



# Early Demand Map for Marine Systems and Applications

**CONJUNTO MAR**

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## Presentación del Conjunto Mar.

- Activity needs:
  - Safe navigation.
  - Fishing fleet activity management and oversight.
  - Water quality monitoring. Ocean and phytoplankton oversight.
- Challenges:
  - Challenge 2: Efficient management of water resources.
  - Challenge 3 Efficient emergency management (in maritime sector).





## Outcome of market consultations in the Ocean Group.

- Among the expressions of interest received, 57 are related to part of this block's contents.
- 3 are from European countries, 5 from Madrid, 2 from Valencia, 1 from Catalonia, 1 from Navarre and 45 from Galicia.
- 7 are from large companies, 37 from SMEs, and the rest from technological centres and OPIs (Public Research Organizations).





## Innovation purchases identified by the Marine Group:

- 1. Reinforcement of maritime safety for the Galician fishing fleet and management and oversight of activity.
- 2. Automation of marine survey through unmanned vehicles.





# TENDER 1

“ Reinforcement of maritime safety for the Galician fishing fleet and management and oversight of activity ”



## Tender objective: concept

- Implement a service that supports the Galician fishing fleet and combines the use of a comprehensive, on-board safety, maritime rescue and fishing activity oversight system, a system for analysing information received, and a replacement system based on the use of unmanned aerial vehicles.



## Tender objective: project contents (1)

- Development of a unique technological solution that integrates fishing activity oversight and safety subsystems into a single on-board piece of equipment.
- Implementation of an information integration platform that allows us to analyse said information, create alarms, and draft reports.
- Dispatch of aerial drones to conduct an initial assessment of a detected incident.

## Users

- Consellería do Mar:
  - Dirección Xeral de Pesca, Acuicultura e innovación Tecnolóxica
  - Servizo de Gardacostas
- Vicepresidencia (AXEGA)
- Consellería de economía (Secretaría de traballo, ISGA)





## User needs that are intended to be covered

- Need to reduce the number of maritime accidents and improve work conditions for professional Galician fishermen by bolstering on-board and navigational security.
- Respond to growing demands for official oversight systems for fishing activity and the fight against illegal fishing and poaching. (E.U. Oversight Regulation).

## Expected outcomes and effects: improvements in current services (efficiency)

- Increased efficiency for current fishing activity oversight systems.
- Possibility of verifying alerts of abnormal behaviours through the use of UAVs.



## Expected outcomes and effects: new services or functions (efficacy).

- Geolocalisation of fleet at all times, which will make early detection of incidents—and, therefore, a more effective response—possible. (Currently, the majority of the fleet lacks a geolocalisation system.)
- Real-time monitoring of embarkation and crew operationality. (No information of this type is currently available.)





## Scope of the tender objective and timeframe

- On-board system that combines:
  - Detection systems for: man overboard, heel and/or sinkage of ship, identification of fishing gear and apparel
  - Medical telecare
- Information integration platform that makes it possible to monitor and analyse said information and send alerts that activate drones.
- Dispatch of aerial drones to verify and monitor alerts received.





## Scope of the tender objective and timeframe

- Timeframe for execution: two years
  - Development of an integrated, on-board system (fishing activity safety and oversight and information integration platform, 12 months).
  - Adaptation of drones for a given service (12 months).
  - Installation of pilot embarkation equipment (6 months) and individualised verification of each component.
  - Pilot plan for assessing the service overall (6 months).





## Tender strategy

- CPTI. Public procurement of innovative technology.
- 1.5 million euros
- Tender during first half of 2017, assignment in September/October, execution by the end of 2019
- Key assessment criteria:
  - Standard data formats (INSPIRE directive)
  - Current state of technology and viability of developing the service within two years. Adecuación a las necesidades detectadas.
  - Adaptation to identified needs.
  - Service cost once completed.
  - Technical quality of the proposal.
  - Prior experience with R&D and innovation projects or with providing similar services.





# TENDER 2

“Automation of ocean survey through  
unmanned vehicles”



## Tender objective: concept (1)

- Provide Galician government, which is responsible for managing the region's various bodies of water, with improved survey and data collection systems through the use of autonomous vehicles to:
  - Help manage “red tide” events
  - Monitor water quality
  - Respond to obligations set forth in the Water Framework Directive
  - Respond to obligations set forth in the Marine Strategy Directive

## Tender objective: project contents (1)

- Develop a service that uses a fleet of aerial and marine vehicles to:
  - Gather water samples at concrete depths or integrated water column samples. Ability store water samples until a future embarkation or transport them to the corresponding laboratories.
  - Operate under adverse weather conditions. Take off and land safely while at sea.
  - Operate water quality instruments autonomously (CTDs, acoustic systems, phytoplankton netting, small dredgers, etc.).



## Users

- Consellería del Mar (INTECMAR)
- Laboratorio de Medio Ambiente
- Aguas de Galicia





## User needs that are intended to be covered

- Need to make current monitoring systems sustainable and efficient, thereby optimising their cost.
- Need to improve meteorological working window without risking human and material resources
- Need to increase the frequency of surveys to improve the detection of phenomena of interest so as to optimise the corresponding response.





Expected outcomes and effects: improvements in current services (efficiency)

- Traditional survey vs. Survey using autonomous vehicles
  - Reduces operational risk.
  - Enhances efficiency: decreases timeframe and costs.
  - Broader meteorological working windows.







Expected outcomes and effects: new services or functions (efficacy).

- Using autonomous vehicles to monitor water quality will make it possible to complete data gathering and survey missions in less time, thereby increasing the synopticity of the measures and making it easier to interpret the data.





## Scope of the tender objective and timeframe

- Unmanned marine vehicle for operation in inland waters with the ability to measure water quality parameters and takes samples.
- Unmanned aerial vehicle with the ability to measure water quality parameters and take samples.
- Ability to operate both vehicle types in a collaborative fashion.
- Mission planning system and monitoring.
- Information management and analysis system.





## Scope of the tender objective and timeframe

- Timeframe for execution: two years.
  - 1st semester: Development of the vehicles: hardware and software. Mission planning system.
  - 2nd and 3rd semesters: Integration of sensors and survey systems. Information analysis systems.
  - 4th semester: Pilot program for validating the system through operation by Intecmar, Augas de Galicia and Laboratorio de MedioAmbiente of one marine vehicle and two aerial UAVs.





## Tender strategy

- Public procurement of innovative technology.
- 2.5 million euros
- Tender during first half of 2017, assignment in September/October, execution by the end of 2019.
- Key assessment criteria:
  - Current state of technology and viability of developing the service within two years.
  - Adaptation to identified needs identified.
  - Service cost once completed.
  - Technical quality of the proposal.
  - Prior experience with R&D and innovation projects or with providing similar services.

