WP3 Review of level of data integration and information management

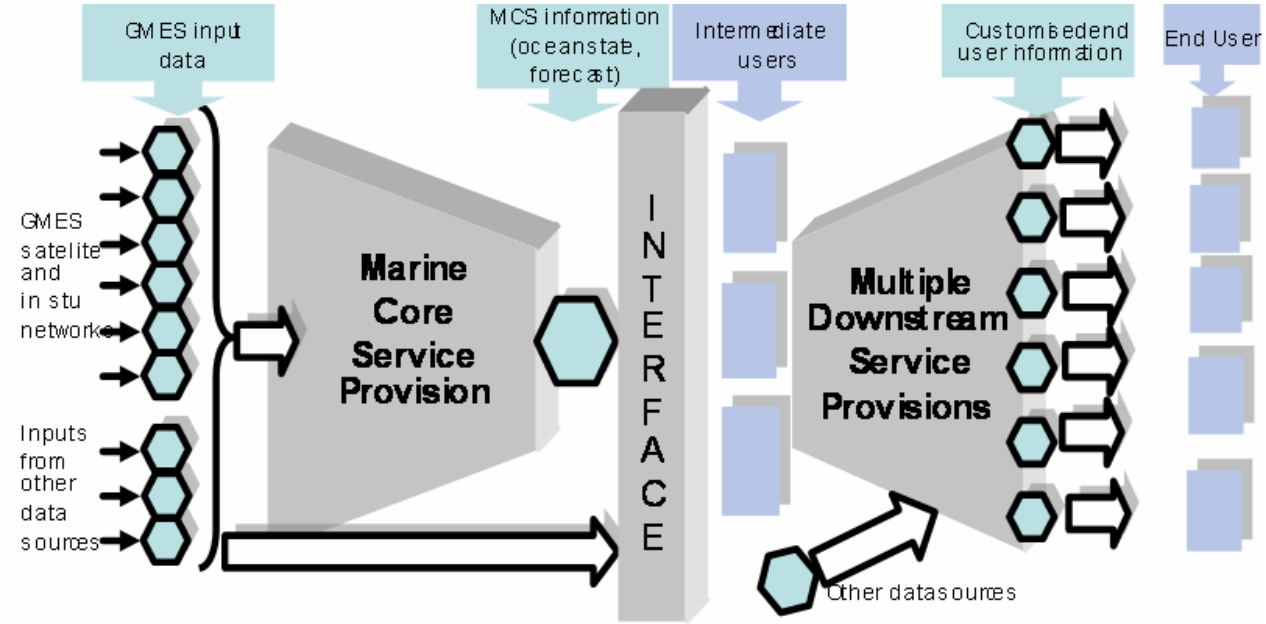
European achievements and guidelines to intercompare with Chinese capacity

Dragoness 1st progress meeting – 17-19 Nov 2008
Bergen

Challenges for an integrated system

- The Integrated System has to be clearly seen as “one single system”
- Access to the Integrated System service has to be simple for the users
- The Integrated System internal architecture has to be modular and evolutive, and organized as a “system of systems”
- The Integrated system must be compliant with European and international standards
- The Integrated System should be based on state-of-the-art technical solutions

Mersea integrated system overview



Inputs

- Ocean observation systems
- Numerical production centers

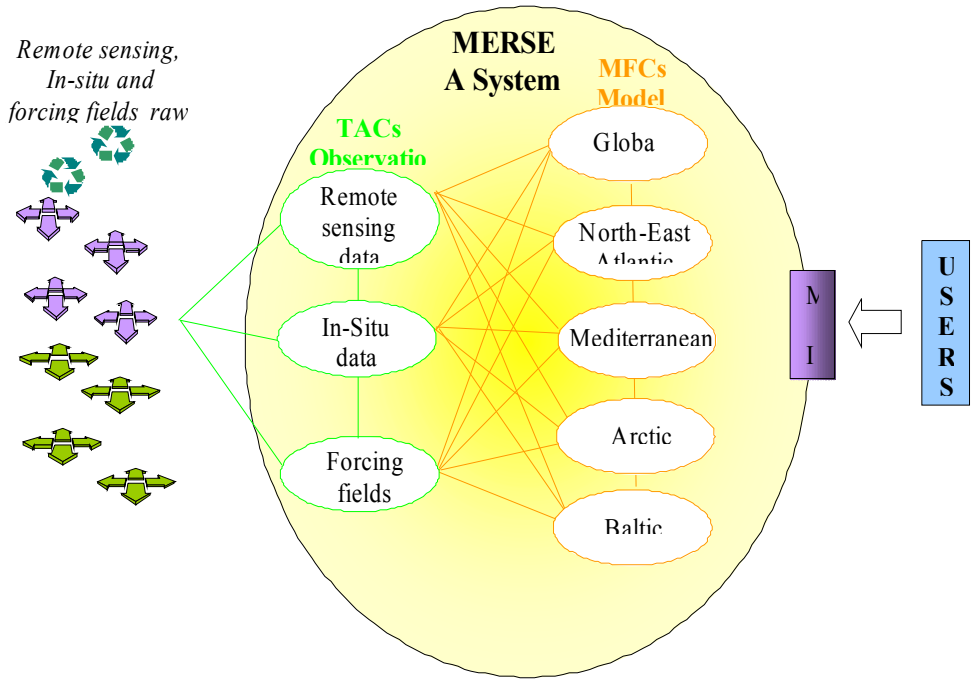
Output

- 4D depiction of ocean state

Downstream components

- Service providers
- Other GEOSS systems

Major components of Mersea system

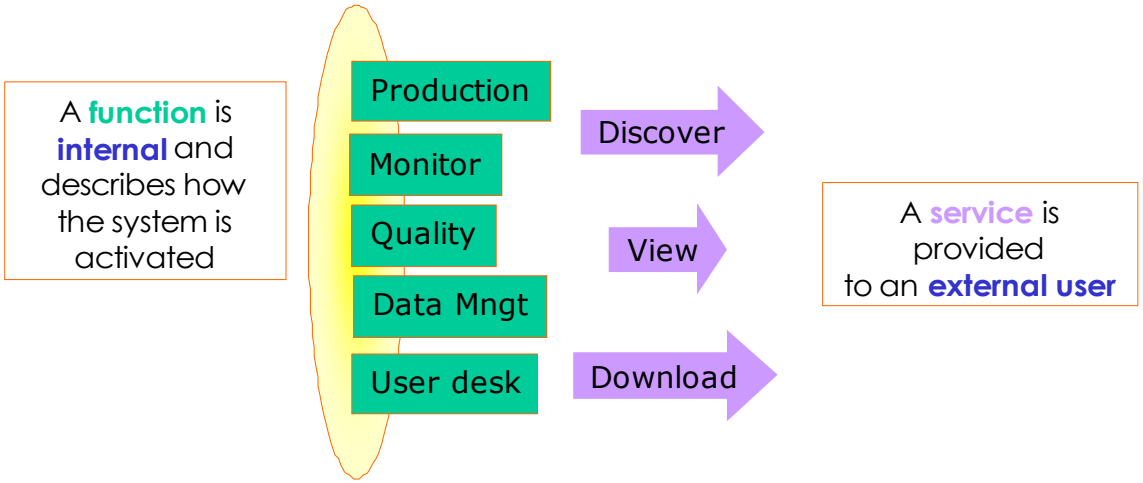


TAC : Thematic Assembly Center
MFC : Monitoring & Forecasting Center

TAC and **MFCs** are in charge of :

- Federating services embedded in this center, checking those services are consistent and not redundant,
- Describing services and products,
- Operating services in a common way (automatic delivery, sub-setting facilities, standard dissemination services,
- Product assessment in a common way,
- Monitoring services and reporting at MERSEA level

Implementing integration

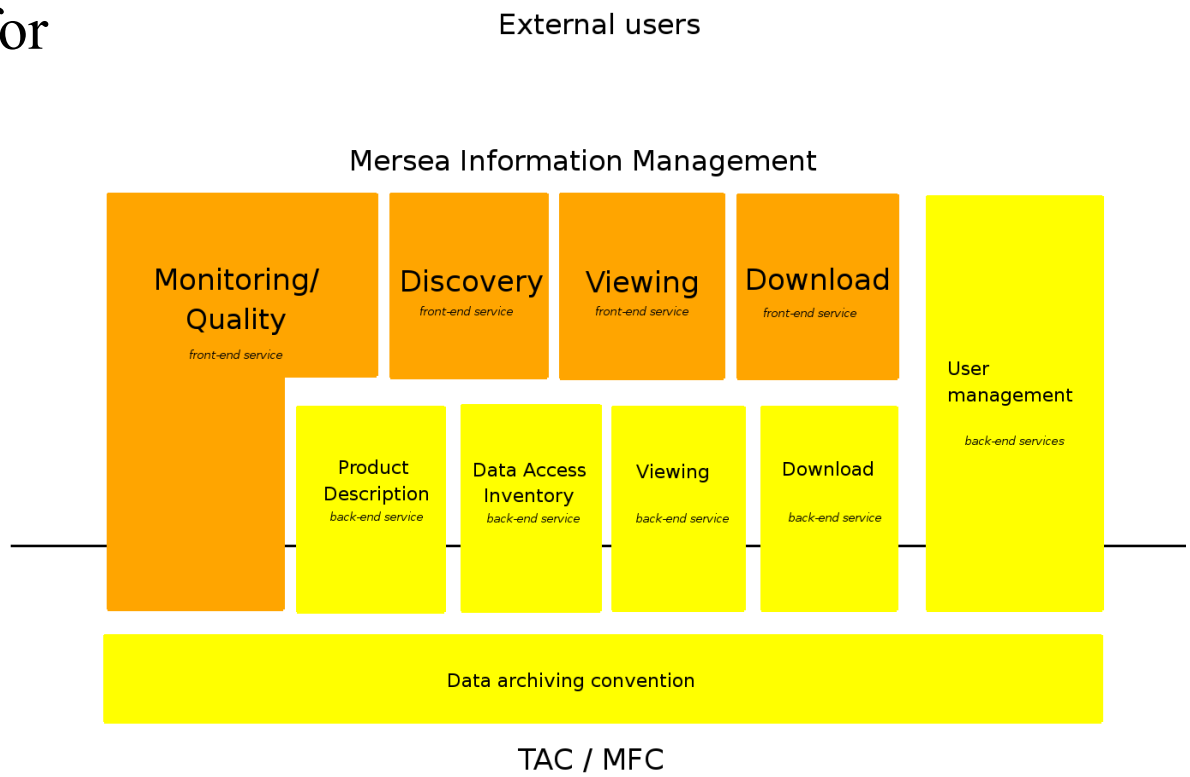


- agree on common standards and procedures
- setup shared interfaces and online services

Mersea information system

INSPIRE (INfrastructure for Spatial Information in the European Community) framework for spatial information management

Service Oriented Architecture (SOA) : modularity, distributed computing with federated interfaces



Main standards used

Data format

• NetCDF 3

Metadata

• ISO19115 (product coverage, resolution, variables, access,...)

• CF convention for NetCDF files (how to define grid, projection, content, variable, units,...)

Data inventory

• THREDDS (opensource)

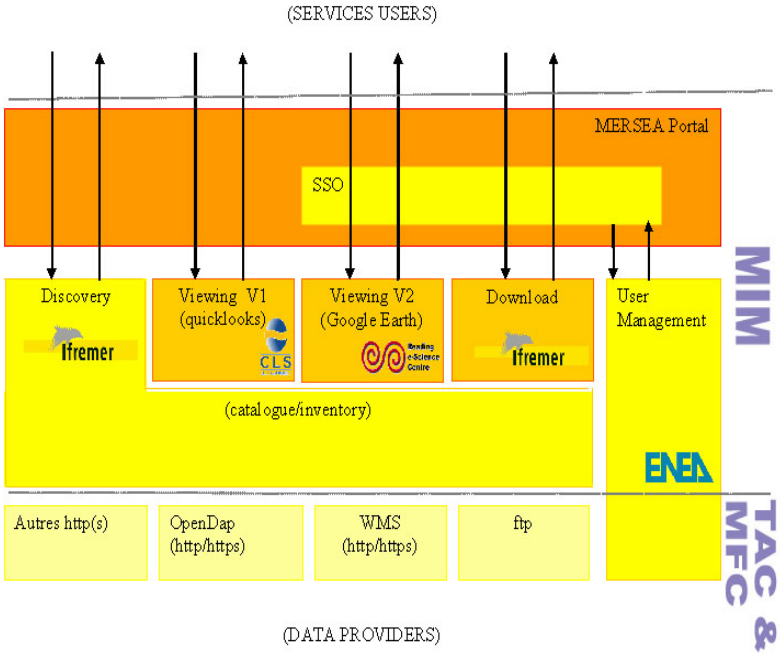
Data access

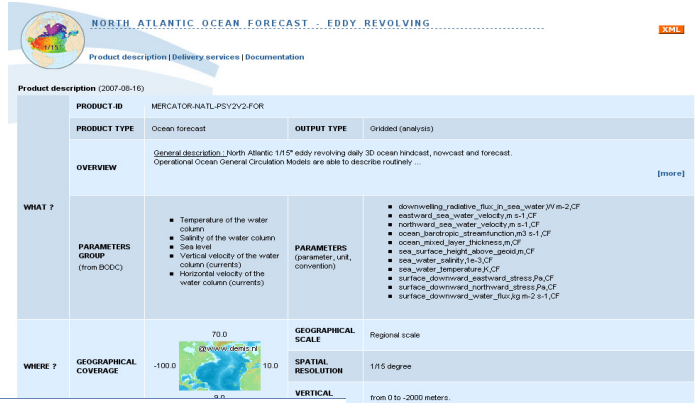
• Ftp

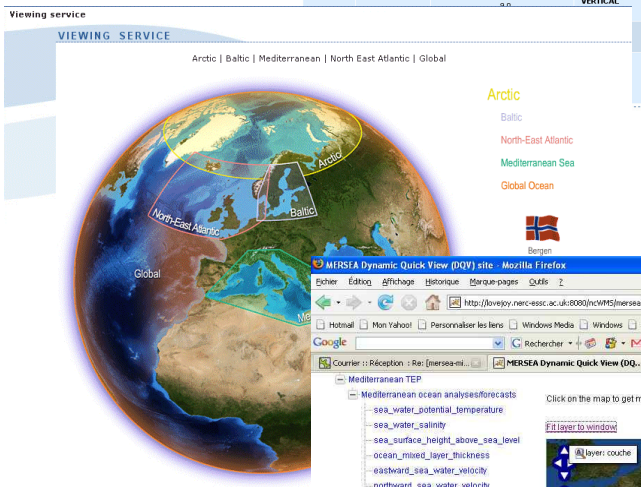
• OpenDAP

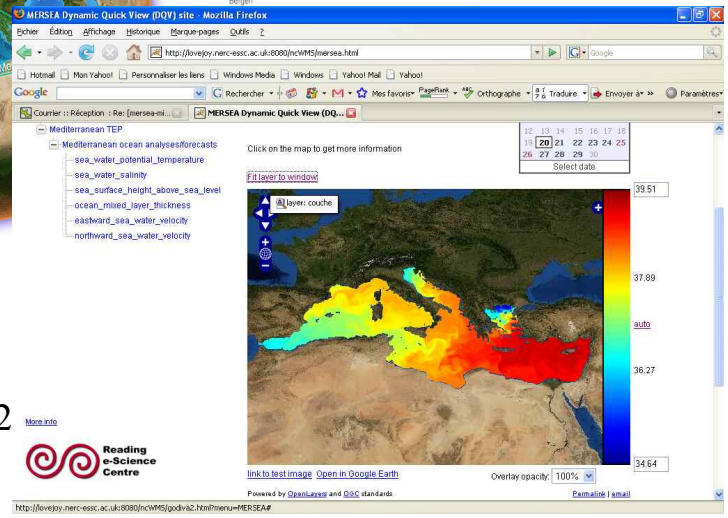
• WMS

Services built on top of these standards









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Categories of users

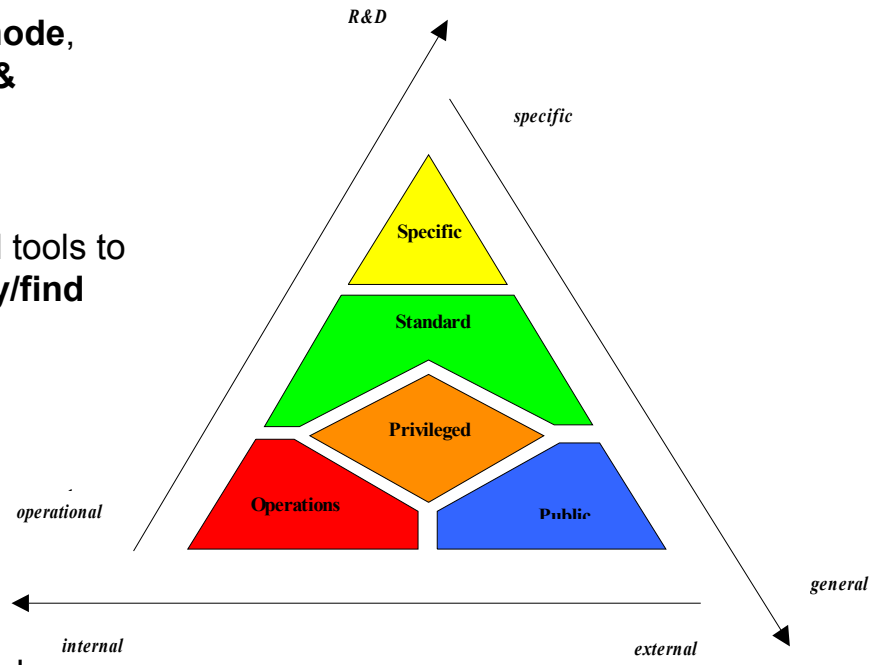
Category 1 : "Privileged use"
exchanging data and/or products and/or services on a **routine mode**, computer-to-computer link, guarantee of **high level availability & quality of service**.

Category 2: "Standard use"
on request, access products routinely (standard products); need tools to **search** among registered (qualified) products and **easily identify/find** needed products, to **select/extract** access useful (limited) information.

Category 3: "Public use"
General Public with aim for education and public outreach. They 'front/demonstration' window for operational oceanography.

Category 4: "Specific use"
these users (e.g. research labs) request specific products, ie. products which are not available online or though registered distribution mean, or not routinely produced and qualified;.

Category 5: "Operations" (system management)
All users involved in the system monitoring and supervision. They need monitoring functions and results, serve general information and provide visibility on existing systems.



Issues encountered

Organizational

- Definition of the **scope and responsibilities of each production units** (Observations, models) and the **contributors to these units**.
- Definition of a **common set of products available for Global and European regions**. Definition and implementation for a **common data policy** compatible with of the contributors ones (free and restricted access policy)
- Definition of the **frontiers between the Global, Regional and Coastal services**: the first two being part of MCS and the third being part of EU member states responsibility.

Technical

- Definition of the appropriate **frontier between centralized and decentralized architecture** to reach the robustness and performance constrains linked to GMES Marine Core services.
- Find the **standards** on which to build the system in particular in term of metadata (ISO), data exchange, visualization tools
- **Manage coherent technical services** across all the TACs and MFCs as the different centers had taken different technical approaches in the past.
- **Keep coherency/consistency with the international developments** around OGC, ISO, Inspire, Google Earth/Maps.

Guidelines to assess Chinese level of integration (1)

Level of integration, distribution of the roles of each partner in China

Are Chinese components for ocean observation and forecast organized as **one single system** or is there **any plan** for that?

Is there a **clear distribution of tasks and responsibilities** ? If not, what is the **level of sharing**? Are there a lot of **redundancies** or do the different components **complement** each other?

What are the **common facilities** on which modelling centres or downstream services rely on?

Are there any **central assembly centres** collecting and aggregating data from distributed local/regional centres in order to provide a single and homogeneous access point? How is defined their scope (by type of observation, of measured parameter, etc…)? Can any modelling centre access to these assembly centres?

Are the **categories of users** and the related **data policies**, **priorities** for access to services, etc… **clearly** and **unambiguously** identified?

Guidelines to assess Chinese level of integration (2)

Standards to support integration and interoperability

Is there a sufficient **level of standardization** for data to be exchanged and used easily between centres (in terms of format and exchange protocol)? Could a end-user application access to multiple sources of data (observation or model forecast) in real-time and seamlessly?

Is there any shared **format** for Chinese ocean products (such as NetCDF) ?

Is there any **requirements** for data documentation through **metadata** (eg : when providing data from a cruise) ?

Is there any shared marine **metadata standard**? Is there a national policy for **metadata** (recommendation of a specific common standard)?

Is there a **common data transfer protocol** for all data providers (such as OpenDAP or ftp) ? are these protocols used and in which centres?

Guidelines to assess Chinese level of integration (3)

Services and user access

Is there any central information service providing a **unique and shared catalogue of products**, links to the data or service providers? If not what are the equivalent services? What is the level of overlap?

Are there any data central **discovery**, **extraction** and **visualization** service able to provide access to most the data produced ?

Are there tools or products to **inter-compare** the products? To provide **quality information** to users?

Is there any independent assessment of the sub-system **performances** (checking availability of the data supposed to be produced, timeliness, etc…)?

How is the overall system monitored? Is there some **indicator** to measure and monitor the **quality of service**?

Guidelines to assess Chinese level of integration (4)

Integration in international global ocean observation system

Is China integrated in projects such as **ARGO** (in situ floats data) or **GHRSST** (satellite sea surface temperature)? Do they **provide data** to these projects? Are their data archived into the global archiving centres?

Do data providers comply to any international standards for **data format** (eg GHRSST NetCDF format for sea surface temperature) and **metadata** (ISO19115, FGCD,…)

Is there any involvement of Chinese partners into **international working groups on data exchange and metadata** (OGC, ISO, etc…)? How do they interact with the Chinese data providers?