

EU MISSION

'Restore our Ocean and Waters by 2030'

European Digital Twin of the Ocean (EU DTO)



BESS inspiration Session 23/05/2024







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

"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. ..."



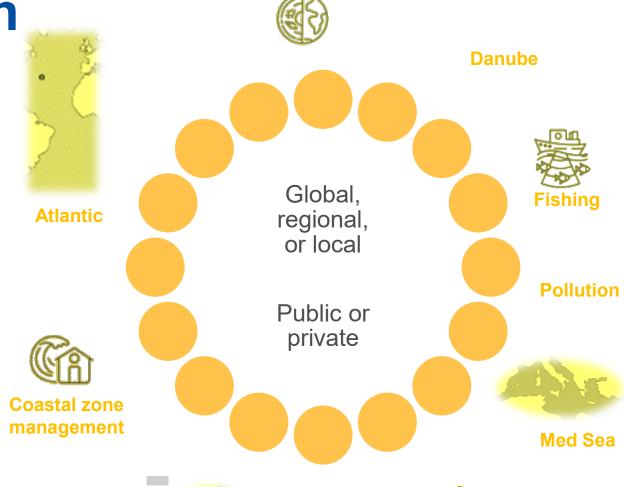
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Ocean Climate





Structuring & integrating the ocean knowledge value chain FOR ocean actors

TO:

- Support science-driven approaches to policies implementations by users: ecosystem-based management of marine habitats/green infrastructure, planning and management of marine areas, safeguard productivity and biodiversity of marine ecosystems, etc.
- > Support industry to develop new business models, sustainable green services, and opportunities in ocean data and related services
- ➤ Increase citizen engagement & empowering citizens in innovative co-designed services and projects, enable the infusion of 'non-scientific data streams'

HOW:

- ➤ By Integrating and connecting wide range of data and models (from physics to socio-economics) with cloud infrastructures, HPC, AI
- by providing development kits, interfaces and visualization tools for "what-if" scenarios and decision support



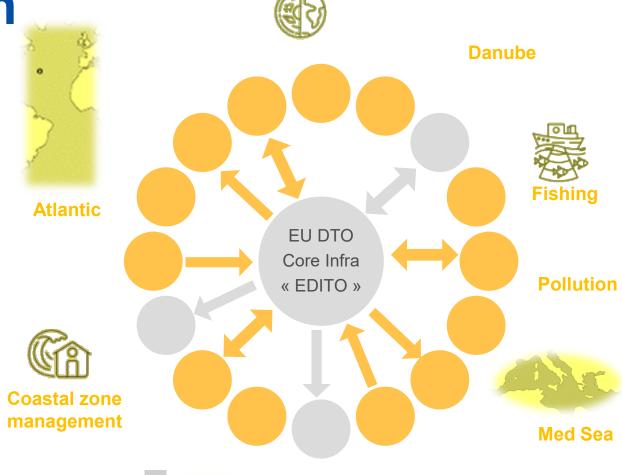
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Ocean Climate





Harmonised data





Marine RIs

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

Models outputs





Atlantic

Biodiversity



EDITO (Core DTO)

Ocean Data Space

DTO engine core models suite

Interactivity Co-working environment **Local Twins**



Models

Physics, Fisheries, biodiversity

Research to operations



Coastal zone management



Maritime Spatial Planning

Danube & Black Sea

Pollution

Med Sea

EU DTO: 3 pillars of action

1. Science-base

(Horizon Europe, national programmes ...)

2. EU Core Infrastructure

(Mission Ocean WP)

3. EU DTO in the world





2. DTO Core Infrastructure (EDITO) (Mission Ocean WP)



Public Infrastructure for the European Digital Twin Ocean IA, IBA - 3M€

EDITO-Infra - EU Public Infrastructure for the European Digital Twin Ocean Mercator Ocean Int (CMEMS) & VLIZ (EMODnet)

Underlying models for the European Digital Twin Ocean, IA - 7M€

EDITO-Model Lab - Underlying models for the European Digital Twin Ocean

Integration of biodiversity monitoring data into the Digital Twin Ocean IA - 10M€

DTO-BioFlow, - Integration of biodiversity monitoring data into the DTO **DIGI4ECO** - DT-sustained 4D ecological monitoring of restoration in fishery depleted areas

Towards a European e-DNA library of marine and freshwater species CSA - 2M€

eDNAqua-plan - A Plan towards an eDNA reference library and data repository for Aquatic Organisms, navigating Europe towards the next generation biodiversity monitoring

Integration of socio-ecological models into the Digital Twin Ocean, RIA, 13M€

GAP in finalisation – 4 RIAs

Roadmap towards the integration of inland waters into the Digital Twin Ocean, CSA - 2M€

IDEATION - InlanD watErs in the digitAl Twln OceaN

EU DTO - Phase 2 IA, IBA - 14M€ Scaling up EU DTO core infrastructure (data sources, models and services) Integration of existing applications (local or sectoral DTOs); Development of new user-driven applications; Interoperability with similar digital initiatives; Stakeholder engagement (inclusivity)

2022

2021

2023

2024

EU DTO: inclusive and open

EDITO follows a co-design and co-development approach

The core EU DTO must:

- be co-developed in collaboration with willing projects and stakeholders
- foster the co-development of local or regional, applicationspecific, DTOs
- open to interoperability with other similar initiatives

You can ALL contribute

- What will you need from the EU DTO?
- What can you bring to the EU DTO, and how?

European Digital Ocean Forum







1. DTO Science Base

















Sustainable Blue **Economy Partnership**



































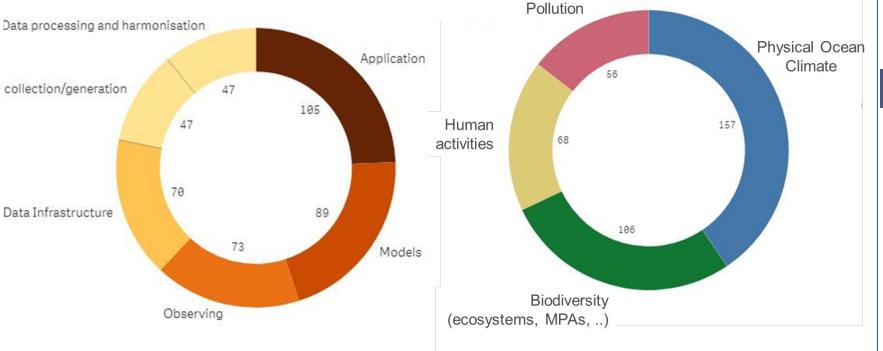












Digital Ocean Forum 14-15 June 2023, Brussels







































3. EU DTO in the world

- EU 27 linking with national initiatives
- UN Decade of Ocean Science for Sustainable Development













All-Atlantic Ocean Research & Innovation Alliance



INVITATION



EUMISSIONS RESTORE OUR OCEAN & WATE

RESTORE OUR OCEAN & WATERS

Digital Ocean Forum #3

Wednesday **12 June**, 12:30-18:00

Scientific and Technical Workshop

Brussels, Palais des Académies

Thursday **13 June**, 10:00-16:30

High-Level event

Brussels, Palais des Académies











