Interreg

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Italy – Croatia

DIH InnovaMare

# DIH INNOVAMARE PROJECT

## D 1.3.1 Two focus groups report

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**Project identification**

**Project ID**: ITHR0200416

**Name of the lead partner organisation**: Hrvatska gospodarska komora

**Name of the lead partner organization in English:** Croatian Chamber of Economy

**Project title**: Cross-border digital innovation Hub for innovative marine technology

**Project acronym:** DIH InnovaMare

**Programme priority**: Sustainable growth in the blue economy

**Specific objective 1.1**: Developing and enhancing research and innovation capacities and the uptake of advanced technologies

**Project duration in months**: 30

**Work package:** WP1 Innovation capacity building for implementation of marine technologies

**Activity title:** A1.3 Focus groups as knowledge-sharing activity for upscaling collaboration between tech companies and blue economy sectors to boost digital and green transformation

**Expected date:** M 18

**Activity description:** Organisation of focus groups where we will invite marine technologies companies like underwater robotics, sensors, UoT, AI, and others that can contribute to the digital and green transformation of blue economy sectors. Define the main abilities and use cases of marine technologies in different blue sectors as a roadmap. Development of a portfolio of case studies of maritime technology applications and related strategy of business development (description, video, podcasts/interviews) to be accessible via DIH website. Focus groups will be held in Zadar and Bari.

**Partner responsible:** ARTI

**Dissemination level:** CO - Confidential

**Status:** Final

**Version:** V1

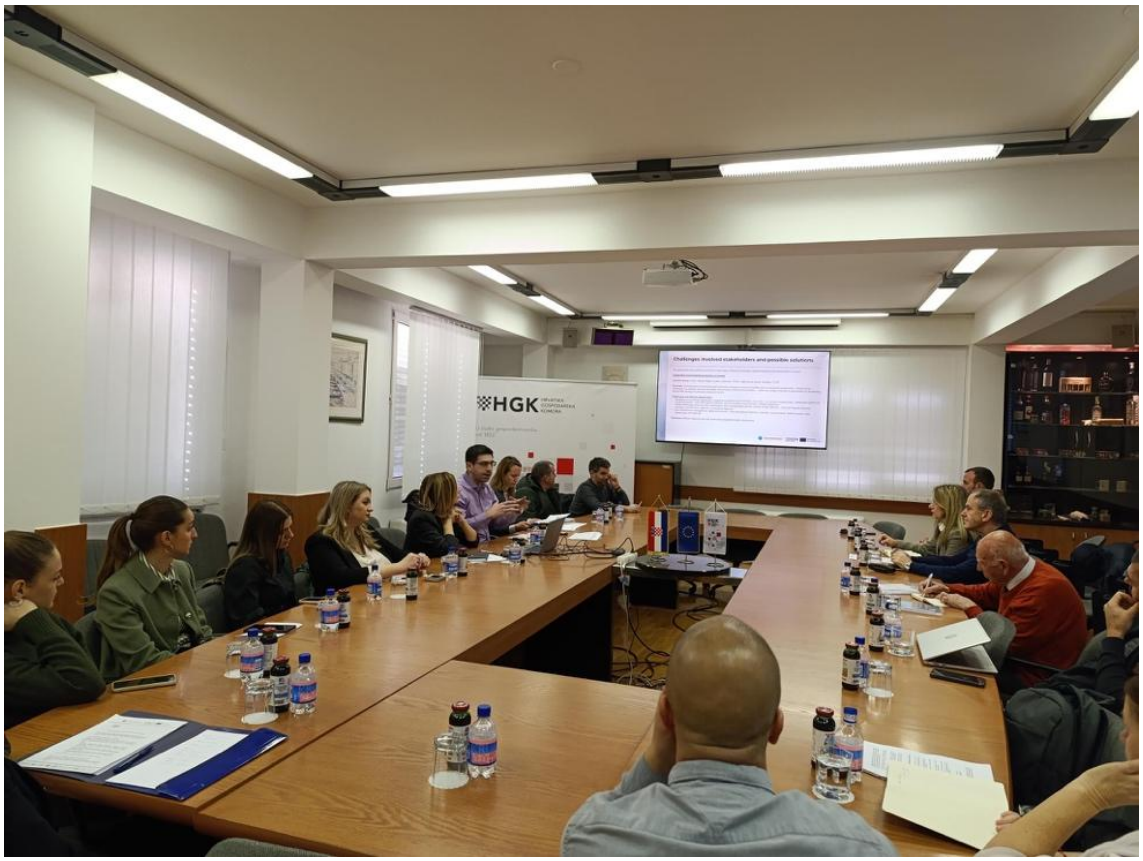
**Date:** 01 July 2025

## Contents

# DIH InnovaMare – First focus group 19th February 2025 – Zadar

## Introduction

University of Zadar successfully organized the first focus group for the DIH InnovaMare project in Zadar, in collaboration with the County Chamber Zadar (CCE) as part of the BLUE ECOSYSTEM project, bringing together key stakeholders in the blue economy. The BLUE ECOSYSTEM project aims to promote innovation and sustainability in the Mediterranean's blue economy, emphasizing collaboration among stakeholders. The DIH InnovaMare project complements the BLUE ECOSYSTEM perfectly, as it enhances research capacities and technology transfer for innovative maritime technologies, focusing on the sustainability of the Adriatic Sea.



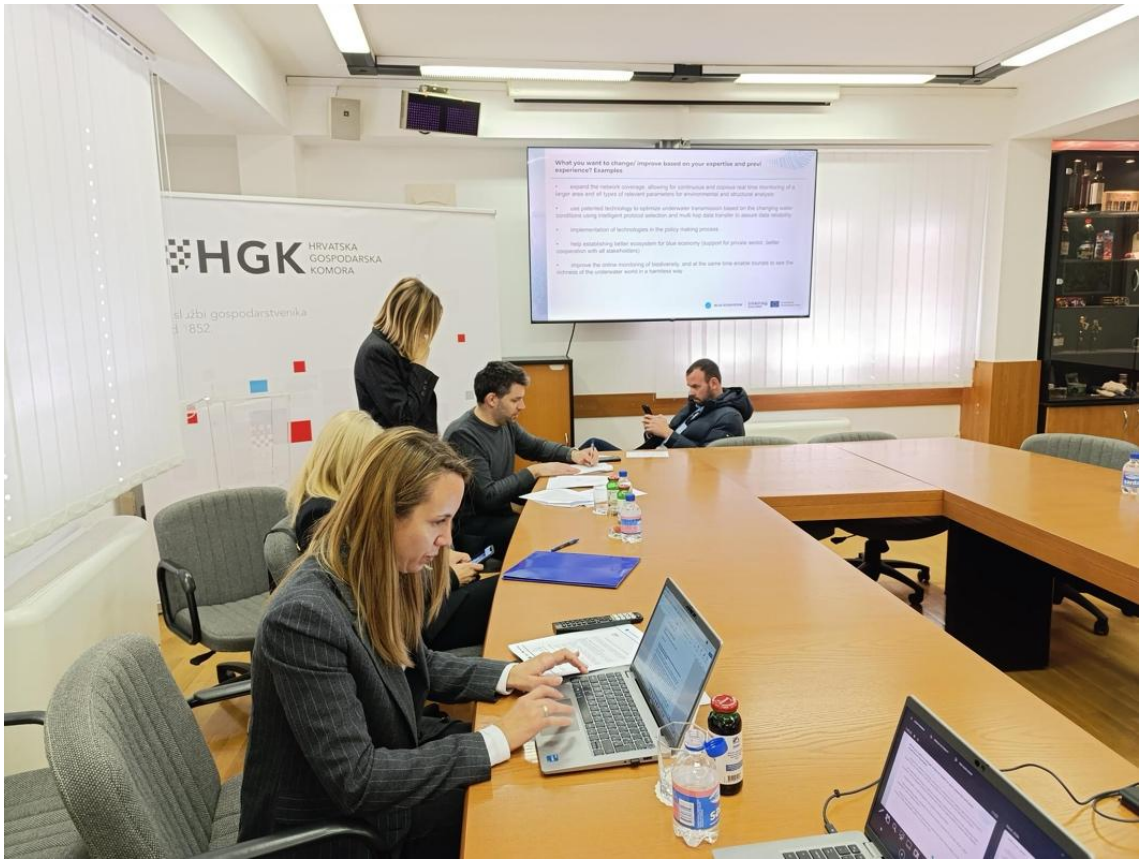
## Objectives of the Focus Group

The workshop aimed to develop project concepts focused on addressing challenges in the blue economy across three key sectors:

- Tourism
- Infrastructure and transport
- Aquaculture and fisheries

## Stakeholder Participation and Methodology

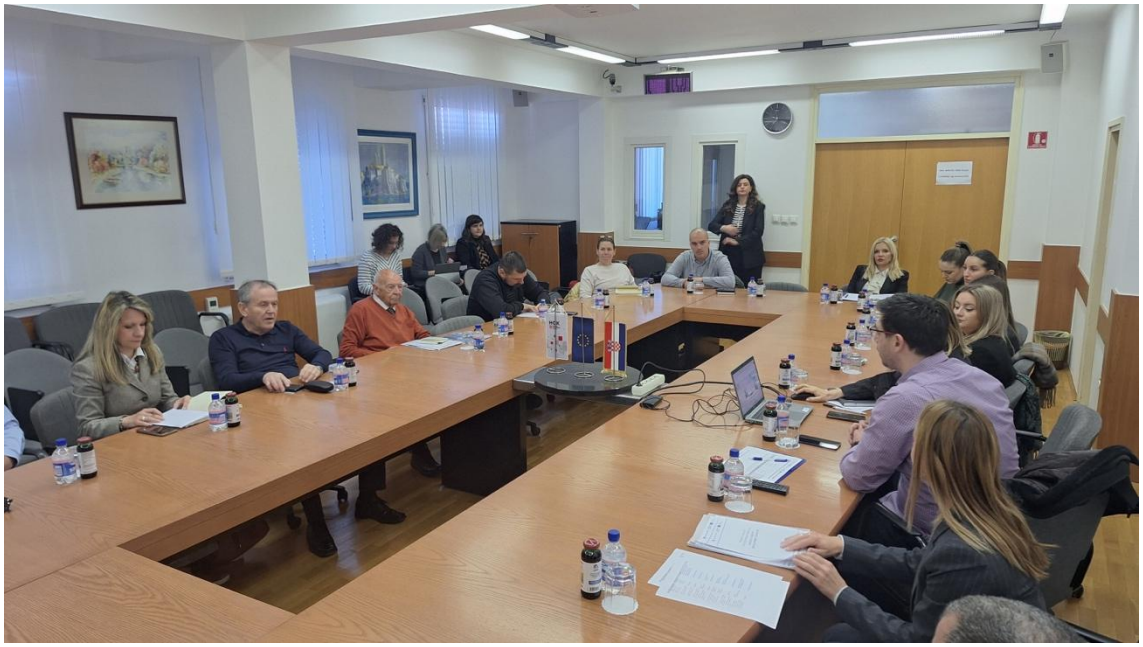
Twenty key project stakeholders from the Zadar County area participated in the focus group, representing the quadruple helix – the business sector, academia, decision-makers, civil society, and environmental organizations. The participants were organized into thematic groups according to their specific areas of expertise, with each team actively contributing to the project concepts.



## Outcomes and Conclusions

The focus group within the DIH InnovaMare project served as an excellent platform for collaboration. By working together on innovative solutions, participants developed project concepts that will support the sustainable development of the Mediterranean region. The emphasis on collaboration, innovation, and environmental preservation is vital for the project's success and for enhancing international cooperation in the blue economy sector.

Collaboration among different stakeholders, who bring diverse perspectives, knowledge, and resources, is crucial for the sustainable development of the blue economy.



Such collaboration also fosters innovation and technological development in the blue economy. It ensures the sustainable protection of natural resources, supports the creation of effective public policies, and enhances regional and cross-sectoral competitiveness.

# DIH InnovaMare – Second focus group 21st May 2025 – Lecce

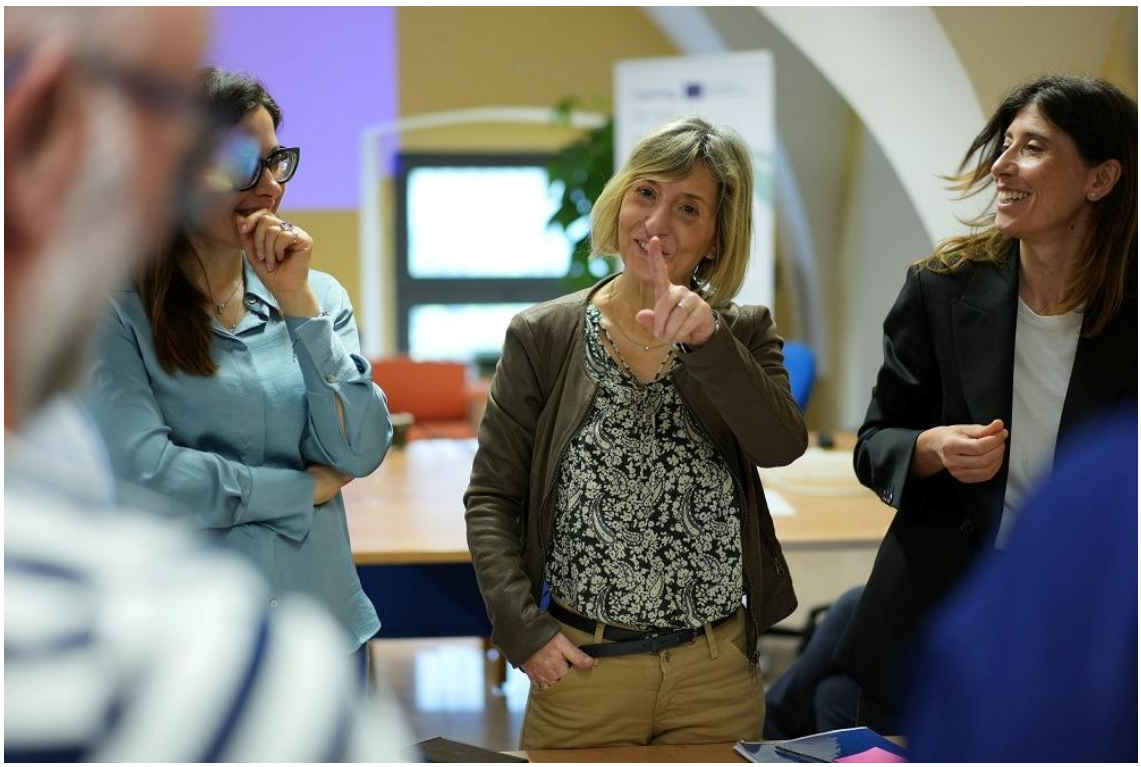
## Introduction

As part of the DIH InnovaMare initiative, ARTI Puglia organized an interactive thematic focus group to stimulate cross-sector dialogue and collaborative solution-building in the domain of marine technologies. Held at the Museo Sigismondo Castromediano in Lecce, the session convened a diverse group of participants including researchers, SMEs, technology developers, public authorities, and academic experts.

The event was structured around two thematic tables:

- **Table 1: Underwater Communication** – Facilitator: Roberto Francescon (Wireless&More)
- **Table 2: AI/IoT Applications and Smart Sensors** – Facilitator: Prof. Guido Bortoluzzi (University of Trieste)

The goal was to identify technological and operational bottlenecks in key innovation areas, promote interdisciplinary collaboration, and lay the foundations for pilot initiatives within the blue economy.



## Brief Overview of the Session

***Table 1: Underwater Communication***

This group addressed key technological challenges related to underwater data transmission, particularly in shallow and coastal waters. Participants worked through design thinking stages to explore solutions for real-time monitoring, interoperability, and maintenance. The discussion emphasized the need for robust communication systems to support data reliability, integration, and long-term sustainability of underwater operations.

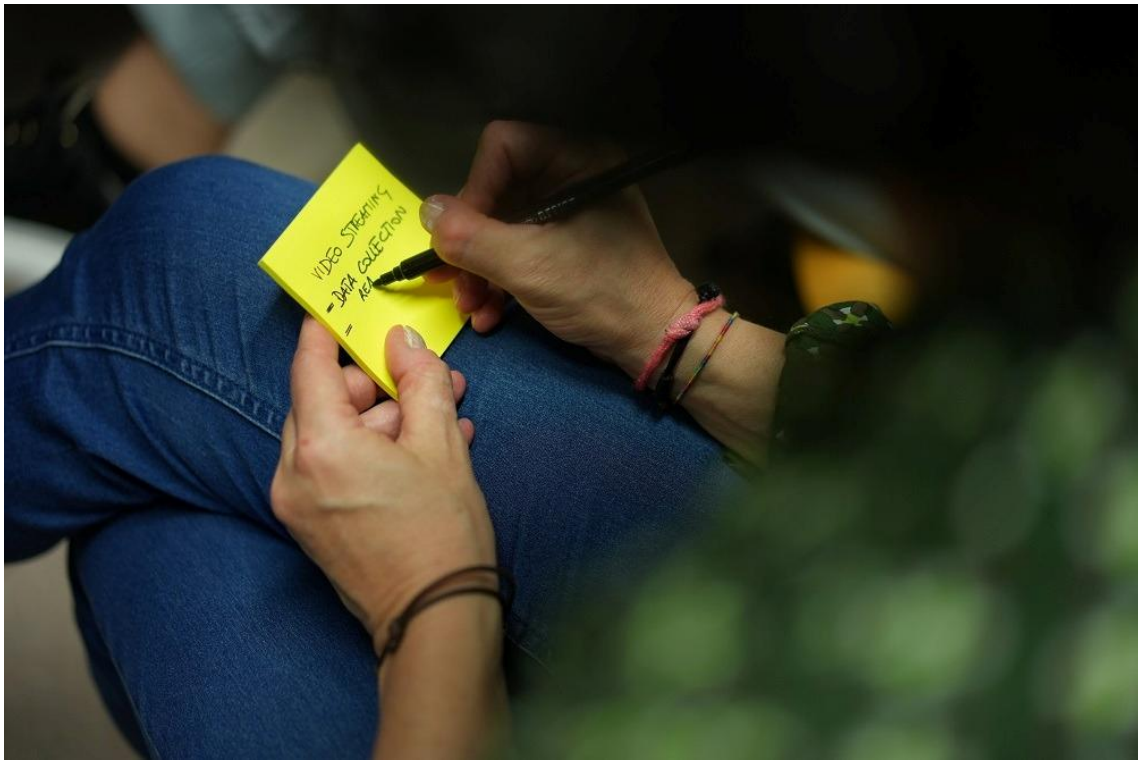



***Table 2: AI/IoT Applications and Smart Sensors***

This group addressed three real-world maritime challenges: AI for object detection at sea, building a scalable AI-driven maritime ecosystem, and the viability of hybrid sea-air drones. Participants worked through design thinking stages to generate and cluster ideas, with a strong emphasis on interoperability, data-driven value creation, and feasibility.

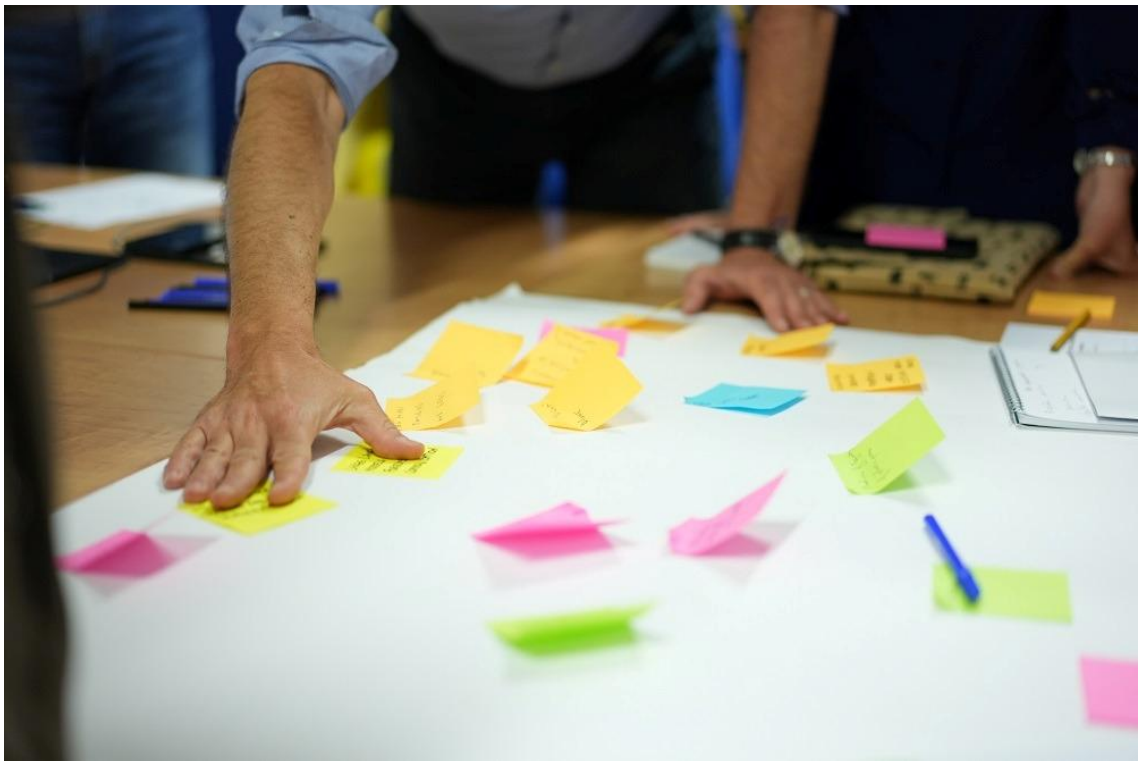
## Objectives of the Focus Group

***Table 1: Underwater Communication***

- Identify technological and operational barriers.
- Promote cross-sector dialogue for open innovation.
- Collect practical experiences from field applications.
- Facilitate brainstorming for collaborative solutions.
- Explore how communication tech can support marine monitoring and sustainability.

***Table 2: AI/IoT Applications and Smart Sensors***

- Define critical AI/IoT use cases in maritime contexts.
- Generate innovative concepts and integration strategies.
- Discuss scalability and deployment challenges.
- Identify requirements for trust, interoperability, and standardization.
- Foster interdisciplinary collaboration for future AI-driven ecosystems.



## Methodology

Both tables employed **participatory** and **design-driven methods**. The key tools and approaches included:

- Individual brainstorming: key words to identify challenges on post-its
- Clustering: Thematic grouping of similar ideas.
- Prioritization: Consensus-based ranking.
- Design thinking: Structured phases of problems identification, and possible solutions.
- Contextualization: Integration of personal insights from real-world experience.

The methodology encouraged both divergent and convergent thinking, ensuring actionable outcomes grounded in technical and operational realities.

## Challenges Identified

***Table 1: Underwater Communication***

- Data Transmission Limits: Acoustic systems have low bandwidth; optical is ineffective in turbid waters.
- Protocol Fragmentation: Proprietary systems lack interoperability.
- Maintenance Issues: Environmental exposure leads to corrosion, power failure, biofouling.
- Synchronization Problems: Difficulties in coordinating multisensor systems.
- Real-Time Response Gaps: Inability to deliver actionable data in real-time.
- Localization Difficulty: GPS doesn't work underwater; acoustic triangulation is expensive.
- Metadata Inconsistency: Lack of standards for sensor data hinders integration.

***Table 2: AI/IoT and Smart Sensors***

- Object Detection at Sea: Risk of collisions with debris due to insufficient sensing and detection technologies.
- AI Ecosystem Viability: Difficulty in building interoperable, scalable AI-enabled business models (e.g., predictive maintenance).
- Hybrid Drone Systems: Technical and legal uncertainties surrounding sea-air drone deployment, including regulatory, environmental, and coordination issues.

## Solutions Identified Related to Challenges

***Table 1: Underwater Communication***

Technical Solutions:

- Edge/onboard processing to reduce data transmission needs.
- Hybrid acoustic-optical systems for optimized bandwidth and energy use.
- Data dumping via proximity-triggered offloading.
- Solar-charging buoys with energy-efficient modes.
- Anti-biofouling tech (coatings, wipers).
- Acoustic triangulation with supplemental sonar/visual aids.

Organizational Mechanisms:

- Standardized protocols and metadata models.
- Regional innovation hubs as “one-stop shops.”
- Shared registries for equipment, protocols, and datasets.

Pilot Initiatives:

- Coastal living labs for testing.
- Challenge-based calls to target specific problems.
- Demonstrators for interoperability in real-world conditions.

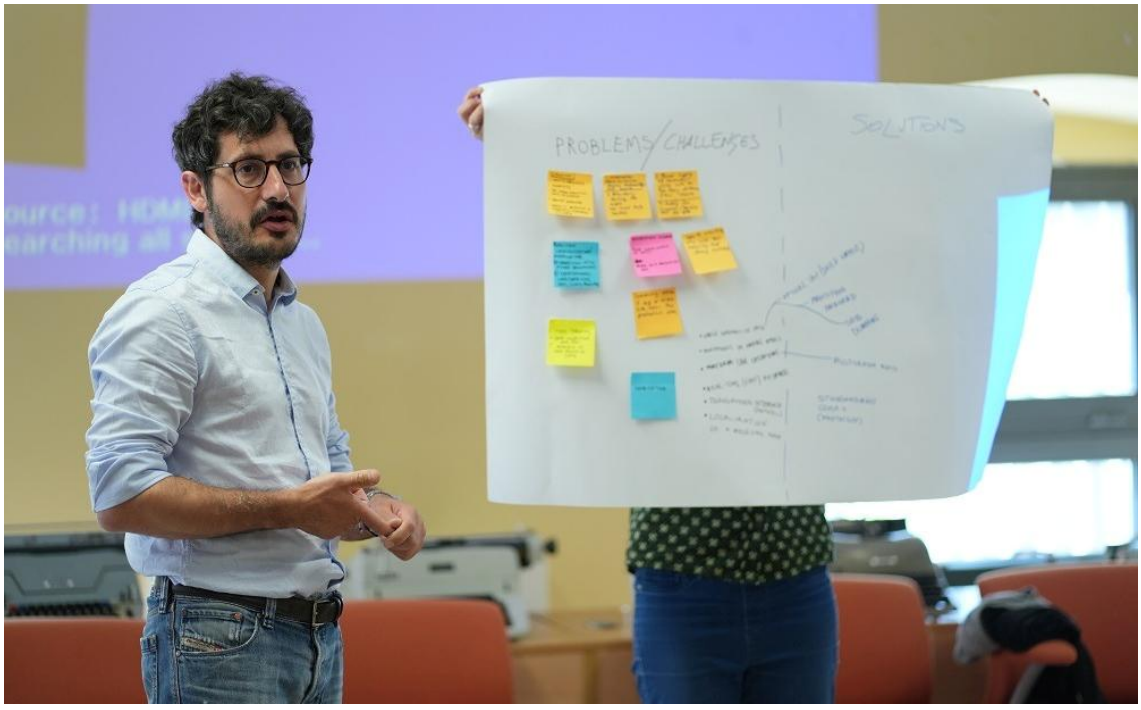


***Table 2: AI/IoT and Smart Sensors***

Challenge 1 – Object Detection:

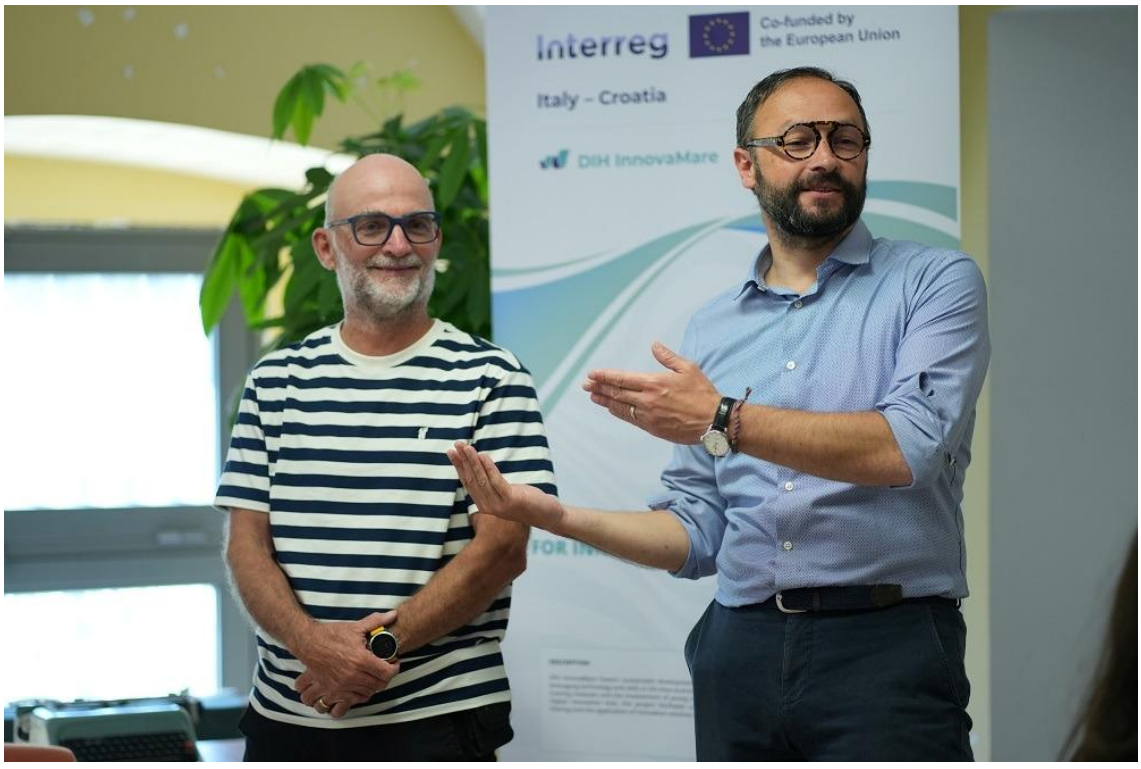
- Real-time connectivity for sea drones.
- Optical sensor integration (infrared, night vision).
- AI-powered data classification and risk prediction.
- Marine animal tracking for safety and environmental protection.

Challenge 2 – AI Business Ecosystem:

- Expanding partnerships with ports and data providers.
- Dashboards and alert systems for real-time operations.
- New business models (e.g., "engine as a service").
- Open data platforms for AI training and transparency.

Challenge 3 – Hybrid Drones:

- Use for infrastructure surveillance, border monitoring, rescue.
- Combined aerial/surface data collection.
- Addressed regulatory and environmental constraints.



## Conclusions

The focus group session in Lecce highlighted both the complexity and the promise of advancing marine technologies through interdisciplinary collaboration. Participants identified key technological and systemic barriers and proposed actionable solutions—from technical innovations to governance models.

Notably, both tables emphasized:

- The urgent need for interoperability.
- The value of modular and reusable components.
- The importance of real-world pilot environments.
- The alignment between technical design and maintenance realities.

The outcomes of this focus group will inform the development of pilot actions and policy recommendations under the DIH InnovaMare framework, contributing to a more integrated, efficient, and sustainable marine innovation ecosystem.