Powering the European Marine Data Ecosystem

For a digital and green future

EMODnet OPEN CONFERENCE 2023

EMODnet
European Marine Observation and Data Network

Session 4: EMODnet, Ocean Observation and the marine knowledge value chain

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Ocean observation

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)

- Scientific Research to gain knowledge and insight
- Modelling (including hindcast, nowcast, forecast)
- Economic activities: shipping, offshore industry, dredging industry, fisheries, tourism, engineering ..
- Environmental Management: monitoring and assessment (water quality, climate status, stock assessment)
- Marine Conventions and Directives, in Europe: Water Framework Directive (WFD), Marine Strategy (MSFD), Marine Spatial Planning (MSP), Coastal Zone Management
- EU Strategies, such as Green Deal, Blue Environment, Blue Economy

Marine knowledge value chain

- **In situ:** data and samples collected for atmosphere, water, seabed, fauna and flora, with diverse instruments and platforms. Samples are further analysed. In situ data are complemented by remote sensing observations.
- **Observations:** ocean, seas, coastal waters, estuaries, river mouths; physics, chemistry, biology, bathymetry, geophysics, and geology
- **Value chain:** steps from sensor data and samples to information to knowledge and benefits - with feedback loops
- **Public Benefit:** Accessible data, High Quality data products, and Knowledge of use for Blue Economy, Resource Management, Ocean Health, Hazards, and Advancing Science

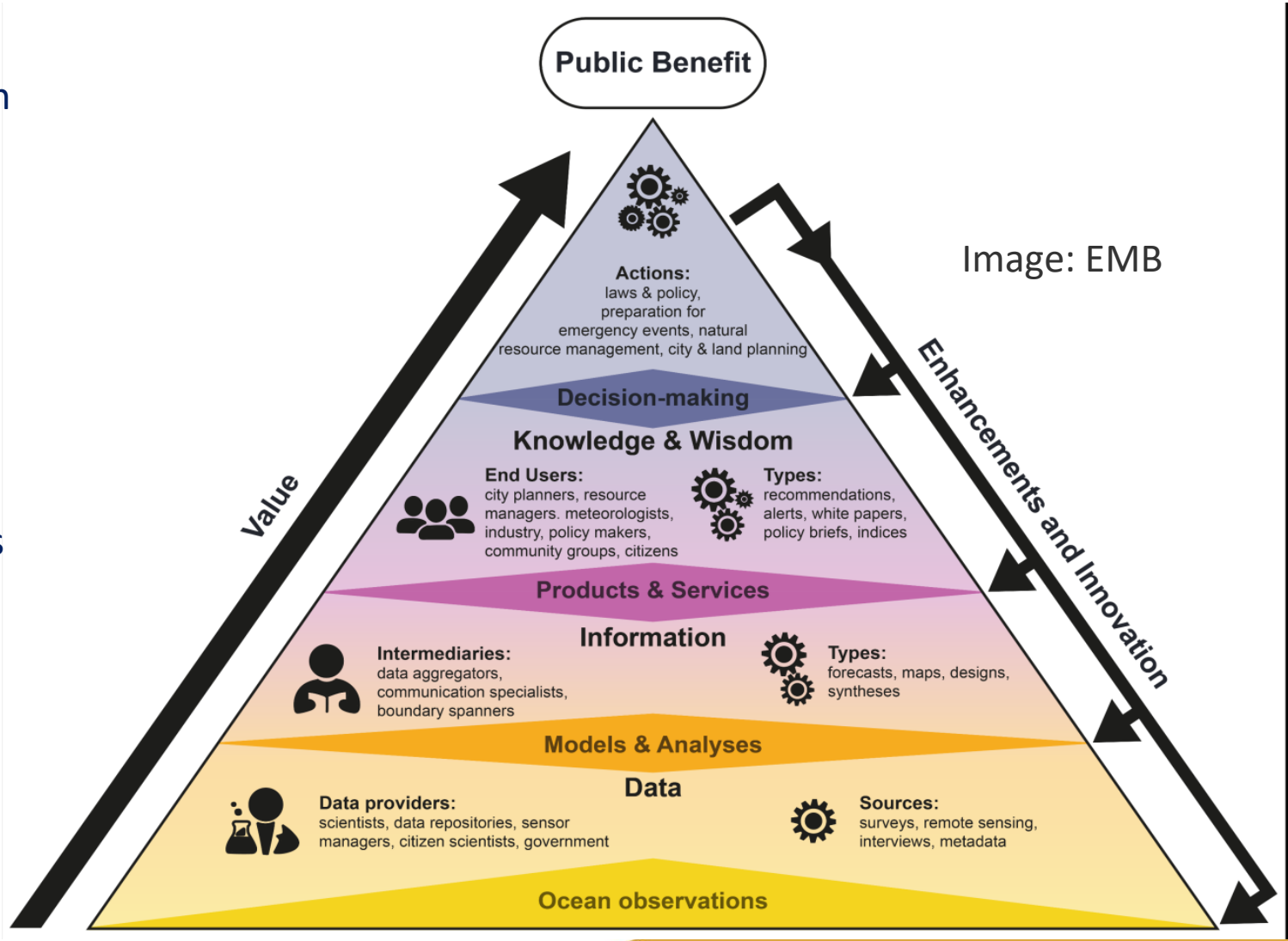


Image: EMB

European Marine Data 'Pyramid'

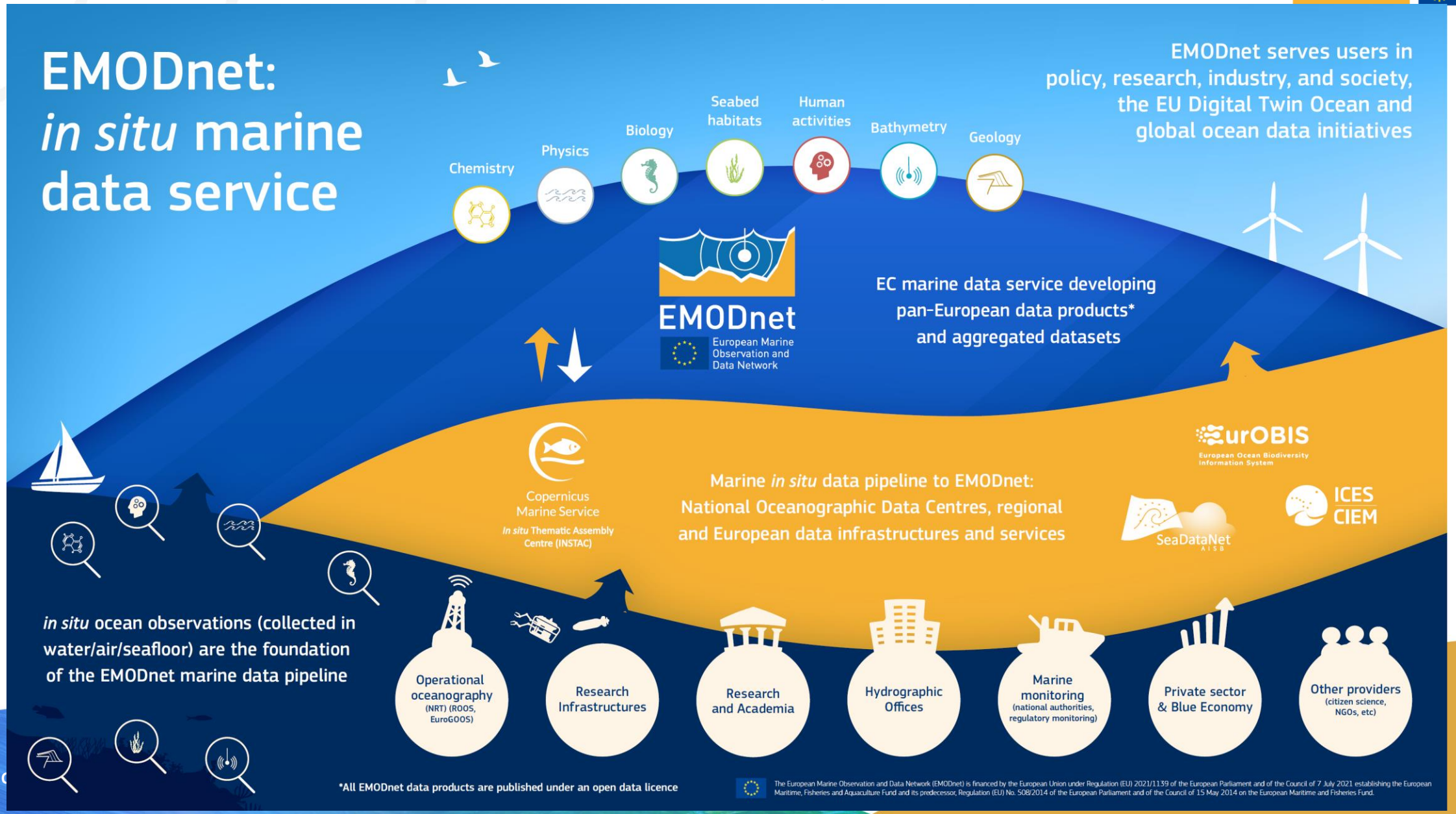
- Observations are organised at national, regional, European and global levels, resulting in **Delayed Mode** and **Near Real Time** data flows
  - **National**: Hydrographic services, Geological Surveys, Marine Research Institutes, Universities, Monitoring agencies, Governmental services, Private sector
  - **Regional**: Regional Operational Oceanographic Systems (ROOSs) under umbrella of EuroGOOS, ICES
  - **European**:
    - ❖ Research Infrastructures: **EuroArgo, EMSO, LifeWatch, EMBRC, ICOS, EPOS**
    - ❖ Data Infrastructures: **SeaDataNet, EurOBIS, EGDI (EuroGeoSurveys), Copernicus Marine InSitu TAC**
    - ❖ Two European Commission marine data services: **EMODnet + Copernicus Marine Service**

- The European Data Infrastructures are **aggregators** for the national and regional data flows and are major **pillars** under EMODnet

- The EMODnet thematic groups ensure close cooperation, safeguarding increasing interoperability and FAIRness of data flows and products generation

- Moreover, EMODnet is well connected with Global Infrastructures and Initiatives, such as GOOS, OBIS, GBIF,PANGAEA, IHO, Argo, UN Decade of the Ocean, SeaBed 2030, ...

EMODnet as data service in the *in-situ* marine data landscape



Future evolution and innovation

- Cooperation and interaction:
  - with EU RTD projects:
  - with European Open Science Cloud (EOSC) developments:
  - With Digital Twins of the Oceans (DTO) developments:

- Expanding the number of data providers, reaching out to data managers that are not yet engaged such as academics, industry, citizen science

- Consulting users about data adequacy, fitness for purpose, and suggestions for upgrades, by means of surveys, webinars, workshops, hackathons, conferences, and publications

- Resulting in innovations and further evolution of EMODnet products and services:
  - More efficient workflows, more use of machine-to-machine services, uptake of cloud, AI and virtual research technologies, increasing visualisations
  - Improved and new products and coverage of new variables, e.g. river input, noise, marine litter, ...

measure once, use multiple times

fitness for purpose

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Thank you for your attention

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Stay up-to-date with the latest news

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