European marine data and research context
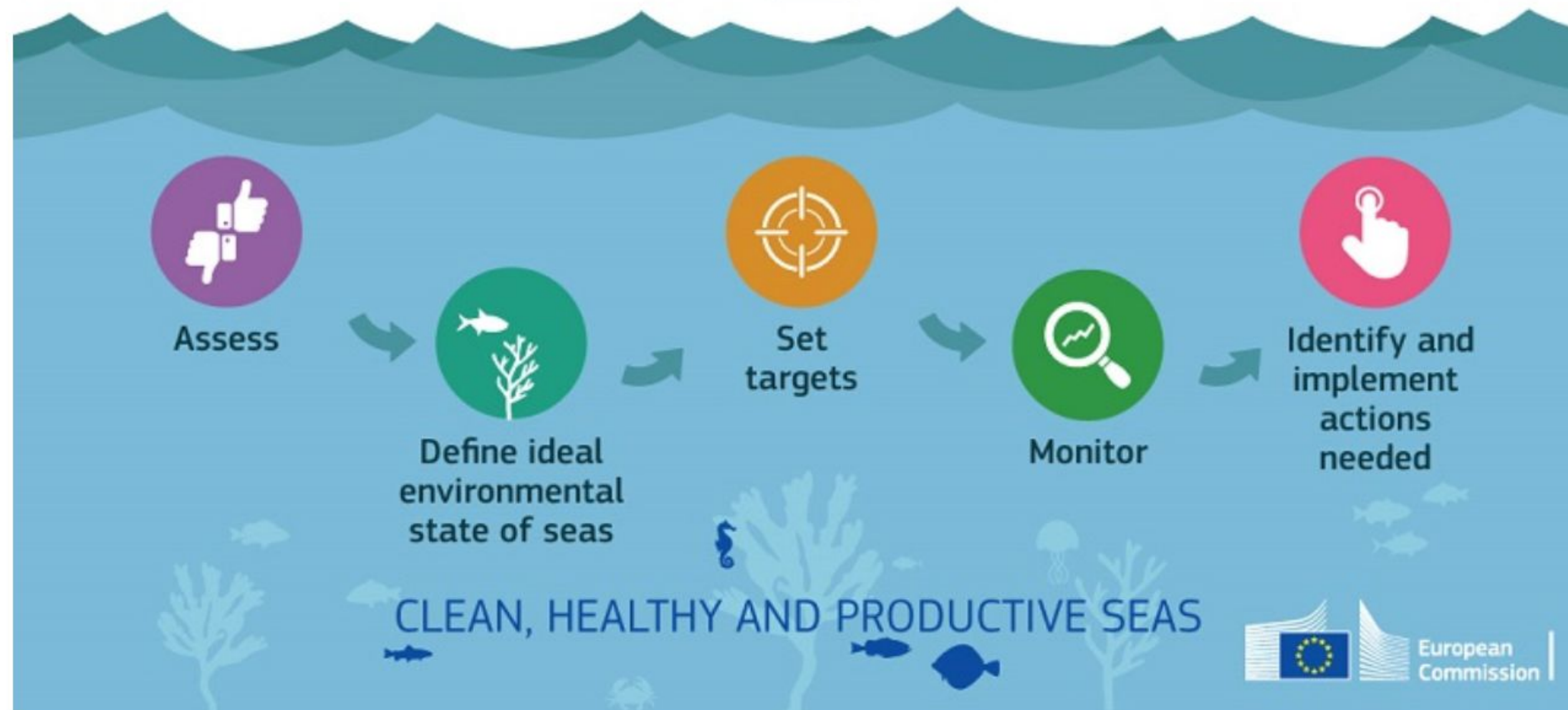
Dick M.A. Schaap (MARIS)
Scientific Director

Dissemination level: Public

iMagine RP1 review
December 5th 2023

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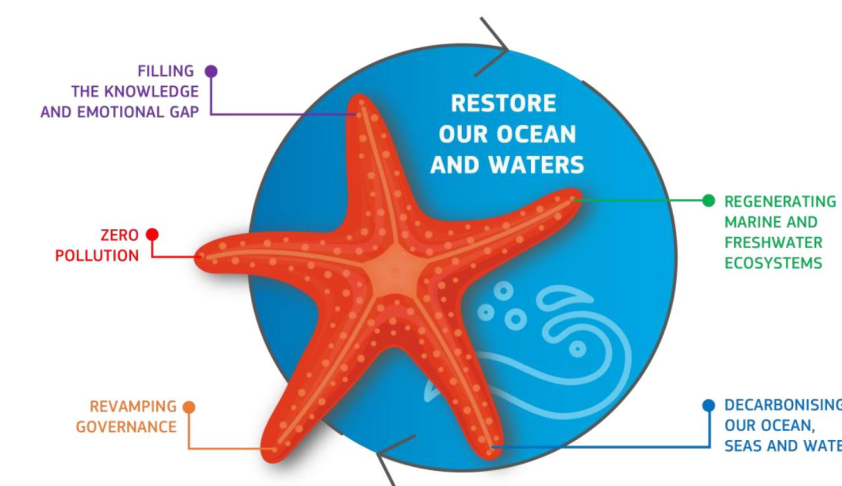# Marine environmental management and policy making

How EU Member States develop marine strategies

Assess → Define ideal environmental state of seas → Set targets → Monitor → Identify and implement actions needed

CLEAN, HEALTHY AND PRODUCTIVE SEAS

European Commission

Source: EU MSFD website

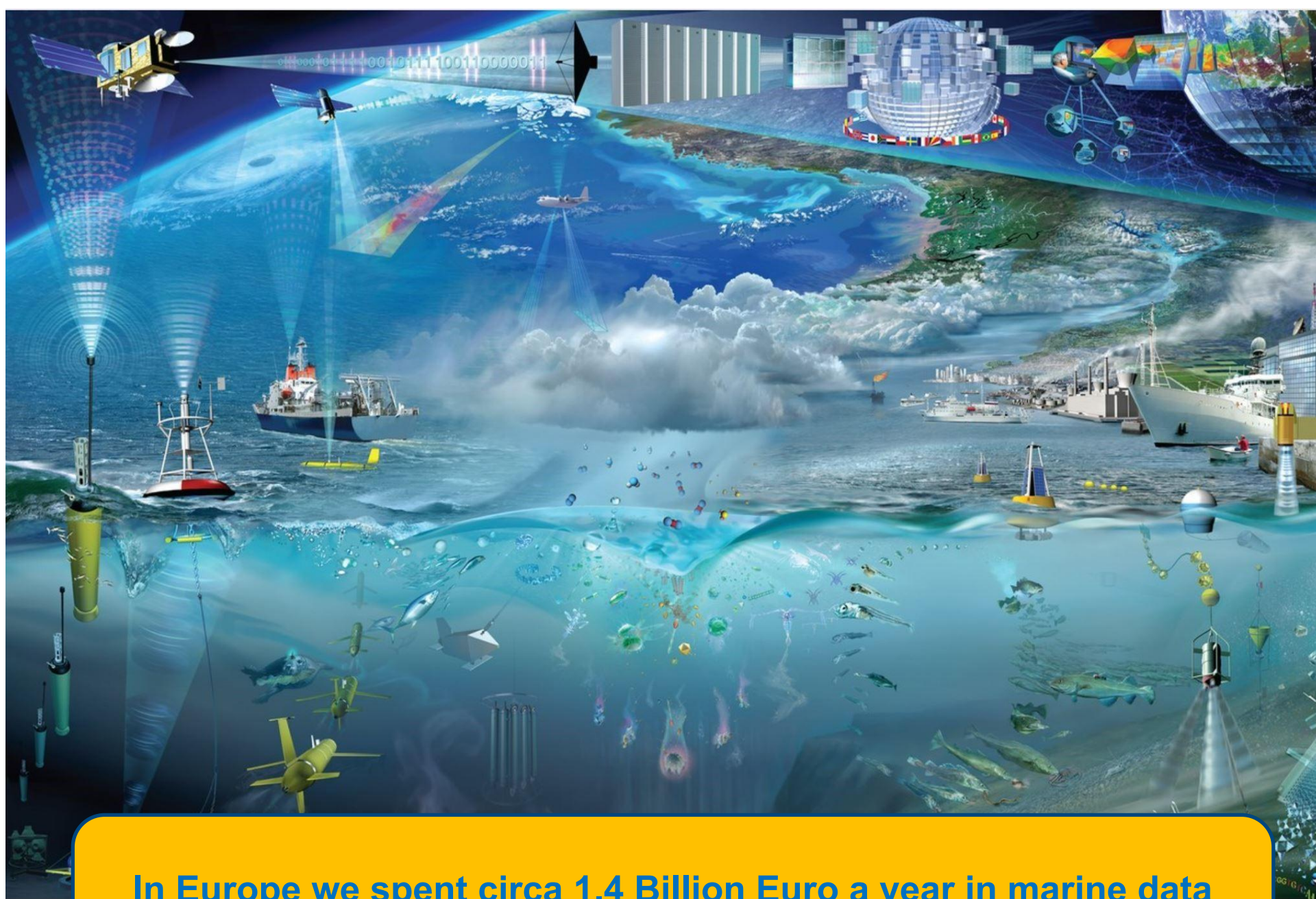**Relevant EU Directives and initiatives for aquatic domain, such as:**

- **Marine Strategy Framework Directive (MSFD)**
- **Water Framework Directive (WFD)**
- **European Green Deal**
- **Mission Starfish 2030 "Healthy oceans, seas, coastal and inland waters"**
- **United Nation's 2030 Agenda for Sustainable Development**
- **United Nation's Decade of Ocean Science (2021–2030)**

Green Deal

RESTORE OUR OCEAN AND WATERS

FILLING THE KNOWLEDGE AND EMOTIONAL GAP

ZERO POLLUTION

REGENERATING MARINE AND FRESHWATER ECOSYSTEMS

REVAMPING GOVERNANCE

DECARBONISING OUR OCEAN, SEAS AND WATERS

2021 2030 United Nations Decade of Ocean Science for Sustainable Development
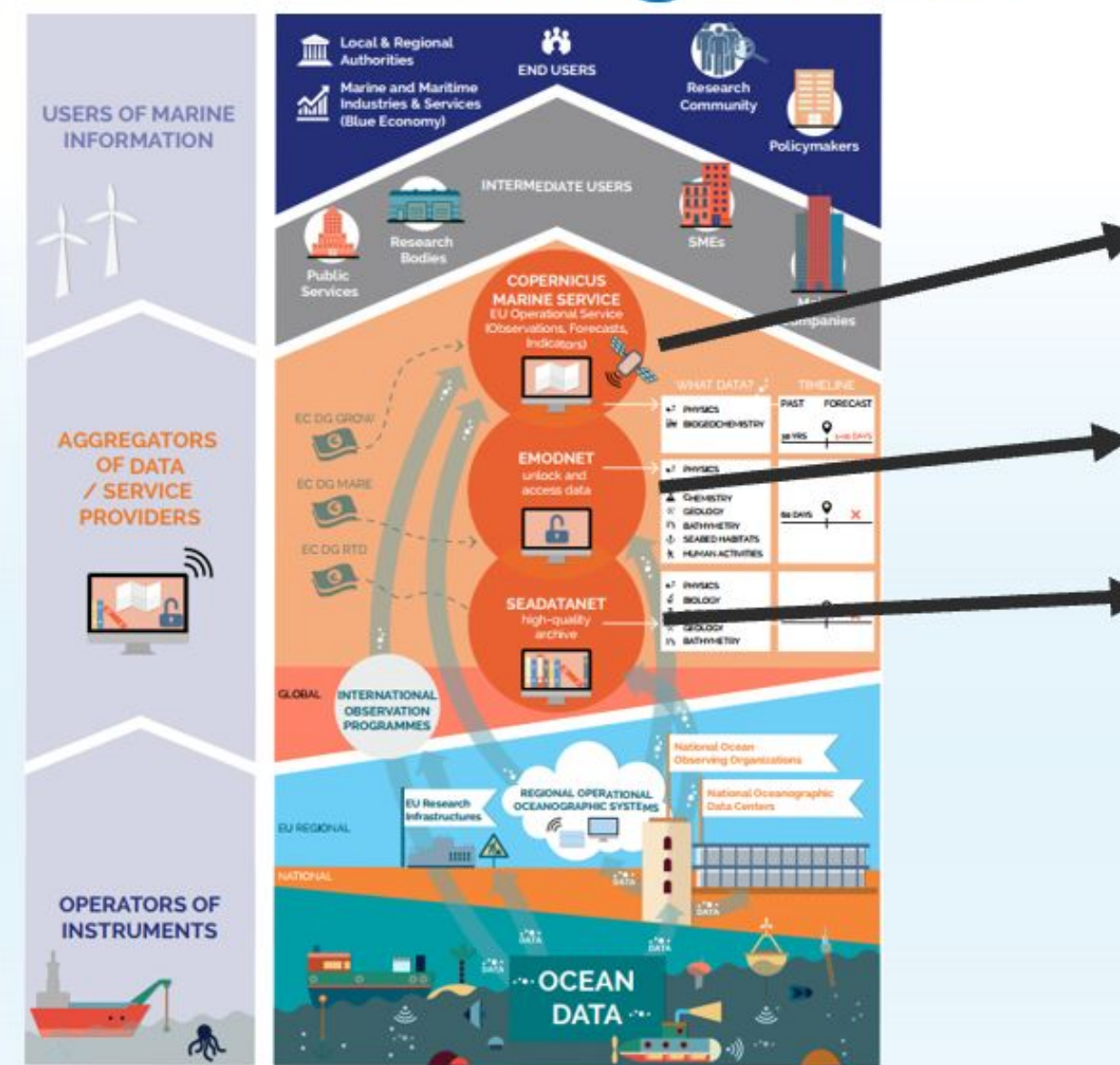
Implementation requires knowledge

The implementation requires an increase of our overall knowledge, demanding more science and improved access to observation data and analytical processing.

In Europe we spent circa 1.4 Billion Euro a year in marine data acquisition (1.0 BE in-situ; 0.4 BE remote sensing)

European landscape marine data management

Data aggregators and providers of data products and services

Europe already has developed an impressive capability for aquatic environmental observation, data–handling and sharing, modelling and forecasting, second to none in the world. This builds upon national environmental observation and monitoring networks and programs, complemented with EU initiatives such as the Copernicus programme (CMEMS) and EMODnet, and European Research Infrastructures (RIs).

Horizon Europe – iMagine project

Great additional potential in collecting and processing image data using high-performance image analysis tools, including Artificial Intelligence (AI) techniques, and in more sharing of image repositories.

OBJECTIVE:

*To deploy, operate, validate, and promote a dedicated **iMagine AI framework** and platform, connected to EOSC and AI4EU, giving researchers in **aquatic sciences** open access to a **diverse portfolio of AI based image analysis services and image repositories** from multiple RIs, working on and of relevance to the overarching theme of 'Healthy oceans, seas, coastal and inland waters.*

Synergy and potential for Blue-Cloud

iMagine

eosc | Blue-Cloud2026

Blue-Cloud develops a Federated European Ecosystem to deliver FAIR & Open data and analytical services, instrumental for deepening research of oceans, EU seas, coastal & inland waters. It also aims to develop a thematic marine extension to EOSC for open web-based science, serving the needs of the EU Blue Economy, Marine Environment and Marine Knowledge agendas.

Services
- **Data Discovery & Access Service**
- **Virtual Research Environment**
- **Blue-Cloud Catalogue**

Thematic Virtual Labs
- Coastal Ocean observations along Europe
- Coastal currents from observations
- Carbon-Plankton Dynamics
- Marine Environmental Indicators
- Global Fisheries Atlas

Essential Ocean Variables Workbenches
- Physics: temperature & salinity
- Eutrophication: chlorophyll, nutrients, oxygen
- Ecosystem-level EOVs

The EOSC Lustrum
5 years of EOSC developments

universität wien
Universitätsbibliothek

19 October 2023
All about everything.

Michel Schouppe Senior expert, Open Science and Research Infrastructures (RTD.A4)

'Blue-Cloud, a great example of FAIR and open thematic demonstrators'

'Blue-Cloud 2026 is implemented as a System of Systems promoting Open Science'

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Potential for DTO developments

DTO developments: EDITO-INFRA, DITTO, DTO-BioFlow, ...

Major involvement by EMODnet, Copernicus Marine Service, and other initiatives such as ILIAD, Blue-Cloud, and others

Big data challenges

Images from micro to macro – including provided through citizen science

AI for image processing will be an important technology

European Digital Twin of the Ocean

A leap in ocean knowledge and sustainable action

We have the ocean and marine network and working relations for introducing and integrating the iMagine AI platform for development and testing, and the new AI image processing services as developed and deployed via iMagine