

COPERNICUS MARINE 8th **GENERAL ASSEMBLY**

User needs and Service Evolution Strategy

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PROGRAMME OF
THE EUROPEAN UNION



Copernicus
Marine Service

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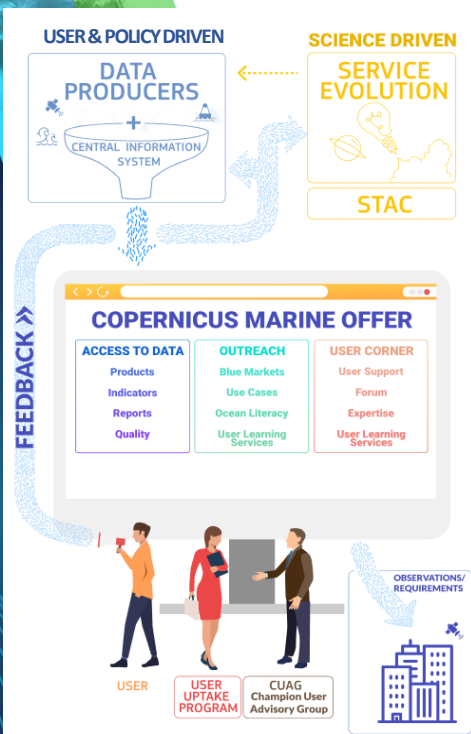


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● Copernicus Marine - Service Evolution principles

A user, policy, science driven, continuously evolving service to remain state-of-the-art and a leading service for Copernicus

- The continuous improvement approach is applicable to all Copernicus Marine Service elements: production centers, marine data store, web & service
- **User & policy driven:** user feedbacks & policy needs are monitored and translated into service/products evolution objectives. **Guidance** from our **Champion User Advisory Group (CUAG)**
- **Science driven:** **Scientific** (observations, modelling, assimilation, AI) and **technological** (e.g. cloud and computing capabilities) **advances** are fully taken into account. **Guidance** from international, independent experts from our **Scientific and Technical Advisory Committee (STAC)**



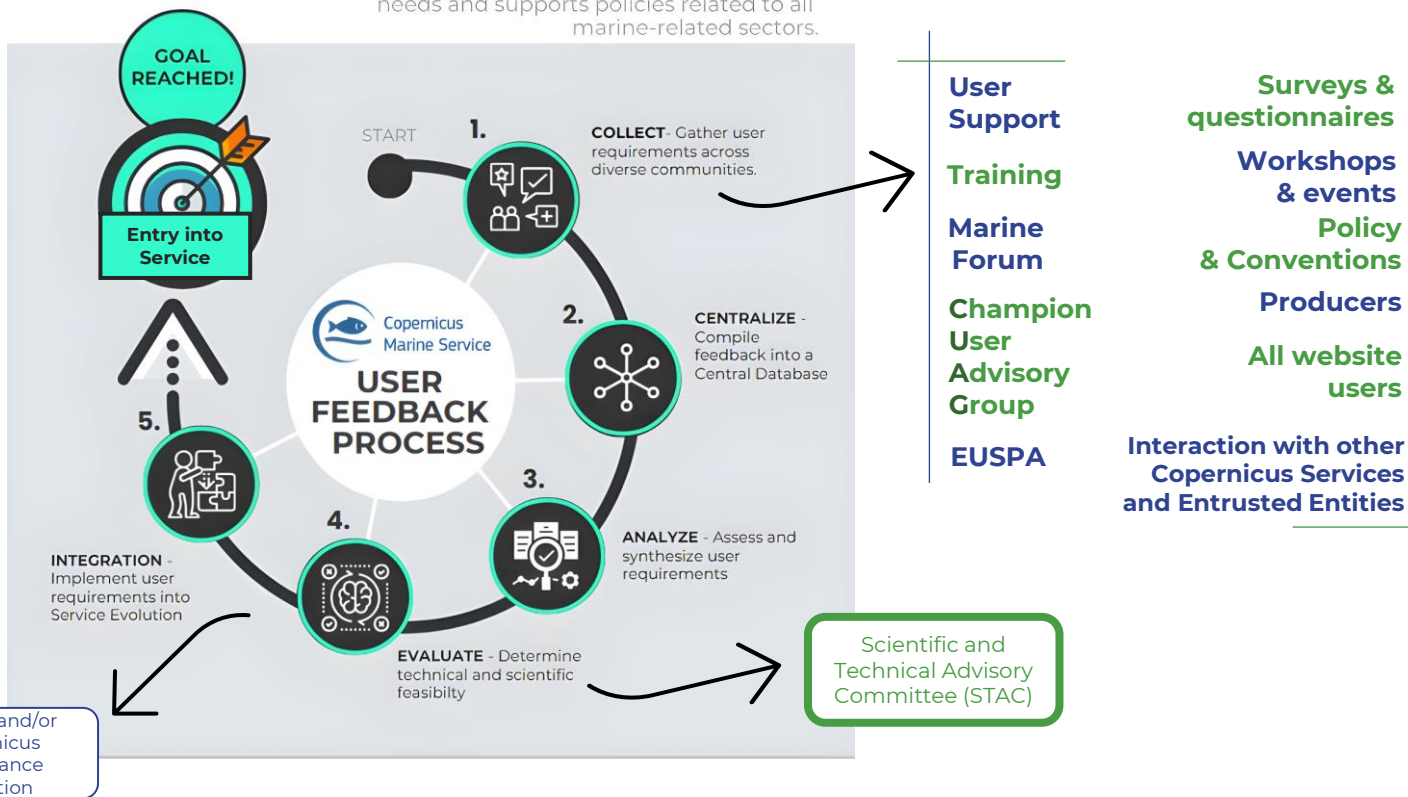


Copernicus
Marine Service

User Feedback Process and Needs

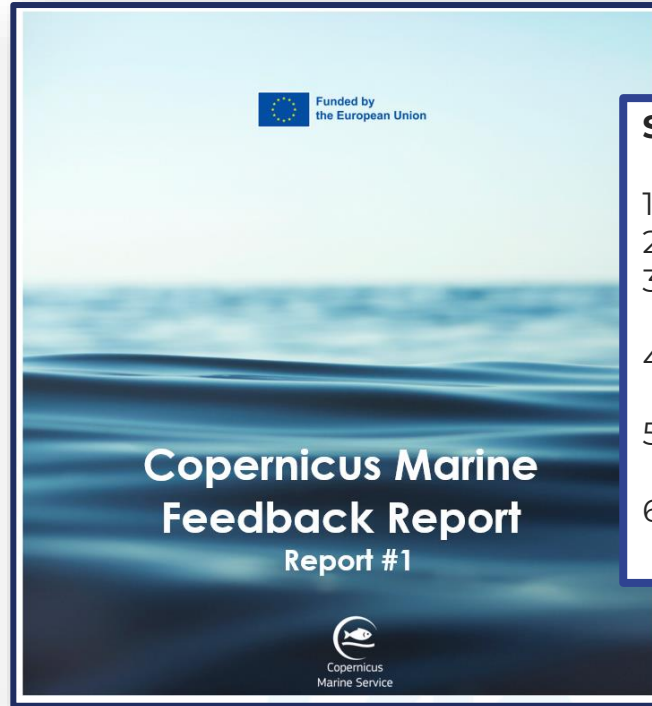
A USER-DRIVEN SERVICE

The service responds to public and private user needs and supports policies related to all marine-related sectors.



Copernicus Marine User Feedback Report

- This document was initiated in 2022 and is produced yearly.
- It provides an **in-depth look** at the method, sources, and tools used to collect user feedback, analyses user needs, and presents the conclusions drawn, as well as the evolution of the service.



SUMMARY

- 1) Introduction
- 2) Methodology
- 3) Policy and Core-user needs
- 4) Needs associated to products
- 5) Needs associated to services
- 6) Conclusions and next steps

Soon to be published, stay tuned !

Champion User Advisory Group (CUAG) – Copernicus Marine



CUAG is composed of **18 independent experts** from the public and private sector. They are selected according to their specific market and marine expertise, and their representativeness of EU Member States.

This group helps us to:

- **Assess** whether the current Copernicus Marine portfolio is fit-for-purpose.
- **Advise** on how to improve the current portfolio or make suggestions regarding better-suited products for markets and applications.
- **Identify** the markets and applications where the industry already benefits from marine data and information, and how they can turn this into value.

How User Needs Drive the Evolution of Copernicus Marine Service portfolio

USER REQUIREMENTS

High Resolution Bathymetry

High resolution coastal products

More BGC variables

Improve Data Access



IMPLEMENTED OR PLANNED EVOLUTION

Satellite-derived bathymetry

New SAR Wind product

Long-term evolution projects

New Marine Data Store (MDS)



Copernicus
Marine Service

- **Service Evolution Strategy**

Guidance/support from our Scientific and Technical Advisory Committee



N. Smith



A. Bracher



P. Brasseur



K. Fennel



M. Grégoire



J. Holt



P. De Mey Frémaux



V. Kourafalou



V. Nieves



G. Smith



E. Stanev



A. Storto

+ observers from other Copernicus Services, ESA, EUMETSAT, EuroGOOS

Service Evolution Strategy: R&D priorities

Document prepared
by the STAC

8 overarching R&D themes

- Next generation of integrated ocean forecasting systems
- HR monitoring and forecasting of the blue ocean
- Arctic Ocean: sea-ice analysis, modelling, forecasting
- Machine learning, AI, big data, high-level data products
- Ocean climate products, indicators, projections
- Space and in-situ observations and impact studies
- Biogeochemistry and marine biology
- Marine coastal environment



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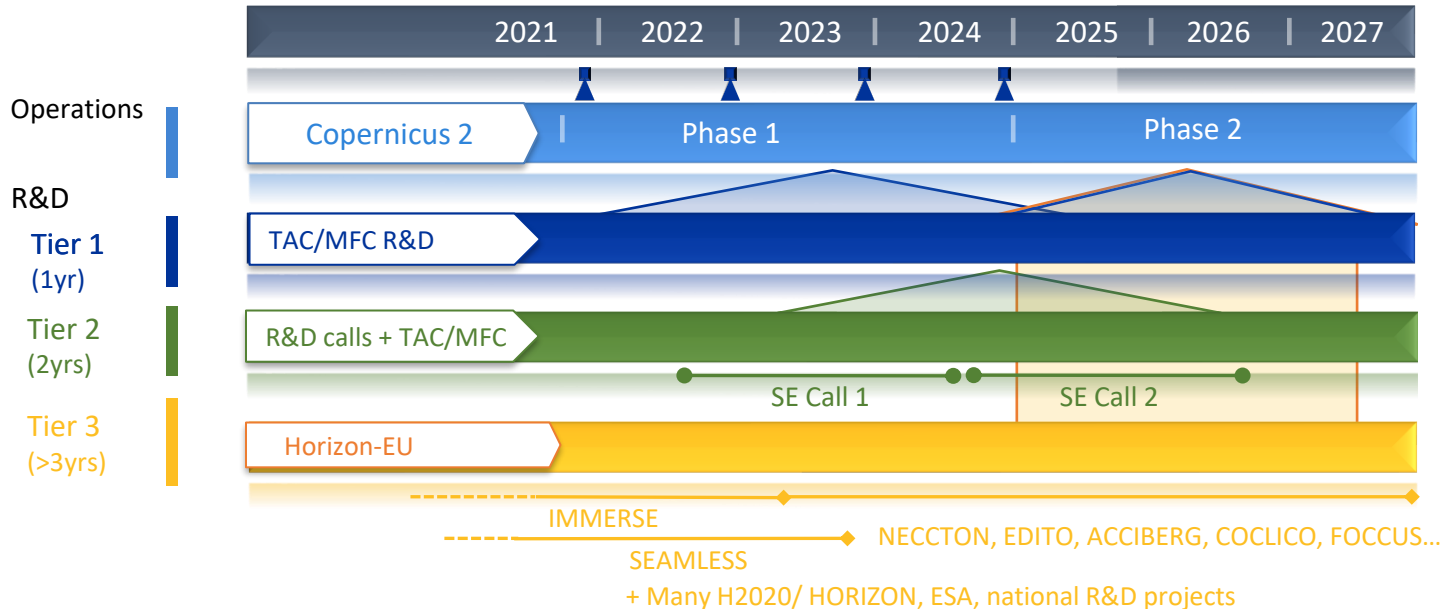
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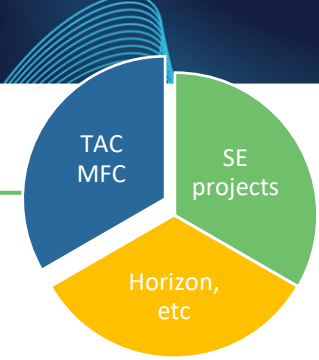
 marine.copernicus.eu
 mercator-ocean.eu

<https://marine.copernicus.eu/about/service-evolution-strategy>

Service Evolution Strategy : R&D streams

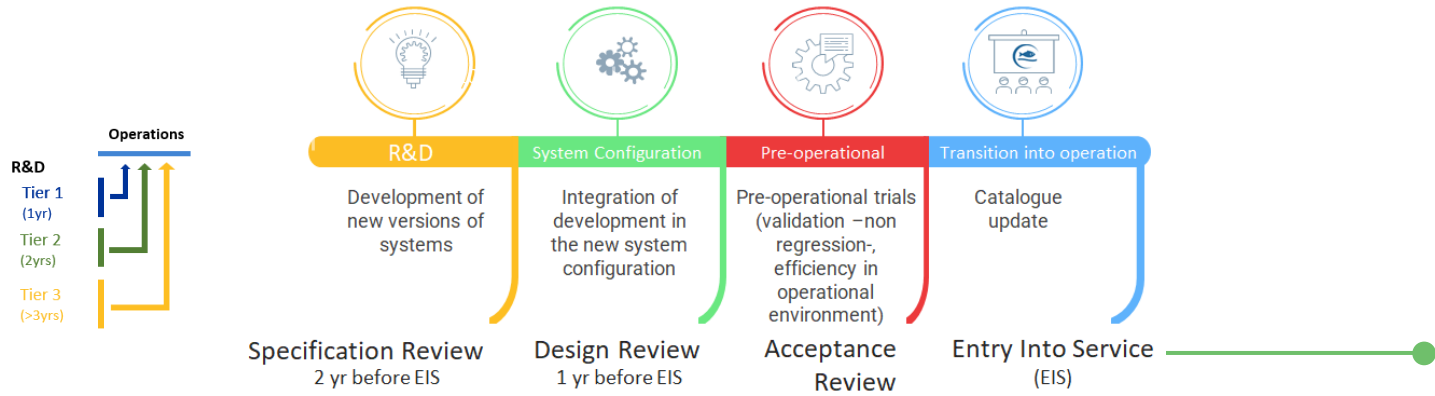
- 3 streams defined to support Copernicus Marine R&D activities, with different time horizons, players/actors and funding mechanisms
- Overall objective: integrate the developments in the operational systems

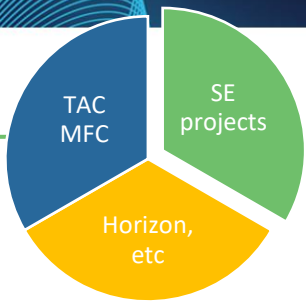




Tier 1 – Short term evolutions : 1 yr

- Addressed within Copernicus Marine through **production centres (TACs, MFCs)** activities resulting in regular updates of the catalogue → Complete overview provided yesterday !
- **Research-to-operation process** → System/product evolutions managed with a series of formal reviews

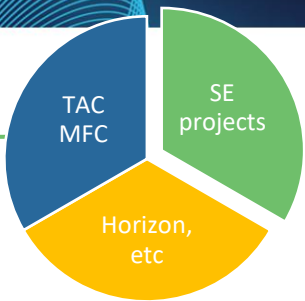




Tier 2 - Mid-term evolutions : 2-3 yrs



- Addressed within Copernicus Marine both through production centres (TACs, MFCs) activities and **open R&D Service Evolution calls**
- Covering topics defined in the [Copernicus Marine Service Evolution Strategy: R&D priorities](#) document
- R&D Service Evolution projects : **significant results in less than 2 years**; potential of **concretely improving the operational service in ~3 years**
- **Strong coordination** needed between R&D Service Evolution projects and production centres (TACs, MFCs)



Tier 2 – 1st call in Copernicus 2 → 14 R&D projects selected



July 2022 -> August 2024

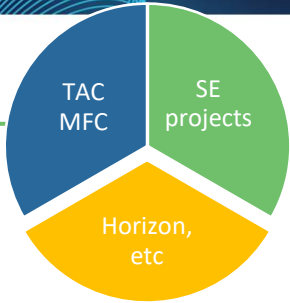
Uptake in Copernicus Marine in following years



<https://marine.copernicus.eu/about/research-development-projects>

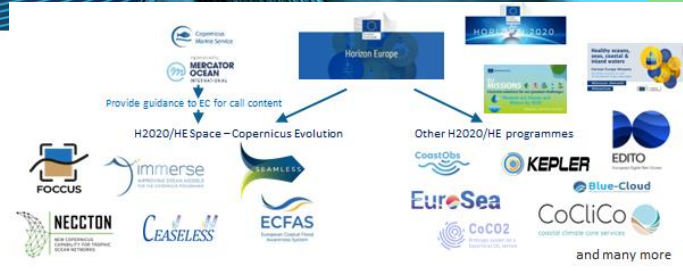
- **New/Improved products:**
 - HR/multiresolution coastal OC products (S2&S3) (**MultiRes**)
 - POC/DOC surface products for coastal/global ocean (**OCROC**)
 - Long timeseries of Phytoplankton Functional Types (**GLOPHYTS**)
 - Detection of Sargassum algae (**SODA**)
 - Ocean mass from GRACE (+Alti/Argo); Freshwater fluxes (**WAMBOR**)
 - Next generation of sea level products (incl. SWOT) (**SLICING, 4DVarNet**)
 - Ocean surface currents from AIS data (**ADEOS**)
- **Upgrading/Preparing the next generation of operational systems:**
 - Advanced data assimilation methodologies (incl. ensemble based, multi-grid) (**ODESSA, MULTICAST**)
 - Calibration of sea-ice forecasts (**COSI**)
 - Coastal zone monitoring (incl. river-ocean interface, wave modelling, risks assessment) (**EstuarIO, KAILANI, Coastal-risks**)

A second call has been issued in January 2024 and is under evaluation



Tier 3 - Long-term evolutions : > 3 yrs

- Required to prepare major evolutions. Addressed externally, with strong links with e.g. H2020/HORIZON Europe/dedicated **HORIZON Copernicus Marine Evolution calls** (expression of needs provided by MOi), ESA, EUMETSAT, national projects.
- Require high-level coordination to prepare and ensure an efficient uptake.



Earth Observation Strategic Research and Innovation Agenda

- European Commission document (DG DEFIS, DG JRC and DG RTD), developed with Copernicus Entrusted Entities and Agencies
- Serves as a **reference for calls** in **Horizon Europe** Work Programmes for **2025-2027** and initial **preparation** for the subsequent EU Research and Innovation framework programme **2028-2035**

Main priority topics for 2025-2027 / keywords, more info:

- Marine data assimilation techniques
- Arctic Ocean
- Artificial intelligence methods
- Downscaling capacity
- Carbon modelling / data assimilation
- Seasonal forecasts of marine environment changes from global to regional scales
- Prediction, detection and attribution of extreme events

