



This project is co-funded by the European Union
and the Republic of Türkiye



PRESENTER FULL NAME: Nicoleta CAPBUN

ORGANIZATION: BEIA

WORKSHOP NAME: Innovation and future-ready technologies in BEIA'S portfolio

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Description of the Organisation

BEIA

R&D performing SME

Offices in Romania, Austria and Belgium
Across the Balkan/Danube/Benelux
region

BEIA

Research & Development: Active in AI,
blockchain, and cloud computing for
smart factories.

BEIA

Smart Solutions: health, energy
Radio-Telemetry: IP/Wireless SCADA
and environmental monitoring
Communication Services: IT&C HW,
SW, network integration



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BEIA Teams' Expertise

Artificial Intelligence (AIoT): Application of Machine Learning, Natural Language Processing (NLP/NLU), sentiment analysis, and Explainable AI (XAI) for monitoring and control systems.

Cloud & Edge Computing: Designing scalable architectures, data spaces, and edge AI frameworks.



Domain applications:
Smart Agriculture & Environment

Industry 4.0 & Manufacturing

Smart Cities & Health



IoT-based monitoring for environmental factors, water quality, and agricultural data

Implementing digital twins, smart data spaces, and supply chain solutions

Developing applications for urban management



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Your Research Fields

Internet of Things (IoT) & Smart Systems

Artificial Intelligence & Data Analytics



Cyber-Physical Systems & Digital Twins

Additive Manufacturing & Smart Prototyping (Integration Side)

Sustainability & Circular Economy Technologies

Industrial Communication & Interoperability



Smart Agriculture & Environmental Monitoring

Smart Cities & Infrastructure Monitoring



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Your On-going Projects

PLENTY-LIFE: Institutionalised cross-sector PLanning and dedicated capacity building to ENablesmall and medium-sized municipalities to develop and monitor sustainable strategies for the Transition to clean energy(LIFE-2021-CET-LOCAL, 2022-2026)

DOMÉ: A Distributed Open Marketplace for Europe Cloud and Edge Services (DIGITAL-2021-CLOUD-AI-01-DS-MARKETPLACE-CLOUD, 2023-2026)

ReCharged: Climate-aware Resilience for Sustainable Critical and interdependent Infrastructure Systems enhanced by emerging Digital Technologies (HORIZON-MSCA-SE 2023-2026)

CHRISS: Critical infrastructure High accuracy and Robustness increase Integrated Synchronization Solutions (HORIZON CL4 EUSPA-2021-SPACE-02-52, 2022-2026)

ONCOSCREEN: A European “shield” against colorectal cancer based on novel, more precise and affordable risk-based screening methods and viable policy pathways (HORIZON CL1 MISS-2021-CANCER-02-01, 2023-2026)

ONCODIR: Evidence-based Participatory Decision Making for Cancer Prevention through implementation research(HORIZON CL1 MISS-2022-CANCER-01, 2023-2026)



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Your On-going Projects

ISOLDE: High Performance, Safe, Secure, Open-Source Leveraged RISC-V Domain-Specific Ecosystems (HORIZON KDT-IA, 2023-2026)

PASITHEA: A Hybrid Autonomous Unmanned Vehicle system opening new horizons in conducting military operations in the marine environment (EDF, 2023-2026)

AIAS: AI-Assisted cybersecurity platform empowering SMEs to defend against adversarial AI attacks (HORIZON MSCA, 2024-2027)

ECYBRIDGE: Strengthening Synergies in Defence and Civilian Cybersecurity (DIGITAL-ECCC-2023-DEPLOY-CYBER-04-CIVIL-DEFENCE, 2024-2026)

EvoRoads: Evolutionary Solutions for Realising a Holistic Safe System Approach for All Road Users (HORIZON CL5, 2024-2027)

META-MUSEUM: Moving Emotions towards confidence in the Transformative Appropriation for a Meaningful Understanding of cultural heritage: a neuroScientific approach to European Museums (HORIZON CL2, 2024-2027)



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Project Idea

Project Idea: The ADVISOR project addresses a multifaceted problem in the autonomous vehicle (AV) industry – the lack of seamless interoperability between different classes of AVs: airborne, under- and on- water. The ADVISOR framework enables efficient development, testing, and execution of AV/swarm-based inspection systems. It provides capabilities to manage various aspects of intricate processes, workflows, and interactions, contributing to the early detection of issues, ensuring the reliable and safe operation of AV/swarms. With solutions that boost efficiency, cut costs, enhance security, and reduce environmental impact, the project promises substantial industry impact across sectors.

23014 ADVISOR <https://itea4.org/project/advisor.html>

Cooperative Missions of Autonomous Vehicle Swarms for Surveillance Tasks

Deadline Dates: 09 March 2026



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Project Idea

❑ Objectives:

- Enhanced situational awareness, navigation, automated mission efficiency and decision support for cooperative multi-type AV swarms.
- Safe and secure communication means between multi-type AVs and shore authorities, enhancing mission security and reliability.
- Multi-modal sensor data fusion capabilities for autonomous maritime infrastructure inspection and marine life classification tasks.
- Robustness of AVs during autonomous operations in harsh maritime environments.
- Automated charging of UAVs and AUVs on USVs, with specialized docking for sea conditions, which streamlines AV operations and extends mission durations.



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Project Idea

☐ Expected Results:

AI-Driven Advisory Framework

- Modular decision-support architecture
- Hybrid AI models (ML + rule-based systems)

Digital Twin-Based Simulation Tools

Sustainability Assessment Engine

Smart Data Integration Platform

- Interoperable data aggregation layer
- Multi-source integration (IoT, satellite, open datasets)
- Secure and GDPR-compliant data processing



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Consortium - profile of known partners (if any)

No	Partner Name	Type	Country	Role in the Project
01	AARHUS UNIVERSITY	UNI	DNK	Knowledge provider for cooperative mission planning and anomaly detection using Digital Twin technology
02	AVULAR ROBOTICS B.V	SME	NLD	Technology provider of drones, software developer of autonomy software
03	BEIA	SME	RO	ICT /IoT system integrator,swarm telemetry
04	DEMCON	IND	NLD	Vessel solution integrator, autonomous software and algorithm developer
05	D7 UNDERWATER TECHNOLOGIES INC	SME	TUR	Autonomous surface vehicle (ASV) design and development, sensor fusion algorithm development, task management algorithm development



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Consortium – required partners

No	Expertise	Type	Country	Role in the project
01	Very successful track record of managing both individual fellowships and large international projects	Uni	DNK	Knowledge provider for cooperative mission planning and anomaly detection using Digital Twin technology
02	Development autonomous mobile and modular robotics systems. Autonomy SW and integration services providing	SME	NLD	Technology provider of drones, software developer of autonomy software
03	Exploit services in digital economy(e-commerce, online services	SME	RO	ICT /IoT system integrator,swarm telemetry
04	Industrial & Automation Systems. EngineeringHigh-Tech Product Development & Production	IND	NLD	Vessel solution integrator, autonomous software and algorithm developer



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PRESENTER CONTACT

DETAILS: Nicoleta Capbun, Beia

COUNTRY: Romania