

# The EU Digital Twin of the Ocean vision

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**European Commission** 

(DG MARE)

representing the inter-service EU DTO team

Learn more here:













## Support the Mission



PROTECT AND RESTORE MARINE AND FRESHWATERS ECOSYSTEMS AND BIODIVERSITY

PREVENT AND ELIMINATE POLLUTION
OF OUR OCEANS, SEAS AND
WATERS

MAKE THE BLUE ECONOMY CARBON-NEUTRAL AND CIRCULAR

#### Cross-cutting enablers for the mission:

- Digital Ocean and Water knowledge system
- Public mobilisation and engagement

## Part of DestinE













Climate adaptation, extrêmes and geohazards Ocean, biodiversity, urban



## From the EU to the world





"Today, we know the ocean is vulnerable and is threatened by our misdeeds. Pollution, chemicals and the overexploitation of marine resources. The ocean is too large for any one of us, and yet so fragile that our individual actions matter. ...

... Every problem is an opportunity for innovation. But we need a clear and ambitious objective. We need a mission, like the European Green Deal. That is why we have launched the 'Mission to restore our ocean and waters by 2030'

... Finally, the ocean is still largely a great mystery for humankind.

That is why Europe is building a digital twin of the ocean.

We are connecting our assets – like the Copernicus satellites, marine infrastructure like icebreakers, buoys and underwater drones, and high performance computing. We will gather the raw data and turn it into real-time knowledge and longer-term predictions.

We are putting the power of the digital revolution at the service of our climate..."



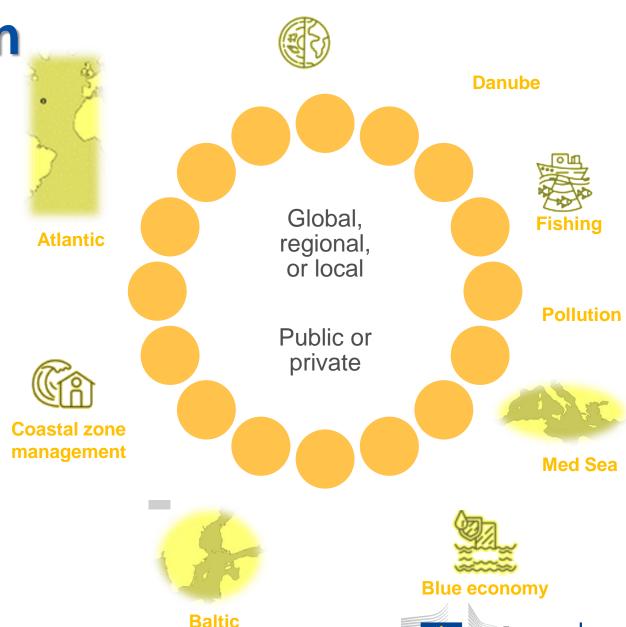
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European

Commission

**Ocean Climate** 



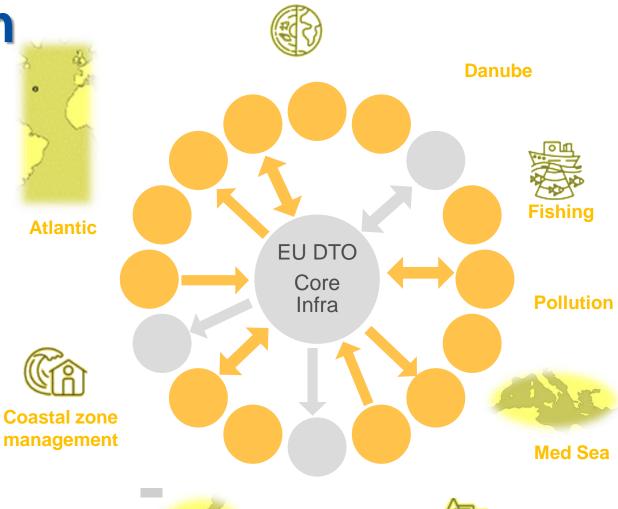
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**Ocean Climate** 





Other sources of data
Research, citizen, private and other
networks data

#### Harmonised data





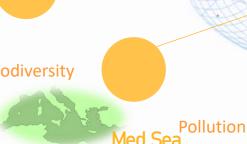
Marine RIs

Models outputs



**Atlantic** 







### Core DTO

Ocean Data Space



Maritime Spatial Planning

Interactivity
Co-working
environment
Local Twins
Marketpace



#### Models

Physics, Fisheries, biodiversity (NEMO, ECOPATH & ECOSIM,...)

Research



operations



Coastal zone management



Danube

Baltic

## 3 pillars of action

#### **Science-base**

- ILIAD
- Horizon Europe:
  - Projects: Blue Cloud, Immerse (Adv Nemo models), Obama-Next, MarcoBolo, Biocean5D, Marbefes (marine and coastal biodiversity and ecosystems)
  - Calls: FAIR and open data sharing in support of healthy oceans, seas, coastal and inland waters;
     Operational ecosystem models from space; Understanding the oceanic carbon cycle
- Sustainable Blue Economy Partnership

### **EU Core Digital Twin Ocean**

- Infrastructure for EU DTO:
  - EDITO-INFRA
- o Data:
  - Integration of biodiversity monitoring data into the DTO
  - Roadmap inland waters (CSA)
- o Models:
  - EDITO-Model-LAB: Underlying models for the European Digital Twin Ocean,
  - Socio-economics models (RIA)
- Services & Interfaces:
  - First steps by EDITO-INFRA & ILIAD

#### **EU DTO in the world**

- o EU 27
- ESA
- UN Ocean Decade
  - DittO
  - Ocean Data Coordination Platform
  - UN DCC Ocean Prediction
     & Coastal Resillience
- o G7 FSOI
- All-Atlantic Ocean Research
   Alliance

#### To come (2023 – onwards):

- gradual integration in EU DTO of ecosystems and socio-ecological models, as well as inland waters
- user and impact-driven services and applications

#### Running the operations: Operational Programmes (EMFAF, Copernicus, LIFE, ...)





Copernicus Marine Service

Ocean
Observation
Initiative

Operationalisation & integration in DestinE: Digital Europe Programme



Horizon Europe Mission Ocean

**EDITO** starts

1st prototype

2024-25

Science - base



## **EUROGEO WORKSHOP 2022**



# Thank you!









