



TREASURE

Implementing Innovation in Mediterranean Ports: From the TREASURE Catalogue
to Practice

Port of Valencia

PP4 – Pablo Palomo
March 26, 2026



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MarineRob

MARINEROB is a company devoted to the development of innovative solutions in engineering and research applied to the marine industry. Its main activities are focused on the proposal of advanced products of autonomous boats, renewable energy, and underwater vehicles for multiple applications.

Its mission is to promote environmental sustainability within maritime operations while ensuring that its technologies are inclusive, particularly for individuals with reduced mobility.



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Alba Glider

The Alba Glider open Sea project develops autonomous underwater vehicles for ocean exploration, featuring AI for tasks like marine wildlife tracking, border surveillance, and maritime traffic monitoring. Operating at depths up to 1,500 meters, it is supported by sustainable motherships powered by solar energy and green hydrogen, ensuring eco-friendly, long-term operations.



The Alba Glider incorporates cutting-edge technologies, combining artificial intelligence with autonomous operation, enabling efficient and adaptable functionality across different marine environments. Its capabilities make it ideal for scientific research, automated management of protected marine areas, and deployment within larger marine systems.



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EasyBoat

EasyBoat develops environmentally sustainable boats that are easy to use and inclusive. Designed for beginners and individuals with reduced mobility, the boats feature user-friendly navigation and integrate advanced technologies with renewable energy. The project promotes eco-conscious boating while making it accessible to everyone.

- Manual or remote control via 5G
- Obstacle avoidance based in deep learning, optical sonar and thermal sensors. AIS and radar warning system
- Powered exclusively by renewable energy self produced.
- 600 Kg and 6 m³ of pay load available, allowing manned crewed together with additional instrumentation or power system for any additional requirement.



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Water management

MARINEROB has been developing a solution that provides immediate, real-time monitoring of the port environment. This solution offers continuous analysis of water quality in the port's internal waters, external anchorage areas, and nearby coastal zones.



The proposal involves the utilization of a Surface Autonomous Vehicle (SAV) positioned near the Autonomous Underwater Vehicle (AUV) to act as a relay between the Command Centre (CC) onshore. Furthermore, in port facilities and coastal areas, leveraging the extensive coverage of 5G mobile networks can enhance both communication performance and available bandwidth.



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- Container terminals
- General cargo
- Solid bulks
- Ro-ro and vehicle terminal
- Passenger terminal
- Liquid bulk



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THE PORT AUTHORITY OF VALENCIA'S ENVIRONMENTAL AND ENERGY POLICY

Environmental Challenges

- The incorporation of environmental and energy considerations into public port land planning, organisation, management, and conservation processes to set goals and objectives for the improvement of both systems.
- Regular systematic analysis and assessment of the activities, products, and services of companies that may interact with the environment, in order to be aware of and manage the environmental risks they may create.
- Measuring, monitoring and managing the use of natural resources and energy, including eco-efficiency criteria in general, and energy efficiency criteria in particular, to ensure suitable environmental and energy performance in the services provided.
- Compliance with applicable environmental and energy legislation and requirements, aiming to go further than the demands required by law, whenever possible.
- Prevention and minimisation of emissions, consumption, discharges, noise, and waste produced as a result of its activities, aiming to recover as much as possible of the waste generated.
- Using and encouraging the implementation of the best, most viable technologies in each activity.
- The provision of suitable training and information for employees to encourage awareness and take-up of this policy.



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Environmental Challenges

The PAV undertakes activities to ensure:

- Water quality – PAV monitors and controls the water quality of its ports through:
 - Daily cleaning of the water surface with a pelican-type craft.
 - Regular analyses to monitor water quality, in line with Water Framework Directive requirements.
 - An internal emergency plan and a contingency plan, in addition to different concession plans, to combat pollution caused by accidental hydrocarbon spills, that includes possible problems with ships scrubbers.



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Activity in TREASURE

Fundación Valenciaport has launched a tender for the provision of specialized services for:

- The design and execution of environmental sampling campaigns in port waters of the Port of Valencia, making use of drone-assisted technology.
- The analytical determination of key environmental parameters related to water quality and potential pollution in port areas, specifically the effect of scrubbers within such environment.
- The integration of sampling results into environmental monitoring framework defined within TREASURE, supporting the evaluation of pilot actions and innovative tools.
- The contribution to the operational, validation of drone-based sampling technologies in compliance with environmental, maritime, and safety regulations.



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Technical specifications

- Design and execution of at least 30 field sampling campaigns in port waters close to the vessels which make use of scrubbers. The campaigns should be separated in time by about 30 days and a minimum time span of 10 months should be covered between the first and the last one.
- The sampling campaigns shall be carried out using drone-assisted technology, specifically unmanned aerial/aquatic systems, capable of collecting water samples and/or capturing real-time environmental data in designated port water areas.
- Laboratory analysis of specific physicochemical parameters with defined thresholds.
- Generation of technical reports, digital datasets, and interpretive analysis of findings.
- Collaboration with Fundación Valenciaport and relevant stakeholders for data exchange and result dissemination.



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Parameters to be analysed

Parameters
pH
Temperature
Turbidity
Polycyclic Aromatic Hydrocarbons (PHA – PAHphe)
Nitrates (NO_3^-)
Sulphate Compounds (Na_2SO_4 , CaSO_4 , HCl , H_2SO_4)



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Deliverables

- **D.1 Sampling Protocol using Drone Technology:** Methodological document detailing the technical procedures and operational protocols for drone-assisted environmental sampling.
- **D.2 Georeferenced Sampling Dataset:** Structured dataset containing all sampling data collected during the campaigns, including coordinates, time stamps, sampling depth, environmental parameters, and drone metadata.
- **D.3 Laboratory Analytical Report:** Full analytic report of the laboratory results, covering all water quality parameters specified in the technical specifications.
- **D.4 Drone Operations Logbook:** Documentation of all drone operations performed, including flight logs, incident reporting, photographs, video recordings, and any technical observations.
- **D.5 Final Technical Report:** Consolidated report summarizing the methodology applied, key results, evaluation of drone technology performance, operational challenges, lessons learned, and recommendations for future applications.



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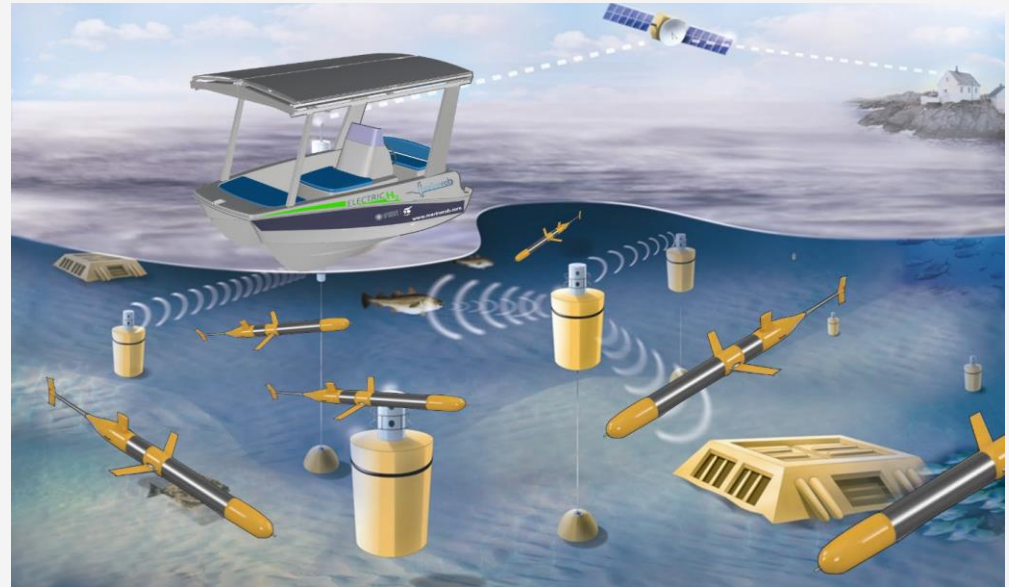
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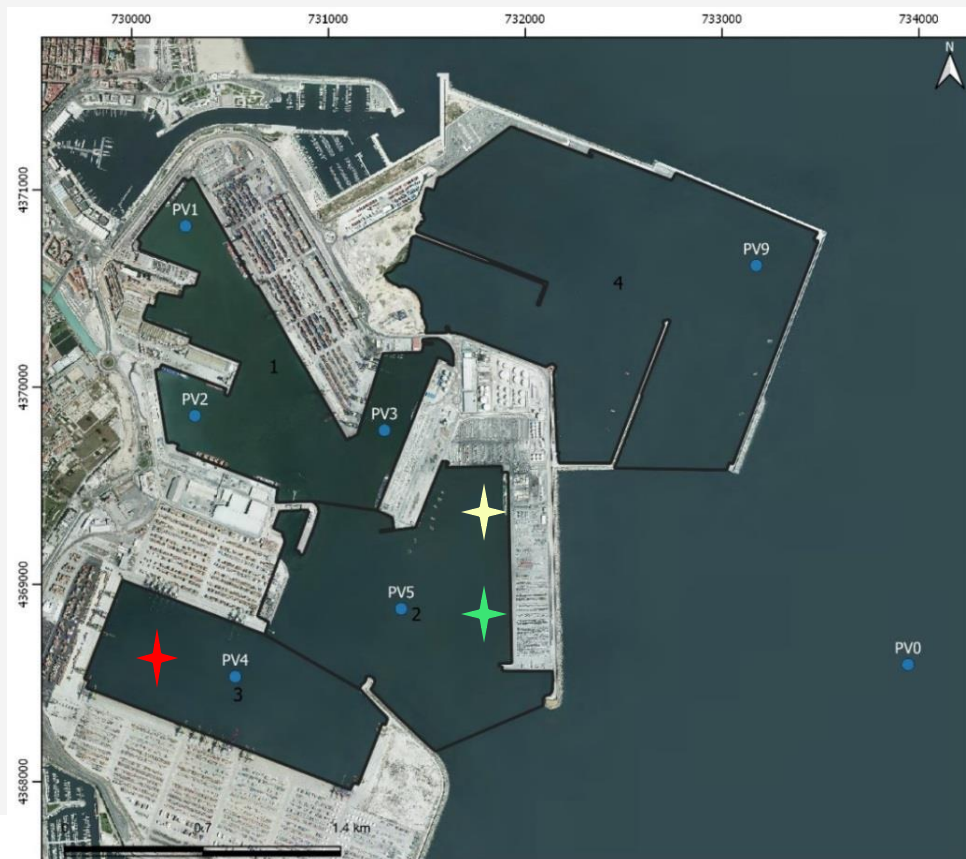
Procedure Workflow

1. Mission Initialization
2. Survey Area Configuration
3. Authorization Request
4. Departure from Mooring
5. AUV/TF Deployment
6. Data Acquisition and Retrieval
7. Validation Check
8. Mission Closure
9. Sample Handling and Transfer





- ★ Eco Savona of Grimaldi
Ro-ro Cargo Ship
Year build: 2021
238 m Length / 34 m Beam
Gross tonnage: 67,311
- ★ MSC Amalfi
Container ship
Year build: 2014
299.91 m Length / 48.33 m Beam
Gross tonnage: 95,014
- ★ Grande Senegal
Ro-ro Cargo Ship
Year build: 2010
210 m Length / 21 m Beam
Gross tonnage: 47,231



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Thank you!

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