

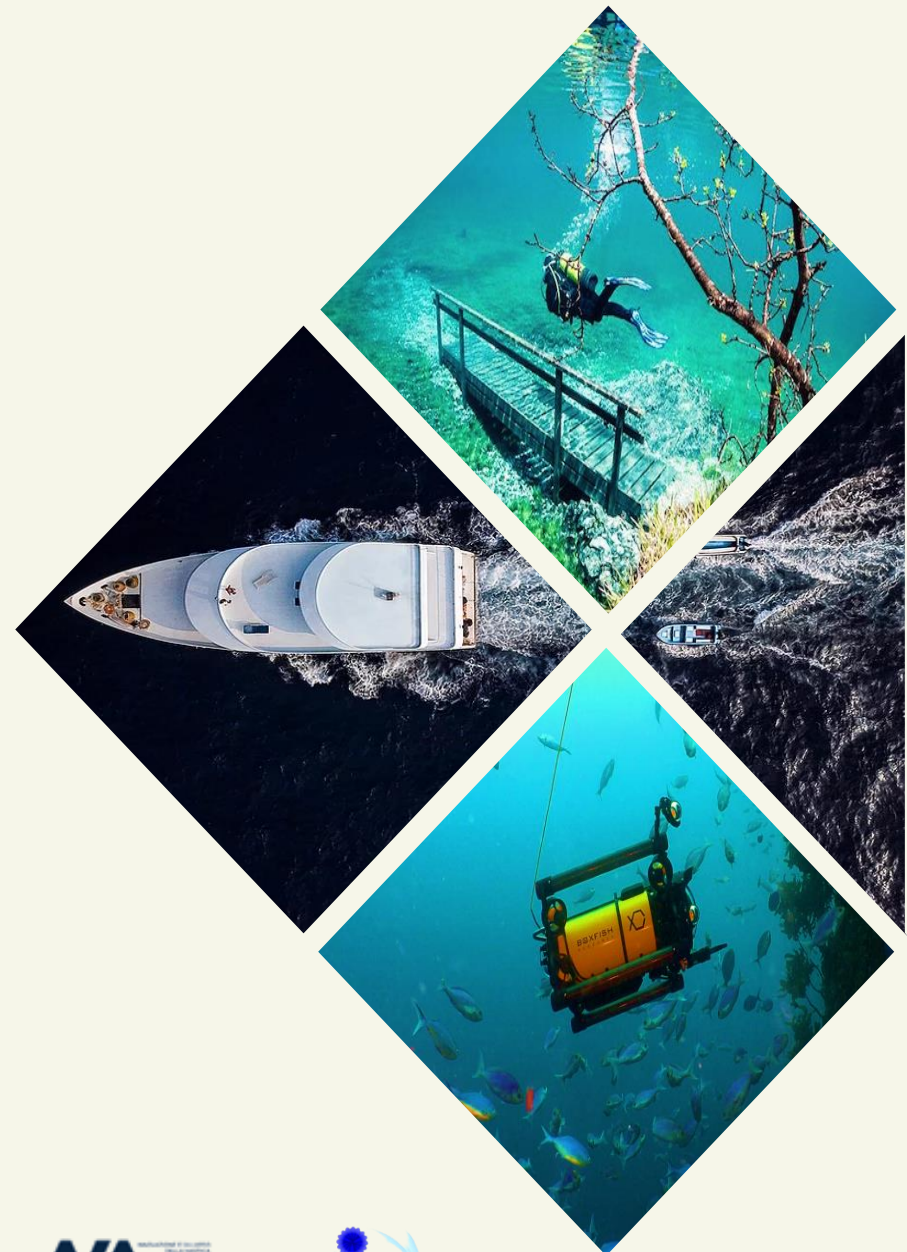
# Blue RoSES Project

## Blue Robotics for Sustainable Eco-friendly Services for innovative marinas & leisure boats



European Maritime & Fisheries Fund

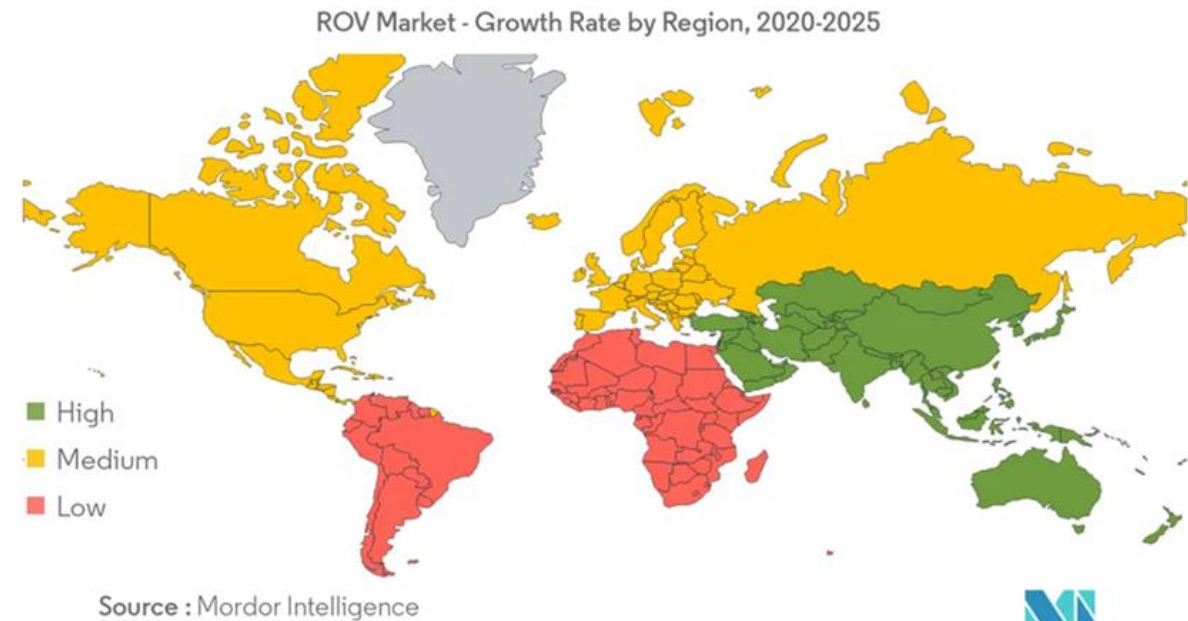
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# BLUES ROSES AND THE BLUE ECONOMY

**The Blue Economy** is an integration of sustainable development and green growth. It highlights a strategic and coordinated development between the marine ecosystem and the ocean / coastal zone economic system.

The Blue RoSES project proposes a new future for **ecotourism** through the innovative use of Remotely Operated Vehicle (ROVs) to access remote and fragile underwater sites. It also addresses the environmental challenges within the marine environment, as ROVs will be used to monitor water, seabed, and yacht hulls for safer refitting and dismantling.



# BUSINESS MODELS

These innovative services will contribute directly to the growth of the Blue Economy, as they will result in the creation of new *business models and job opportunities*, especially in the coastal tourism sector, which is currently the **highest** contributor to the **European blue economy**.

To this extent, the project partners have identified 8 innovative business models related to the project's specific objectives. These business models address the different uses of ROVs and the value they deliver.

## STRATEGIC OBJECTIVES

1

PROVIDE REMOTE ACCESS TO NATURALISTIC AND/OR CULTURAL UNDERWATER SITES

2

ENABLE ROBOTIC-BASED WATERS AND SEABED MONITORING INSIDE MARINAS

3

ENABLE ROBOTIC-BASED MONITORING OF YACHT HULLS FOR SECURITY AND SUPPORT TO REFIT AND DISMANTLING

# SO1. REMOTE ACCESS TO NATURALISTIC AND/OR CULTURAL UNDERWATER SITES (PILOT 1).

This objective looks to provide remote access to underwater sites of touristic interest. The access would be performed by piloting a Remotely Operated Vehicle (ROV) from onboard leisure boat(s), marina ground station(s), and/or smart apps connected to the worldwide web.

## SO1.1. UNDERWATER CARTOGRAPHY / UNDERWATER MAPPING

**Value Proposition:** Using ROVs to map hard-to-reach underwater regions (*including 3D maps and models of GPS-defined areas*), enabling scientific research activities as well as visuals for documentaries in locations that cannot be reached with traditional means.

### Example of Key Activities:

- Complete detailed and precise mapping and survey tasks
- Create 3D models and/or images of the mapped areas.
- Acquire geophysical and geotechnical seabed data.

## SO1.2. INNOVATIVE AND SUSTAINABLE UNDERWATER TOURISM

**Value Proposition:** Allow *virtual tourism* of underwater sites using ROVs, with particular emphasis on the ability of tourists to control the ROVs directly from a web browser and therefore allow the exploration of underwater historical sites, museums, shipwrecks, etc. from anywhere in the world.

### Example of Key Activities:

- Discover, conserve, and enhance underwater heritage
- Enhance customer experience
- Deliver live underwater ecotourism visits experiences



# SO2. ROBOTIC-BASED WATERS AND SEABED MONITORING INSIDE MARINAS (PILOT 2)

This objective aims to use ROVs with a marina sensor network to obtain data and/or samples for water monitoring.

## SO2.1. MARINA ENVIRONMENTAL PURPOSES: QUALITY, WASTE, AND SURVEILLANCE

**Value Proposition:** Provide effective, accurate, and safe underwater water quality inspection and surveillance with a focus on sensible cost savings, lowering complexity, and optimizing resources by using eco-friendly equipped ROVs.

### Key Activities:

- Sample and monitor water quality and marine ecology
- Provide surveillance of the marina seabed and the under docks
- Inspection/assessment of underwater infrastructure
- Provide water quality certifications

## SO2.2. UNDERWATER CONSTRUCTION AND MAINTENANCE

**Value Proposition:** Minimize time of divers in water & improve their safety while operating maintenance works in marinas, by using work-class ROVs equipped with a variety of custom arms and tools to provide guidance and help with the work in the hard-to-reach marina locations.

### Key Activities:

- Supervise, inspect and assess any underwater infrastructure during underwater works.
- Operate in confined and difficult-to-access spaces, in any type of environment.

# SO3. ROBOTIC-BASED MONITORING OF YACHT HULLS FOR SECURITY AND SUPPORT TO REFIT AND DISMANTLING.

This objective looks to use ROVs for the monitoring and maintenance of yacht hulls (considering underwater aspects of hull cleaning within marinas).

## SO3.1. MONITORING AND MAINTENANCE OF YACHT HULLS

**Value Proposition:** Use ROVs to help divers perform quick, effective, and cost saving hull damage recognition and repair inside marinas while yachts/boats are at their anchor, without the need for dry docks.

### Example of Key Activities:

- Provide complete inspection and repairing/maintenance services using ROVs and professional divers

## SO3.2. YACHT HULLS CLEANING INSIDE MARINAS

**Value Proposition:** Perform quicker, safer and more effective cleaning of large vessels and yacht hulls using ROVs inside marinas, without having to take the hulls out of the water and using less resource-intensive means.

### Example of Key Activities:

- Provide complete inspection and cleaning services
- Recycle the debris removed from the hulls and extract the hazardous materials

## SO3.3. ENVIRONMENTAL PROCEDURE FOR DISMANTLING: CERTIFICATION

**Value Proposition:** Certify dismantling companies, “pools”, that use Eco-friendly measures and follow specific approved sustainable plans to manage and recycle hulls for a safe, ecological and regulated procedure

### Key Activities:

- Create a new certification for Hull dismantling
- Use of ROVs to inspect, audit, and certify dismantling pool

# GENERAL BUSINESS MODEL

An additional business model was developed in relation to the development and management of software and hardware required for all of the previous business models.

## → **General Business Model: UNDERWATER ROVS: SOFTWARE AND HARDWARE DEVELOPMENT**

This BM includes the design and delivery of innovative and eco-friendly software and hardware for underwater ROVs, as well as exchangeable multi-purpose tools to fit the same vehicle tailored to the clients' different needs.



# Exploitation Plan: Stakeholders Survey

- ❖ The Project Team is constantly working to improve the results of the project and its exploitation roots. To that end, the engagement of experts and stakeholders is fundamental.
- ❖ We are working to get stakeholder input into the project and its potential applications. The overall goal of stakeholder engagement is to:
  - ✓ Identify different areas of interest and concern;
  - ✓ Refine different business models based on stakeholder need;
  - ✓ Share project outcomes with interested audiences.
- ❖ We welcome as many views and interests as possible. The survey can be accessed online here.

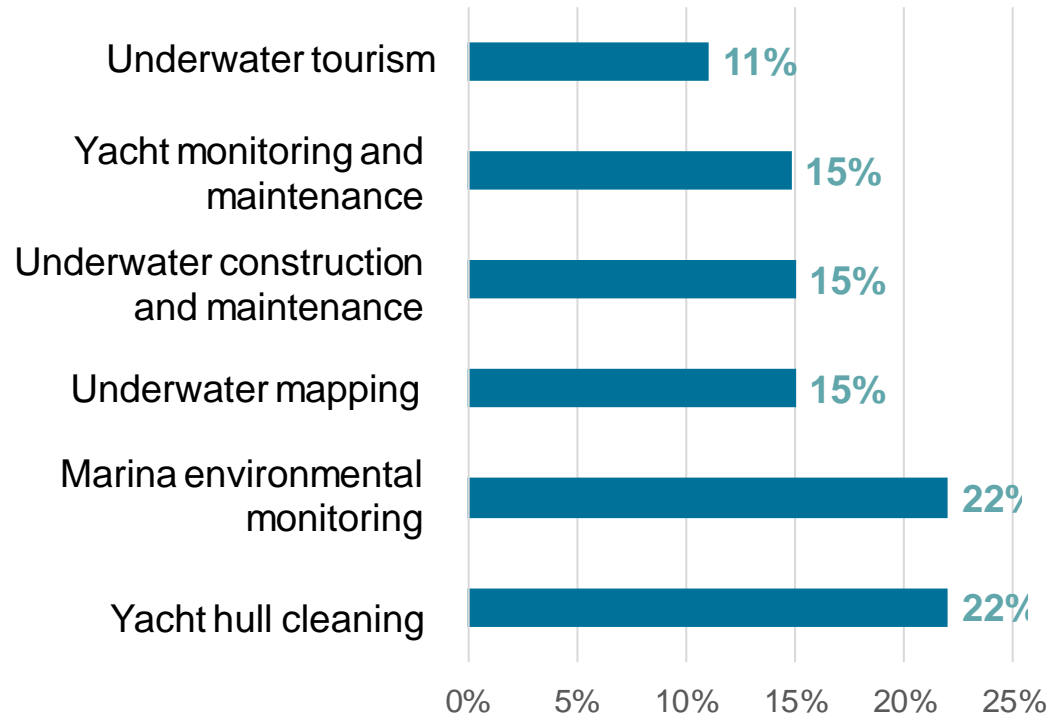




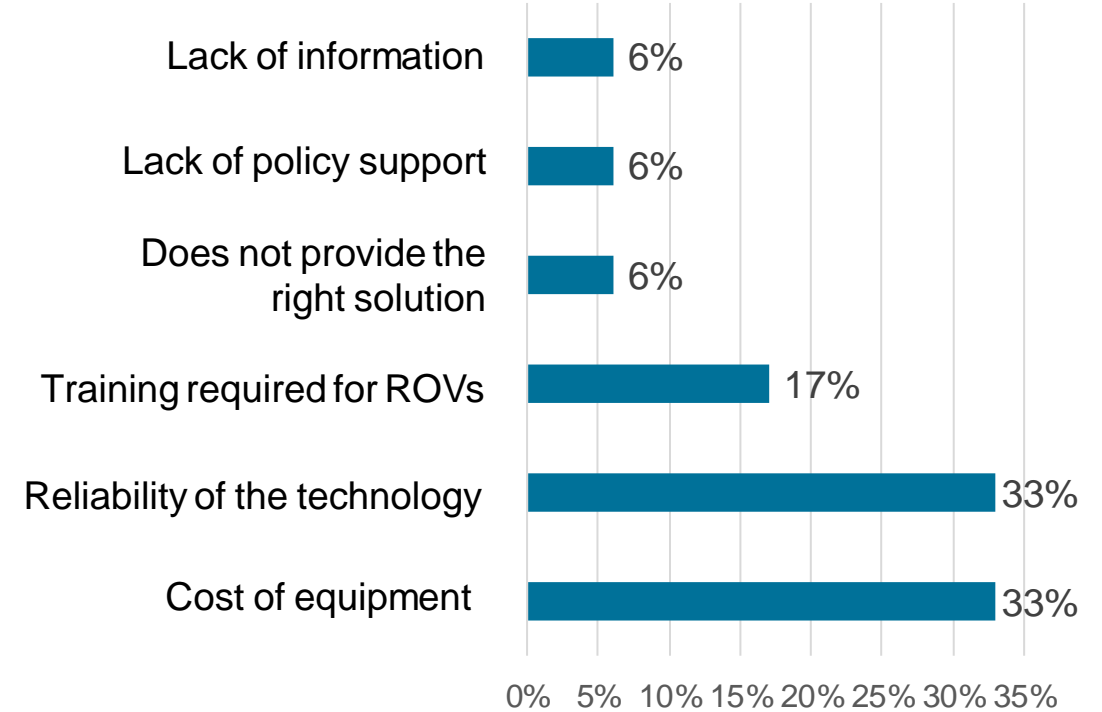
# Stakeholders Survey Feedback

- ❖ From the first surveying round, the following inputs were gathered. The graphs highlight the areas of interest in Marine Robotics so far stated by stakeholders, as well as perceptions of the biggest challenges.

*Figure 1: Applications of Interest*



*Figure 2: Biggest Challenges*



# Stakeholders Survey Feedback

- ❖ A wide variety of areas and potential applications for ROVs have been mentioned so far by stakeholders, including the below
  - Environmental clean up (waste management and disaster relief)
  - Military use
  - Surveillance and safety use
  - Underwater hull cleaning
  - Navigation control for boats

The results so far highlight the strong potential for job and economic activity within the field of marine robotics. Jobs could be equally wide-ranging, including:

Robotic engineers

Marine archaeologists

Specialist divers

# Thank You For Your Attention

## CONTACT INFORMATION



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