

# Spanish Maritime Risk Disaster Tool Management. AI advanced data analysis SMART MARITIME AI - SMarAI





# SMarAI

## Basic project data:

Name: Spanish Maritime Risk Disaster Tool Management. AI advanced data analysis – **SMART MARITIME AI**

Submitted to the “Technical Assistance for Disaster Risk Management – Track 1” call of the Union Civil Protection Mechanism (UCPM), the project will start on **April 1 2025**, and **will last for 24 months**.

## Beneficiary details:

Promoted by **the Spanish Maritime Safety and Rescue Agency (SASEMAR)**, the project includes the **Centre for Studies and Experimentation of Public Works (CEDEX)** as an affiliated entity and **the State Meteorological Agency (AEMET)** and **the Spanish Port System** as associated members.

**SMarAI supports and enhance the work carried out by SASEMAR in the Spanish designated Area of Search and Rescue** where has been assigned the functions of rescue people at sea, fight against marine pollution, and maritime traffic control. This area covers 1.500.000 km<sup>2</sup>, three times the size if the Spanish territory, and it is distributed across four major seafronts, adding complexity to SASEMAR’s tasks of allocating available resources.

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## ESTIMATED BUDGET FOR THE ACTION

The budget of the consortium has been distributed taking into consideration the responsibility levels (project coordinator, WP leader...) the workload, and proposed developments from each partner.

One of the objectives of WP1 is to ensure diligent management of the project's funding and financial resources.

The most important figures of the project budget are as follows:

	ELIGIBLE COSTS	EU CONTRIBUTION
<b>SASEMAR</b>	439.973,30	417.974,00
<b>CEDEX</b>	308.210,29	292.799,00
<b>consortium</b>	748.183,59	710.773,00

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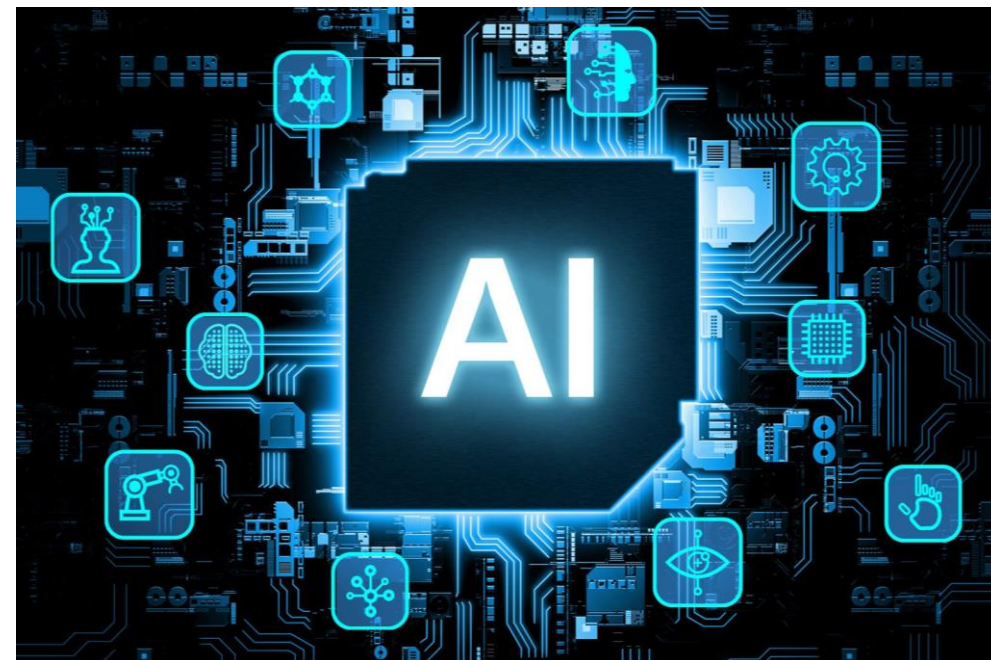
In a context where **maritime risks transcend borders**, the **increase in maritime traffic** and the **associated threats such as oil spills, pollutants, or mass evacuations**, demand a swift and efficient response capacity.

It focuses on **enhancing maritime safety intervention capabilities in the event of a disaster at sea** through the **development of an operational platform** for advanced data analysis **based on artificial intelligence (AI)**. This tool aims to support decision-making in maritime emergency management by identifying risks more effectively.

This tool will **integrate multiple data sources in real time to anticipate and manage emergencies**. Through the use of Artificial Intelligence, SMarAI aims to process large volumes of data and provide maritime authorities with a tool to enhance prevention, preparedness and response to emergencies at sea.

## Detected needs:

- Knowledge availability for risk assessment and management: need to make information accessible to maritime safety agencies
- Lack of comprehensive analysis of collected information, need to integrate multiple data sources and requirement for advanced data processing
- Efficient resource management: improved allocation of rescue units
- Enhancing SASEMAR's governance to strengthen decision-making



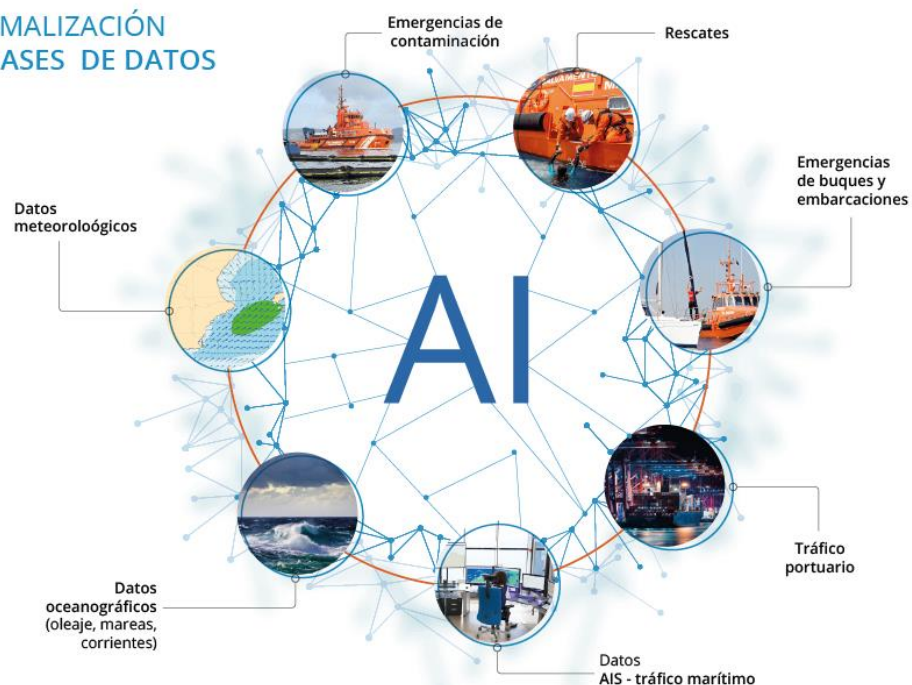
## In-Depth analysis of available databases

- ❖ Emergencies
- ❖ Meteorological data
- ❖ Oceanographic data (waves, currents and tides)
- ❖ Port traffic
- ❖ Maritime traffic
- ❖ Other databases to study

# Proyecto SMarAI

El proyecto SMART MARITIME AI tiene como objetivo **mejorar las capacidades de intervención de seguridad marítima en caso de catástrofe en la mar** mediante una **plataforma operativa basada en Inteligencia Artificial (AI)** para asignar los recursos operativos de forma más eficaz, ayudando a la toma de decisiones.

## NORMALIZACIÓN DE BASES DE DATOS



## EL MARCO TÉCNICO DE SMarAI CONSTA DE TRES ELEMENTOS CLAVE:

1



**Integración y análisis de datos** para entrenamiento, prueba y validación de algoritmos de AI en la estimación del riesgo de desastre

2



**Análisis de riesgos** incluidos peligros, exposición y vulnerabilidades, y la definición de los algoritmos de AI adecuados

3



**Plataforma operativa de AI para usuarios finales** integrada en un visor donde los modelos de AI se aplican a los datos seleccionados para lograr la previsión y cartografía de riesgos en tiempo real





## MEJORAS

Anticipación

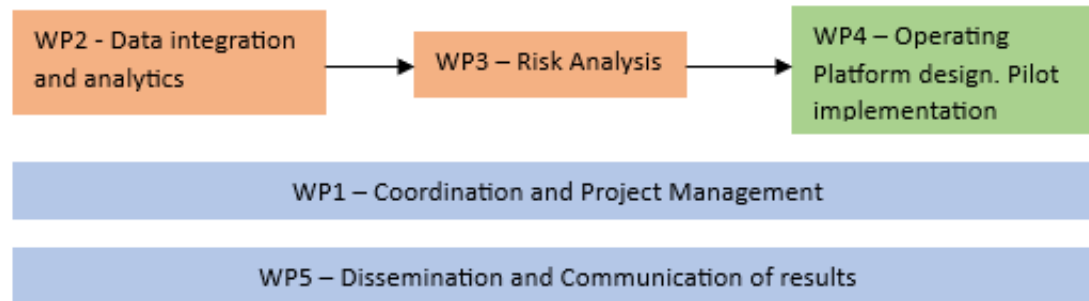
Gestión de la emergencia

# SMarAI

## SPECIFIC OBJECTIVES

-  **Data integration:** Create a standardized database by integrating and processing data (including emergency data, meteorological and oceanographic data, maritime traffic density, etc). Along with exploring others relevant sources and selecting appropriate variables.
-  **Risk Analysis:** Define a framework to identify hazards and vulnerabilities using Artificial Intelligence.
-  **Operational AI Platform:** Develop a tool to provide risk maps for end-users, it is a tool that continuously learns.
-  **Cross-border cooperation:** Promote the replicability of the platform in other EU Member State and third countries that face similar challenges and could adapt this tool to their own needs.

## WORK PACKAGES



**SASEMAR** will be the **lead beneficiary** of work packages **WP1**, **WP4** and **WP5**, while **CEDEX** will be the lead beneficiary of **WP2** and **WP3**.



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## EXPECTED OUTPUTS

**18 milestones have been identified** for this project, with **the most important ones** detailed below:

**MS5:** Validation of intermediate results

**MS6:** Supervision of final documents: final report and methodological guide

**MS7:** Completion of the identification of useful fields in different types of data

**MS8:** Creation of database

**MS9:** Definition of the risk assessment

**MS10:** Obtaining the initial inference model

**MS11:** Commissioning of risk analysis tools

**MS12:** Technical specification of user interfaces. Project start, planning, design and development

**MS13:** Software review and validation. Test and testing

**MS14:** Unit Test Result. Test results, implementation of the platform and completion of the project

The system will not only remain relevant but will also evolve to meet the new needs and challenges of the maritime environment

**“Towards a safer future at sea with SMarAI”**

# SMarAI

## IMPACT



Improved **decision-making**



**Optimization of response** and operational efficiency.



**Strengthening international cooperation** in maritime risk management.

Publication of a **Methodological Guide** to facilitate its implementation in other Member States.



Improvement and optimization in the **allocation of rescue units** assigned to the Spanish SAR zone



**Contribution to the dual transition: ecological and digital**, regarding the ecological transition, it promotes the efficient use of resources, reduces greenhouse gas emissions and enhances resilience to climate change.



## TENTATIVE DATES AND LOCATIONS FOR MAJOR EVENTS

- 1) **Workshop at the European Coast Guard Functions Forum**, hosted by EMSA, expected to take place during the last six months of the project in Lisbon.
- 2) **Final International Conference at the International Maritime Organization (IMO)**, expected to take place during the last six months of the project in London.
- 3) **National Conference**, expected to take place during the last six months of the project in Madrid.



# QUESTIONS

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