8. Documentation shall confirm the consent, data sharing, storage duration, and destruction upon withdrawal of consent.
Privacy and Confidentiality	9. Confidentiality of personal data shall be ensured, and tissue samples shall be anonymized or de-identified.
	10. Data associated with human samples must be de-identified or anonymized before transfer and

	processing, in full compliance with GDPR and national regulations.
	11. Strict procedures, encryption, access controls, cloud-security measures, incident-response procedures, and staff training will ensure data protection.
	12. Only project staff with a clear operational need will have access to personal data. Access logs will be maintained for audit purposes.
	13. Personal data will be stored only for the minimum period necessary for the research purpose. After this period, data will be securely destroyed or anonymized.

11. Artificial Intelligence and Cybersecurity

Category	DATA PROTECTION
Aspect	**Proposed mitigation measures**
Regulatory Compliance and Ethical Framework	1. All artificial intelligence–related activities shall comply with applicable EU legislation, including the Artificial Intelligence Act (Regulation (EU) 2024/1689), and shall align with the OECD AI Principles.
	2. AI systems shall be developed and used in accordance with ethical principles, including transparency, explainability, accountability, human oversight, non-discrimination, and appropriate validation procedures.
Governance, Oversight, and Responsible Use	3. AI-based tools and systems shall be used only for purposes consistent with approved project objectives and shall not be deployed for unintended or high-risk uses without prior review.
	4. Appropriate human oversight shall be ensured for AI-supported or automated decision-making processes relevant to project activities, particularly in healthcare, biomedical, or diagnostic applications.
Capacity Building and Awareness	5. Project staff involved in the development, use, or supervision of AI systems shall receive appropriate training on responsible AI use, ethical considerations, and associated risks.
Cybersecurity and Information Systems Protection	6. Cybersecurity measures shall be implemented in compliance with the EU NIS2 Directive and relevant national cybersecurity regulations to protect project-related digital systems, data, and infrastructure.
	7. Measures such as access controls, authentication mechanisms, secure configurations, monitoring and incident response procedures shall be applied to prevent unauthorized access, data breaches, or system misuse.

12. Procedures and Reporting in Case of Accident

Category	PROCEDURES AND REPORTING IN CASE OF ACCIDENT
Aspect	**Proposed mitigation measures**
Incident Identification and Reporting	1. Procedures shall be in place for the timely identification and reporting of accidents, incidents, near-misses, and unexpected events arising from project activities.
	2. Project personnel shall be aware of their obligation to report incidents in accordance with project and institutional procedures.
	3. Roles and responsibilities for incident reporting, internal notification, and follow-up actions shall be clearly defined within the project team.
	4. Incident reporting procedures shall apply to all project activities, including laboratory work, field activities, pilot testing, digital activities, and interactions with external stakeholders or communities.
Incident Response, Documentation, and Follow-up	5. Reported incidents shall be documented and assessed to determine their causes, impacts, and required corrective or preventive measures.
	6. Serious incidents with potential or actual environmental, health, safety adverse effects, that affect communities, public or workers shall be reported without delay, not later than 24 hours, to the Project Implementation Unit (PIU) and other relevant authorities, in line with World Bank requirements.
	7. Incident reports will provide sufficient detail regarding the scope, severity, and possible causes of the incident or accident, indicating immediate measures taken or that are planned to be taken to address it.
	8. Corrective actions identified following an incident shall be implemented and monitored until closure.
	9. Incident reporting and response procedures shall be coordinated with relevant thematic procedures defined elsewhere in this checklist (e.g. OHS, hazardous chemicals, biodiversity protection, community health and safety).

13. Stakeholder Engagement

Category	STAKEHOLDER ENGAGEMENT
Aspect	**Proposed mitigation measures**
Public Consultation	1. Publish the notice on the beneficiary web page on draft ESMP Checklist consultations for minimum of two weeks.
Dissemination	2. Dissemination of research results will be conducted through scientific events, peer reviewed publications, webinars and digital platforms etc.
	3. The low engagement from external stakeholders or uneven participation across different groups. will be addressed through proactive outreach, targeted recruitment strategies, and continuous communication.
	4. Open science practices will be applied whenever appropriate to support early dissemination and transparency, while ensuring that sensitive or potentially exploitable project outputs are protected prior to release.
	5. Clear licensing terms (e.g., Creative Commons or open-source software licenses) will be applied to those outputs intended for public sharing.
	6. The dissemination activities will enable the exchange of scientific, clinical, safety, ethical, and responsible AI practices.

GRM	7. Grievance Redress Mechanism (GRM) shall be established by appointing a person in charge and providing and publishing on the website e-mail address where the interested public, either groups or individuals, could send complaints, comments and/or suggestions. The e-mail address shall be reported to the DIGIT GRM of the CSF at grmdigit@hrzz.hr for project under DIGIT.2.1.02. Challenge Program, DIGIT 2.2.01. Seal of Excellence and DIGIT 2.2.02. Routes to Synergies.
	8. Grievance Redress Mechanism (GRM) shall be established by appointing a person in charge and providing and publishing on the website e-mail address where the interested public, either groups or individuals, could send complaints, comments and/or suggestions. The e-mail address shall be reported to the DIGIT GRM at grmdigit@mzom.hr for project under DIGIT.1.2.03. Professionalization of Research Centers Call.
	9. Grievance Redress Mechanism (GRM) shall be established by appointing a person in charge and providing and publishing on the website e-mail address where the interested public, either groups or individuals, could send complaints, comments and/or suggestions. The e-mail address shall be reported to the DIGIT GRM of the Croatian Agency for SMEs, Innovation and Investments (HAMAG-BICRO) for project under DIGIT.1.2.02. Technology Scouting.
	10. Information on such received complaints, comments, and suggestions should be archived in a logical framework database and reported to the DIGIT Project GRM of the CSF on monthly basis, together with information on the measures taken following received complaints, comments, and/or suggestions
	11. Contractor's Grievance Redress Mechanism (GRM) shall be established and reported to project's GRM.
Internal Procedure for Reporting of Irregularities	12. The procedure for internal reporting of irregularities and the method of appointing a confidential person and the protection of whistleblowers shall be published on the website with the reporting instructions.

Capacity Building	13. Training on safe operation of equipment will be conducted.
	14. Capacity building will be carried out based on research findings and technologies.

14. Vulnerable Groups

Category	VULNERABLE GROUPS
Aspect	**Proposed mitigation measures**
Identification and Risk Awareness	1. Project activities shall identify whether vulnerable or disadvantaged groups may be affected or involved, directly or indirectly.
	2. Vulnerable groups may include, where relevant, persons with disabilities, elderly persons, children, patients, economically disadvantaged persons, and other groups with reduced capacity to avoid or cope with project-related risks.
Inclusive Design of Project Activities	3. Project activities shall be designed and implemented in a manner that avoids disproportionate risks or negative impacts on vulnerable groups.
	4. Where project activities take place in public, semi-public, or shared facilities, reasonable measures shall be applied to ensure safe and inclusive access for vulnerable persons.
Interaction and Participation	5. Interaction with vulnerable groups shall be conducted in a respectful, non-discriminatory, and culturally appropriate manner.
	6. Participation of vulnerable groups in project activities (e.g. testing, pilots, demonstrations) shall be voluntary and based on informed consent, where applicable.
Protection from Harm and Exploitation	7. Project activities shall not expose vulnerable groups to increased health, safety, psychological, privacy, security or discrimination-related risks.
	8. Any activities involving children or other highly vulnerable persons shall follow applicable legal and institutional protection requirements including the use of images and personal identifying data.
	9. Code of Ethics for Research Involving Children (2003) and other applicable EU regulations shall be

Category	VULNERABLE GROUPS
Aspect	**Proposed mitigation measures**
	followed.
Information, Communication, and Grievances	10. Information relevant to project activities shall be communicated in a manner accessible to vulnerable groups, where relevant. Accessible communication measures, including facilitation (e.g., sign language) or other appropriate communication aids, as needed, will be implemented.
	11. Vulnerable groups shall have access to the project's grievance mechanism without barriers or risk of retaliation.
Monitoring and Adaptive Measures	12. Any issues or incidents affecting vulnerable groups shall be monitored and addressed through appropriate corrective measures.

15. Cultural Heritage

Category	CULTURAL HERITAGE
Aspect	**Proposed mitigation measures**
Legal Compliance and Authorization	1. All activities involving archaeological materials shall comply with applicable legislation and institutional requirements.
	2. Necessary permits and approvals shall be obtained prior to analysis.
	3. The origin, ownership, and legal status of materials shall be documented and verified.
	4. Sampling of archaeological materials shall be subject to prior written authorisation by the legally responsible institutions (including the excavation director/scientific lead, the curating institution, and, where applicable, the competent heritage authority), obtained before any sampling activity.
Sampling and Impact Minimization	5. Sampling shall be limited to the minimum quantity necessary to achieve project objectives.
	6. Non-destructive or minimally invasive methods shall be used wherever feasible.
	7. Any destructive analysis shall be justified, documented, and approved in advance.
	8. Sampling shall follow a conservation-first approach, prioritising already fragmented or non-diagnostic material and minimising impact on archaeological specimens.
	9. Sampling of unique or complete specimens shall only be undertaken on a case-by-case basis, where it can be demonstrated that no damage to integrity, scientific value, or curatorial significance will occur.

Category	CULTURAL HERITAGE
Aspect	**Proposed mitigation measures**
	10. Where no suitable low-impact sampling strategy can be applied, the specimen shall not be sampled and alternative material shall be used where possible.
Handling, Preservation, and Storage	11. Materials shall be handled in accordance with conservation standards to prevent damage, contamination, or loss.
	12. Appropriate storage conditions shall be ensured to maintain material integrity.
	13. Access shall be restricted to authorized and trained personnel.
Documentation, Traceability and Use	14. All sampling and analyses shall be properly documented.
	15. Full traceability of samples shall be ensured through labeling, storage, and tracking procedures.
	16. Documentation shall include sampling location, quantity, method, and analytical purpose to ensure full traceability.
	17. Materials and associated data shall be used only within the approved project scope and in accordance with agreements.
Return and Incident Management	18. Materials shall be returned to the originating institution or managed in line with agreed conditions.
	19. Any damage, loss, or incident shall be promptly reported and addressed in accordance with project procedures.

C. Monitoring and Reporting

The Project Beneficiary shall be responsible for monitoring the implementation of all applicable environmental and social (E&S) measures throughout the duration of project implementation.

Monitoring shall cover compliance with each E&S measure applicable to the project, as identified through the project screening and checklist process.

The Project Beneficiary shall submit semi-annual Environmental and Social Monitoring Reports to the Project Implementation Unit (PIU). Each report shall provide a clear and structured assessment of compliance with the applicable E&S measures, including identification of any non-compliance, challenges, corrective actions taken, and planned follow-up measures.

Monitoring and reporting shall be conducted in a manner proportionate to the nature and risk level of the project activities. Where an E&S measure is assessed as not applicable, a brief justification shall be provided.

Any significant incidents, accidents, or cases of non-compliance with potential environmental, health, or safety implications shall be reported to the PIU without delay, in accordance with the incident reporting procedures.

Incident reports will be submitted to the Project Implementation Unit (PIU) immediately, and not later than 24 hours, after any serious event which has, or is likely to have, a significant adverse effect on the environment, communities, public or workers. Incident reports will provide sufficient detail regarding the scope, severity, and possible causes of the incident or accident, indicating immediate measures taken or that are planned to be taken to address it. Reporting requirements will be in line with the Environmental and Social Commitment Plan (ESCP).

Annex 1. E&S Monitoring and Reporting Template

No.	E&S measure	Applicable (YES/NO)	Compliance status (compliant/non-compliant/partially compliant)	Description of Implementation/Findings	Corrective action /if applicable	Timeline for correction	Comments
1.	*[insert measure]*	*YES*	*compliant*	*Measure implemented in line with requirements [description of implementation of measure]*	*N/A*	*N/A*	
2.	*[insert measure]*	*YES*	*non-compliant*	*Delay in implementation due to [reason]*	*[description of corrective action]*	*[date]*	
3.	*[insert measure]*	*NO*	*N/A*	*Measure not applicable to project scope*	*N/A*	*N/A*	

Annex 2. Incident / Accident Report Form

DIGITAL, INNOVATION, AND GREEN TECHNOLOGY PROJECT (DIGIT PROJECT) IBRD LOAN NO. 9558-HR, PROJECT ID: P180755	
INCIDENT / ACCIDENT REPORT FORM	
Program	
Name and No. of the Project	
Beneficiary	
Incident / Accident No.	
Date	
Time	
Reported by	
SCOPE OF INCIDENT / ACCIDENT	
Type of Incident / Accident	☐ Environmental ☐ Social ☐ Occupational Health and Safety
Place	
Date	
Time	
DESCRIPTION OF THE INCIDENT / ACCIDENT	
Detailed description of the incident / accident	*What is the incident? / What were the conditions or circumstances under which the incident occurred (if known)? / Are the basic facts of the incident clear and uncontested, or are there conflicting versions? What are those versions? / Is the incident still ongoing or is it contained? / Have any relevant authorities been informed?*
Duration of the incident / accident	
Possible causes of the incident / accident	
RESPONSE ACTIONS FOR THE INCIDENT / ACCIDENT	
Status of Actions	☐ Implemented ☐ In Progress ☐ Other
Description of Response Actions	*Responsible party / Expected date if action(s) are in progress*
IMPACT ON THE PROJECT	
Does the event affect the project activities?	☐ Yes ☐ No
Elaboration of the impact on project activities	

DIGITAL, INNOVATION, AND GREEN TECHNOLOGY PROJECT (DIGIT PROJECT) IBRD LOAN NO. 9558-HR, PROJECT ID: P180755	
INCIDENT / ACCIDENT REPORT FORM	
SEVERITY LEVEL	
	☐ Low ☐ Medium ☐ High

Annex 3. Public Consultations Report

Information Disclosure

The Public Consultations on Draft ESMP Checklist covering multiple projects under the Calls Challenge Program (DIGIT.2.1.02) and Professionalization of Research Centers (DIGIT.1.2.03) were held from January 20 to February 2, 2026.

The Draft ESMP Checklist was disclosed both in English and Croatian.

Notice on the Public Consultations and the method of submitting questions, concerns and comments, were disclosed on the DIGIT website, and the web sites of the beneficiaries as follows:

DIGIT web page	https://digit.mzom.hr/en/news-and-events/public-consultations-esmp-checklist/ https://digit.mzom.hr/novosti-i-dogadaji/javno-savjetovanje-esmp-checklist/

Project Title	Beneficiary	web address
DIGIT.2.1.02.001 **A comprehensive AI powered early warning system for digital management of water supply security, resilience, and sustainability (AquaGuardian)**	University of Zagreb – Faculty of Chemical Engineering and Technology (FCET)	https://www.fkit.unizg.hr/vijesti?@=23lx7#news_57353
DIGIT.2.1.02.004 **ToxiCode: Transforming Venom Peptides into Precision Therapies by Deciphering and Refining their Evolutionary Code**	University of Zagreb – Faculty of Food Technology and Biotechnology (FFTB)	https://www.pbf.unizg.hr/novosti/obavijest_o_javnom_savjetovanju_esmp_checklist_digit
DIGIT.2.1.02.012 **Accelerated mineral carbonation of secondary raw materials as a strategy for carbon storage in construction products - ACCEL**	University of Zagreb Faculty of Civil Engineering	https://www.grad.unizg.hr/novosti_i_objave?@=2b5h2#news_8980

DIGIT.2.1.02.014 **Autonomous Robotic Technology for Environmental Monitoring, Intervention and Safety (ARTEMIS)**	University of Zagreb Faculty of Electrical Engineering and Computing	https://www.fer.unizg.hr/novosti/novosti?@=32ljf#news_94045
DIGIT.2.1.02.016 **Smart Optimization of the Electrical Distribution System through Multidisciplinary Data Analytics and AI**	Faculty of Science, University in Zagreb – PMF	https://www.pmf.unizg.hr/aktualnosti?@=1oxfs#news_26883
DIGIT.1.2.03.011 **University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture**	University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture	https://www.fsb.unizg.hr/index.php?fsbonline&novosti&id=40629.
DIGIT.1.2.03.019 **Professionalization of the Research Center for Medical Bionics (RCMB)**	University of Split, Faculty of Science	https://www.pmfst.unist.hr/kontrolne-liste-plana-upravljanja-okolisnim-i-drustvenim-rizicima-esmp-checklist-za-digit-pozive/

Method of Comments Submission

The public could submit their questions, concerns, and comments on the Draft ESMP Checklist during the Public Consultations by e-mail to grmdigit@mzom.hr.

Comments Resolution

One comment was received during the Public Consultations from January 20 to February 2, 2026.

Date	Question / Comment / Concern	Answer / Resolution
January 22, 2026	The Beneficiary raised the question regarding the method of meeting the provision of the Draft ESMP Checklist: 'The ESMP Checklist shall be part of the consortium agreement between the beneficiary, and all partners.'	The answer by the PIU was sent to the Beneficiary on the January 23, 2026 was: 'Environmental and Social Management Plan (ESMP) Checklist is currently in the process of Public Consultations. Since all projects that will be

		financed are required to be compliant with Environmental and Social Management Framework of the World Bank it is important to ensure that all project participants are obliged to comply with Environmental and Social requirements during project implementation. Therefore, applicants are requested to include following paragraph into their partnership agreements. All project activities carried out by the applicant and the project partners shall be fully compliant with the Environmental and Social Management Plan Checklist (ESMP) Checklist applicable to the project. The applicant shall be responsible for providing all project partners with the final, officially published ESMP Checklist and for ensuring that the partners are informed of their obligations arising therefrom. Evidence of delivery of the final ESMP Checklist to all project partners shall be submitted to the DIGIT Project Implementation Unit (PIU).'

Annex 4. Public Consultations Report, May 21, 2026

Information Disclosure

The Public Consultations on Draft ESMP Checklist, revision 1, May 2026, covers DIGIT.2.2.01.007 Dwelling at the Edge between Land and Sea (DELS) Project. The Public Consultations were held from May 7 to 20, 2026.

The Draft ESMP Checklist was disclosed both in English and Croatian.

Notice on the Public Consultations and the method of submitting questions, concerns and comments, were disclosed on the DIGIT website, and the web sites of the beneficiary:

DIGIT web page		https://digit.mzom.hr/novosti-i-dogadaji/javno-savjetovanje-esmp-checklist-2/ https://digit.mzom.hr/en/news-and-events/public-consultations-esmp-checklist-2/
DIGIT.2.2.01.007 **Dwelling at the Edge between Land and Sea (DELS)**	Institute for Anthropological Research	https://inantro.hr/novosti/draft-esmp-checklist-e/ https://inantro.hr/en/news/draft-of-esmp-checklist/

Method of Comments Submission

The public could submit their questions, concerns, and comments on the Draft ESMP Checklist during the Public Consultations by e-mail to grmdigit@mzom.hr.

Comments

During the Public Consultations from May 7 to 20, 2026 no comment was received.

Annex 5. Note, May 21, 2026

The following projects were added to the ESMP Checklist, revision 2, May 2026 and categories of measures prescribed:

1. DIGIT.2.2.01.013 VirusHunter (VH) - ONE TEST FOR ANY VIRUS
2. DIGIT.2.2.01.014 Energy AI - ENAI
3. DIGIT.2.2.01.016 CONVIA - Multimodal Temporal Intelligence for Real-Time Knowledge Extraction from Audio-Visual Content Streams
4. DIGIT.2.2.01.018 BRIDGE – Bidsale for Real estate Innovation and Decision-making Grounded in Equity
5. DIGIT.2.2.01.019 IgG based Early and Precise Multimodal Diagnostics for ALS
6. DIGIT.2.2.01.020 DEEPCLIMA – DEEP TECH PLATFORM FOR AI-DRIVEN CLIMATE RISK INTELLIGENCE
7. DIGIT.2.2.01.021 Next-generation AI agent for scalable cybersecurity
8. DIGIT.2.2.01.022 GlycoDiaRisk
9. DIGIT.2.2.02.012 Bridge2Health: Developing Capacities to Bridge Health Inequalities in Vulnerable Populations using well-tailored Biological Markers

Annex 6. Note, September 18, 2026

The following projects from DIGIT.1.2.02. Technology Scouting were added to the ESMP Checklist, revision 3, September 2026 and categories of measures prescribed:

1. DIGIT.1.2.02.001 AI Auditor: Multi-Agent Engagement Quality Review
2. DIGIT.1.2.02.002 EdgeArrhythmia — Hierarchical Cascaded Inference for Resource-Efficient Real-Time Arrhythmia Detection on Edge Platforms
3. DIGIT.1.2.02.003 NeuroPlay Rehab — AI-Driven Motion Tracking for Remote Rehabilitation
4. DIGIT.1.2.02.005 RoadSense - System for intelligent monitoring of road conditions
5. DIGIT.1.2.02.006 M3I – Multi-Method Machine Intelligence for Zero-Label Concept Discovery in Evolving Text Streams
6. DIGIT.1.2.02.007 CORaL – Colorectal Oncology Research via Liquid biopsy
7. DIGIT.1.2.02.009 CorrIntel AI - AI-Assisted Corrosion Assessment of Steel Structures in Coastal and Industrial Environments
8. DIGIT.1.2.02.010 Fire Safety Voltage Limitation Device for Photovoltaic Power Plants
9. DIGIT.1.2.02.011 Tinker Labs Digital Modular STEAM Platform – Proof of Concept of a Scalable Physical-Digital Learning Infrastructure
10. DIGIT.1.2.02.012 KLAK - Proof of Concept for a Gamified Quiz Platform for Measurable Digital Brand Engagement
11. DIGIT.1.2.02.013 Agentic Decision-Making for Autonomous PTZ Camera Systems

The following projects from DIGIT.2.2.02. Routs to Synergies were added to the ESMP Checklist, revision 3, September 2026 and categories of measures prescribed:

1. DIGIT 2.2.02.17 FOREST Research and Innovation NETwork for Horizon Europe Synergies (FOREST-NET)
2. DIGIT 2.2.02.19 Building the Croatian Virtual Human Twin Ecosystem for Precision Medicine – TWINPATH