The EMODnet Central Portal: how federated webservices led to a centralisation success story

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The European Marine Observation and Data Network, EMODnet, is service of the DG Mare (Directorate Generals of Maritime Affairs and Fisheries, of the European Commission), established in 2009, to provide open access to in situ marine data and derived data products, tools, and services. Its guiding principle to "collect once use may times" has been the backbone for all developments and evolution which led, in 2023 to a unified service through a single access point web portal. Since its inception and until 2022, EMODnet existed as a collection of nine (Bathymetry, Biology, Chemistry, Geology, Human Activities, Physics, Seabed Habitats, Central Portal, and Data Ingestion) web portals which provided access to their outputs in a similar way. Seven of those portals (thematic lots- Bathymetry, Biology, Chemistry, Geology, Human Activities, Physics, Seabed Habitats) have now been merged into the EMODnet Central Portal and work is ongoing to incorporate Data Ingestion, a work that is due completion in the spring of 2024.

The new EMODnet Central Portal provides unified data, metadata discovery, visualisation and download services, which are presented to users through a map viewer and metadata catalogue powered by a collection of backend webservices maintained by the thematic lots. The centralisation process was only possible due to the interoperability provided by these webservices, which comply with a set of geospatial (OGC, Open Geospatial Consortium) and OpenDAP (via ERDDAP API) data service standards.
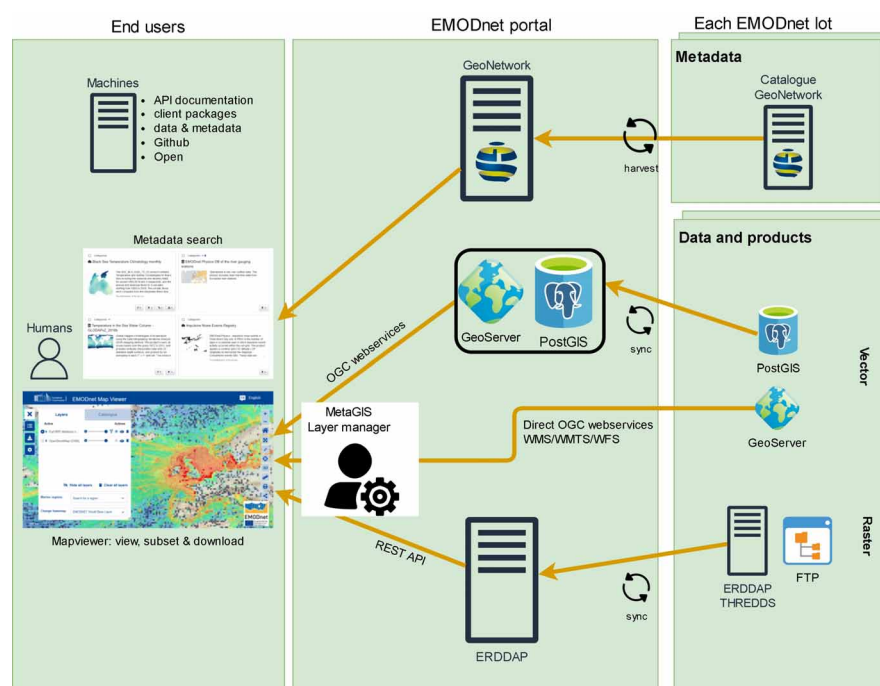

Figure 1 High level technical architectural diagram of EMODnet publishing services.

This process impacted not just the technical but also communication and administration aspects, leading to increased standardisation and consistency of both the publication and communication procedures of the various assets and work developed by the EMODnet community.

In this abstract, we present the EMODnet Central Portal technology stack, we discuss distributed architectures, webservice standards and how they were used to provide the functionality of the map viewer and the metadata catalogue. Finally, we discuss the positive and negative aspects of managing a distributed spatial data infrastructure and how we plan for further improvement in EMODnet services by means of the EDITO-INFRA Project, which will implement the core infrastructure of the EU Digital Twin Ocean.

Oral presentations