MY OCEAN

Marine
Core
Service

Aviso & Mercator serving MyOcean

How a european marine user accesses ocean products derived from satellite altimetry and numerical simulations (past and present missions & forecasts)

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MyOcean ?

Marine Core Service

- **MyOcean is a SERVICE**
  - The main component of the « **GMES** » Marine Core Service
  - Global & Regional Ocean monitoring and forecasting
  - Information based on Data Combination and assimilative Models
  - Currents, Temperature, Salinity, Sea level, Ice, ….

  ➔ **GMES Marine Core Service**

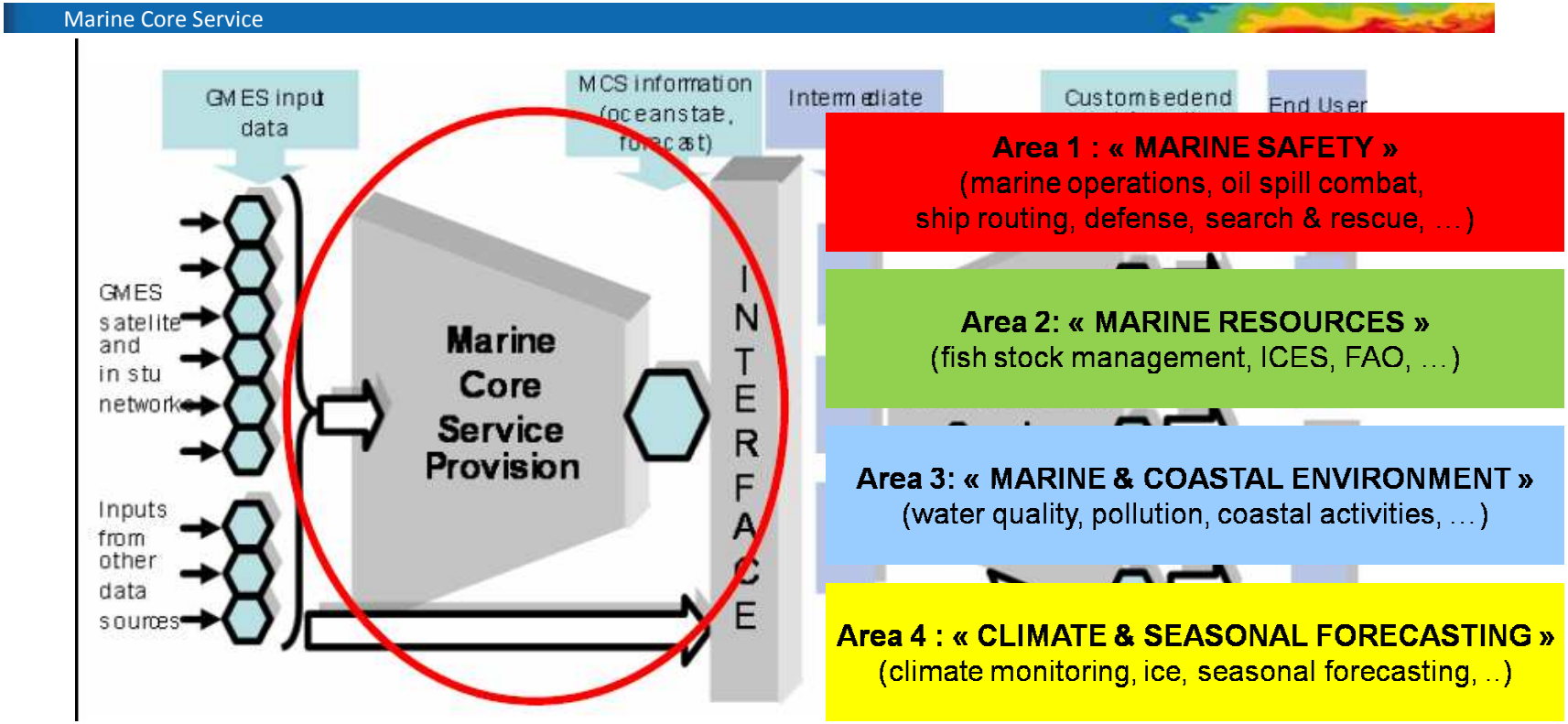
- **MyOcean is a NETWORK of European partners**
  - 61 partners out of 29 countries ; ~350 people involved ; ~150 FTE
  - 20 core partners committed for operations;
    european best monitoring and forecasting systems

  ➔ **Pan-European network**

- **MyOcean is a PROJECT**
  - An EC/FP7 project, the GMES « Marine Fast Track » project
  - 3 years : 1st April 2009 ➔31st March 2012
  - Budget 55 M€, with 34 M€ EC funding

  ➔ **2009 – 2010 – 2011 – 2012**

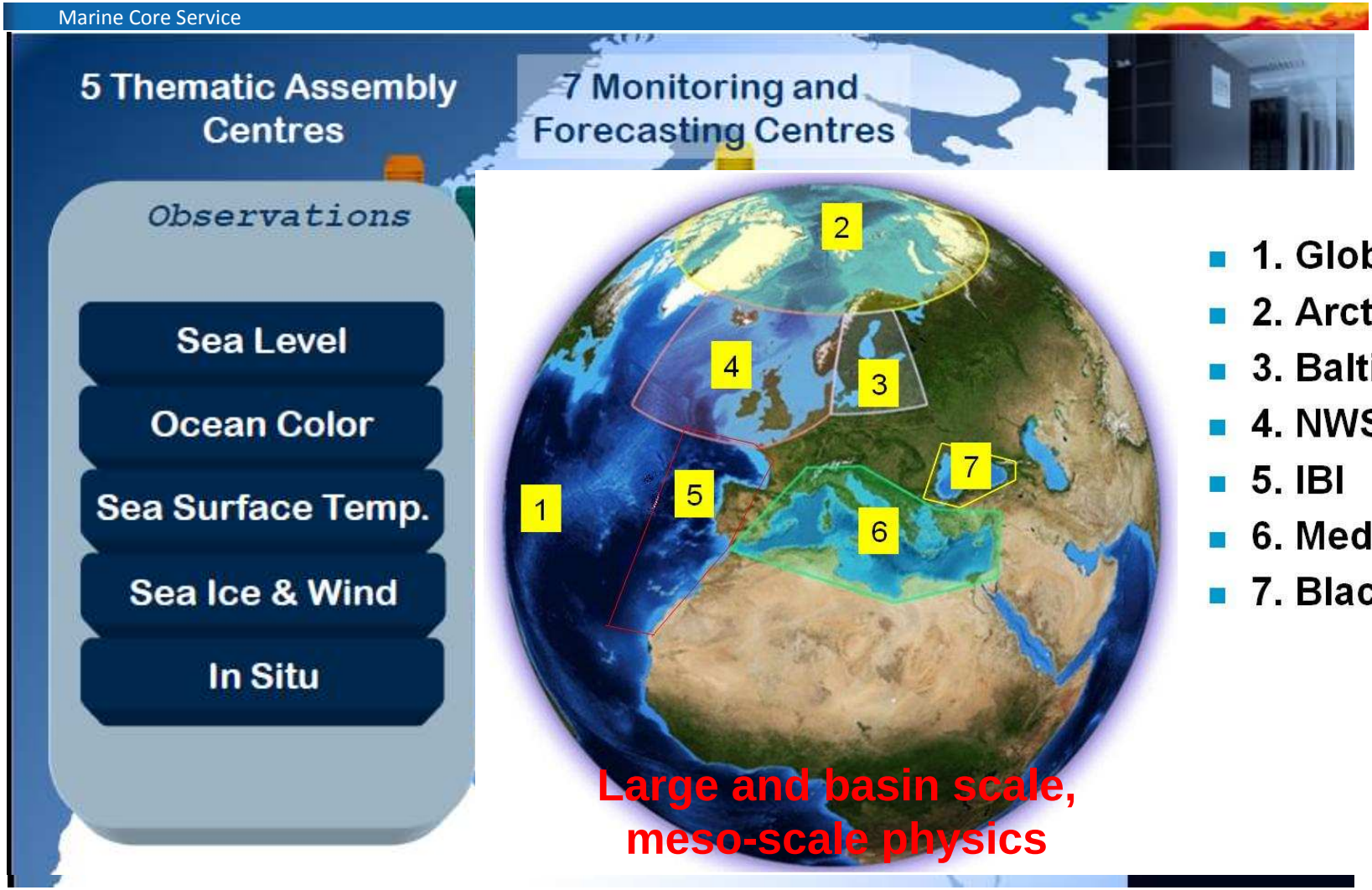
A clear (and limited) role in the value chain



Observing → **Describing** → Deciding

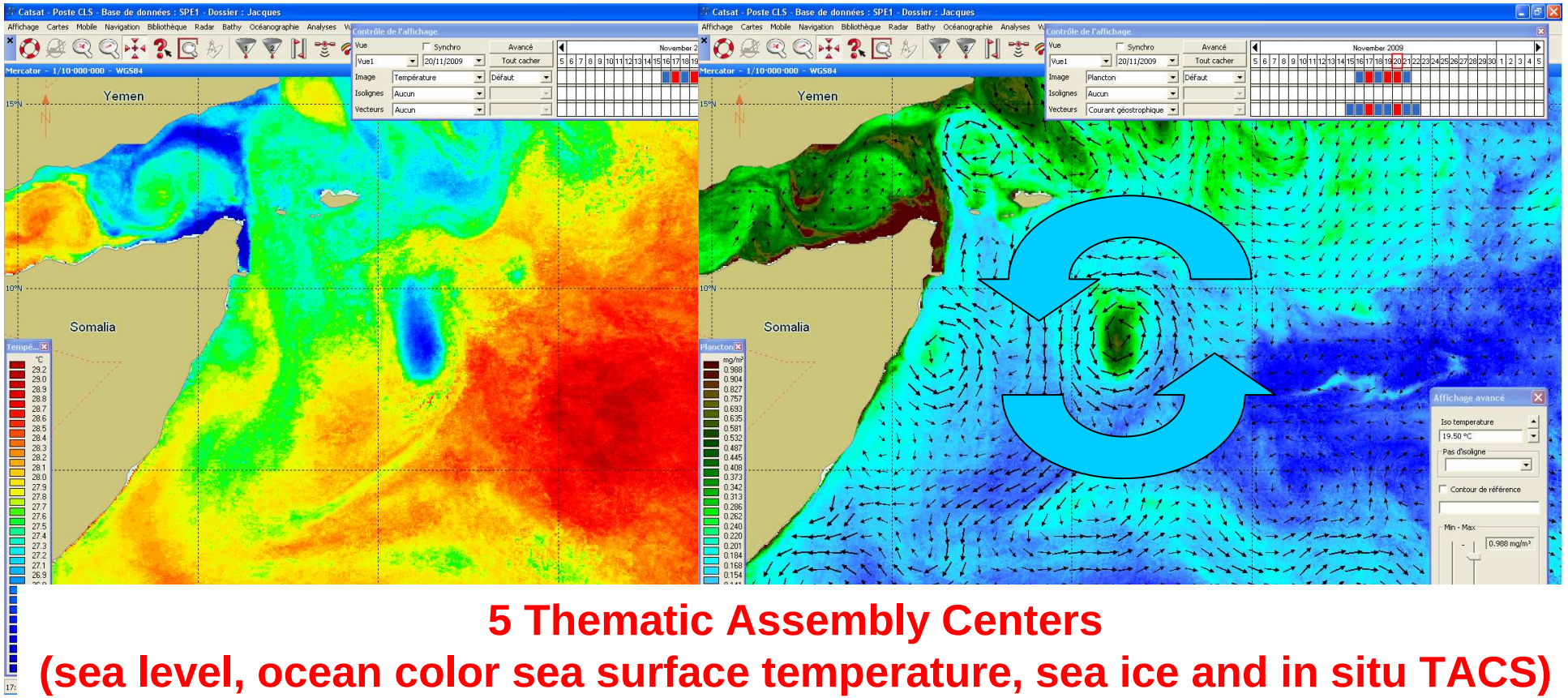
The Production Units (PU)

Marine Core Service



SST, ocean color & currents on 20/11/2009

Marine Core Service



5 Thematic Assembly Centers
(sea level, ocean color sea surface temperature, sea ice and in situ TACS)

7 Monitoring and Forecasting Centers
of the global ocean and main european basins (MFCs)
(Large and basin scale, meso-scale physics)

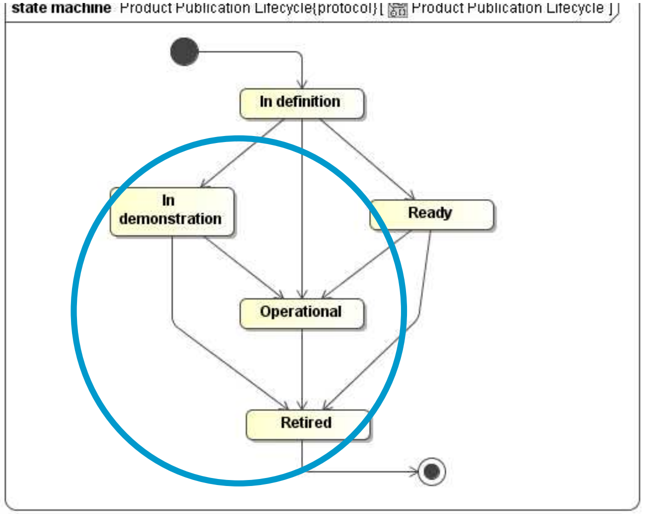
What does MyOcean offers ?

Marine Core Service

- **Ocean Core Information**
  - Physical state of the ocean, primary ecosystem
  - Global ocean and main European basins and seas
  - Large and basin scale, meso-scale physics
  - Hindcast, NowCast, Forecast

- **Open & Free Data Policy**
- Open access, Free access
- Commitments through **Service Level Agreements (SLA)**

- **One single service desk**
- One entry point, unique web portal
- Connected to all production units (PU)
- Via the MIS manager



MyOcean catalogue

			…ion	Vertical Resolution	Temporal Resolution of files	Point (P), Trace (T), Gridded Data(G…	L3,L…	Update time of product on Delivery mechanism UTC	Update frequency of product on Delivery mechanism	Delivery mechanism	Temporal extent of Analysis, hindcast and Forecast stored on delivery mechanism	Format
			…ording t…	43 levels from 0 to 5000	daily mean fields	GD	L4	thursday at 20pm	weekly	OPENDAP	7 days forecast + 1year hindcast	NETCDF CF
			…ording t…	43 levels from 0 to 5000	daily mean fields	GD	L4	thursday at 20pm	weekly	OPENDAP	7 days forecast + 1year hindcast	NETCDF CF
				16 levels from 0 to 700 m	daily mean fields	GD	L4	not available	weekly	FTP OPENDAP	1year hindcast	NETCDF CF
				12 levels from 0 to 3000m	daily mean fields	GD	L4	thursday at 8am	weekly	FTP OPENDAP	7day hindcast ; 10 day forecast+ archive sinc…	NETCDF CF
			…)	5 levels (4, 9, 51, 96, 175 m	hourly instantaneous fields	GD	L4	5am and 5pm	twice daily	FTP OPENDAP	12 hour hindcast; 60 hour forecast + hindcast	NETCDF CF
			…/15° Lat)	Model grid interpolated …	daily mean fields and hourly in…	GD	L4	09Z00 the day of the T00-T24	daily	(1) FTP (2) FTP OPENDA…	(1) 1 days hindcast and 5 day forecast, for pre…	NETCDF CF
			…/15° Lat)	Model grid interpolated …	daily mean fields and hourly in…	GD	L4	09Z00 the day of the T00-T24	daily	(1) FTP (2) FTP OPENDA…	(1) 1 days hindcast and 5 day forecast, for pre…	NETCDF CF
			…/6° Lat)	Model grid interpolated …	monthly mean fields	GD	L4	N/A	per version	FTP OPENDAP	20 y hindcast	NETCDF CF
NWS	NWS AMM nominal 20y hindcast Ecosystem	NWS 40oN – 65oN, 20oW – …	~12 km (1/9° Long, 1/6° Lat)	Model grid interpolated …	monthly mean fields	GD	L4	N/A	per version	FTP OPENDAP	20 y hindcast	NETCDF CF
IBI	IBI nominal T,S,U,V,SSH,Ice	IBI 32oN to 48oN, 15oW to C…	1/20' deg hor	ver. resolution: 34 levels	daily mean fields	GD	L4	not available	daily	FTP OPENDAP	72 hours forecast	NETCDF CF
MED	Med nominal T,S,U,V,SSH	MedSea	1/16 x 1/16 deg hor.(~6 km)	71 irregular vertical levels	daily mean fields	GD	L4	daily 15pm for forecast, Wedn…	daily for forecast, weekly fo…	FTP OPENDAP	7 days analysis ; 10 days forecast + archive o…	NETCDF CF
MED	Med nominal Ecosystem	MedSea	1/8 x 1/8 deg hor.(~12 km)	71 irregular vertical levels	daily mean fields	GD	L4	thursday at 10am	weekly	FTP OPENDAP	10 days forecast + archive of 17 days sliding w…	NETCDF CF
BS	Black Sea nominal T,S,U,V	BlackSea, 27.4E-41.9E, 40.9N…	~5 km (1/180 deg lon, 2/45 d…	35 irregular vertical levels	daily instantaneous 00 UTC f…	GD	L4	daily at 1500 (UTC)	daily	FTP	2 days hindcast; 3 days forecast	NETCDF CF
SL	Global L3 NRT SLA	Global	7km	N/A	instantaneous	T	L3	not available	daily	FTP	not available	NETCDF
SL	Med L3 NRT SLA	Med Sea	7km	N/A	instantaneous	T	L3	not available	daily	FTP	not available	NETCDF
SL	Global L3 RAN SLA	Global	7km	N/A	instantaneous	T	L3	not available	yearly	FTP	not available	NETCDF
SL	Med L3 RAN SLA	Med Sea	7km	N/A	instantaneous	T	L3	not available	yearly	FTP	not available	NETCDF
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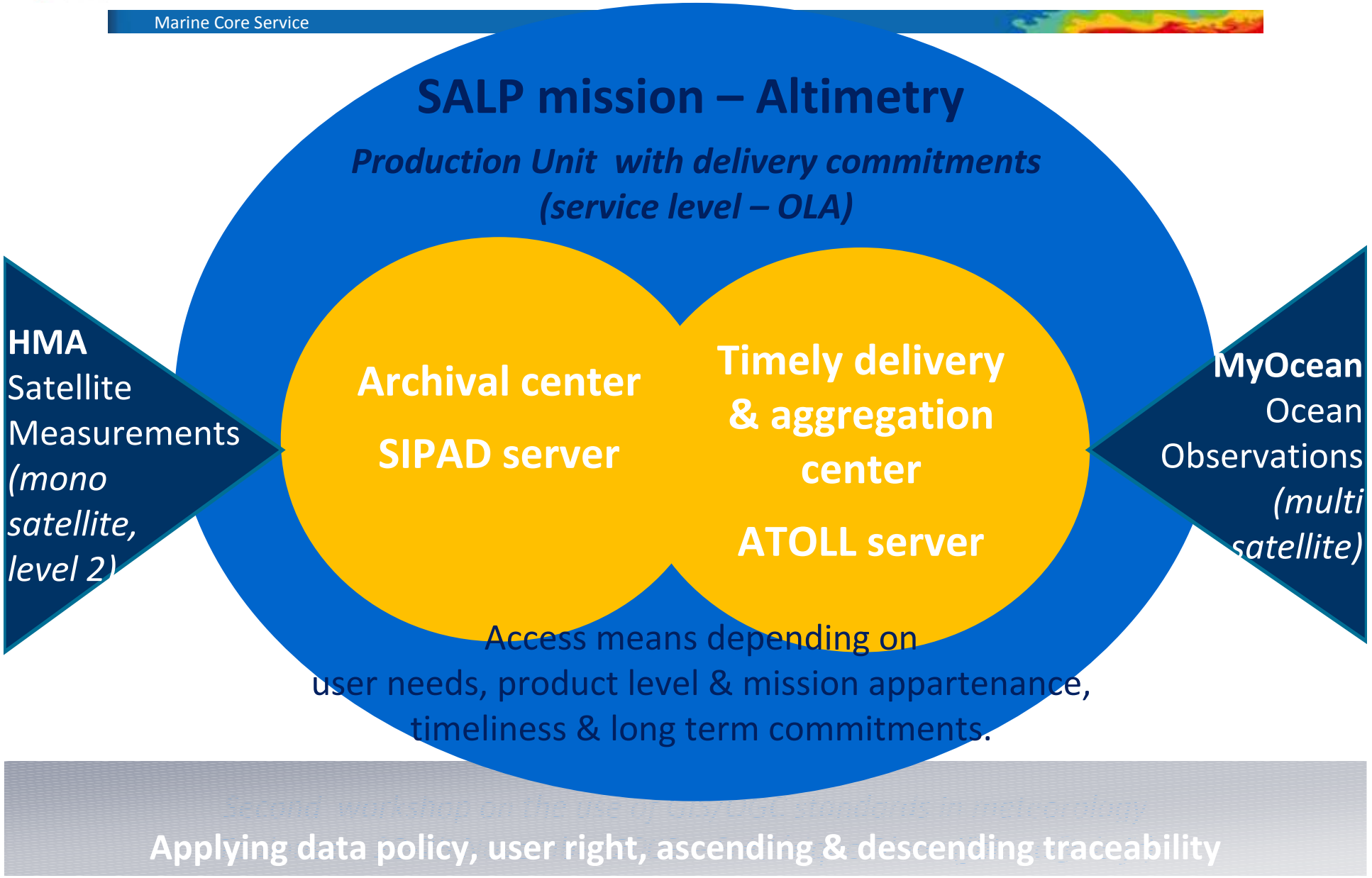
- **A single « portfolio »** of products
  for the whole pan-European **MyOcean marine core service**
- A **unique reference definition** , regularly updated
  shared by users, producers and stakeholders,
- **Product characteristics :**
  product source, ocean product properties and accuracy, coverage and resolution,data structure, availability
- **Delivery characteristics :**
  delivery interface , availability, timeliness & latence time; accuracy; format, …
- **A standard readable description**
  (Inspire profile + use of ontologies and standard names)

Data management & sustanability of systems

Marine Core Service



From user request to data delivery

Marine Core Service

1. User request

- Ocean currents
- Gridded maps
- Mediterranean sea products,
  multimission synthesis
- 10 years
  and subscription for timeseries
- Gilbratar straight extraction
- Numerical data needed

2. Request analysis

9 years distributed on archival server
– delayed time products –

Last year distributed on line via Thredds server
– delayed time products –

Timely delivery distributed online via Thredds server
– near real time products ,
daily update of weekly data (past) –

3. Transmit orders

< Archival server
(in once or in sandbox till readiness)

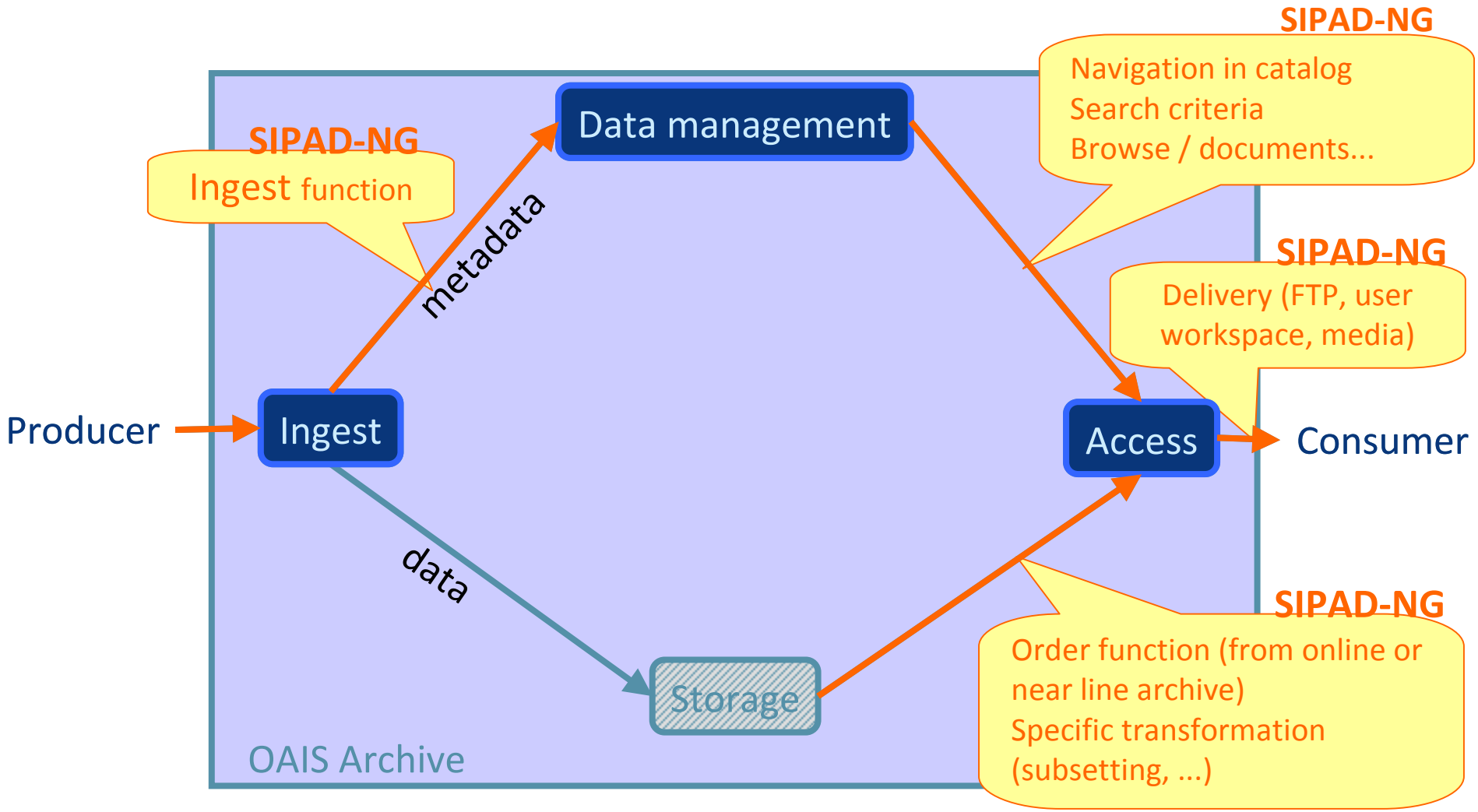
< An alert send for the last year product readiness

< An alert send each week, for updatred delivery

CNES SIPAD-NG functional architecture

Reference to the OAIS (Open Archival Information System) functional model
(http://public.ccsds.org/publications/archive/650x0b1.pdf)

Marine Core Service



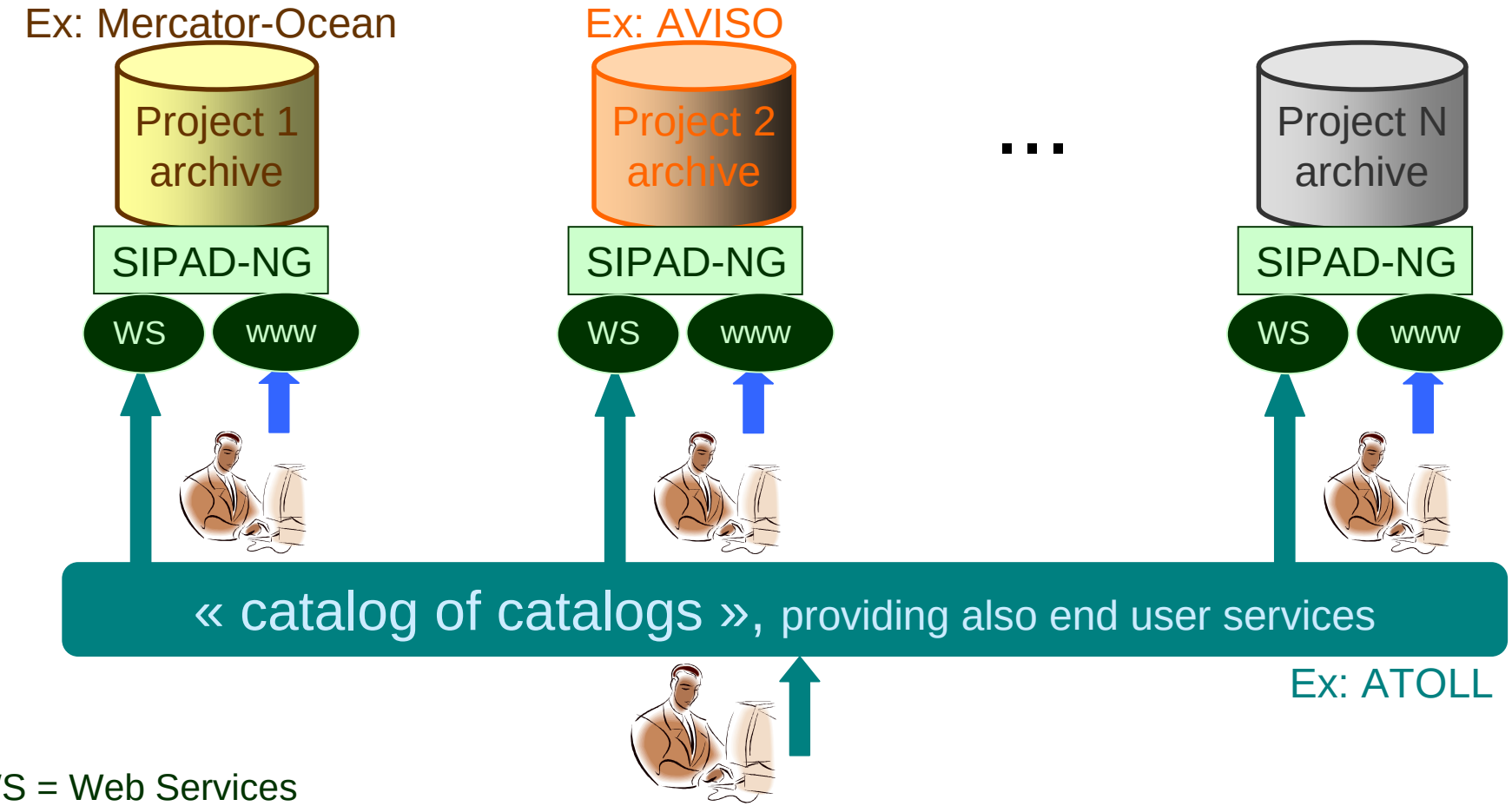
NG to a project

2 ways of accessing archives

Marine Core Service

direct access to archive via the SIPAD-NG catalog

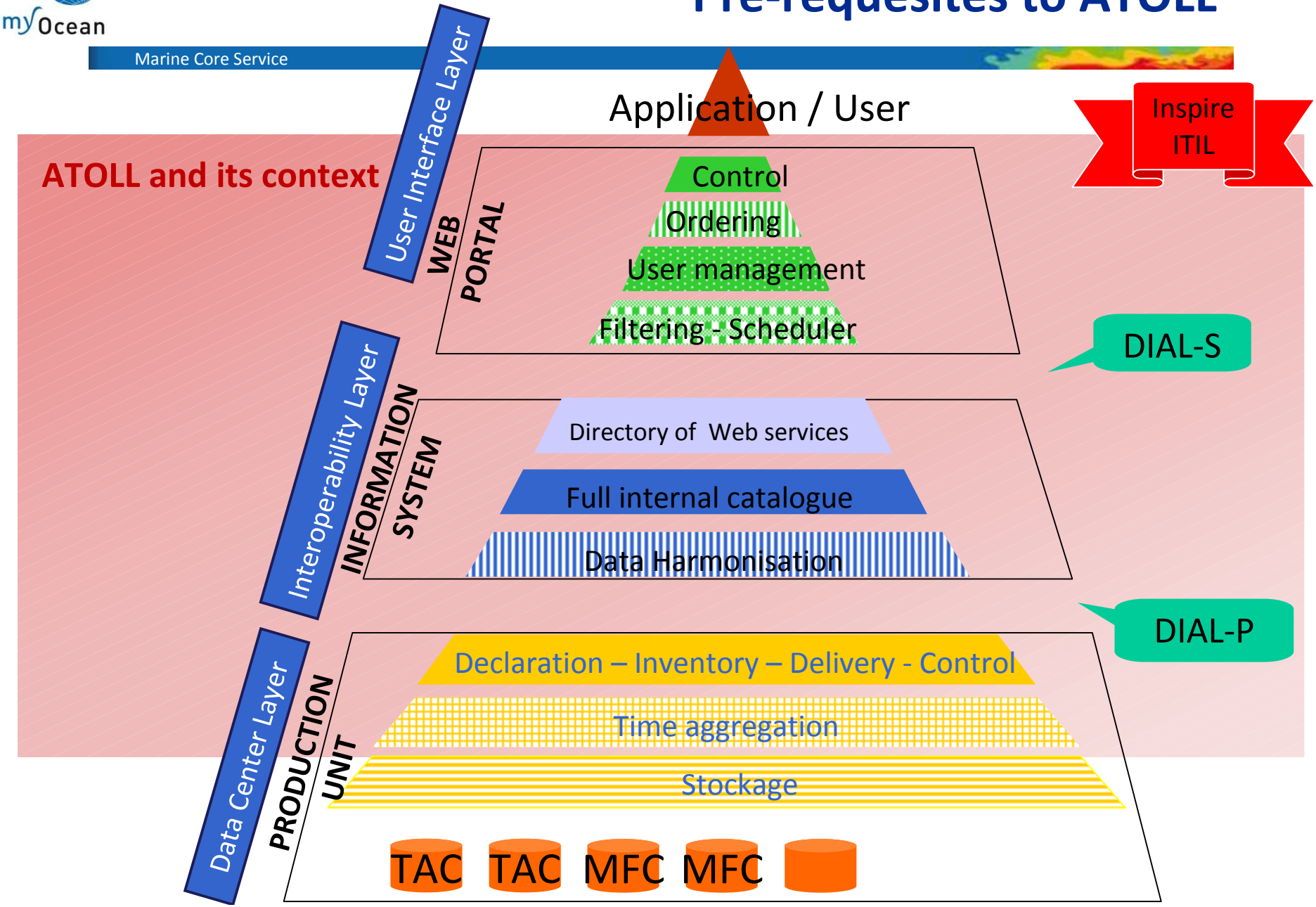
access to a « catalog of catalogs » which accesses to archives via Web Services (SIPAD specific, HMA compliant, ...)



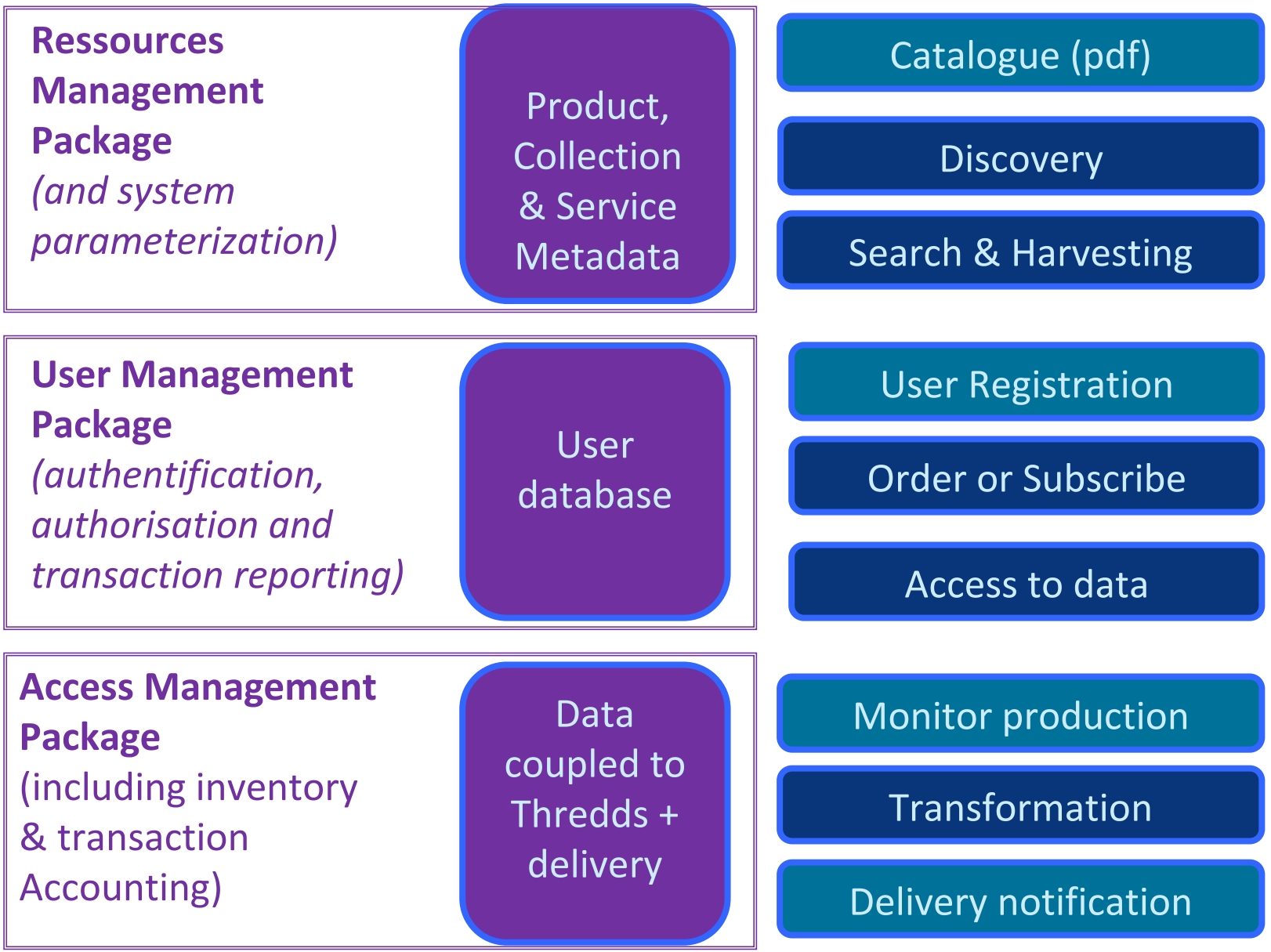
WS = Web Services

Pre-requesites to ATOLL

Marine Core Service



ATOLL functional breakdown



[DIAL-P] Data and metadata

Marine Core Service

Data Type	Encoding*	Access Interfaces
Satellite swath	NetCDF	FTP SIPAD
Gridded data (model outputs, satellite)	NetCDF Climate and Forecast (CF) conventions	FTP Opendap/WCS/WMS** SIPAD

** Harmonisation underwork (netcdf 3 / 4, CF 1.4, CSML feature type)*

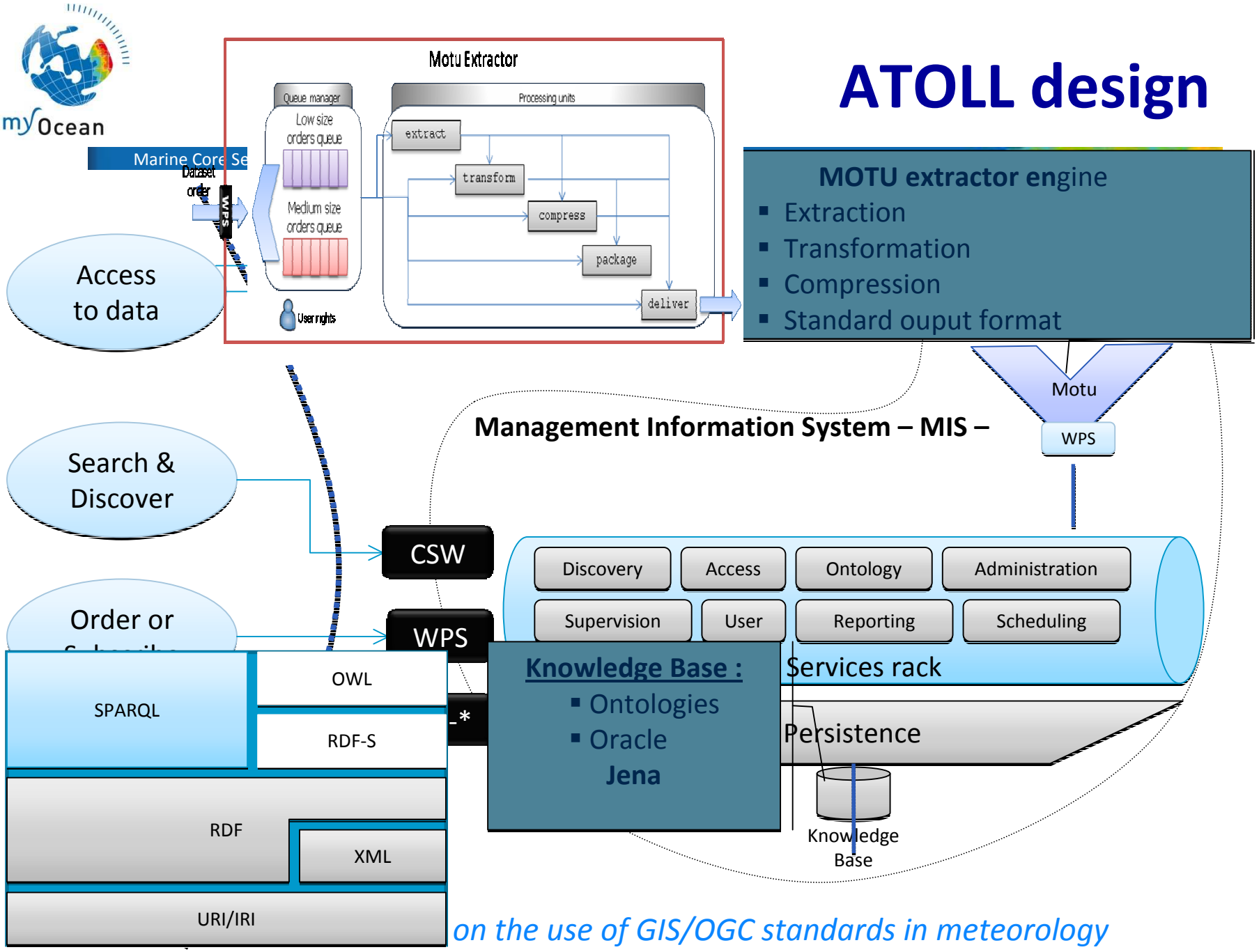
*** Thredds data server (aggregation of time parameter associated to subsetting capabilities: parameters, space, time and depth)*

Inspire ISO profile* (**ISO/TC211 19115,19119,19139**) (statistic & dynamic information)	Ontology & vocabulary web services** : **SKOS vocabularies** **+ URIs , GEMET, SEADATANET**
+ Inventory module for update of the dynamic information	+ User module for transaction report

*** tested/validated by Humboldt** Inspire implementation project , **cooperative action in an ocean international framework**

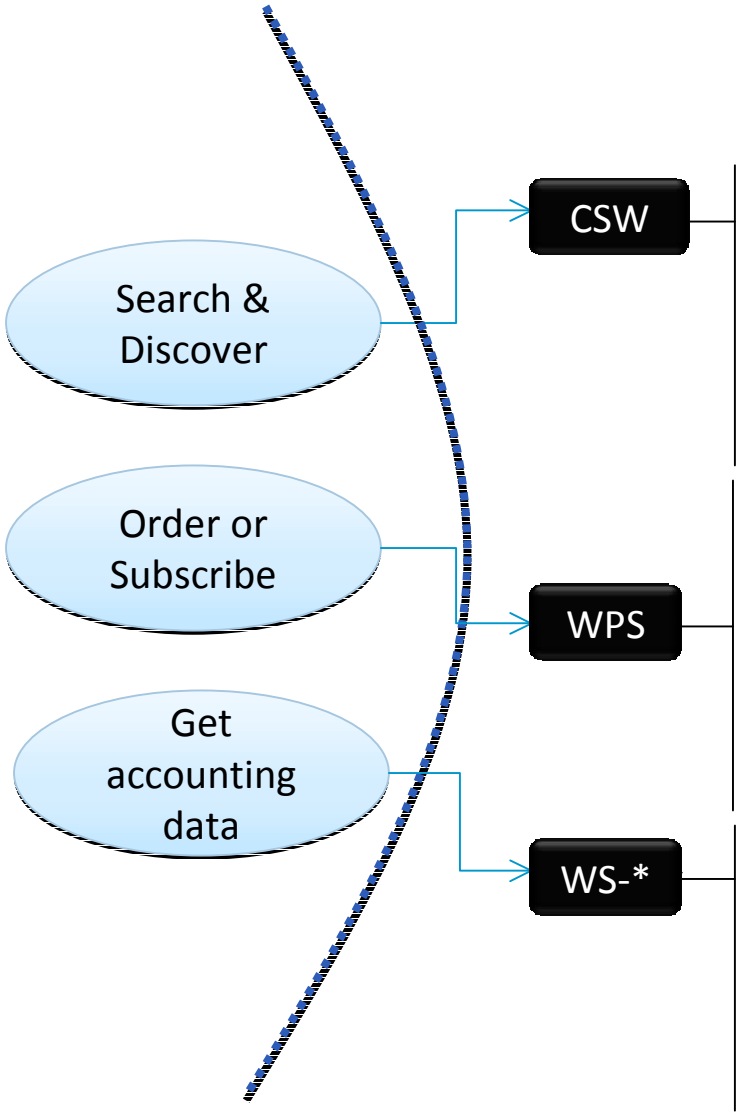
**** english language**

ATOLL design



[DIAL-S] interoperable interfaces

Marine Core Service



OGC CSW-T (2.0.2) interface

- ebRim application profile
- catalogue of ISO 19115 product metadata
- catalogue of ISO 19119 service metadata

Constellation SDI

OGC WPS (1.0.0) interface

- order or subscribe a dataset
- asynchronous mode
- geographic, vertical, variable or subsetting
- delivery size estimation

Deegree

REST WS-* interface

- access to resources
- multiple representations
- search interface (SPARQL)

Jersey

ater

ons

➔ Geographical bounding box / Time window

A basic supervision function to monitor product timeliness

Inventory on timeliness: Merged NRT MSLA motu-ftp-aviso

Resource	Merged NRT MSLA
Download Service	motu-ftp-aviso

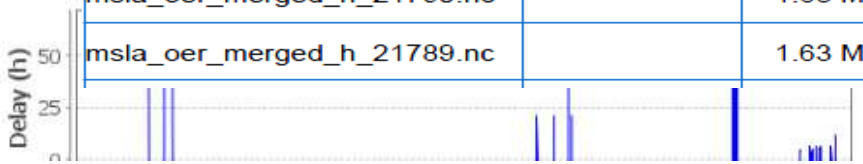
Metadata description

Variables	UNAVAILABLE
Geospatial Coverage	south="81.97" north="81.97" west="359.67" east="359.67"
Format	NetCDF
Product State	Operational
Product Visibility	ON LINE
Product Level	UNAVAILABLE

Production details

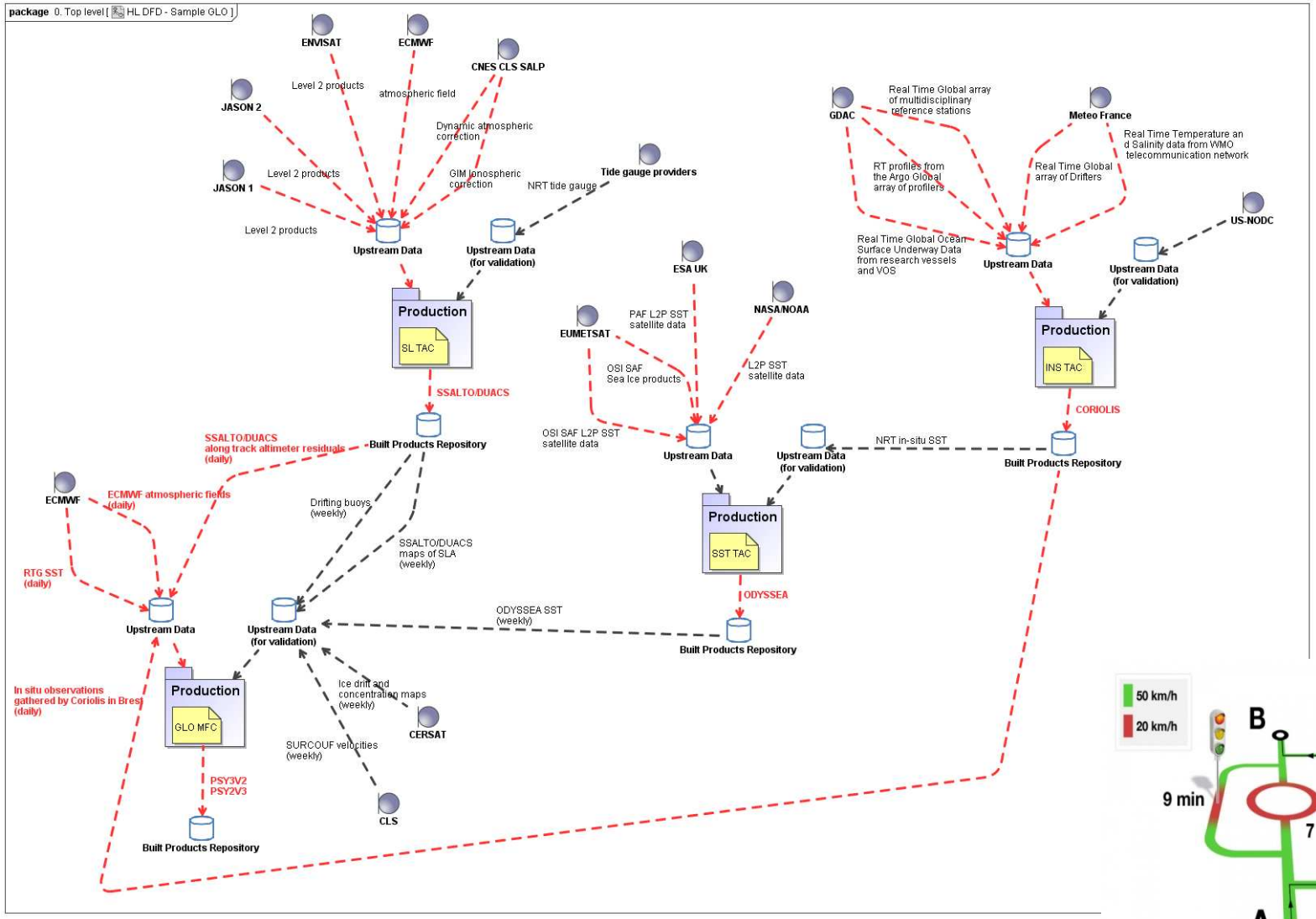
Expected time coverage	2001-08-22T00:00:00 / 2009-09-01T23:59:59
Effective time coverage	2001-08-22T00:00:00 / 2009-09-01T23:59:59
Report time coverage	2001-08-22T00:00:00 / 2009-09-01T23:59:59
Last production date	2009-10-01T06:16:00
Reliability of update	95.5 %
Disk space	2617.66 Mo
Files number	1585

Name	Model Prediction	Weight	Time coverage	Expected update	Effective update
msla_oer_merged_h_21793.nc		1.63 Mo	2009-09-01T00:00:00 2009-09-01T23:59:59	01/10/2009 03:00:00	01/10/2009 06:16:00
msla_oer_merged_h_21792.nc		1.63 Mo	2009-08-31T00:00:00 2009-08-31T23:59:59	30/09/2009 03:00:00	29/09/2009 23:21:00
msla_oer_merged_h_21791.nc		1.63 Mo	2009-08-30T00:00:00 2009-08-30T23:59:59	29/09/2009 03:00:00	29/09/2009 02:13:00
msla_oer_merged_h_21790.nc		1.63 Mo	2009-08-29T00:00:00 2009-08-29T23:59:59	28/09/2009 03:00:00	28/09/2009 14:59:00
msla_oer_merged_h_21789.nc		1.63 Mo	2009-08-28T00:00:00 2009-08-28T23:59:59	27/09/2009 03:00:00	26/09/2009 23:27:00



) – *Frédérique Blanc (fblanc@cls.fr)*

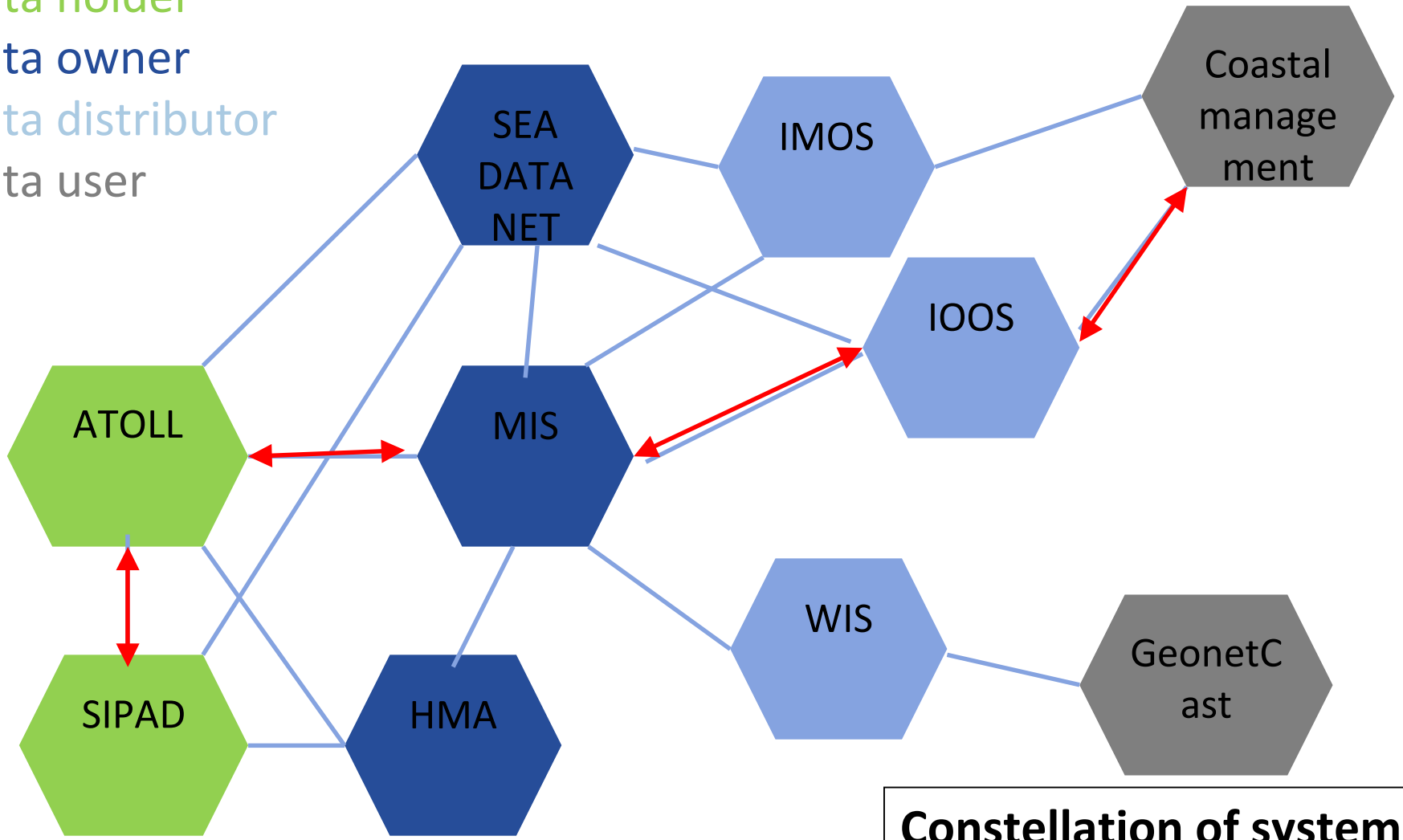
An advanced supervision function to monitor product dependencies



[GMES] The traceability requirement (ascending & descending)

Marine Core Service

Data holder
Data owner
Data distributor
Data user



Constellation of systems

[GMES] The traceability requirement (ascending & descending)

Marine Core Service

Data User

Data distributor

Data owner

Data holder

Where does this product comes from ?
(in the value chain)

Product origin
data server,
owner,
relay server
relay service

Who does what with which product ?

User detailed request
user information
data request parameters
transaction information

External provider

Constellation of systems