my Ocean

Status of the proposal as of 6 November 2007

Where are we

- MyOcean was submitted on 16 June 2007

- A hearing was held in Brussels on 25 September 2007
  - Pierre Bahurel
  - Fabienne Jacq
  - Kostas Nittis
  - Johnny A. Johannessen

- An orientation meeting for the national delegates to GMES was held in Darmstadt on 17 October 2007

- The evaluation report was released on 21 October

- The ad-hoc working team will have a telephone conference on Wednesday 7 November at 1530

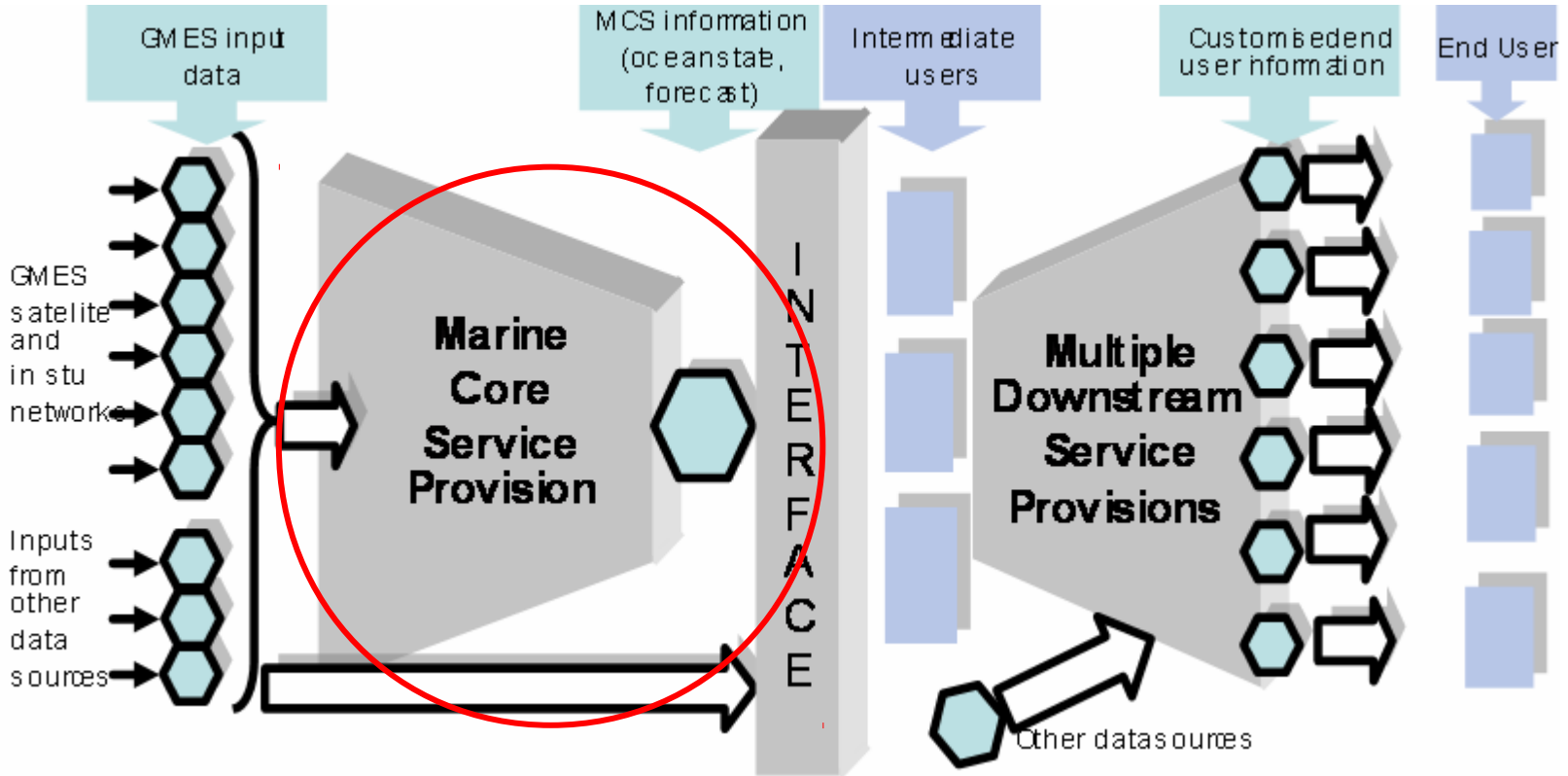**RECAP**

A European Marine "core" service

clearly defined by the EC GMES Implementation Group

From GMES MCS Implementation Group report by P.Ryder & al

Card 1: "WHY?"

- **Areas of Benefit**
- MyOcean will *"provide the common denominator data for **all users in the marine sector**, in other words the information for existing & new downstream services."*
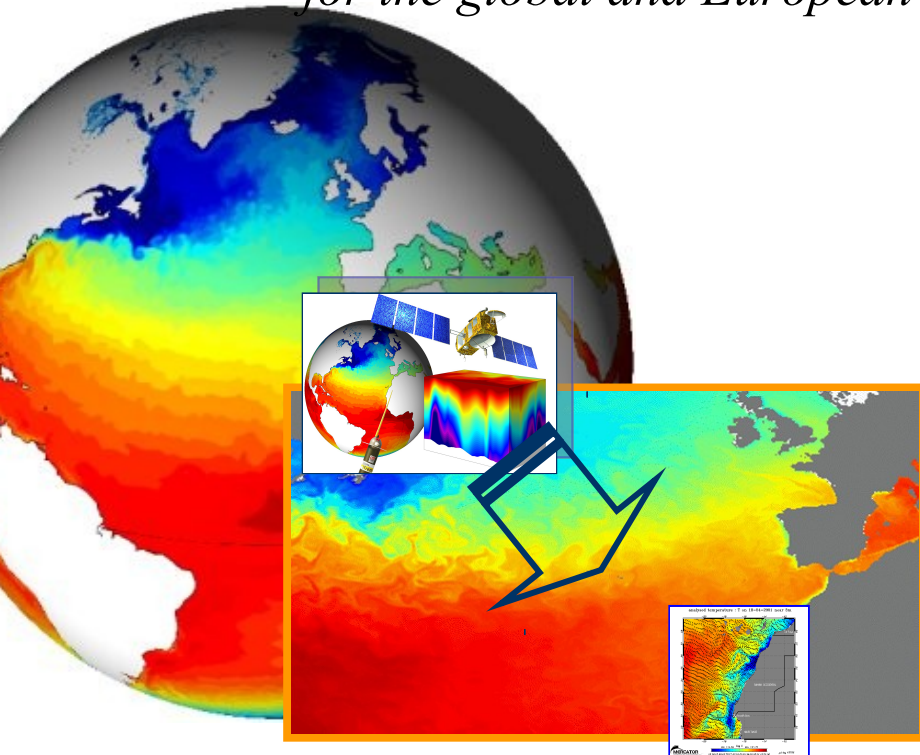
- Climate
- Marine Environment
- Seasonal and weather forecasting
- Offshore
- Maritime transport and safety
- Fisheries
- Research
- General Public

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Card 2: "WHAT ?" (Raw matter)

- MyOcean will
  - *"deliver **regular and systematic reference information** (processed data, elaborated products) on the state of the oceans and regional seas:*
  - *at the resolution required by **intermediate users & downstream service providers**, of known quality and accuracy,*
 - *for the global and European regional seas."*

- Physical state of the ocean, and primary ecosystem
- For global ocean, and main European basins and seas
- Large and basin scale ; mesoscale physics
- Hindcast, Nowcast, Forecast
- Data, Assimilation and Models

Card 2: "WHAT ?" (Service)

- MyOcean will
    - *"deliver **regular and systematic reference information** (processed data, elaborated products) on the state of the oceans and regional seas:*
    - *at the resolution required by **intermediate users & downstream service providers**, of known quality and accuracy,*
    - *for the global and European regional seas."*
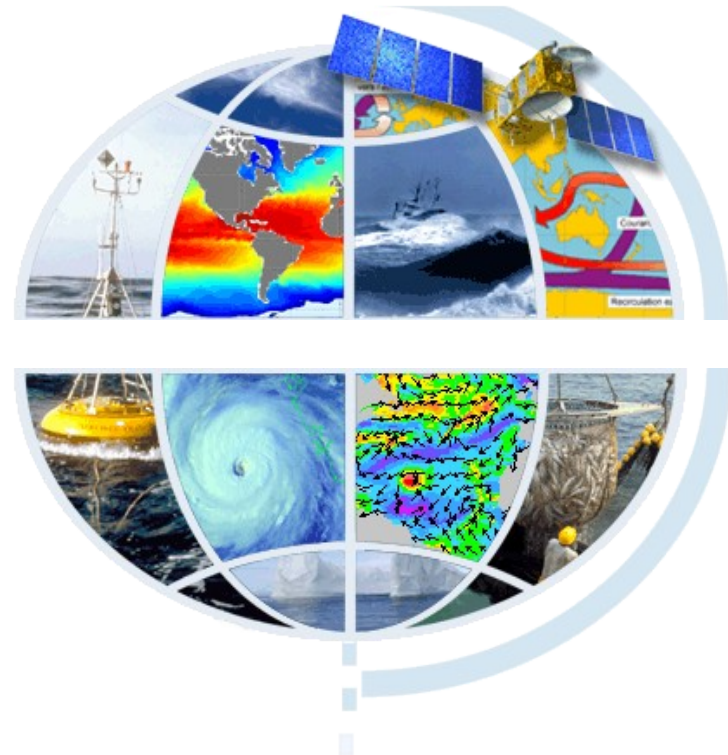
Data handling, Modelling and Assimilation

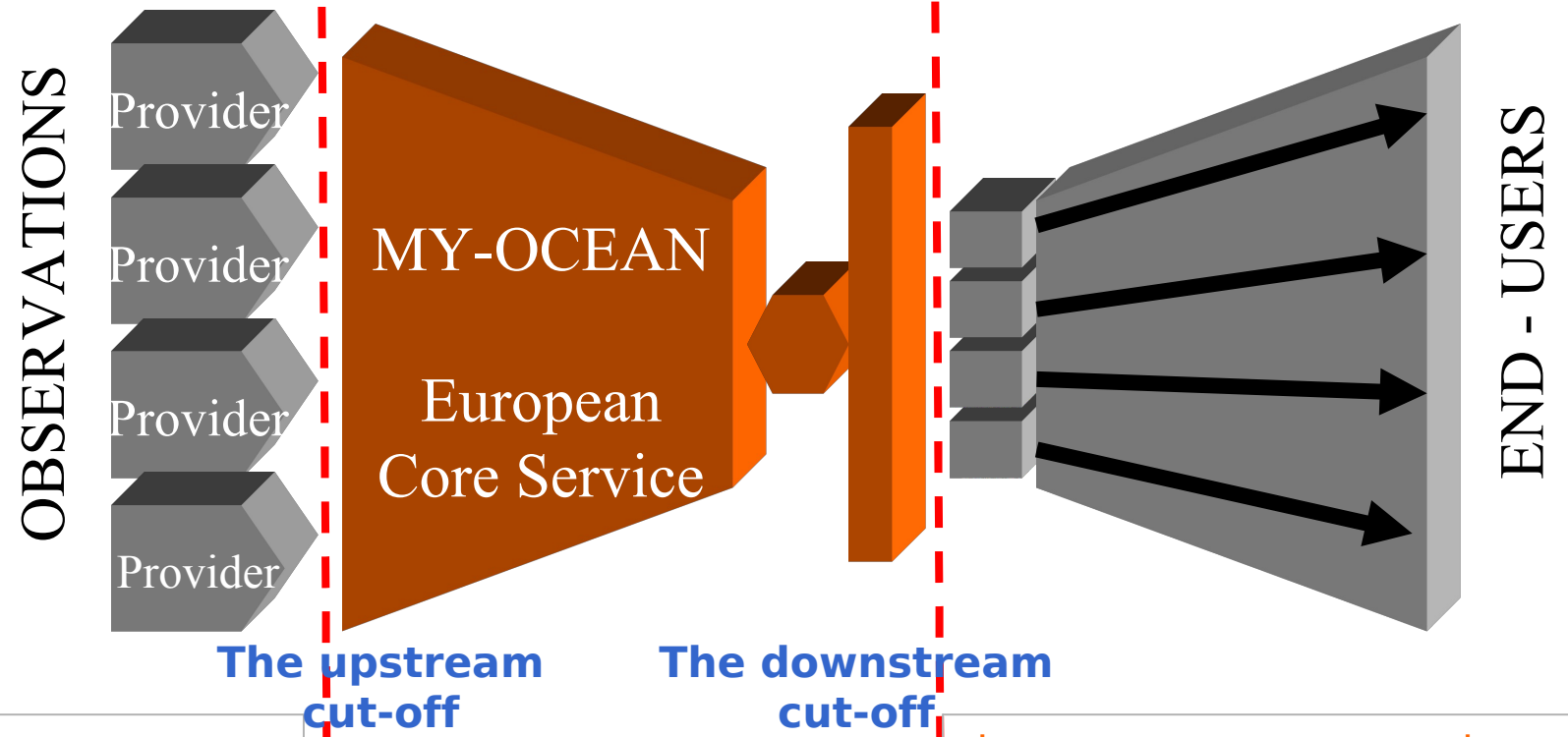⬇

`Variables`: T, S, UV, SSH, ice, Chl-a, ...

⬇

`Products`: Catalog of reference products : pre-defined data fields, reanalysis, reports, ...

⬇

`Service`: Real time, Delayed Mode, On request,

Card 3: "HOW FAR ?"

Card 4: "TO WHOM ?"

- **The Key Users**
- MyOcean will deliver a service to

  - **EU**: The European Union
    - **Users: <u>European</u> agencies (EEA, EMSA, EDA, ...)**

  - **MS**: The Member States
    - **Users: <u>National</u> Service Providers**

  - **IG**: The Intergovernmental bodies
    - **Users: MS and/or <u>exec.bodies</u> such as OSPAR, UNEP-MAP, HELCOM, ICES, ...**

EEA	EMSA	EDA	...

Met Offices	Ocean centers	...

Env. agencies	Research centers

Navies, CoastGuards, ..

OSPAR	UNEP-MAP

ICES	...

CORE

Marine Core Service

GMES Implementation | **GMES Operations**

| 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |

MCS
Workshop   CALL PROPOSAL   KICK-OFF   QUALIF MCS V1   QUALIF MCS V2

(prototyping core system) MY OCEAN (core service)

Qualif Service V1
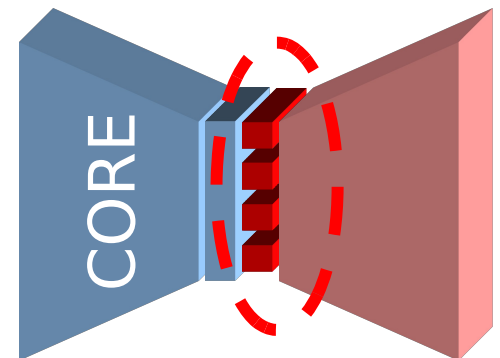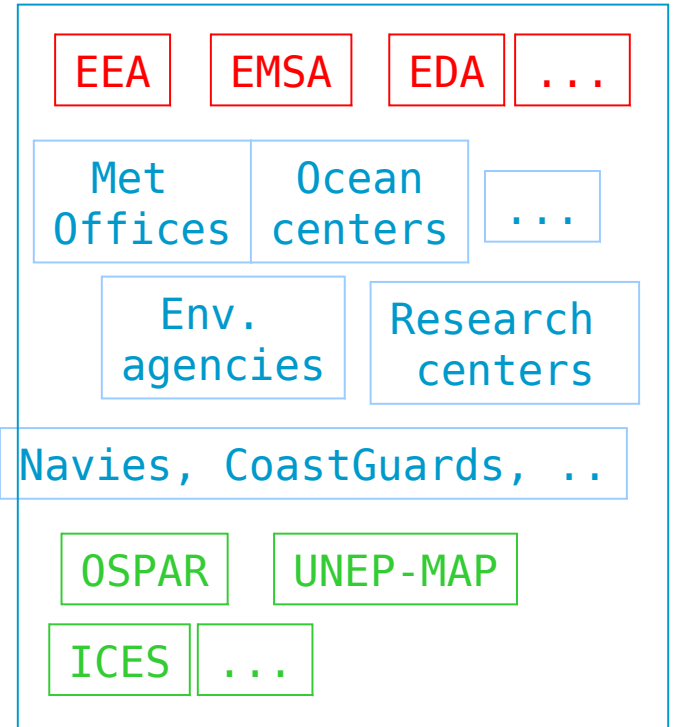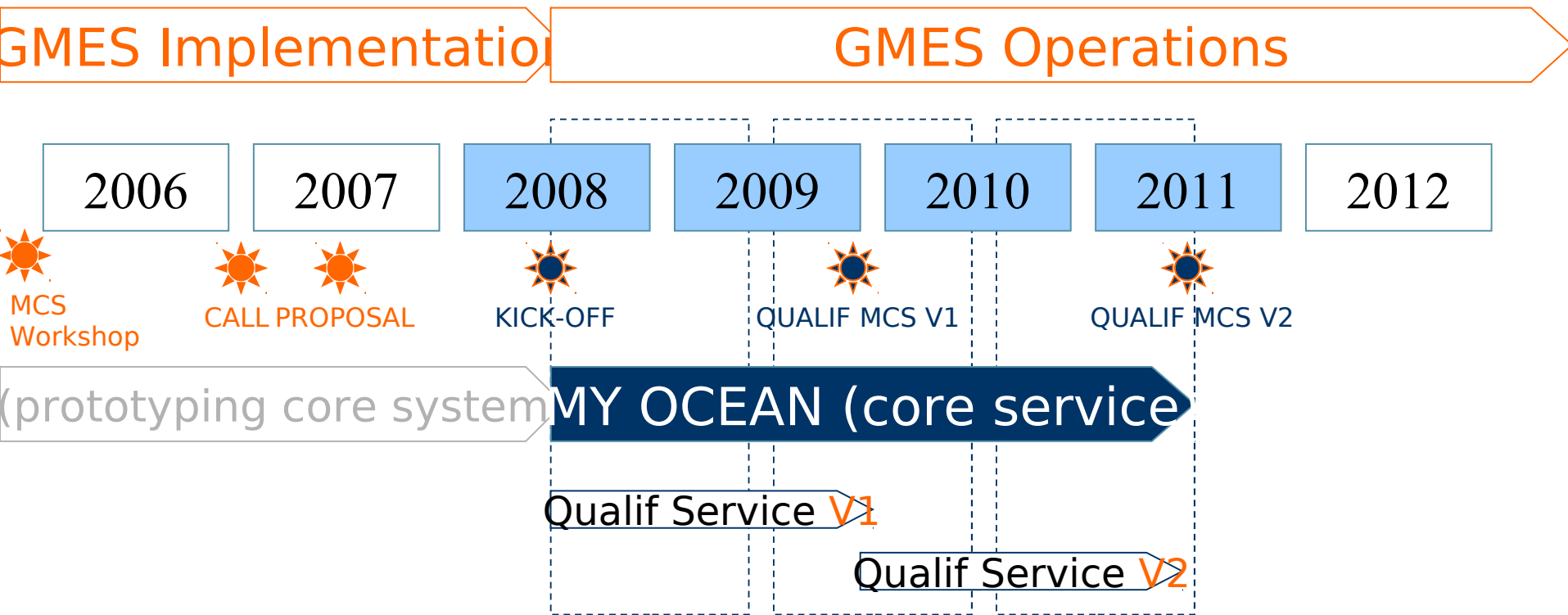
Qualif Service V2

- A 3-year project
- Starting before summer 2008, ending in 2011
- 2 phases :
  - First 18 months: qualification of Service Version 1
  - Last 18 months: qualification of Service Version 2

MyOcean   **Recall Work breakdown**
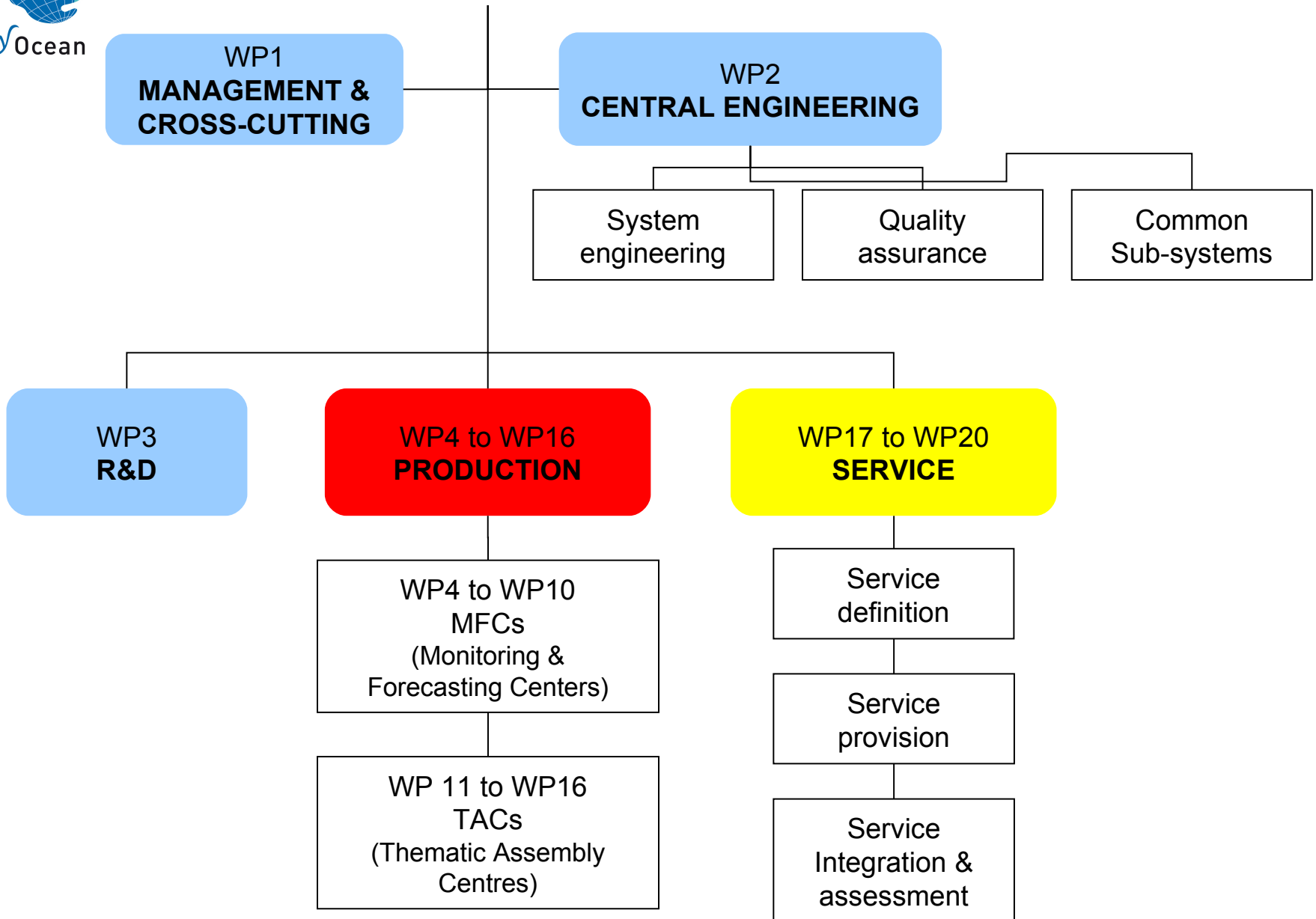
MyOcean

WP1 Cross cutting

WP1.1 Daily Management

WP1.2 Strategy, governance, roadmap

WP1.3 Capacity building

WP2 Central engineering

WP2.1 System engineering

WP2.2 Quality assurance

WP2.3 System supervision

WP2.4 Information system

Marine Cor...

Production set up & S&T validation

Services set up & User validation

Monitoring & forecasting centres

Service integration & assessment

WP3 R&D

WP4 Global MFC

WP5 Arctic MFC

WP6 Baltic MFC

WP7 NW MFC

WP8 IBI MFC

WP9 Med MFC

WP10 B.Sea MFC

WP17- S1 Service definition & monitoring

WP18 -S2 Service provision

WP19 - S3 Integration & assessment By member States

WP20 – S4 integration & assessment For EU and IGgencies

WP3.1 Service evolution R&D

WP3.2 R&D open call

WPx.1 Coordination

WPx.4 Production

WPx.2 R & D

WPx.5 Calval -Quality

WPx.3 Development & maintenance

WP18.1 Service desk

WP19.1 Global

WP18.2-8 MFC Service operations

WP19.2 Arctic

WP17.1 Product portfolio & SLA

WP19.3 Baltic

WP19.4 NW

WP17.2 Service "quality" monitoring

WP19.5 IBI

WP17.3 Commissioning Forum

WP19.6 Med. Sea

WP19.7 Black Sea

WP 20.1 Ice

WP 20.2 Oil spill

WP 20.3 Marine environmental strategy

Thematic assembly centres

WP11 SL TAC

WP12 OC TAC

WP13 SST TAC

WP14 Sea Ice TAC

WP15 InSitu TAC

WP16 Wind TAC

my Ocean

Marine Core Service
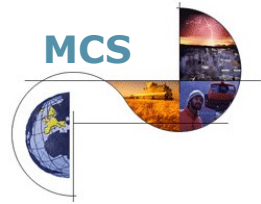
1. Look for and focus on the **European added-value** : build and set up the "**European Core**"
2. Start from **existing** core systems

3. Be **service** oriented
4. Be simple but fully **operational** !

5. Ensure full **connection** with the **EuroGOOS** networks
6. Involve **users** in the success of the MCS
7. Ensure **quality**, and make sure to link **operational / research**

- 6 TACs, 7 MFC infrastructures
- 1 service desk

- Key users as partners
  - Member States
  - EU agencies
  - Intergov bodies

- ROOS networks
- R&D networks

- Internal governance

HEARING

Marine Core Service

The attendents included:

- R. Gilmore (MERSEA contract officer)
- GMES Bureau
- Evaluation group (G. Duchossois, R. Husband, O.   Gråbakk, G. Campbell, ...G.D. Strøm)
- Other EU FP7 representatives

- From MyOcean Pierre Bahurel, Fabienne Jacq, Kostas   Nittis, Johnny A. Johannessen

- **The Core Operators**
  - 6 TACS: Built on ESA, Eumetsat/SAF and national (CNES, ...) initiatives, intergrating MERSEA, Globcolor, GHRSST/Medspiration outputs, located in France, UK, Italy, Norway, Netherlands, Greece, Denmark, ...
  - 7 MFCs: built on EC and national initiatives, integrating Mersea and GOOS outputs, located in France, Norway, Denmark, UK, Spain, Italy, Ukraine, ..

- **Build MyOcean on the success of MERSEA, MARCOAST and POLARVIEW**
  - **23% of Polarview ESA/GSE partners** are part of MyOcean consortium (**7** out of 30)
  - **56% of Marcoast ESA/GSE partners** are part of MyOcean consortium (**18** out of 32)
  - **57% of Mersea EC/FP6 partners** are part of MyOcean consortium (**23** out of 40)
  - In MyOcean, **36 "new" partners** were not in Mersea nor Polarview or Marcoast

- **New partners**: Through R&D call, for innovation: Through User integration experience

- **Measure of success** : Number of **satisfied Users** (not the number of partners), WP17

- **Clarification 5:** How will the consortium **interface with** parallel on-going projects?

- Projects dealing with:
  - **Observations**: ESA DAP, SAF, …, EuroArgo, Micon,…, Globcolor, Medspiration, …
  - Marine **science & technology**: ECOOP, Globwave, …
  - **users** and downstream : Marcoast, Polarview, Mariss, national, …
  - **GMES system**: BOSS4GMES, Humboldt, Seadatanet, Tango, …
  - **international**: GEO, GODAE, GOOS/EuroGOOS, JCOMM, Dragonness & Dragon, Hycom NOP...

- Interfaces
  - MyOcean partners are **participating** to these projects !
  - MyOcean representatives are **invited** by and **inviting** other project representatives
  - MyOcean is represented in « cluster » **organizations** where projects are discussed, linked and invented : GMES meetings, Earth Obs and Ocean conferences, EuroGOOS, JCOMM, GODAE, MOON, Helcom, …
  - MyOcean is **promoted** (GMES meetings, UE, national, …) to ensure a good knowledge of the project and open collaborations

Marine Core Service

- **Clarification 2:** What lessons have been learnt from **MERSEA** and how are these integrated into the Work Programme?

- MERSEA (April 2004 to March 2008) is an R&D project to develop a European core capability in ocean monitoring and forecasting.

- European systems have been improved, gathered in a network with a first step towards standardization.

→ MyOcean, moving from « **system** » to « **service** »

Marine Core Service

Lesson 1 (about the system architecture)

- build the MCS system on a system of systems basis (**distributed** and **modular**), and start from **existing** well-assessed components, … is the only way to set up a first-rank European capacity .

  → in MyOcean, we've developed further the modularity (MFC/TAC), and built them into existing and well-assessed components.

Lesson 2 (about the users integration):

- The use of the MCS service by the intermediate users on a <u>long-term basis</u> has to be clearly organized, and considered as a key « project » objective. Demonstrate products is not enough. Users are the first stakeholders.

  → in MyOcean, two WPs dedicated to this objective, with a clear « user integration » mission, and a strong participation of the users *in* the project as equal partners.

Lesson 3 (about the user categories)

- Intermediate users of the « public sector » (member states, UE) are the first 'natural' users and supports of the MCS implementation. They do need a framework to fully endorse this role.

  → in MyOcean, Member States, UE agencies and Inter-governmental organizations are the first targeted users.

Lesson 4 (about the need for R&D and quality)

- The quality of « core products » is still extremely dependent upon the level of associate R&D : strong user demand for 1) full assessment, and 2) regular improvements.

  → in MyOcean, R&D is cross-cutting the project (WP3 and the different 'production units' MFC/TACs). Link with external networks is ensured through R&D open call.

Lesson 5 (about the governance)

- To manage a project contributing to the GMES MCS implementation requires to solve daily management issues and high-level strategic questions, and demands strong coordination

  → in MyOcean, we've clearly distinguished the strategic level (coordinator, the board) from the executive level (project manager, ex.committee), and support through a project office. We prepare governance organizations.

Lesson 6 (about maturity)

- There is indeed a clear gap between a fully operational organization, and the current maturity of a consortium composed of the current European 'best players' in operational oceanography. But the motivation is clear, the GMES objectives are understood, and the process on-going. Standardization in a decentralised architecture is very expensive.

  → in MyOcean, the « transition to operations » objective is a central one. Organization is meant to provide education and support to the core operators, and steer the consortium towards the operational phase. Ressources are identified for that. Roles and commitments are key notions.

Marine Core Service

KPIs background of the consortium

- **Space projects**
  - ESA/DPQC : Day to day calval expertise level 1 & level 2 ENVISAT
  - CNES/SALP : Day to day calval expertise level 1 & level 2 all altimetry missions
    Performances are followed through day-to-day expertise and yearly reporting
  - SAF KPI
- **Oceanography**
  - GODAE KPIs and metrics
  - MERSEA KPI – exhaustive list for system, service, project
- **Service**
  - MARCOAST, POLARVIEW KPIs and organisation (validation bureau, SLA checking)
  - SAF KPI methodology

MyOcean hypothesis

- **A smaller set of KPI** will be implemented everywhere to support:
  - Product quality control
  - System and service "technical" availability – Continuity of services
  - Service quality control
- KPI will be indicators and statistics but will also be implemented through quality and R&D reference reports (To be consolidated)

KPIs list and illustrations

KPI for Product quality control : GODAE classes

- ☐ **Fields provided** : Daily mean, best estimate, ocean convention
- ☐ **CLASS1** : T, S, U, V, SSH, MLD, BSF, TX, TY, Qtot, E-P-R agreement on grid/depths
- ☐ **CLASS2** : Sections/moorings (high resolution T,S,U,V)
- ☐ **CLASS3** : Integrated quantities (volume or heat transports)
- ☐ **CLASS4** : Forecast skills
- ☐ **COMPARISON** : model/model, model/climatology, model/obs

NB: COMPARISON KPI is not yet planned in the MyOcean TAC/MFC quality activities because of resources mainly

"V1 Product, service and system characterisation"

Marine Core Service

- **Question 1.c)** Provide a detailed definition of the required **input data**.

- A critical issue for the MCS. MyOcean has devoted 6 WorkPackages to deal with input data

  - Organize a European network of 6 thematic assembly centres (6 WPs)
  - Detail MyOcean requirements for space data, identify existing and future satellite missions, interfaces (e.g. Eumetsat, ESA, CNES, NASA ground segments and/or Eumetsat SAFs) and requirements (timeliness, format).
  - A **meeting with ESA** Data Access Portfolio project team prior the proposal submission : May 16, 2007
  - Write a MyOcean **reference document** available: `MYO-SYS-EISD` "Satellite data needs from the GMES Marine Core Services" and provided to ESA
  - Organize MyOcean to cover the in situ regional diversity in WP15
  - Set up parallel projects to steer the In situ observation part (EuroArgo, Micon, ...) ;

- What we plan to do
  - Complete and regularly upgrade the "input data" documentation
  - Ensure interface with space agencies, set up Procurement Level Agreements
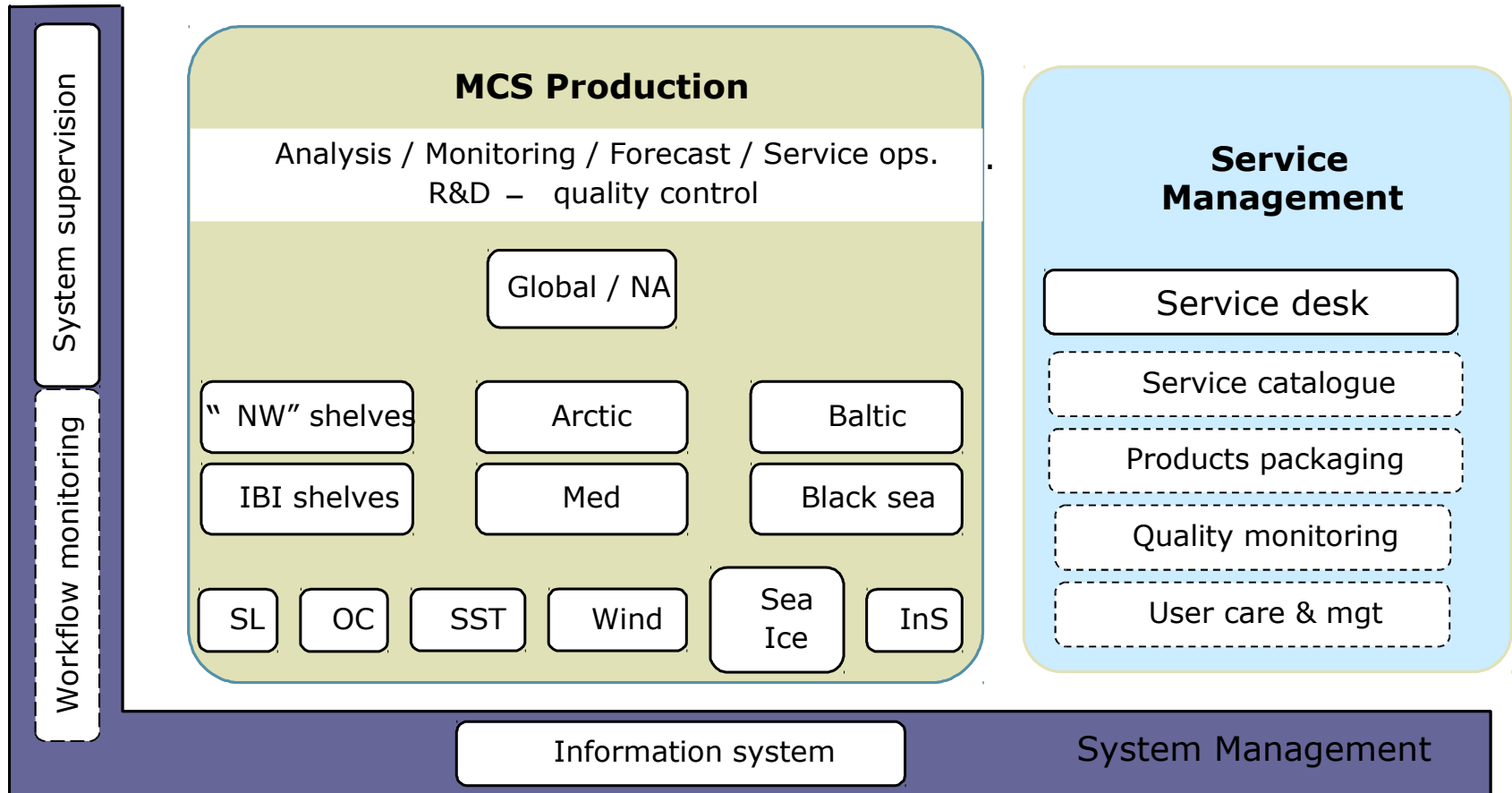 - Address the strategic issues at the board level

Major Issues

a) Provide a detailed functional (logical) architecture that illustrates how the input data defined in 1 c) is transformed into the products and services identified in 1 a). In particular this architecture should describe the:

- hierarchy of functions;

- associated dataflows.

This architecture shall be independent of the physical implementation.

b) Provide a description of the high-level software architecture and its relationship to the functional architecture defined in 2 a). In particular it should be possible to identify the main software components that will be used to implement the various functions.

c) Provide a description of the physical architecture showing the main hardware components, their geographical location and any associated communications links.

d) Provide a mapping of the software architecture identified in 2 b) onto the hardware architecture defined in 2 c).
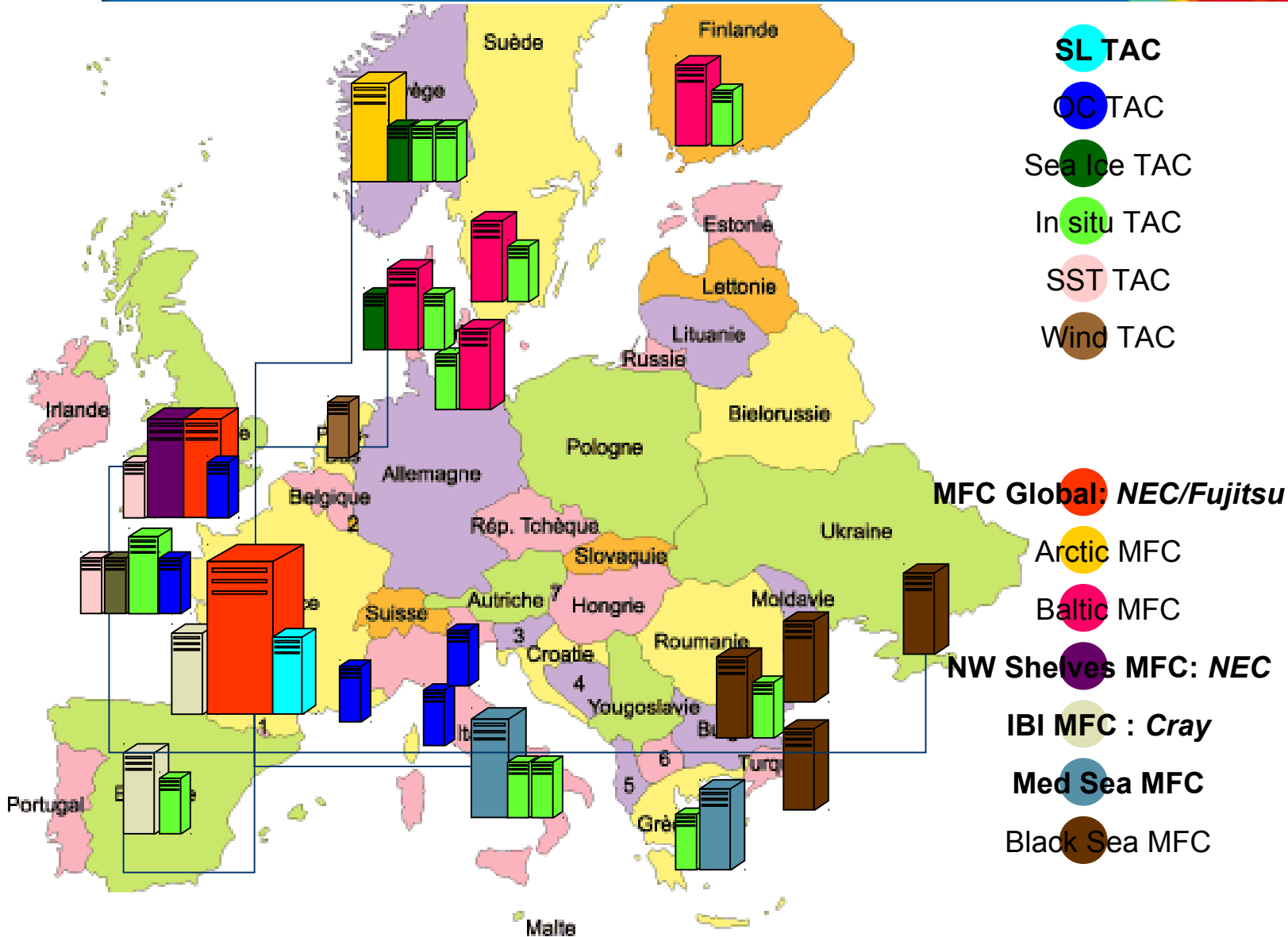
Major Issue, Question 2a
Systems and sub-systems

a) Provide a detailed functional (logical) architecture that illustrates how the input data defined is transformed into the products and services. In particular this architecture should describe the:

- hierarchy of functions;   - associated dataflows.

System supervision

Workflow monitoring

MCS Production

Analysis / Monitoring / Forecast / Service ops.
R&D – quality control

Global / NA

" NW" shelves   Arctic   Baltic

IBI shelves   Med   Black sea

SL   OC   SST   Wind   Sea Ice   InS

Service Management

Service desk

Service catalogue

Products packaging

Quality monitoring

User care & mgt

Information system

System Management

Major Issue, Question 2c
Physical architecture: computing
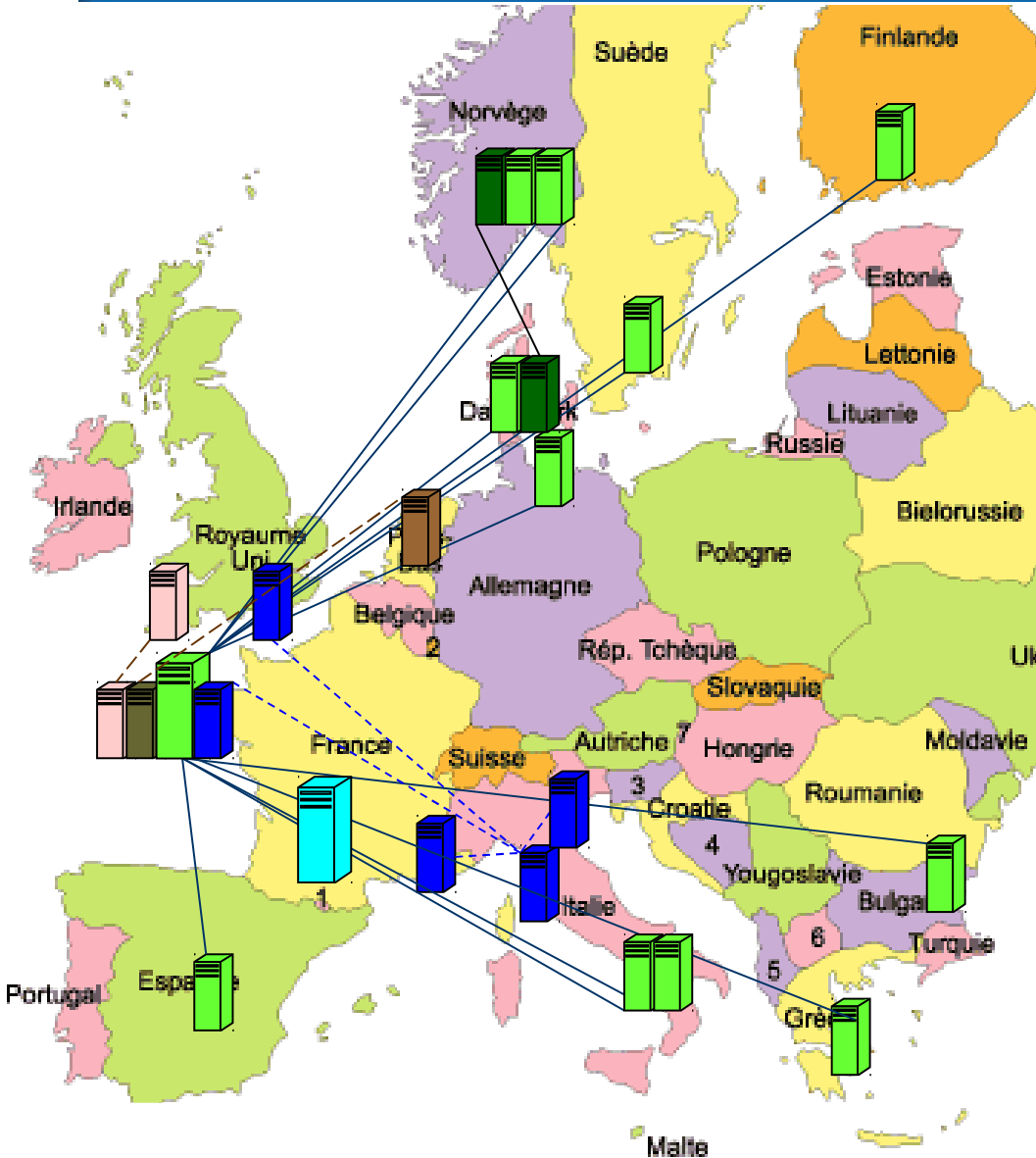
Major Issue, Question 2b, 2d
TAC - SW and physical mapping

Marine Core Service

SL TAC: **central**
CLS : SSALTO/DUACS,
SURCOUF, ARMOR, MDTRIO

OC TAC : **distributed**
ACRI: GlobColour, MARCOAST
PML: DISMAR/INTERISK
CNR, JRC, IFREMER: MERSEA,
ADRICOSM

Sea Ice TAC : **distributed**
MetNo: POLARVIEW, OSI SAF
DMI: OSI SAF

SST TAC : **distributed**
MetOffice: GHRSST
IFREMER: Medspiration

Wind TAC: **distributed**
IFREMER : Cersat
KNMI : Wind SAF

In situ TAC: **distributed**
IFREMER: Coriolis
IMR: National, DMI: National
SMHI: National, BSH: National
FIMR: National, Puerto: National
Enea, OGS : National
HCMR: National, IOBAS: National
NIVA: National

FC:central
et.no: TOPAZ/HYCOM
ORWECOM

ves MFC: central
MRCS/POLCOM/FOAM
4/NORWECOM
MO/ERSEM **V1**

lobal: distributed
: OPA/NEMO ¼
MO 1/12 **V1**
d 1/12

e : OPA/NEMO ¼

distributed
PSS1-NEMO
OLCOM
Puerto: NEMO 1/36° **V1**

Baltic MFC: distributed
DMI,BSH: HIROMB/SCOBI
BSHcmod-ERGOM
BALECO
SMHI,FIMR: HIROMB/BOOS
For **V1**

Med Sea MFC: distributed
INGV: NEMO 1/16°
HCMR

Black Sea MFC: distributed
MHI: MHIC-IMSE, WAM

Marine Core Service

- **Clarification 1:** What is the **current state of the art** with respect to input data sources, resolution, assimilation techniques, output information content, update times, forecast period, error levels and reanalysis coverage. In particular, what are the relevant activities in **on-going or recently completed projects** upon which MyOcean will build and how will the consortium plan to **ensure access to these basic building blocks**? What is the MyOcean progress beyond this current state of the art?

- Europe through MERSEA & EuroGoos (among others) is at the leading edge of operational oceanography in the world. European key players of international operational oceanography (e.g. GODAE) are represented in MyOcean.

- Satellite & in-situ data and services proposed in My Ocean (MERSEA, ESA GSE heritage) are also used in major non European operational oceanography systems (e.g. US) and are known as state-of-the-art contribution

- My Ocean will mainly consolidate these systems (both on operational, quality and service aspects)

- MyOcean partners are also participating in all the ongoing reference projects for GMES and the marine sector, which ensure a perfect transfer of know-how.

Validation approach during operations

- **During operations, validation is performed through** :
  - Routine product quality control **IN PRODUCTION**
  - Long term product quality control **R&D**

  - Key Performances Indicators production
    - System level : availability, time performances, failures
    - Service level : connections, ordering, satisfaction of SLA
  - KPI auditing by service supervisor & external bodies

- **User forum commissioning**
  - Annual Operations review
  - Conferences
  - Trials and downstreaming

Marine Core Service

- **Question 6.** Provide a more detailed characterisation of the **processes** to be put in place to support the **migration to an operational** and **sustainable service delivery** structure.

- The following processes we will put in place, and monitored:

  - **Producers committed**: MFC/TACs "Production units" to sign OLAs (Operating Level Agreements). Process = **OLAs**.

  - **System documented** : WP2 to organize the certification process and versioning monitoring. Process = **Reviews**.

  - **Service defined** and monitored: WP17 to establish and monitor SLAs (Service Level Agreements) with users. Process = **SLAs** & **Commissioning Forum**.

  - **Service desk organized**: a pan-european service desk organized at European scale. Process = **WP18** management

  - **Users integrated**: Users' application systems really interfaced with MyOcean (ready to go). Process = **User integration program** in WP19 & WP20.

  - **A MCS integrated in Europe:** interfaces to R&D innovation networks, users' organizations, GMES stakeholders, etc. Process = **meetings**, **R&D open call**, ...

  - **Human resources trained**: key personnel trained to operations, service, R&D needs, use of MyOcean outputs. Process = **partners training, conferences, ...**

- *See also below clarification n°11 (strategy & governance)*

- **Question 4.** Provide a **comprehensive list** of organisations using each product and service for the V0 MyOcean portfolio and the expected **user organisations** for the V1 MyOcean product and service portfolio. This should include a clear indication of which users are participating in each service demonstration. Which of these users are participating in the User Board?

- The <u>direct</u> users of MyOcean products are
    - a) **Member States service providers** (intermediate users) that provide downstream services and products to regional / national / local users
    - b) **European and Regional Agencies**: EMSA, EEA, HELCOM, OSPAR, UNEP-MAP, Arctic Council, OOPC, GCOS, JCOMM, ...

- The Core User Group will be composed by both a) and b) members

- A much broader range of MyOcean users (end-users) is involved <u>indirectly</u> in the demonstrations of WP19 and together with the MS providers carry out the assessment

- SLAs will be established by WP17 following GSE approach

- Existing relations "Core service providers" → "Intermediate users" built through MERSEA, Marcoast/Polarview, regional organizations (e.g. GOOS/EuroGOOS), ... will be continued.

Marine Core Service
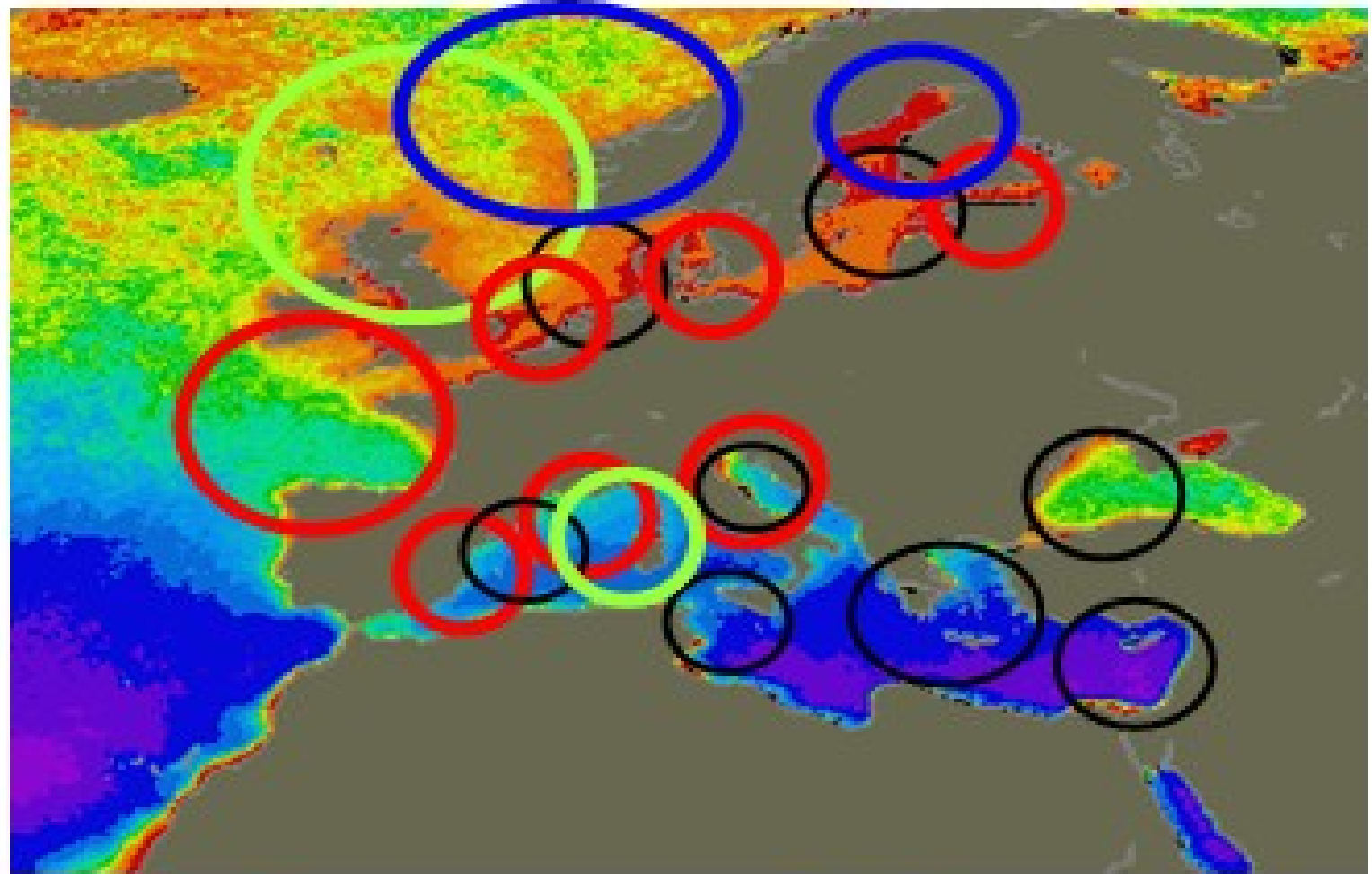
□ **Clarification 12:** How do the consortium members plan to ensure that the outputs of the different MCS elements (TACs and MFCs) are effectively supporting **downstream service providers and intermediate users**? What links need to be put in place to ensure effective exploitation of Marine Core Service products developed and delivered under the MyOcean consortium by intermediate users and downstream operators in order to provide information products and services that effectively respond to policy driven demand for information. What is the current status of these links?

□ We believe 1/ that the long-term success of the MCS demands a clear "user **integration**" activity in the early stages, and 2/ that the Member States and UE agencies are key users for sustainability.

□ Our approach is far more pro-active than in e.g. Mersea:
  – fully engage the national (downstream) service providers from all Maritime European countries (WP19) as **equal partners of the project**. 1/3 of the partners are "MS users" (23 out of 69)
  – Devote a WP (WP20) to user-integration experiments with the major UE and inter.gov. organizations. See EMSA, EEA, ...

□ WP17 is devoted to the monitoring of the Users satisfaction, with independent partners to provide feedbacks and recommendations to the board. SLAs process to support it. Yearly **Commissioning Forum** to drive the project.

□ The commercial sector is not addressed as a direct user (has to be discussed at GMES level). The GSE follow-on program is identified here, as an opportunity.

- **Clarification 13:** What aspects of **coastal seas** information are covered by MyOcean, how are local models interfaced to the MCS output and how does MyOcean support the delivery of policy relevant information in key coastal regions such as the Baltic and North Sea?

- Service providers in "Coastal seas information" are targeted **users** of the MyOcean MCS.

- Coastal seas problems are addressed <u>through</u> the <u>national service providers</u> (intermediate users of WP19) who are fully integrated into MyOcean

- A wide range of applications / scales is covered and will be demonstrated in WP19: from sea ice to water quality and from subregional to coastal scales

- In most cases the intermediate users (downstream service providers) follow the <u>downscaling</u> approach (nesting of their coastal models to regional MyOcean models).

- Key institutes that provide <u>Policy Advice</u> in regional seas (both to governments and to conventions HELCOM, OSPAR) are directly involved in the project (FIMR & SMHI - Baltic, CEFAS – North Sea). They are partners to the Marine Strategy process (EMMA). Will be represented in the Core User Group. In this way, the special needs related to policy relevant information are covered.

- Local models are developed within ECOOP project and by national institutes. MyOcean WP3 is considering R&D to improve MyOcean service to the coastal service providers.

☐ **Clarification 14:** How does the consortium intend to ensure greater exploitation of ocean data products within the **climate change** community?

☐ Involve relevant partners

– By including GCOS, WCRP and Clic as demonstration partners and/or corresponding users in WP20, information of MyOcean climate related products and the climate change community response can be exchanged.

– By including in the partners list, national reference agencies for meteorological and climate change issues. Weather Agencies, Climate group (eg. CMCC Italy) : around 8 partners.

☐ Prepare relevant services and products

– **Ocean Reanalysis** is one of the deliverables of the project.

– See for instance WP4, with the multi-year Global Ocean ¼° reanalysis (4 countries involved).

– Multi-year Reference Simulations are prepared at regional level (MFCs), and data sets provided by TACs

– Work on "ocean indicators fo climate change". See for instance the collaboration between expert on mean sea level trend (A. Cazenave involved in IPCC work) and the sea level TAC team.

Marine Core Service

- **[Governing] Board**
  - Composed of senior managers, multi-year experience in operational oceanography, first-rank responsibilities, strong investment in favor of the MCS
  - Pierre Bahurel (chair), Mike Bell, Nadia Pinardi, Johnny Johannessen, Pierre-Yves Le Traon, Erik Buch, Fabienne Jacq ; + 3 MCS stakeholders, + chairs of the Core User Group and the Scientific Advisory Committee

- **[Advisory] Core User Group**, and **Advisory Scientific Committee**
  - User: composed of leading users in WP19/W20 , chair: K.Nittis (tbc)
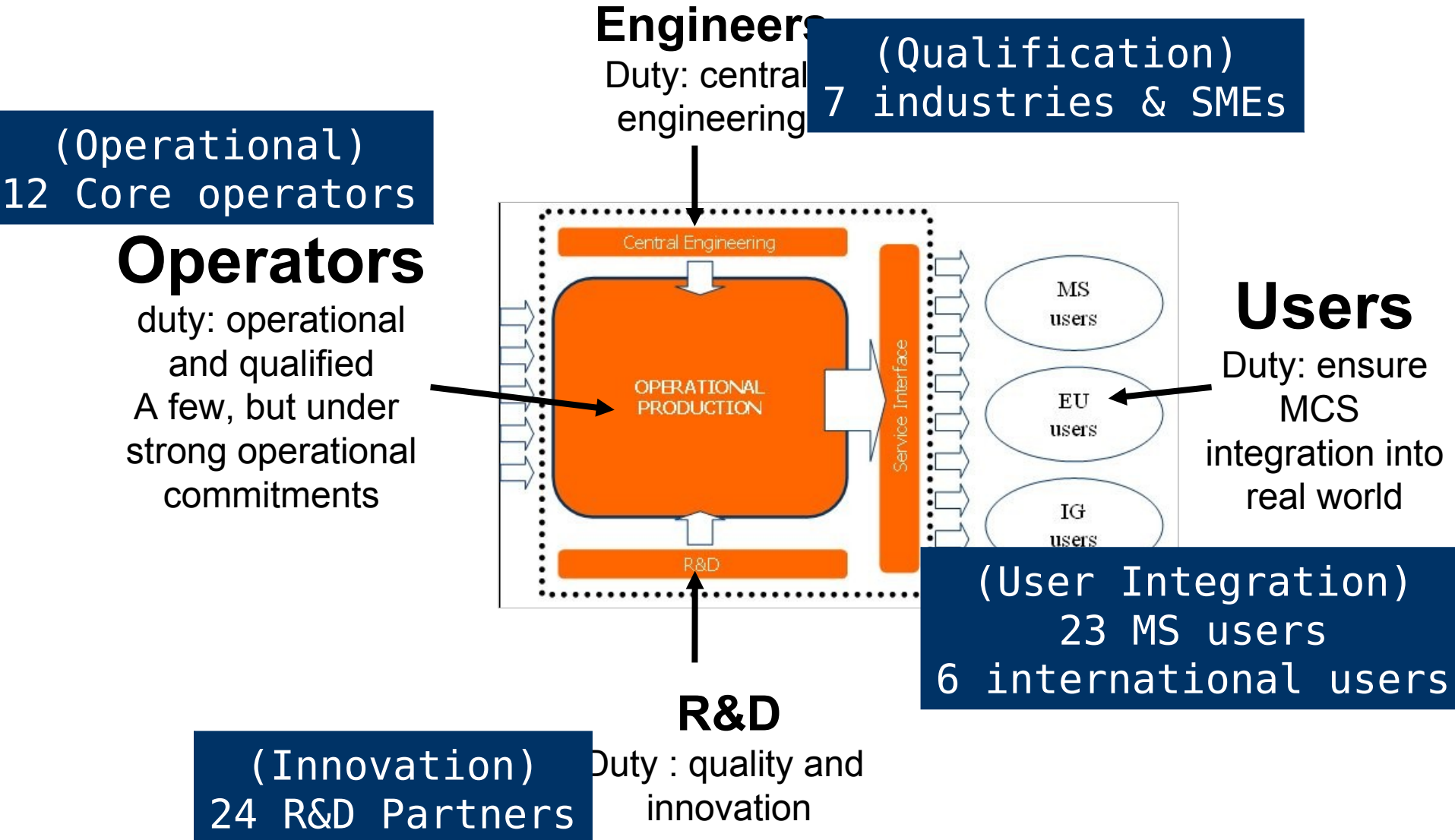 - Science: composed of senior scientists (in / out the project); chair, P.Brasseur (tbc)

- **[Daily Management] Project Manager, and Project Office**
  - Mercator Ocean staff; high level management already committed
  - Project Manager, position opened at CNES (experience space project manager)
  - Project Office : 1 contract officer, 2 engineers (Science&Technical, Planning&Integration).

- **[Executive] Executive Committee**
  - Composed of the 20 WP leaders, chosen by the board for their experience and capacity.

Marine Core Service

Engineers
Duty: central
engineering

(Qualification)
7 industries & SMEs

(Operational)
12 Core operators

Operators

duty: operational
and qualified
A few, but under
strong operational
commitments

Users

Duty: ensure
MCS
integration into
real world

(User Integration)
23 MS users
6 international users

R&D
Duty : quality and
innovation

(Innovation)
24 R&D Partners

EVALUATION RESULTS

MY OCEAN

Marine Core Service

MyOcean Evaluation

Evaluation Report:

- Criteria 1: Scientific and/or technical excellence   Score 3 out of 5

- Criteria 2: Quality and efficiency of the implementation and the management   Score 3.5 out of 5

- Criteria 3: Potential impact through development, dissemination and use of the products Score 4 out of 5

Total score: 10.5 out of 15. Threshold for passing is 10

Total cost of MyOcean	**79.5 meuro**
Requested from EU	**45.2 meuro**
Evaluation Panel recommendation for EU contribution	**33.0 meuro**

MyOcean Evaluation Report?

MY OCEAN

**Marine
Core
Service**

TELEPHONE CONFERENCE AT 1530 TODAY

I WILL HAVE TO TAKE THE TRAIN AT 1145 - HAVE IT