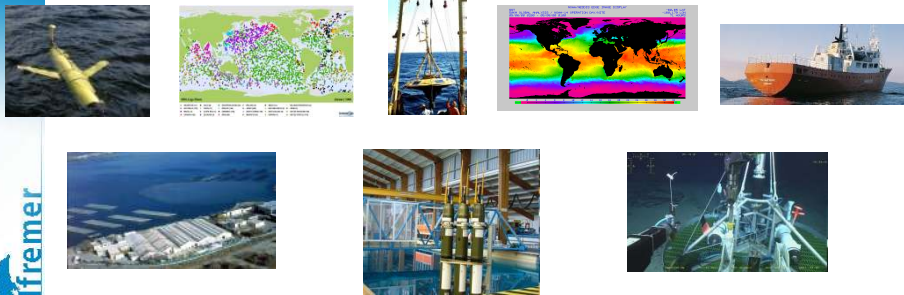


# Marine Ocean Research Infrastructures

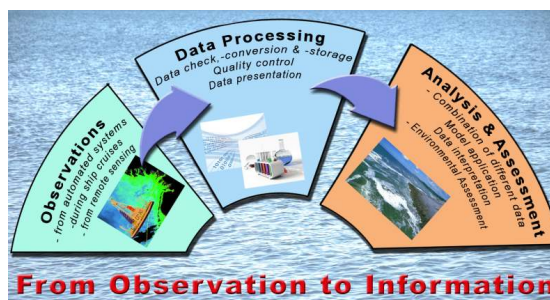
## Linking data from various European marine data initiatives



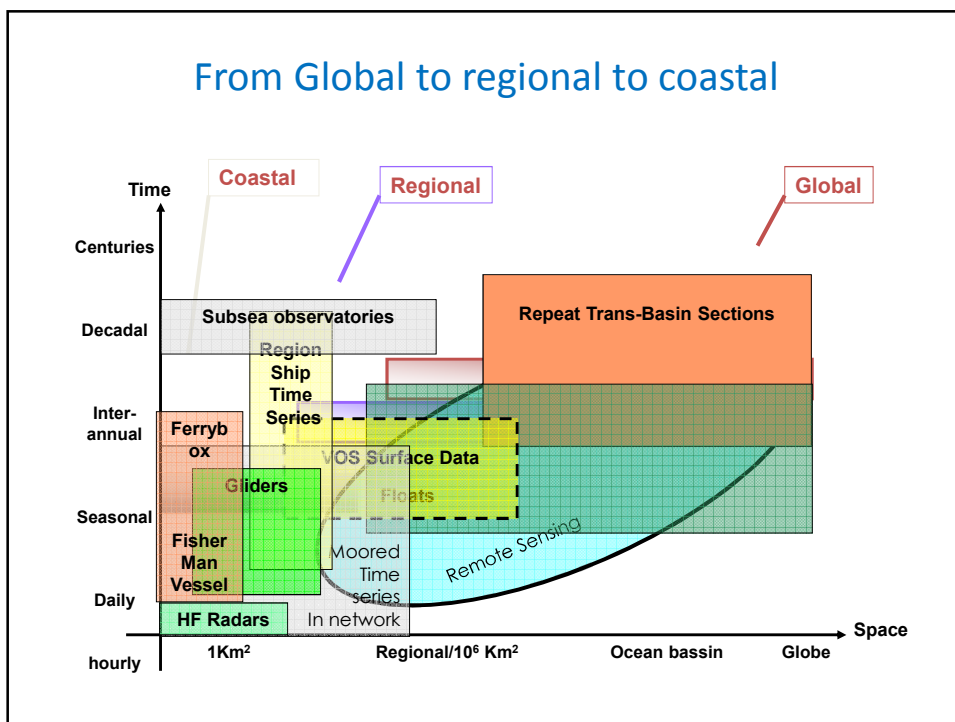
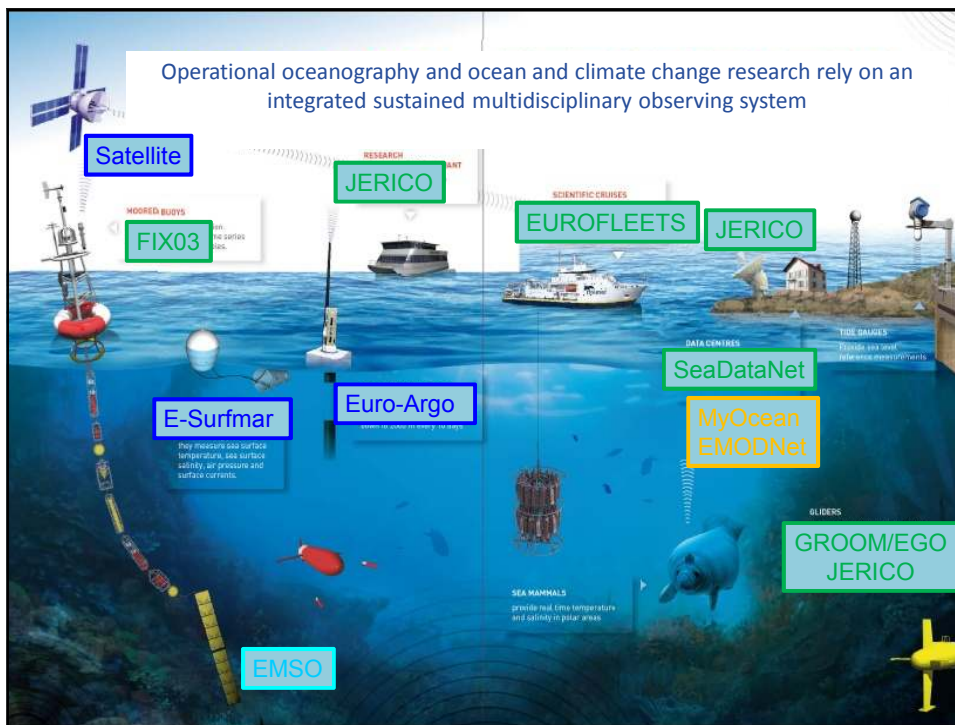
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# From observation to Services

<p>Sensors to measure continuously and autonomously physical, chemical and biological parameters</p>	<p>Platforms or structures anchored on the seabed, floating in the water column or drifting at the sea surface, and remote sensing from satellites.</p>	<p>Sampling and consecutive laboratory analyses from research ships, or shore, including water, sediments and biota (phytoplankton, bacteria, zooplankton, fish)</p>	<p>Communication systems to transfer in real time data from sensors to the network and to the land stations</p>	<p>Data collection system for direct control of data quality, and data storage systems to enable data analysis and use for model applications</p>	<p>Software and web based information tools to analyse data for trends, compliance to EU directives, to distribute and disseminate data to end users</p>
<p>Examples</p> <ul style="list-style-type: none"> <li>• salinity, temperature</li> <li>• turbidity, oxygen</li> <li>• chlorophyll, nutrients</li> <li>• bathymetry</li> <li>• primary production</li> </ul>	<ul style="list-style-type: none"> <li>• buoys, floats</li> <li>• gliders</li> <li>• moorings</li> <li>• AUV's, lander</li> <li>• FerryBox</li> <li>• remote sensing</li> </ul>	<ul style="list-style-type: none"> <li>• inorganic trace compounds</li> <li>• gases, e.g. CO<sub>2</sub>, CH<sub>4</sub>, DMS</li> <li>• organic micropollutants</li> <li>• abundance &amp; function of biota</li> <li>• food web</li> <li>• HABs</li> </ul>	<ul style="list-style-type: none"> <li>• Satcom</li> <li>• GSM, GPRS</li> <li>• fibre optics</li> <li>• acoustics</li> </ul>	<ul style="list-style-type: none"> <li>• Data bases</li> <li>• Quality control</li> <li>• Data standards</li> </ul>	<ul style="list-style-type: none"> <li>• Analysis</li> <li>• Presentation</li> <li>• WEB</li> <li>• GIS</li> </ul>



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## Main characteristics of the Marine Research Infrastructures

- They are **distributed** and mainly **funded** through **nations**
- They developed as **a network** through **ESFRI or I3 projects** that have:
  - increased **cross institutes coordination**
  - **enhanced interoperability of the infrastructures** by defining common standards, best practices and infrastructure sharing
  - allowed to **conduct joint development** to develop further the infrastructure
  - **enhanced access** to the observation data
- An European ESFRI-like infrastructure can materialize at first by the addition of a light « Central Office » which heads up the national components to bring the adequate degree of European coordination and sustain commitments.



EuroGOOS  
European Global Ocean  
Observing System






## The Euro-Argo ERIC example



Euro-Argo: A new European Research Infrastructure

## The Euro-Argo European Research Infrastructure

- Objective: ensure a long term European contribution to Argo
- Proposal: Europe establishes an infrastructure for ¼ of the global array
  - ✓ Deploy about 250 floats per year to contribute to the Argo core mission including regional enhancements (Nordic seas, Mediterranean&Black seas) (maintain an array of 800 floats).
  - ✓ Prepare and contribute to the extension of Argo (e.g. marginal seas, biogeochemistry, deep ocean, polar regions)
  - ✓ Dual use: ocean and climate research and operational oceanography (GMES/Copernicus)
- Set up a new European legal structure (Euro-Argo ERIC) that will allow European countries to consolidate and improve their contribution to Argo international (agreements at ministerial level).
- **Published on JOUE on the 5th MAY 2014**

## Organisation of the Euro-Argo RI

### A central facility and distributed national facilities

**Objectives: Improve, Strengthen and Sustain European contributions to Argo**

**Unified voice for Europe in Argo**

**The Central Research Infrastructure**

- Define and agree on a roadmap for the evolution of the European contribution to Argo
- Link with Argo International
- Coordinate and monitor the deployment of all European floats
- Organize float procurement at European level
- Organize joint R&D activities
- Coordinate European contributions to Argo data management
- Maintain the link with research and operational oceanography (GMES Marine Service) user communities

**Distributed National Facilities**

- Float procurement
- Float Deployment
- Data processing
- Research and Development

Coordinate Distribute Work among partners

Contribute to the ERIC Share expertise and knowledge

**Euro-Argo ERIC**

- The Council**  
Defines the broad strategic direction of the ERIC and its evolution. It is composed of one delegate per member.
- The Management Board**  
Supervises the operation of the Euro-Argo ERIC and ensures that it operates and evolves in accordance with the strategic direction set by the Council.
- The Central Research Infrastructure**  
Responsible for the implementation of the decisions and programmes adopted by the Management Board. Includes a Programme Manager and a Project Officer. May hire additional personnel to support the Euro-Argo activities.

Argo International ↔

The Scientific and Technical Advisory Group (Advises on any scientific and technical matters) ↔

Euro-Argo User Group ↔

**Local Host** France (Ifremer, Brest)

**Members:** Finland, France, Germany, Greece, Italy, Netherlands, United Kingdom

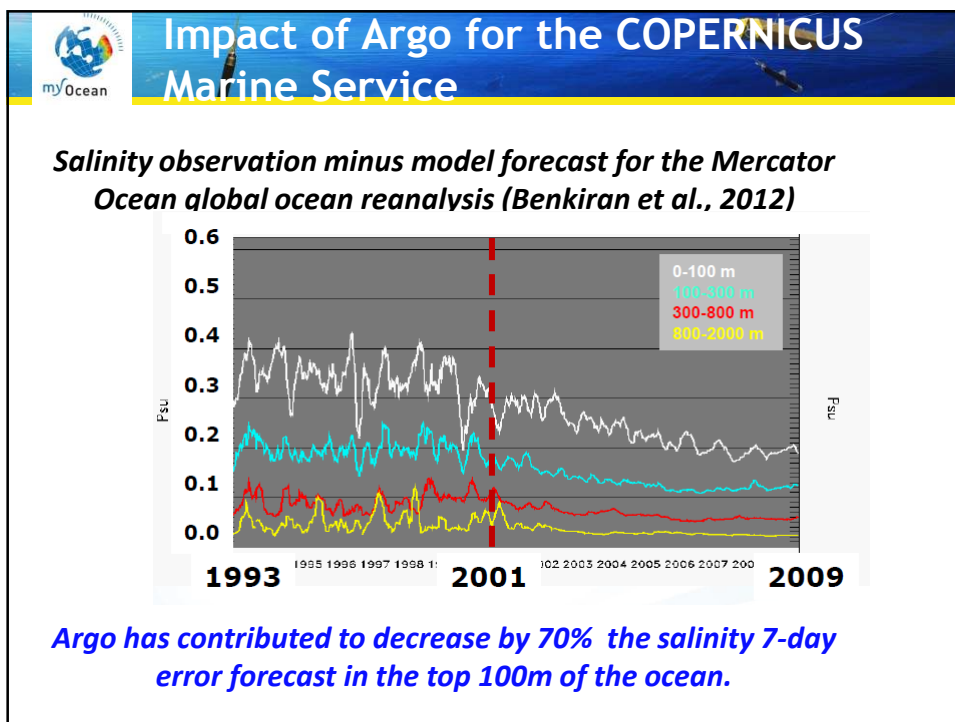
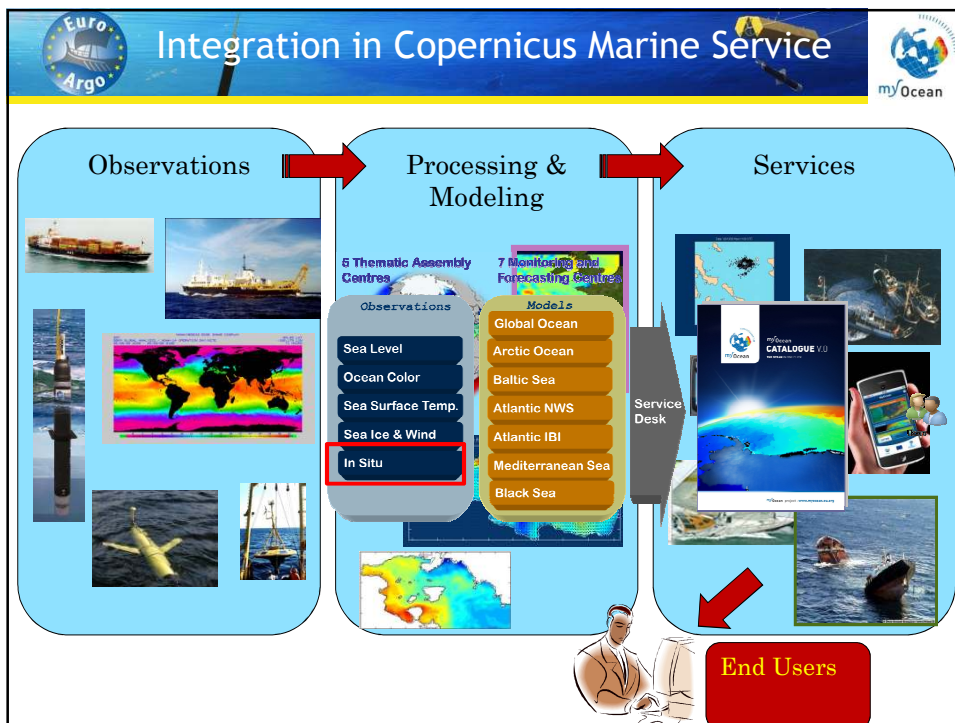
**Observers:** Norway, Poland

**Candidate Members:** Bulgaria, Spain, Ireland (Portugal ? Turkey ? Sweden ?)

Founding Members and Observers

Planned Members

© Euro-Argo ERIC





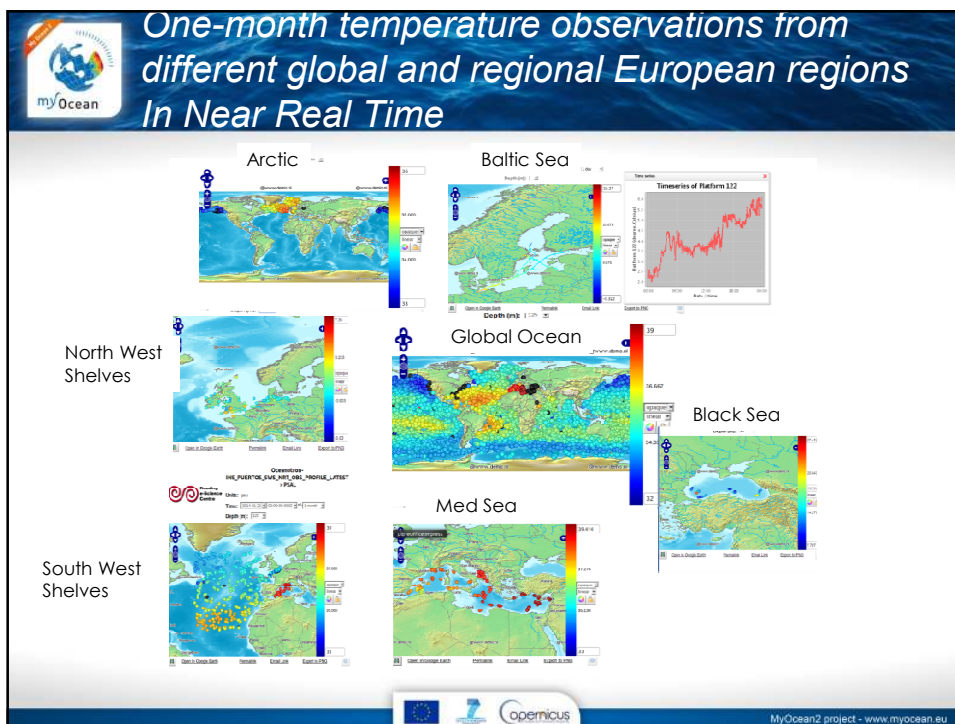


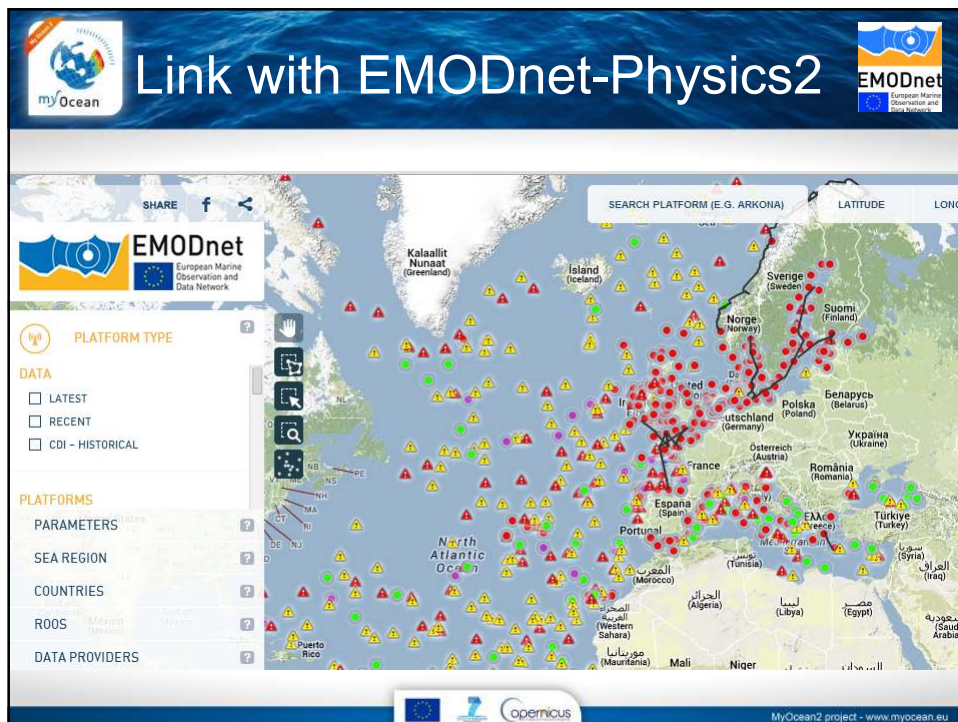
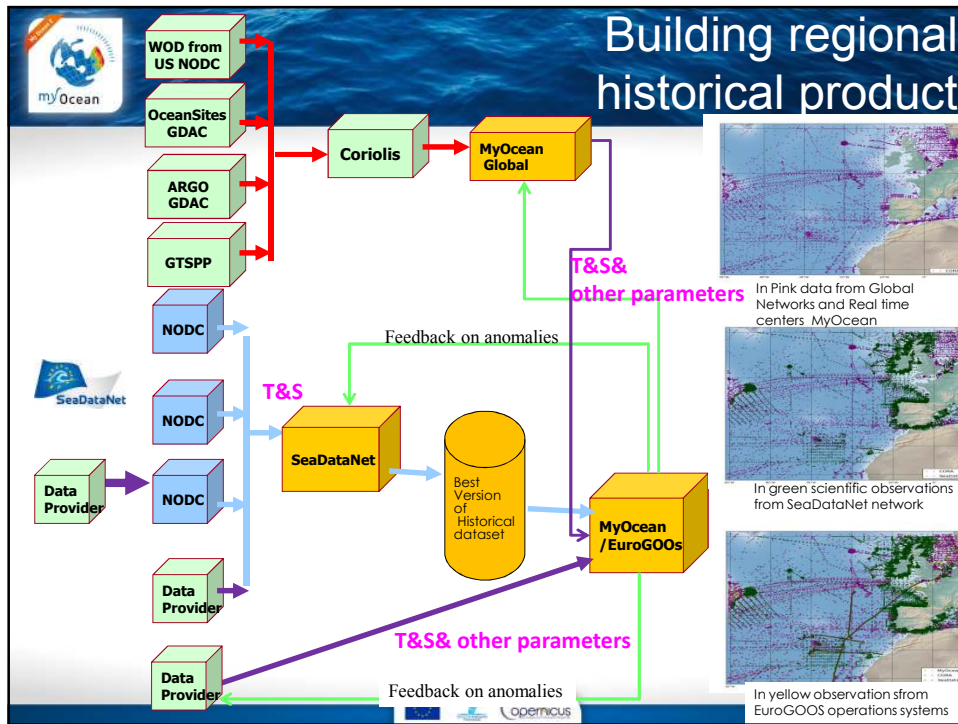



# EuroGOOS, MyOcean, SeaDataNet , EMODNet-physics

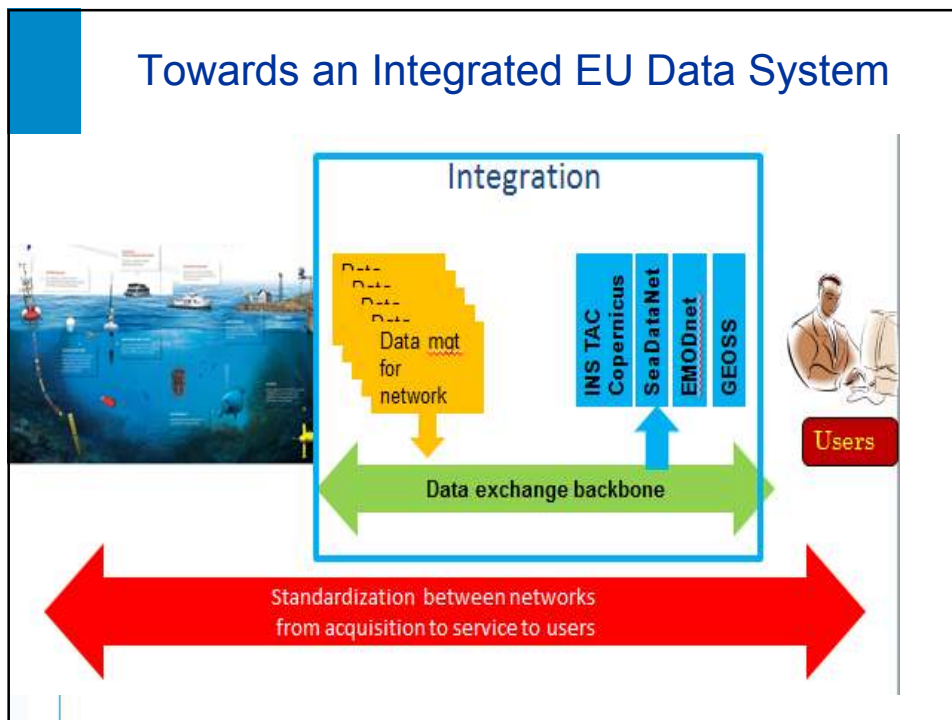



A join effort towards an integrated  
service to users





## Towards an Integrated EU Data System



## What is needed

- Improve data integration by agreeing on **common vocabularies** and **data formats** including **minimum required metadata**, for data exchange between the different networks
- **Standardize near real time quality control procedures**
- Promote data publishing by **promoting data citation procedures** and thereby referencing scientist and organization in reference directory.
- **Assess the full life cycle of observing data and information** from data acquisition to long term archiving to detect fields for improvement
- **Support to the networks data system managers to upgrade their system for better integration in the existing EU and International infrastructures and develop common tools that would be deployed to add additional OGC services on the network data such as**
  - Use **Sensor Web Enablement specifications** for real time publication of platform description at network data centre level and enable networks and platform browsing through the web portal or develop event notification system.
  - **Enhance and deploy existing tools to provide OGC services** (View and download) on in situ data available on FTP servers managed by assembly centres
  - **Test central integrated data stores (e.g. Cloud type technology)** to synchronize with existing data centres and provide new integrated services to users.



## Towards Integrated monitoring strategy at European level

- Reduce overlaps; adapt sampling to processes, maximize synergies and benefits
- Coordinate between Research infrastructures to optimize the observing system from in situ data collection to analysis in laboratory
- Strengthen data interoperability in term of data processing (Quality Control), Data Dissemination (common standards and protocols) , data consolidation across observing networks
- Facilitate integration in models
- Facilitate dual use of in situ and satellite observations including in coastal areas

