Status of GSE - GMES Services Element

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overview

Introduction – GSE as part of GMES

1. GSE consolidation phase

2. GSE and the Initial Services

3. Stage 2 GSE implementation

4. how to move to service sustainability

GMES Objective

"Europe needs to establish an autonomous capacity for Global Monitoring of Environment and Security by 2008"

Global
Monitoring for
Environment and
Security

European Commission

European Space Agency

European and national user agencies

European and national space organisations
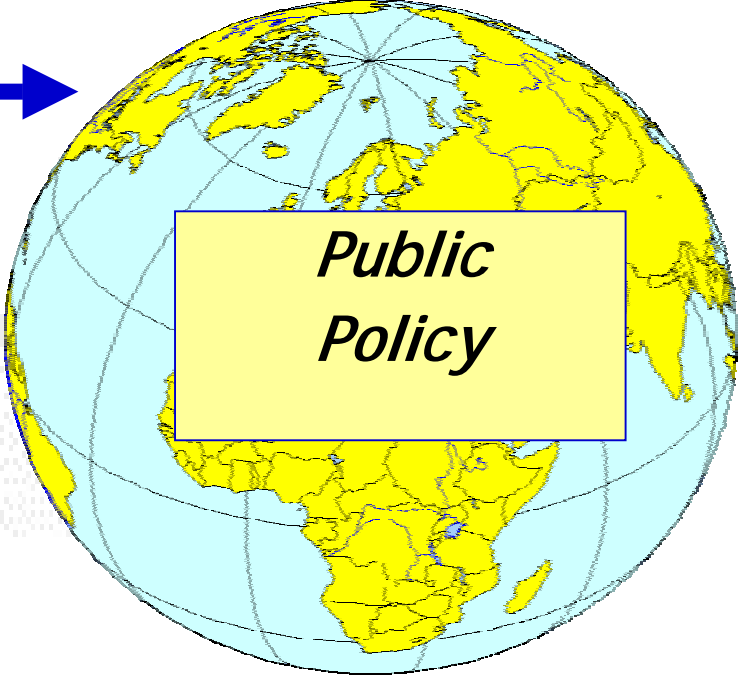
Industry

R&D institutions

and other partners

GMES Partnership

GMES builds upon existing capacities and expertise

Halo workshop Nov 04

European Space Agency
Agence spatiale européenne

What is GMES?

Space observing systems

Data integration & information management

User oriented services

In-situ observing systems

Solutions →

← **Needs**

Public Policy

Governments, EU
International Organisations
Regulatory Bodies
Industry
General Public

1. GSE Consolidation

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GMES Services Element Objectives

Geo Data	Information	Services	End-users
EO Met & R&D satellite data, remote sensing, in-situ networks	GIS, Processing Data Fusion, Forecast Model	Operational Earh System Monitoring Forecasting	Citizens EU Policy Regulation body Env agency
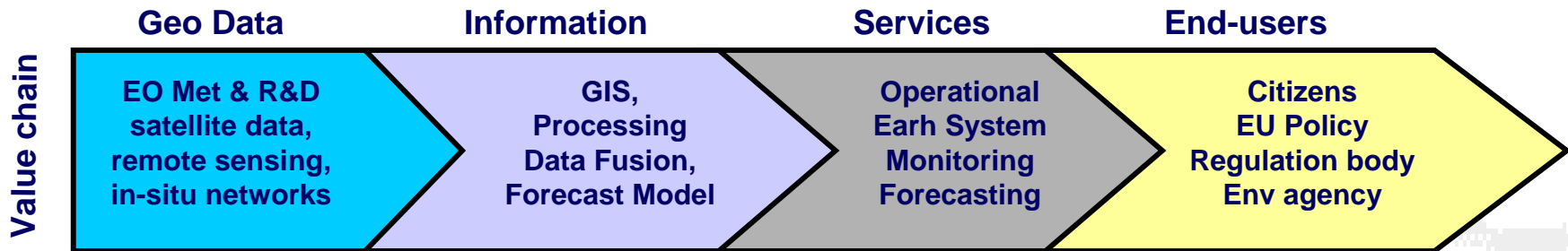
Value chain

Make the end-to-end EO value chain more <u>effective</u> by:

- *Delivering information (not data) to end-users (e.g. tactical / strategic)*

- *Organising the supply and service side*

- *Federating the demand (e.g. user-pull, not technology pushed)*

- *Establishing a sustained dialogue with end-users (e.g. policy body)*

GSE aims to close the loop between operational results and definition of future systems

Cardinal Requirement

- ## Complete, clear & convincing answers

    What information is needed?

    What services can be provided?

    What are the benefits for Europe's Citizens?

    Do the benefits justify the costs

- ## Geographic scope

    Global; continental; regional; national; local
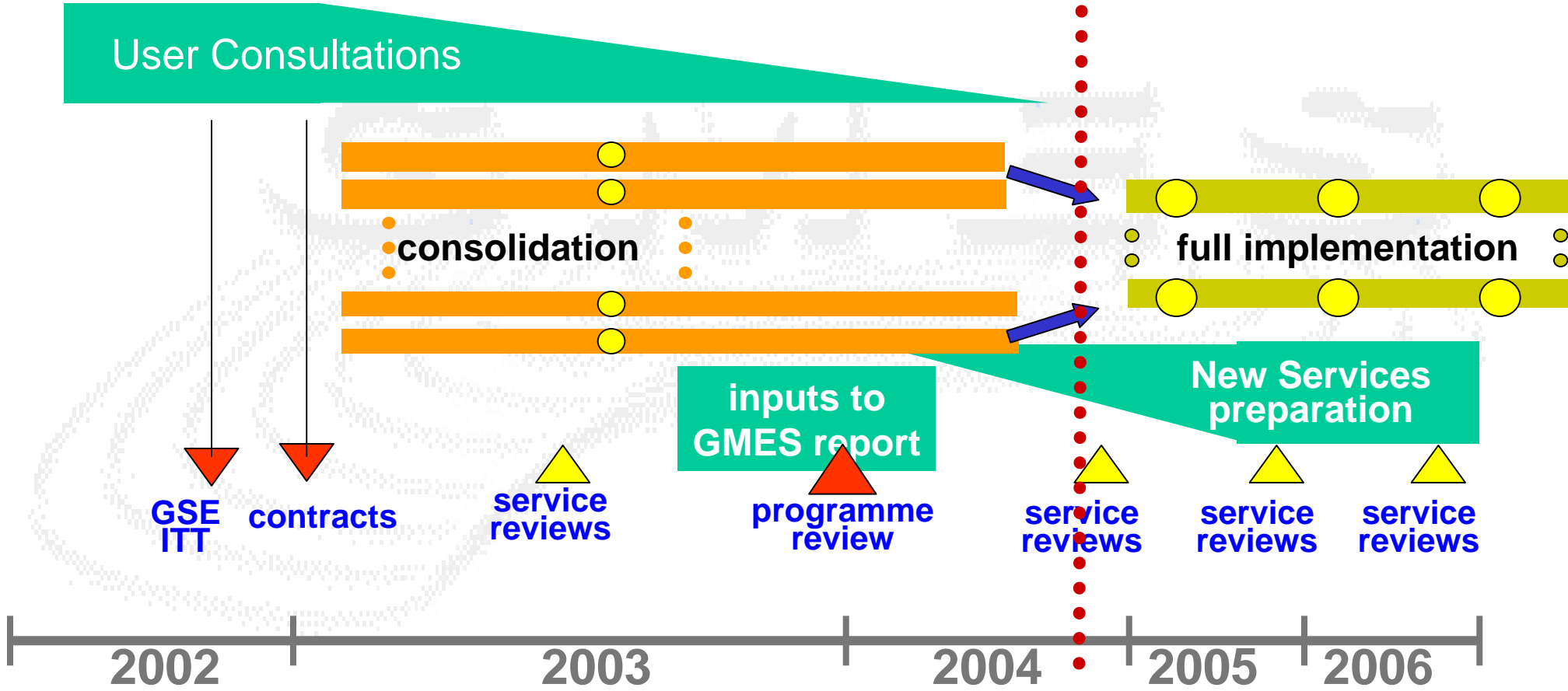
- ## Timescale

    Present + 10 years

Consolidate offering

- ## Build on existing capabilities:
  - Monitoring techniques

  - Models & data assimilation tools

  - Processing delivery infrastructure

- ## Pan-European partnerships:
  - Complementary service providers (EO, in-situ, non-geophysical, etc)

  - Infrastructure owners (ground stations, satellite operators, telecoms networks, models, monitoring networks etc)

GSE Programme sequence

User Consultations

consolidation

full implementation

inputs to
GMES report

New Services
preparation

**GSE
ITT**

contracts

**service
reviews**

**programme
review**

**service
reviews**

**service
reviews**

**service
reviews**

2002   **2003**   **2004** **2005** **2006**

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GSE Consolidated Services

- **CoastWatch**
- **ROSES**
- **ICEMON**
- **Northern View**
- **Forest Monitoring**
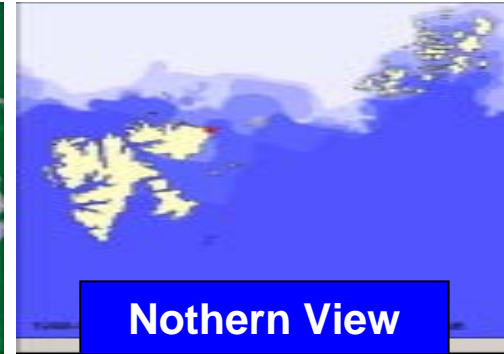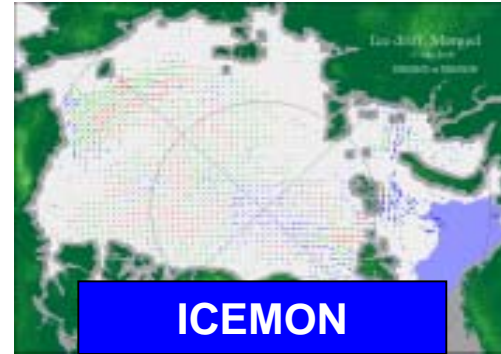- **SAGE**
- **Risk-EOS**
- **TerraFirma**
- **GMES Urban Services**
- **Food Security**
- **Respond**
- **PROMOTE**

GSE **Consolidated Services**

CoastWatch

ROSES

ICEMON

Nothern View

RISK-EOS

Forest Monit.

SAGE

TerraFirma

GUS

RESPOND

Food Security

PROMOTE
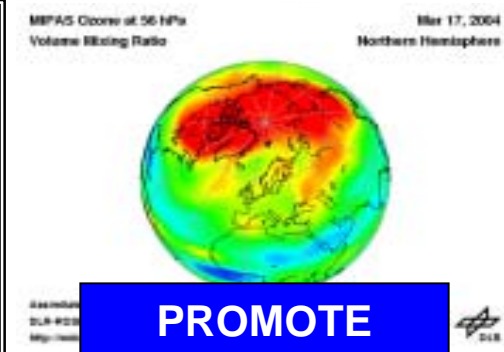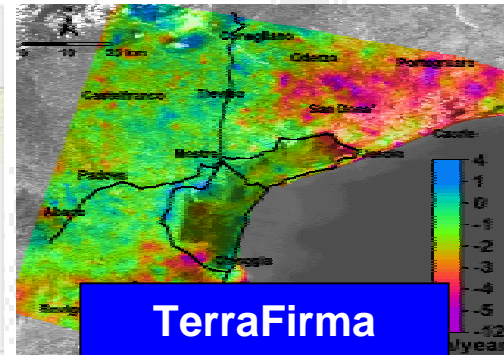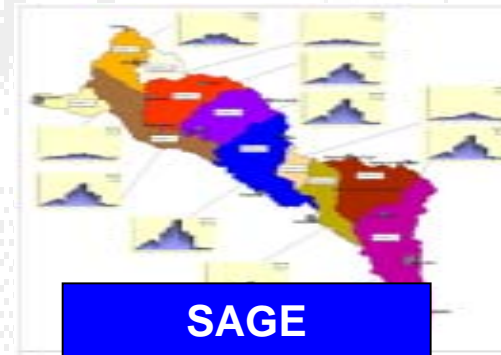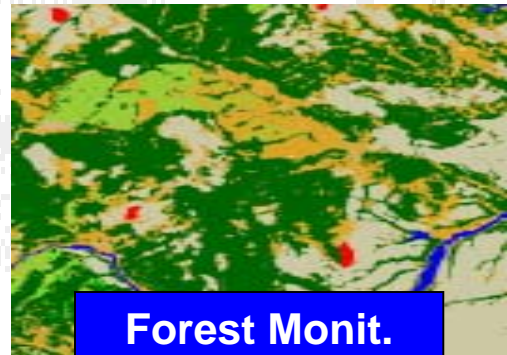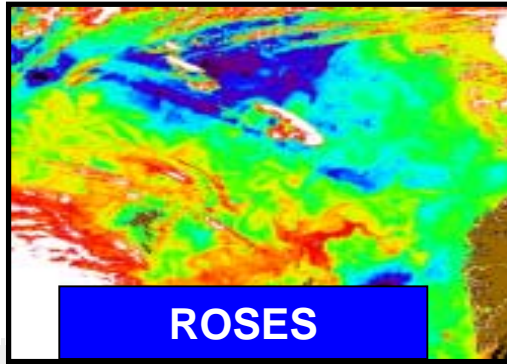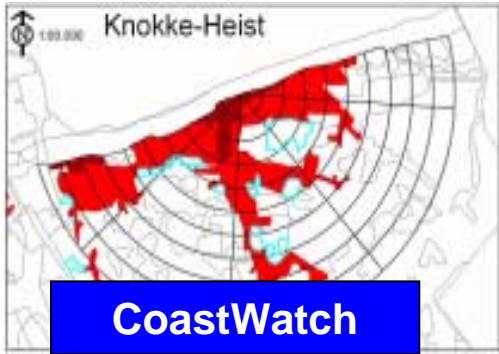
Examples of delivered GSE
Consolidated Services

Consortium:

CoastWatch

ROSES

ICEMON

Northern View

Forest Monitoring

SAGE

Urban Services

GMFS

RISK-EOS

TerraFirma

Service achievements

48 services offered by first 10 consolidation consortia

92 service chains in place by summer 2004

224 users delivered with services by summer 2004

(status as Summer 2004)

Marine & coastal examples

AIS

Buoy drift data

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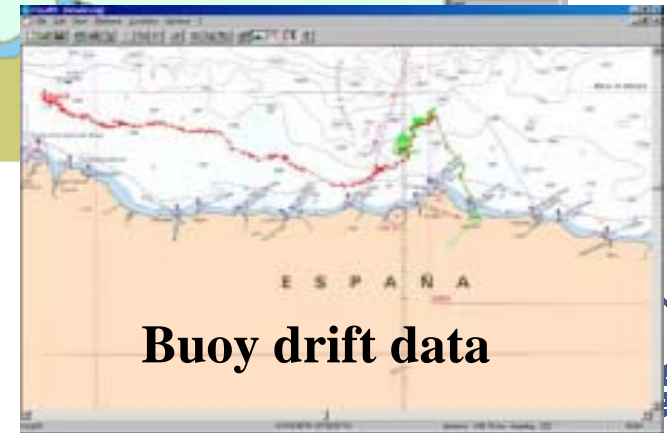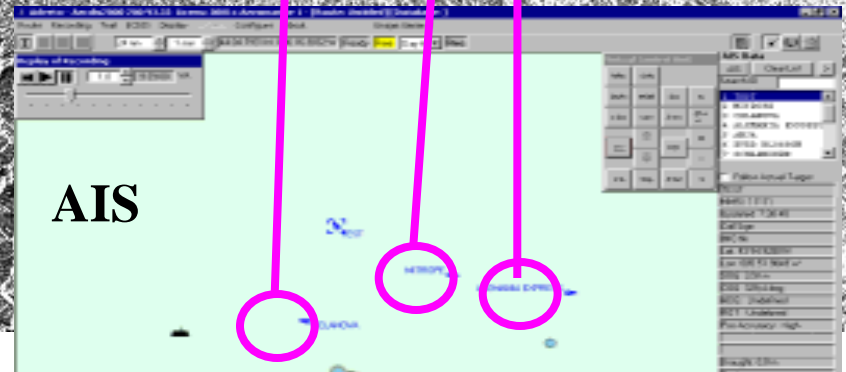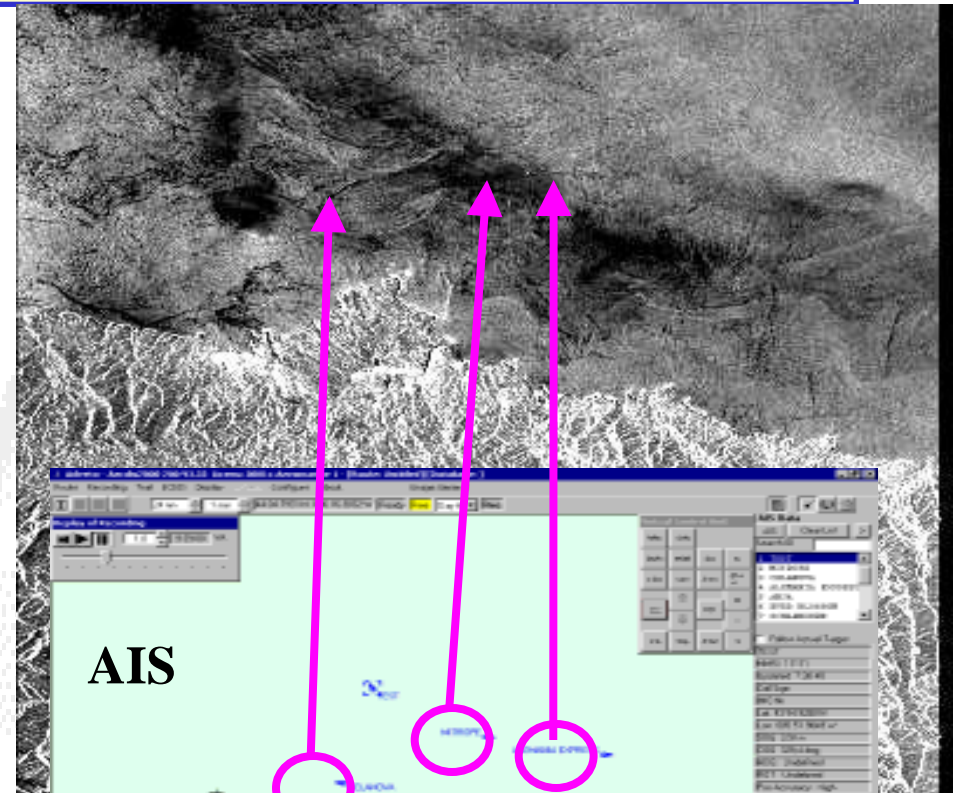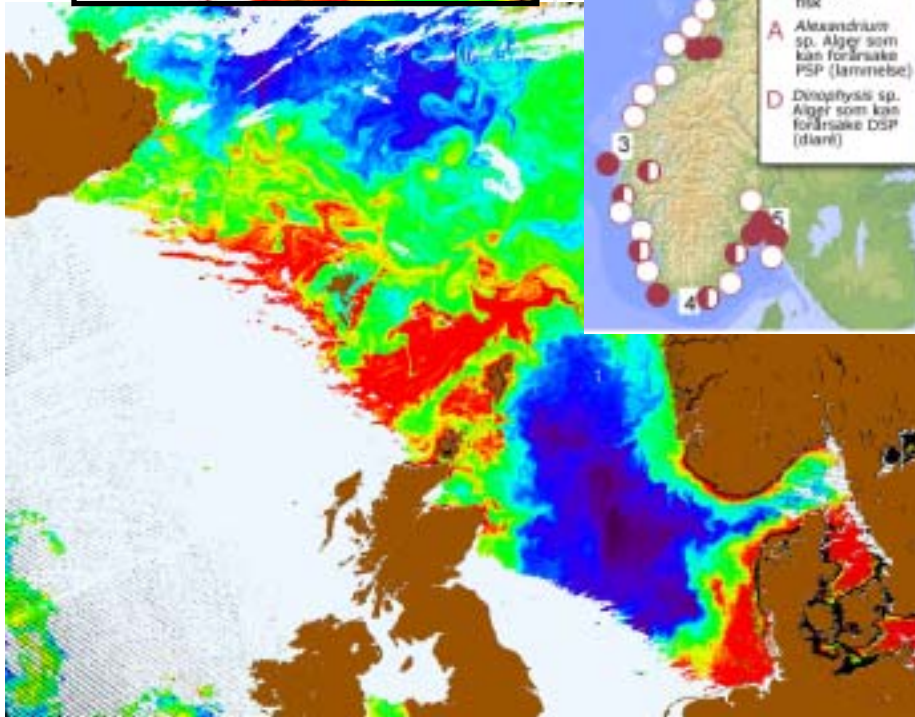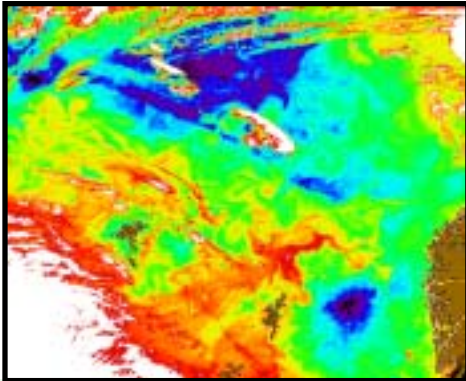
CoastWatch

Services	2003	2004
Coastal Indicator Service	●	●
Coastal Land Cover and Land Use Change	●	●
Water quality Monitoring	●	●
Coastal Flooding Service	●	●
Cwave Exposure Monitoring	●	●

ROSES

Services	2003	2004
Algae Bloom Monitoring	●	●
Oil Spill Monitoring & Impact Assessment	●	●

Polar examples

Admiralty Inlet, July 11, 2003

Legend
— Floe Edge
— Moving Ice
Open Water
Land Fast Ice
30 Year Average

Note:
No IPs on ICE …
2 GSE …

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ICEMON

Services	2003	2004
Global Ice Type And Ice Drift Products	●	●
High Resolution Ice charts (Svalbard area)	●	●
Ice Thickness Map (Baltic Sea)	●	●
Ice Map (Northern Sea Route)	●	●
Seasonal Ice Classification (Svalbard)		●
Ice Forecast Products (Baltic Sea)		●
Regional Climate Products		●

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Northern View

Services	2003	2004
Glacier Monitoring	●	●
Ship / Iceberg Service	●	●
Sea Ice Monitoring (Floe Edge)	●	●
Marine Contaminant Discharge Service	●	●
Land Monitoring	●	●
Sea Ice Monitoring (Near Ice Shore Complex)		●
River and Lake Ice Monitoring		●

GSE Web Sites

Urban Services	http://www.gmes-urbanservices.com
Forest Monitoring	http://gafweb.gaf.de/gse/
SAGE	www.gmes-sage.info
Risk EOS	http://www.risk-eos.com
TerraFirma	http://www.terrafirma.eu.com
GMFS	http://www.gmfs.info
CoastWatch	www.coastwatch.info/home
ROSES	http://roses.cls.fr
ICEMON	http://www.icemon.org
Northern View	http://www.northernview.org/
RESPOND	http://www.respond.eu.com/
PROMOTE	http://www.knmi.nl/samenw/promote/

GEO Benefits v GSE Services

GEO Identifified Benefit	ROSES	CoastWatch	Northern View	ICEMON	SAGE	Forest Monitoring	Risk EOS	GMFS	Urban Services	TerraFirma	Promote	Respond
reducing loss of life & property from natural & human induced disasters							■	■		■		■
understanding environmental factors affecting human health & well being	■	■	■		■	■			■		■	
improving management of energy resources						?			?			
understanding, assessing, predicting, mitigating and adapting to climate variability & change			■	■							■	
improving water resource management through better understanding of the water cycle					■							
improving weather information, forecasting & warning												
improving the management and protection of terrestrial, coastal& marine ecosystems	■	■	■	■	■	■			■			
supporting sustainable agriculture and combatting desertification					■			■	?			
understanding, monitoring and conserving biodiversity		■	■	■	■	■			?			

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2. GMES Initial Services and GSE

Transition to operational, sustainable services

- a systematic and practical application of subsidiarity

- the gradual implementation of GMES, in an evolutionary and open way

- an involvement of all levels of industrial service providers

- the contribution of **research** to the improvement of services

- implementing a pilot phase of GMES by the end of 2005, based on a limited number of "**initial services**"

GMES Initial Services

- Preliminary picture of what GMES is

- Concrete examples of GMES added-value

- Increase awareness & mobilize decision-makers on GMES

- Starting-point for other GMES activities eg: **socio-economic & architectural studies**

- Based on: availability, maturity, reliability, utility, sustainability

- Via the coordinated results of on-going & planned

- **Service activities under EC & ESA Programmes**

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GSE & GMES Initial Services

	Coastwatch	ROSES	Risk EOS	TerraFirma	PROMOTE	SAGE	Urban Services	Forest Monitoring	Food Security	Icemon	Northern View	RESPOND
Marine and coastal environment	■	■										
Risk management (flood & fires)			■									
Risk management (land motion)				■								
Air Pollution (local to regional scales)					■							
European land-use / land cover state & changes	■					■	■					
Forest Monitoring								■				
Food Security Early warning									■			
Global Change Issues										■	■	
Maritime Security (inclduing sea ice-monitoring)										■		
Humanitarian Aid												■

3. GSE next stage : progressive implementation

Next Stage of GSE
Scaling-up Services: 2005-2007

- **Three European-Scale Portfolios** (Large)
    - Coastal & Marine Environment Services
    - Land Information Services
    - Polar Environment Services

- **Four Regional-Scale Portfolios** (Medium)
    - Forest Monitoring Services
    - Flood & Fire Risk Management Services
    - Geo-hazard Risk Management Services
    - Food Security Information Services in Africa

- **Follow-on actions to be defined in 2005**
    - Humanitarian Aid, Atmospheric Monitoring
    - From PROMOTE & RESPOND consolidation results

GSE & GMES Initial Services

	marine & coastal environment	land environment	polar environment	flood & fire risk mgmt	forest monitoring	geohazard risk mgmt	food security
Marine and coastal environment	■	□	□				
Risk management (flood & fires)				■	□		
Risk management (land motion)						■	
Air Pollution (local to regional scales)							
European land-use / land cover state & changes		■	□				
Forest Monitoring					■		
Food Security Early warning							■
Global Change Issues	□	■	■		■		
Maritime Security (inclduing sea ice-monitoring)	□		■				
Humanitarian Aid							□

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Example – marine & coastal

EMSA   **EU DGs**   **EEA**   **Int'l conventions secretariats OSPAR, Helsinki, MAP**

Coast guards   **Port authorities**   **Coastal Environment managers**   **environment agencies**   **Health & safety agencies**   **Food/ fisheries agencies**

Airborne surveillance operators

AIS

VDS

VTMS operators

GS operators

Systematic monitoring and detection for ALERT   **Decision support information**   **Reference DB administration**   **Coastal Management information**

In-situ data collection networks

NRT radar imagery   NRT optical imagery   Meteo forecast   Ocean state forecast

Satellite Space operators

Halo workshop Nov 04

Meteo models operators   Ocean model operators

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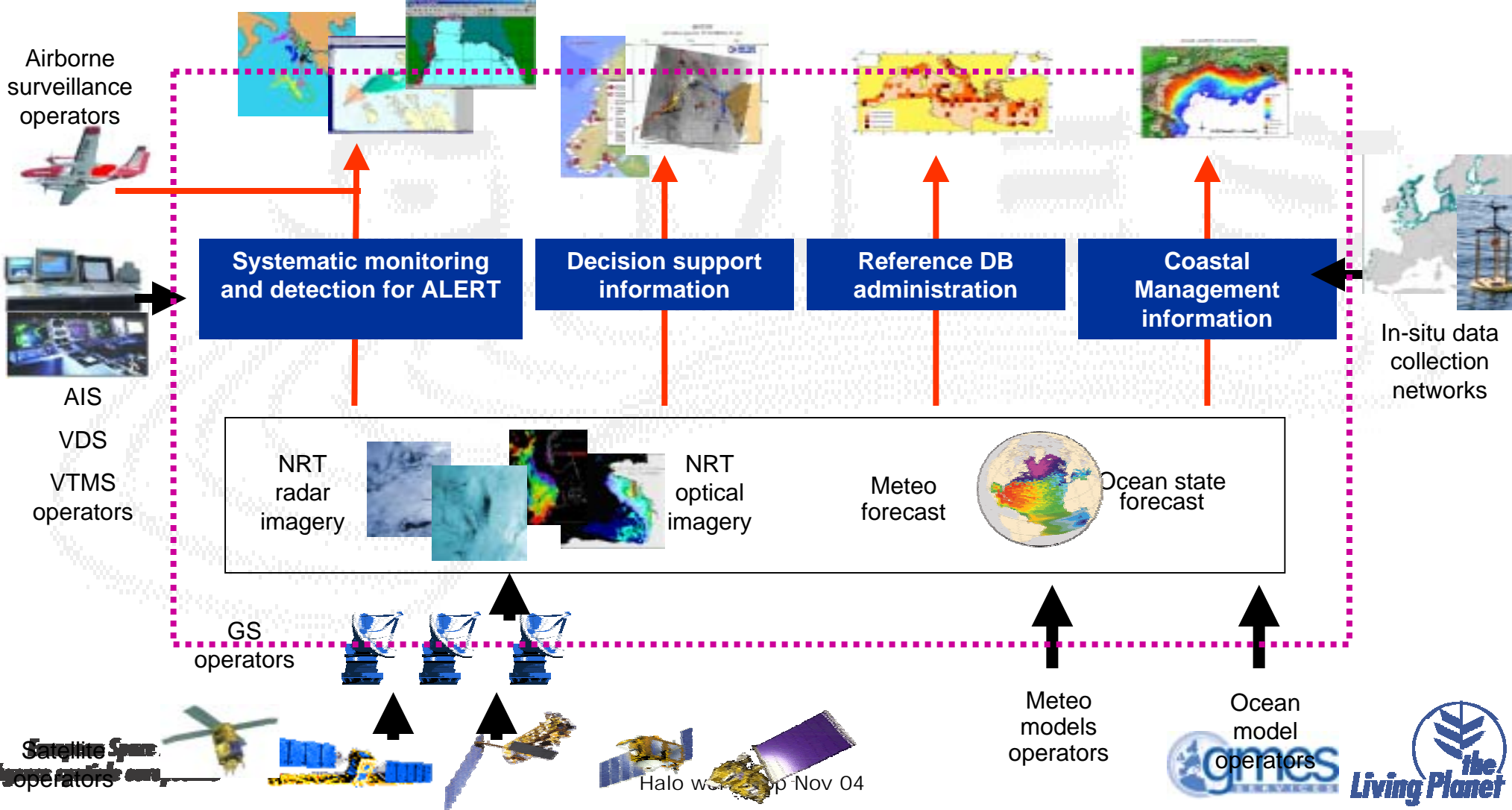
Objectives

- Cardinal requirement – Goal of each contract is to:
  - **Demonstrate progress towards long-term sustainability for a set of GMES services**
  - **Deliver services and benefits to users on progressively larger scales**
  - **Establish a durable, open, distributed GMES Service Provision Network**
  - **Establish common standards and working practices for GMES Services**

- Sustainable means:
  - **Available**
  - **Reliable**
  - **Affordable**

- **Service network management** separate from ESA project management requirements

- Service network shall establish a **User Executive Body** responsible for:

  - Review of activities completed during current operations period

  - **Endorsement of activities proposed** for next operations period (service delivery, service portfolio upgrade, validation procedures, standards implementation, common infrastructure etc)

- Service **delivery and validation/qualification** is major task to be executed

How to demonstrate progress to sustainability

- **Demand side**
  - **User management of service** procurement process which means SLA migrates progressively to:
    - External services contract (outsourcing)
    - Licence and maintenance contract (in-house)
  - Service uptake greater than 50% of target market
- **Supply side**
  - **Service coverage expands** to address all major areas of interest to the target user segments
  - Progressive **reduction in unit costs** for each service
  - Commercial revenue for delivery of services based on capabilities developed within GMES
  - Development of **common standards** for information generation and service delivery
  - **Joint exploitation** of common capabilities & infrastructure
- **Common elements**
  - Contribution to service delivery costs from non-R&D budgets
  - User and intermediaries engaged in effective lobbying for continuity of data sources

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Users in the driving seat: SLA evolution

	Service provider	User
Step 1	Service promising but not suitable for immediate operational uptake	Interested but not committed Needs to build understanding
Step 2	Service customised to requirements based on user feedback No proven compliance with accepted working practices/ standards/validation norms	Invests in-kind contribution: resources, knowledge & data to validate service Receives service at discount price in return
Step 3	Service customised to requirements based on user feedback No proven compliance with accepted working practices/ standards/validation norms	Starts integrating service within own operational practices Starts promoting service & bringing in other users from own community – still receives service at discount price in return
Step 4	Service validation process complies with user standards & working practices First year of operating with standard production chains	lobbying for complementary funding Increased role in management of service procurement Some contribution to service cost
Step 5	Routine delivery costs reduced to max extent possible First trials of in-house operations or outsourced service provision Approaching sustainability	Support access to complementary funding Increased role in management of service procurement increased contribution to service cost

VALUE STATEMENT => go/no-go

Service fit for purpose

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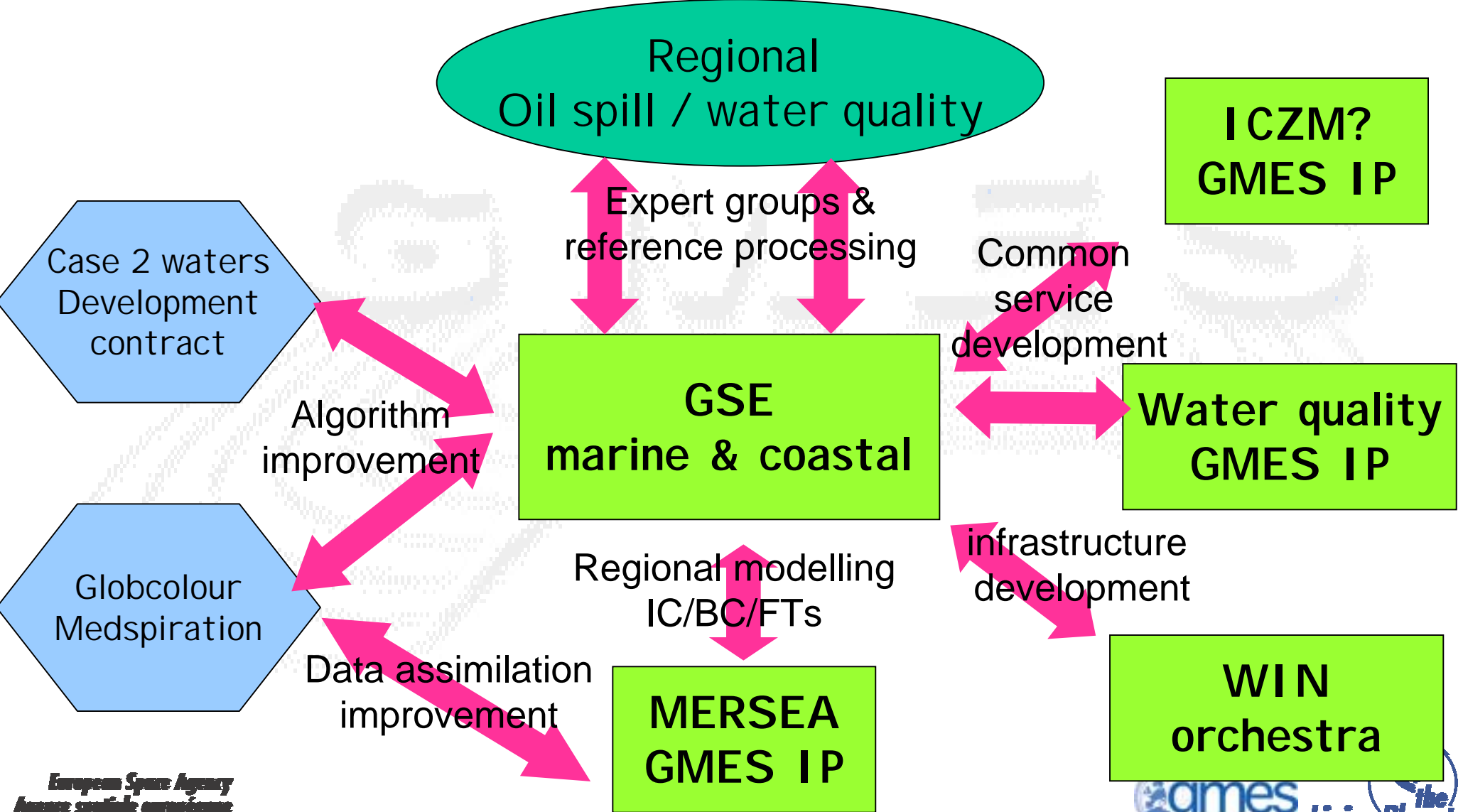
ESA's Expectation

- **Evidence of commitment to the proposed implementation by relevant major national, regional and international user organisations**

- **Credibility of proposed strategy and plan to achieve sustainable service growth and evolution during stage 2**

- **Credibility of consortium plans to attract complementary funding from non research sources**

- **Proven ability to assure continuity of services from stage 1 to stage 2**

- **Involvement of user-organisations in guiding and evaluating the implementation of the services**

- **Involvement of relevant user organisations as a vehicle for user federation and service distribution**

ESA's Expectation (cont.)

- **Adequacy of access to relevant EO, in-situ, and socio-economic data sources**
- **Availability of appropriate modeling, assimilation and data integration tools**
- **Efficiency of utilization and integration with relevant existing service-provision infrastructures**
- **Commitment of dedicated operational infrastructure and staff**
- **Adequacy of proposed service quality control and validation processes**

4. How do GSE contracts link with FP6 activities

Coordination mechanisms

IP
Integrated Project
(R&D + demo)

Exchange Information

Align Schedules

Joint Meetings or reviews

Access Models (Hind/now/forecast)

Transfer Algos & Software (IPR)

Validate Products

Test New Services

Agree Common Standards

Common Approach to users

G S E

Definition of common terminology & Services Portofolio

NoE
Networks Of Excellence

Research Issues

Scientific Advice & Review

New Methods

G S E

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Conclusions

- ESA will start expanded activities for:

  seven portfolios in Q1 2005

  Humanitarian aid and atmospheric pollution later in 2005

- These activities will **demonstrate progress to sustainable** service operations during the contract lifetime

- The contract shall be managed to **ensure effective cooperation** and exchange between ESA and EC projects – **no more isolated developments**

- The user shall be placed very much in the driving seat while maintaining a standard ESA project management approach

GSE References

http://earth.esa.int/gmes/Services.html

Available Documents (PDF format)

- **GSE Policy Foundations Review**

- **GSE Service Prospectus**