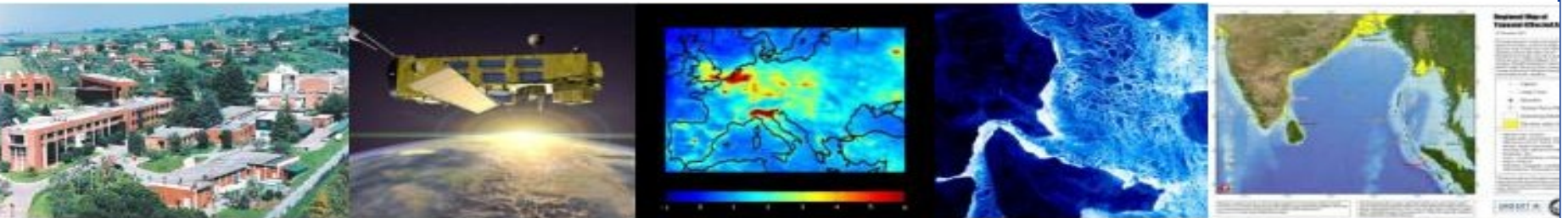


# GMES Services



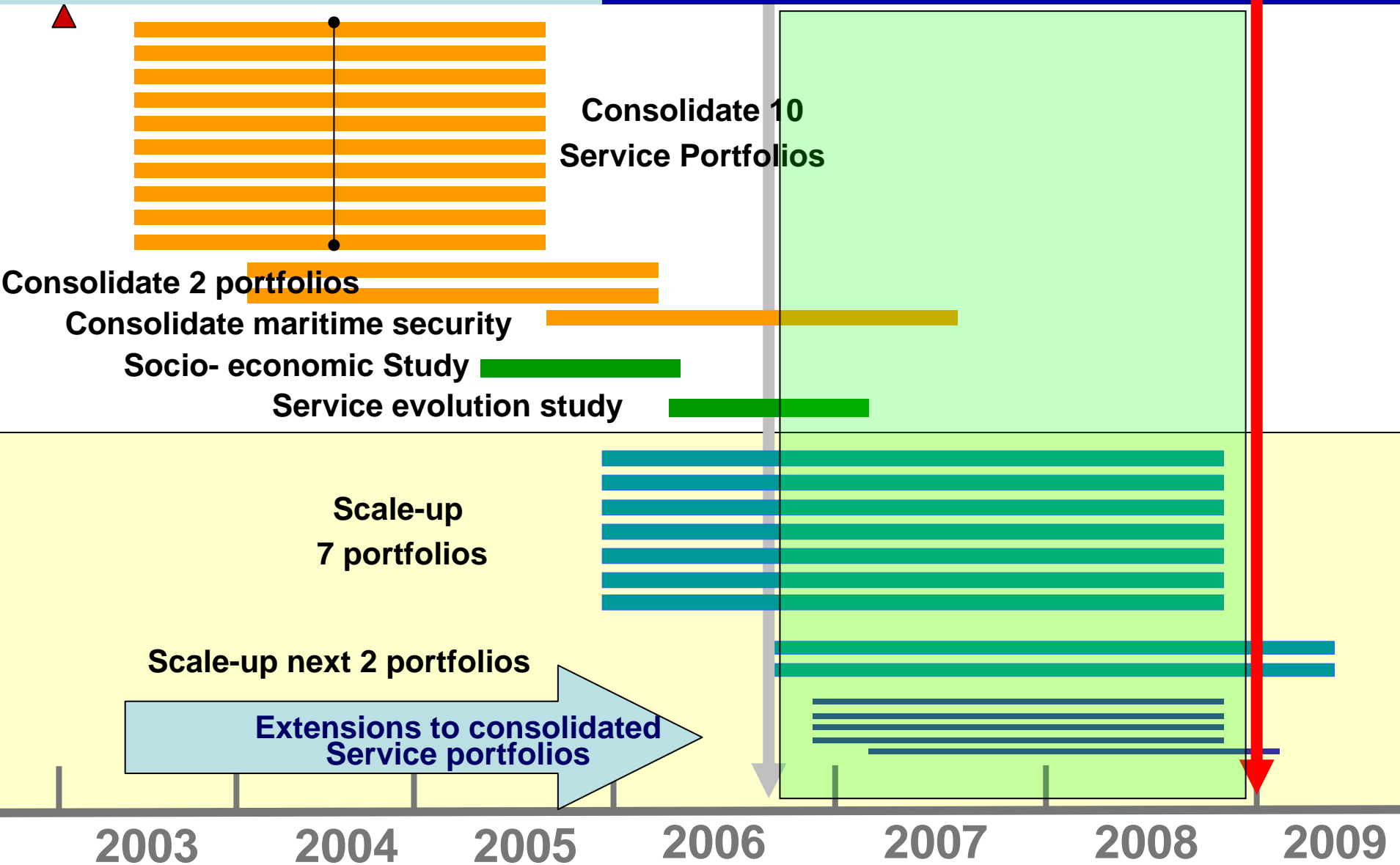
presented by C. Zehner  
ESA/ESRIN

- **GMES Services Element**
  - Background / Status
- **GSE Contribution to Fast-Tracks**
  - Engaged user base & documented requirements
  - Service Delivery & Qualification
  - 2008...

# GMES Services Element

Consolidate services

Scale-up services



# GSE Services Stage 2 : 2006 – 2008/9

## 2005 - 2008

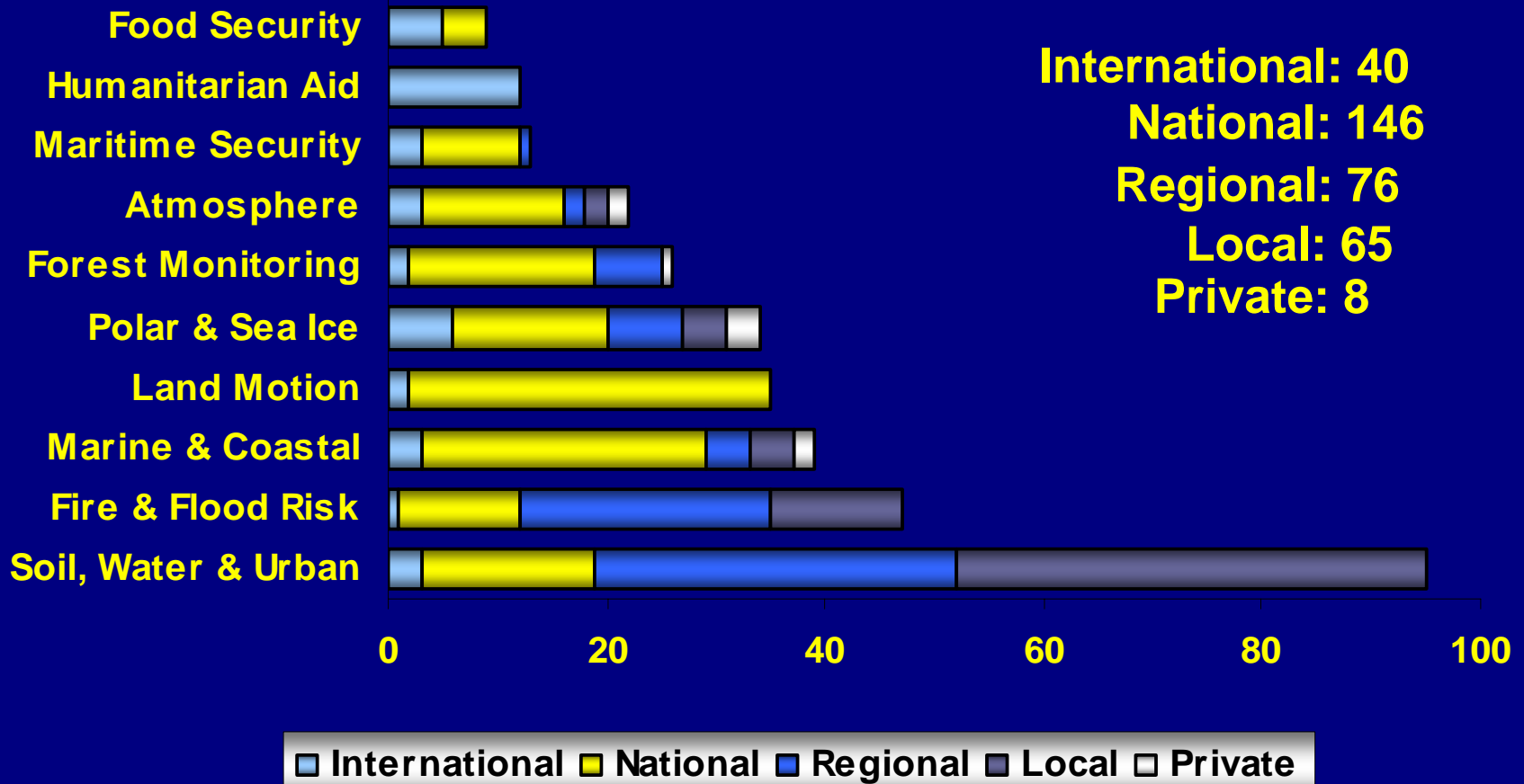
- Forest Monitoring Services GAF (D)
- Land Information Infoterra (D)
- Polar Information Services C-CORE (CDN)
- Marine & Coastal Information Services Alcatel (F)
- Flood & Fire Risk Services Infoterra (F)
- Geo-hazard (Land motion) Information Service NPA (UK)
- Food Security Information Services Vito (B)

## 2006 - 2009

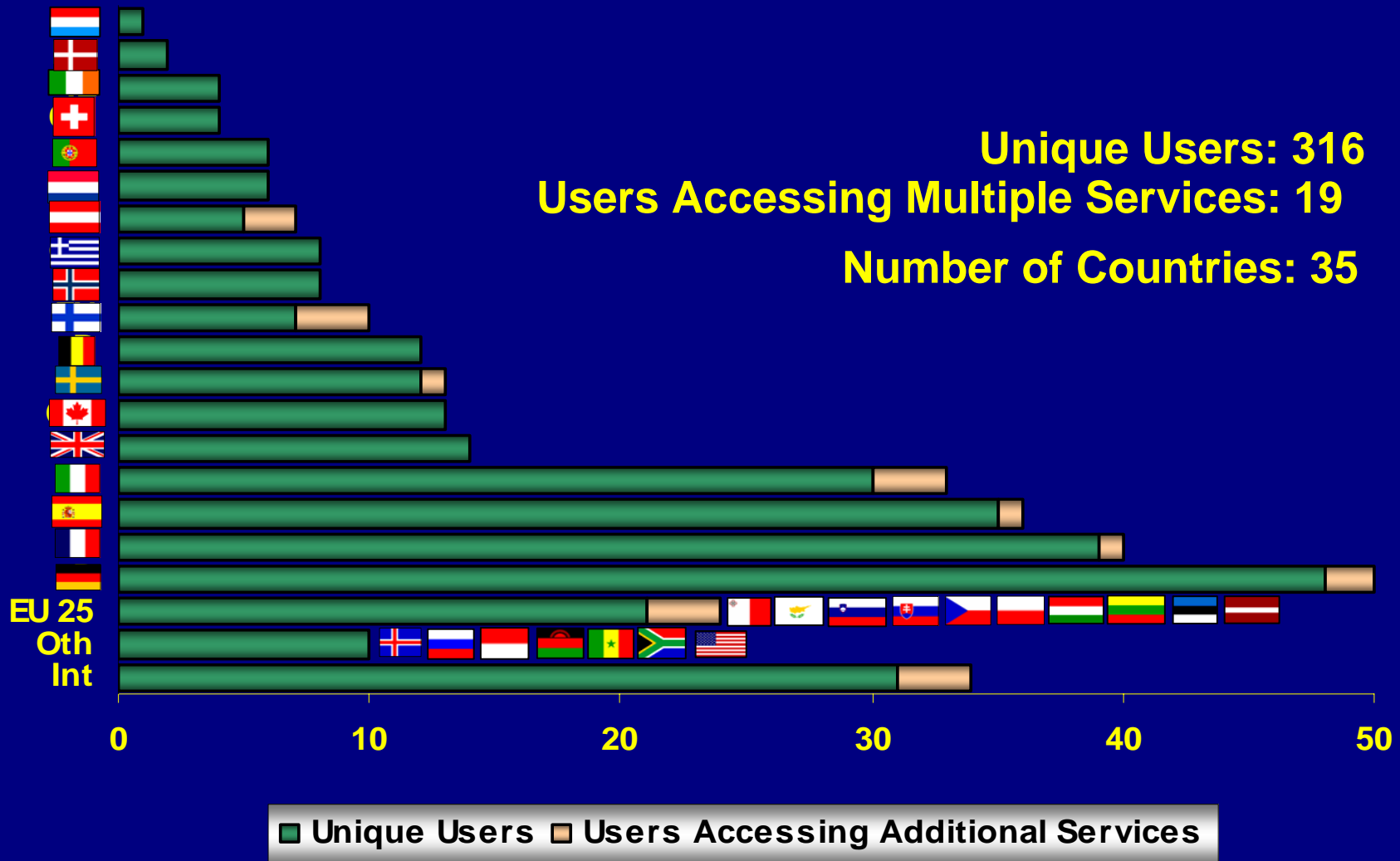
- Atmospheric Monitoring Services DLR (D)
- Humanitarian Aid Information Services Infoterra UK

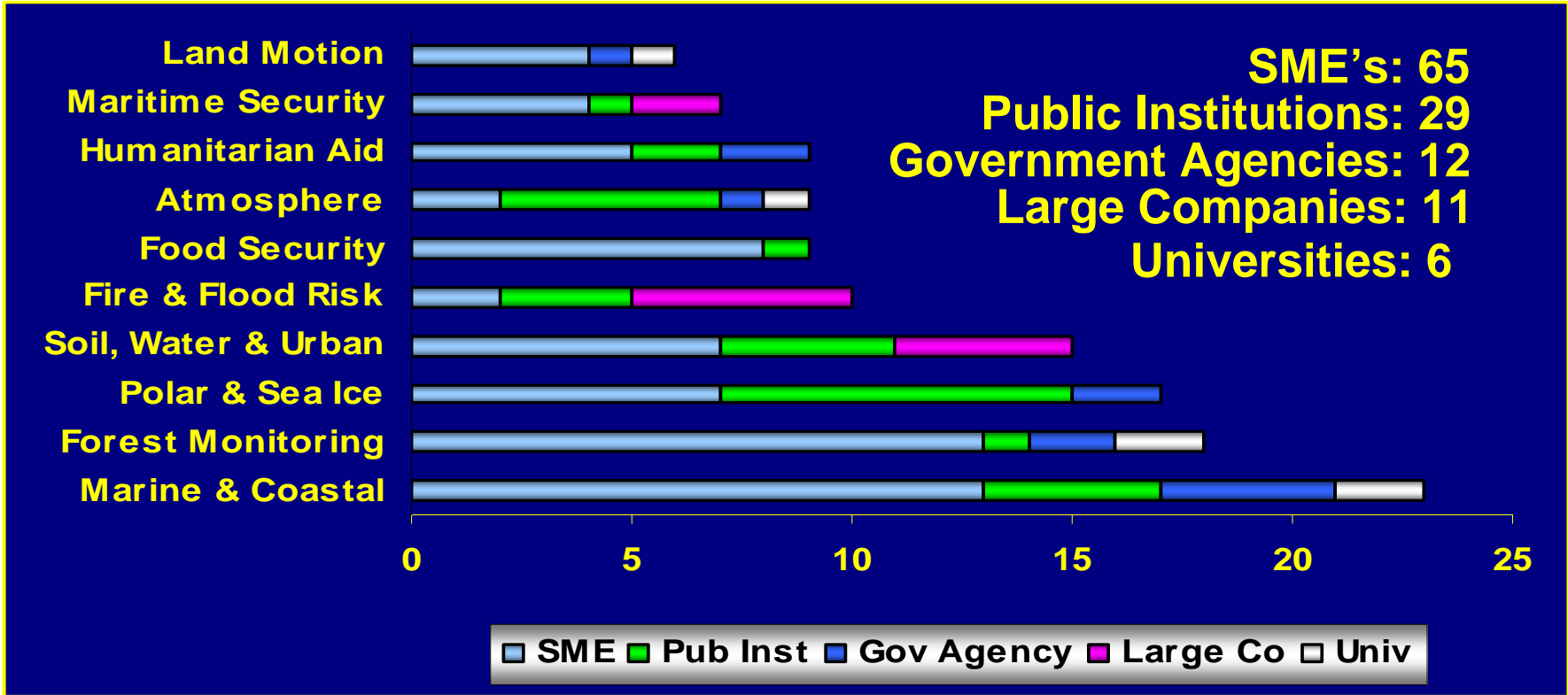
## 2005 – 2007 (consolidation)

- Maritime Security Telespazio (I)



**Unique Users: 316**  
**Users Accessing Multiple Services: 19**  
**Number of Countries: 35**





# What is a sustainable service ?

- **Useful**
- **Available**
  - responsive to users when needed
  -
- **Reliable**
  - consistent user-defined quality
  - & standards
- **Affordable**
  - overall benefits justify costs







# How are the User Needs structured ?

## European-Level

- Driven by EU Policies
- EC DGs and Community Institutions

## National-Level

- Driven by National policies & international commitments
- National ministries & Institutions

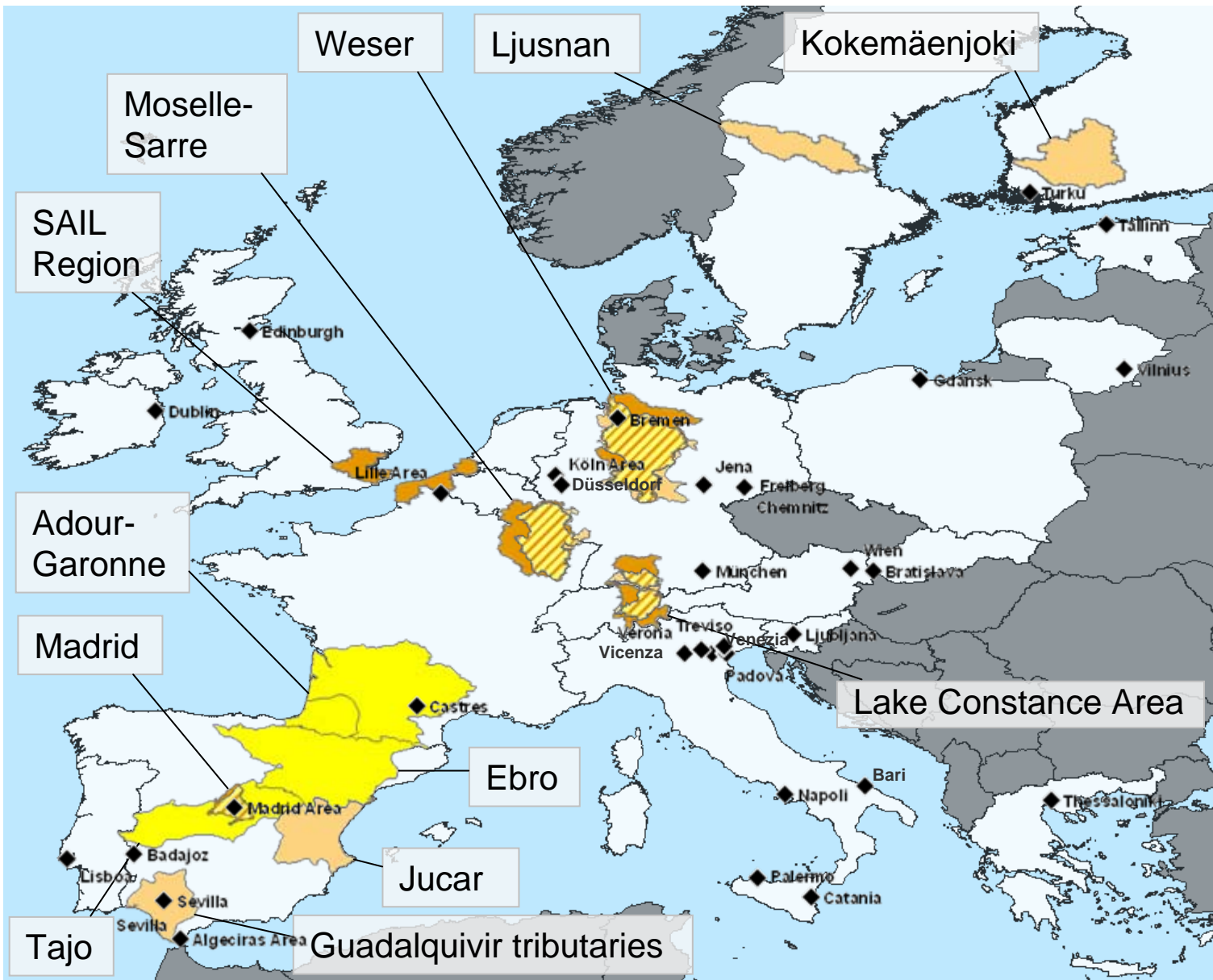
## Regional-Level

- Driven by national policy & regional issues
- Civil Protection Units, Regional Government Agencies

## Local-Level

- Driven by local issues, national law and institutional statute
- Municipalities, Port Authorities

# GSE Land Services Delivery: 2006-2008



- Impervious Areas
- Water Quality
- Irrigation
- Urban Atlas Cities
- Overlap Areas

# Forest Monitoring Services Delivery: 2006-2008



# Oil-Spill monitoring Services: 2006-2008

## Service Portfolio

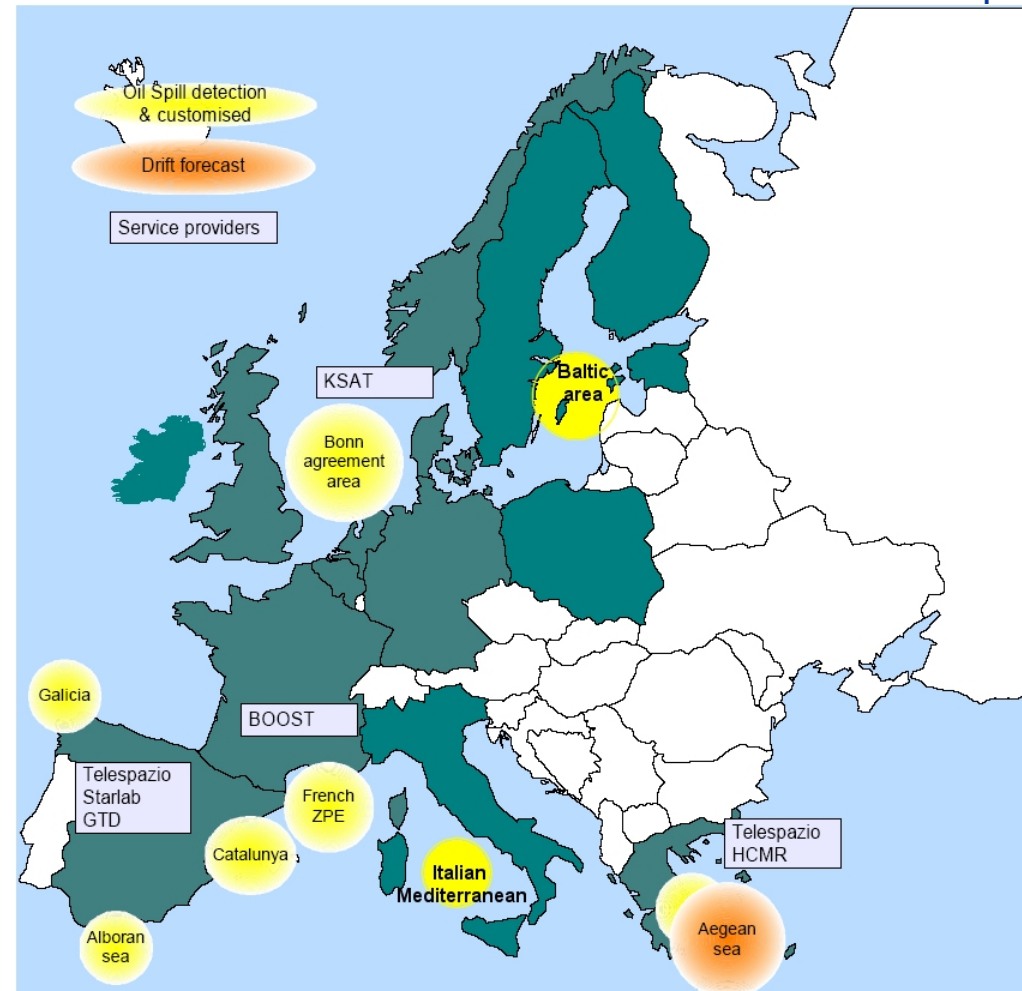
- Routine oil spill detection
- Polluter identification (SAR + AIS fusion)
- Customised emergency response
- Drift forecasting and impact assessment
- Oil spill statistics

## Core users:

- MCA (UK)
- BfG (D)
- MUMM (B)
- NSD (NL)
- Prefet Maritime (F)
- SASEMAR (E)
- MMM (Gr)

## Additional Users:

- Ministero dell'Ambiente (I)
- Polish Coast Guard (Pol)
- Swedish Coast Guard (Swe)
- SYKE (Fin)
- Estonian Coast Guard (Est)
- Irish Coast Guard (Ire)

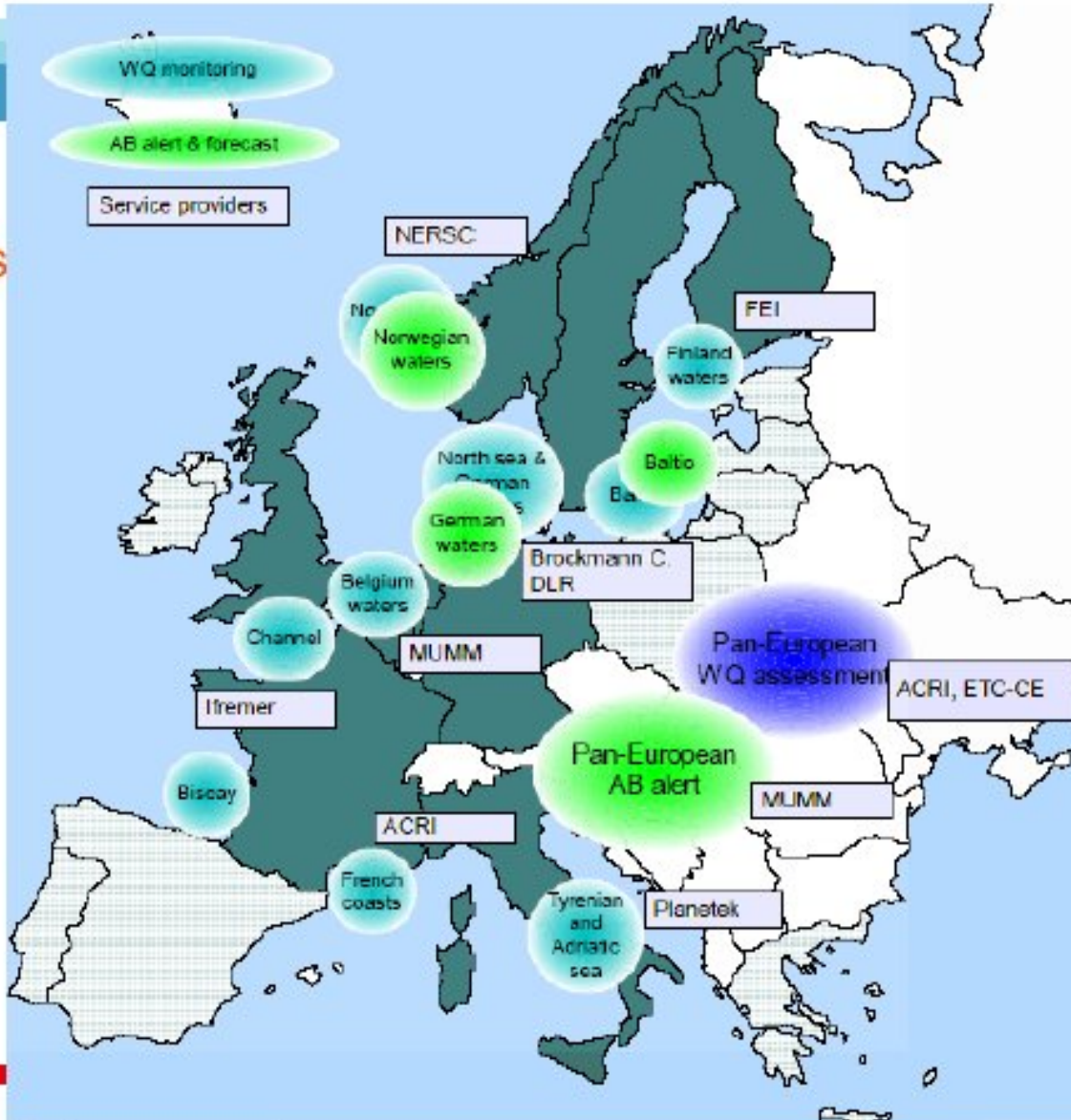


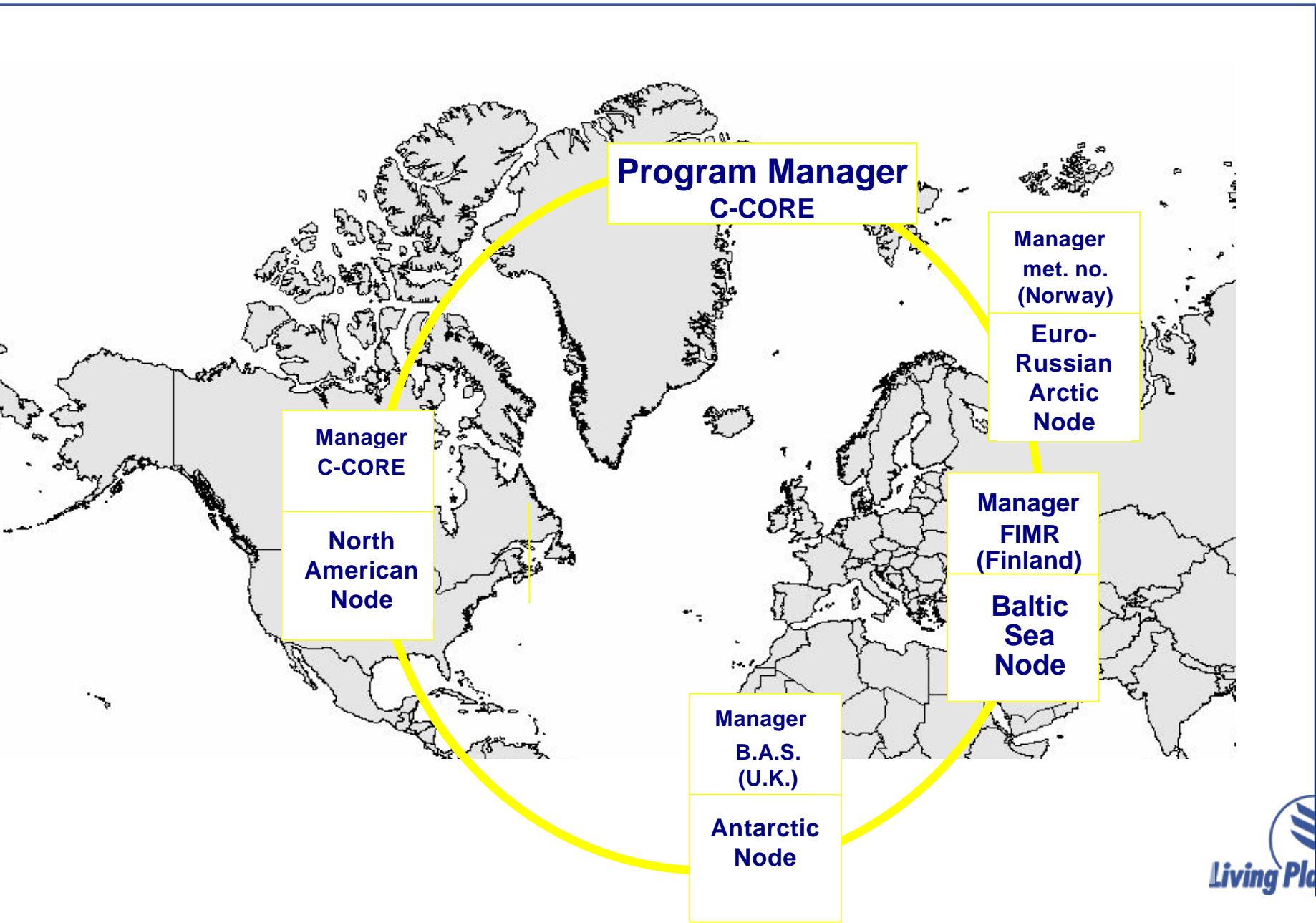


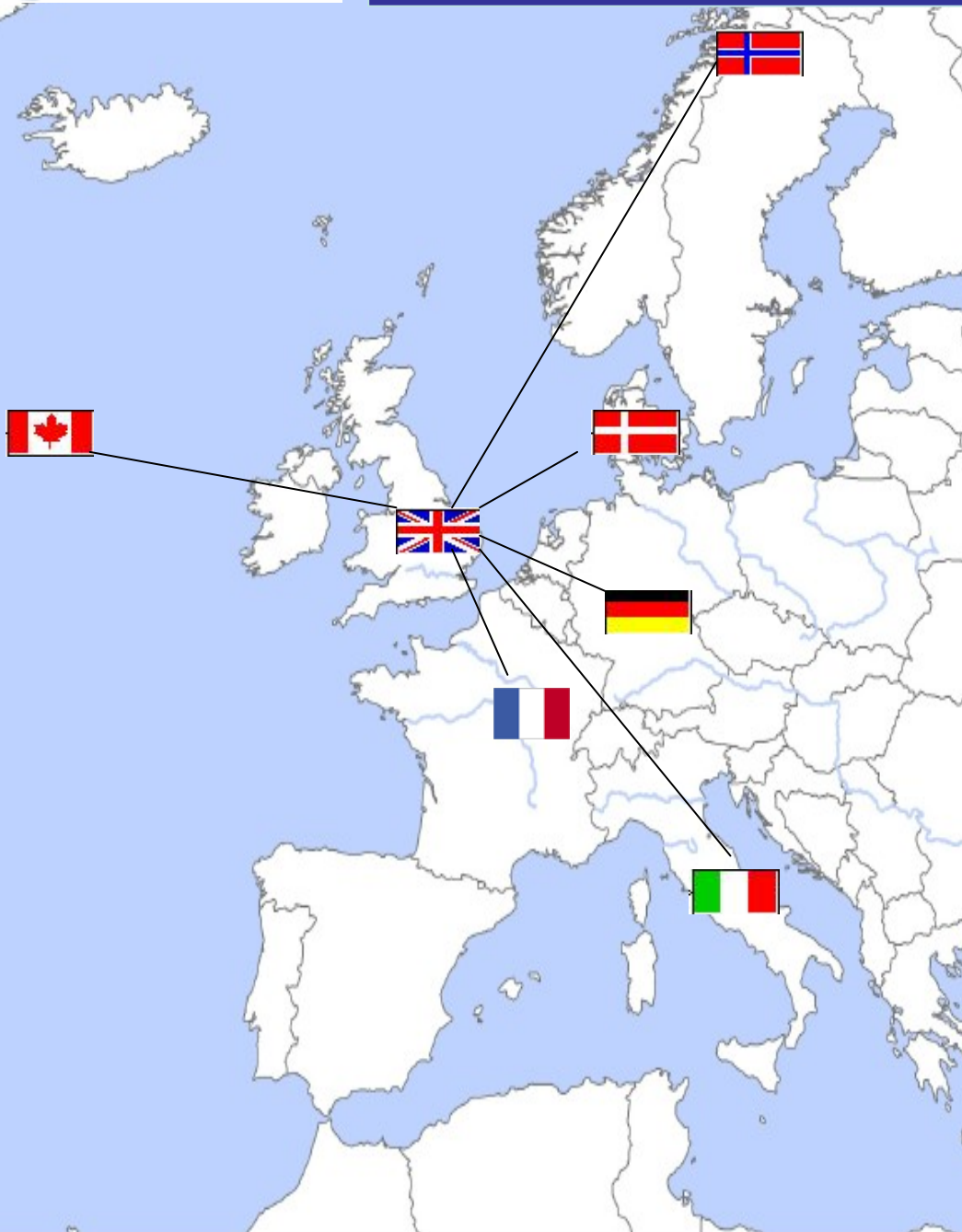
## MarCoast services portfolio (cont'd)

### MarCoast Water Quality services

- Water quality monitoring and alert (S3, Planetek)
- HAB monitoring, evolution and forecasting (S4, MUMM)
- Water quality assessment service (S5, ACRI)
- Met-Ocean data (S6, Mercator-Ocean)







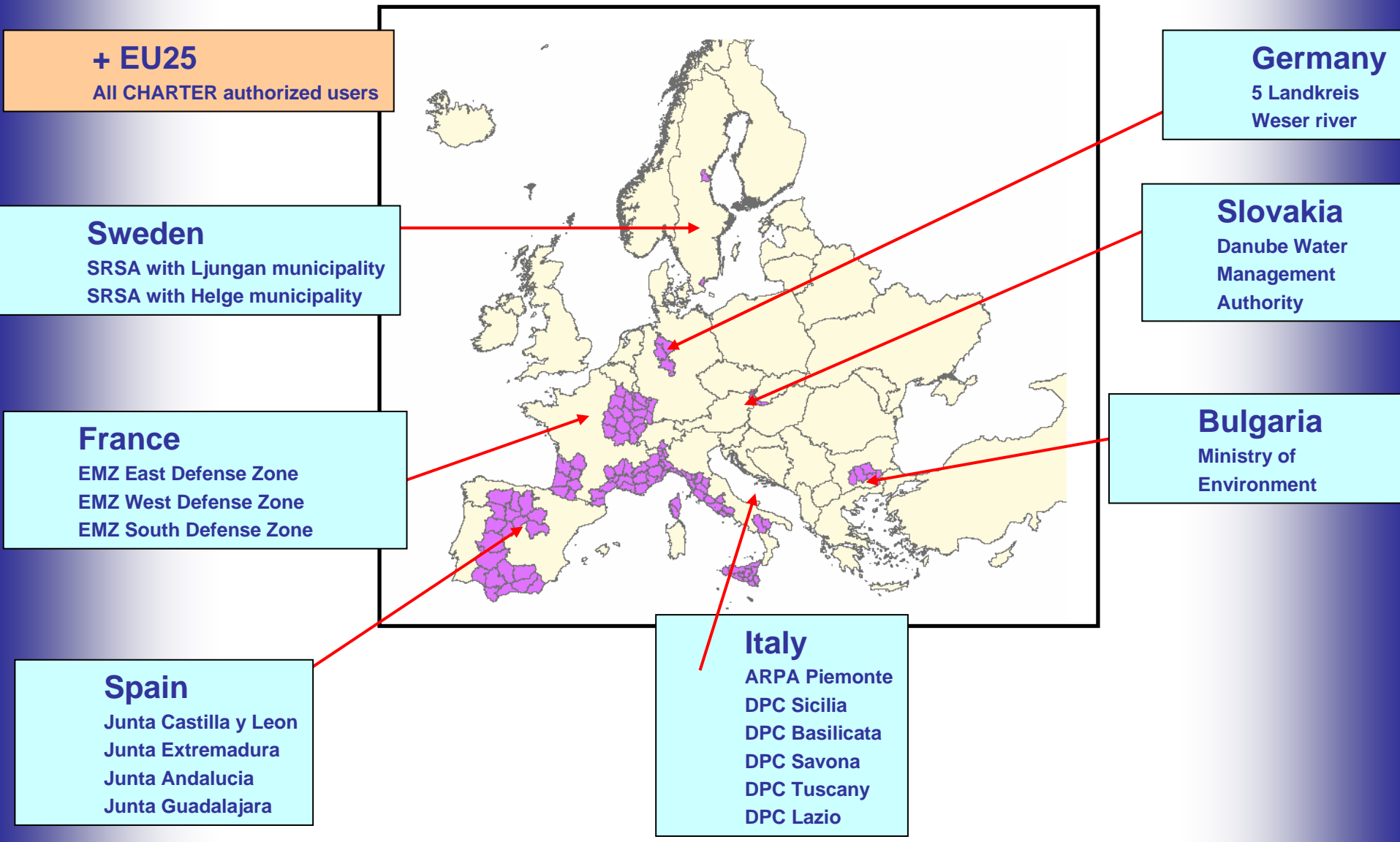
- UK**  
**BAS: Mgmt and Hi-res ice charts**  
**Vexcel: Low res ice charts**
- Denmark**  
**DTU: User web interface**
- Germany**  
**U.Bremen: Low res ice charts**
- France**  
**Ifremer: Ice drift charts**
- Norway**  
**NPI: Hi-res ice charts**
- Canada**  
**C-CORE: Ice-berg monitoring**
- Italy**  
**ISAC/CNR: Hi-res ice charts**



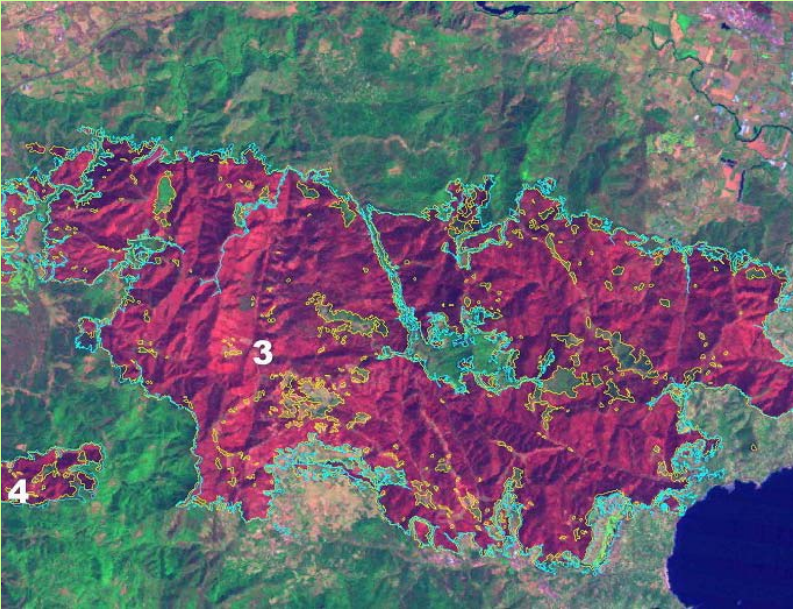
# Fire & Flood Risk Services Delivery: 2006-2008



- 22 Service Level Agreements placed with user organisations  
(France 4, Italy 4, Spain 4, Germany 4, Sweden 2, Bulgaria 1, Slovakia 1, International 1)



# Forest Fire Services



## Burn Scars Mapping

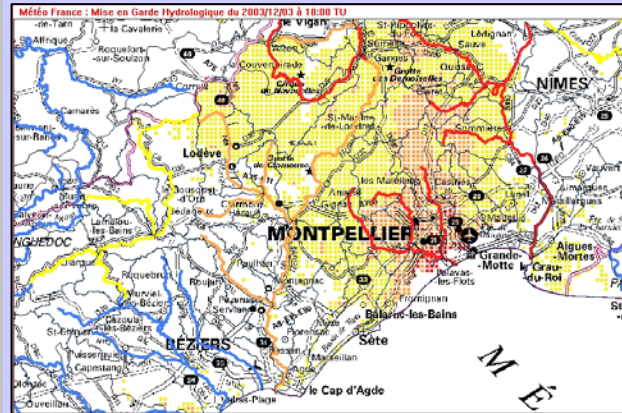
- Yearly maps
- burned areas
- 1ha mapping unit,
- damage & fire risk assessment



## Assets Mapping

- Very high resolution maps
- human settlements changes in areas prone to forest fire & flood

# Flood Services

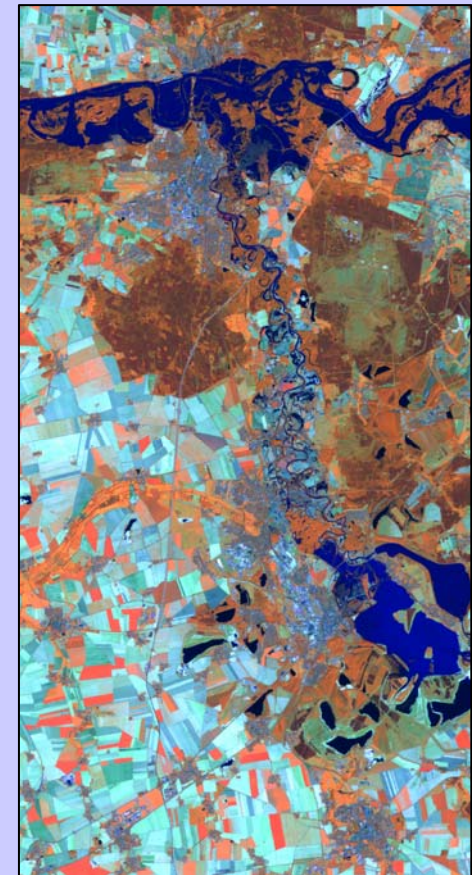


## Flash Flood Early Warning

Hourly Maps: R

Resolution 1km2:

- risk of excessive runoff
- risk of river flooding



## Flood Risk Analysis

- Flood risk maps based on historical flood events
- Flood risk maps based on hydraulic simulations
- Flood event databases



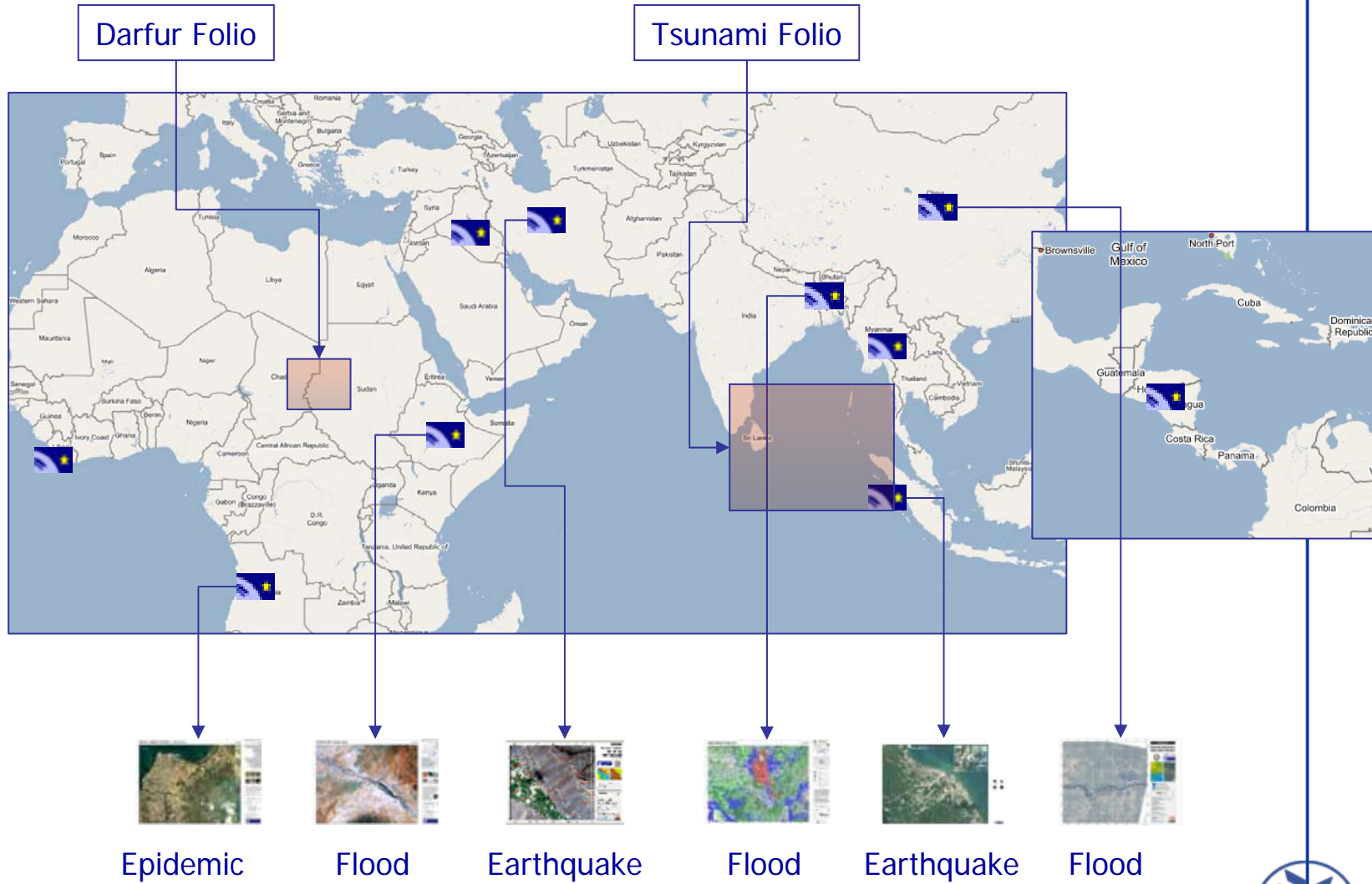


# GSE Land Motion Services Delivery: 2006-2008

KEY TO COVERAGE MAP: ▲ Sites that have been processed ▲ Sites currently being processed ▲ Sites due to be processed



# Respond Services Delivery: 2003-2006- 2009



# PROMOTE : Air Quality Monitoring & Forecast services



Home

Objectives

Partners

Meetings

Internal

Services

Ozone

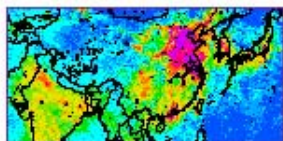
UV

Air Quality

Climate



## Air quality monitoring services



Global NO<sub>2</sub> monitoring by GOME and SCIAMACHY

KNMI & BIRA-IASB.

[www.gse-promote.org](http://www.gse-promote.org)



Global SO<sub>2</sub> monitoring by GOME and SCIAMACHY

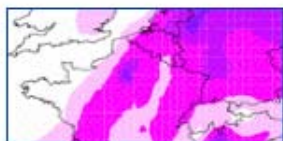
BIRA-IASB.



Air quality data base for Europe, Germany and Northrhine-Westfalia

RIU, University of Cologne, Germany.

## Air quality forecast services



Air quality forecast for France and Europe

Prev'Air, France.



Air quality forecast for Europe, Germany and Northrhine-Westfalia

RIU, University of Cologne, Germany.



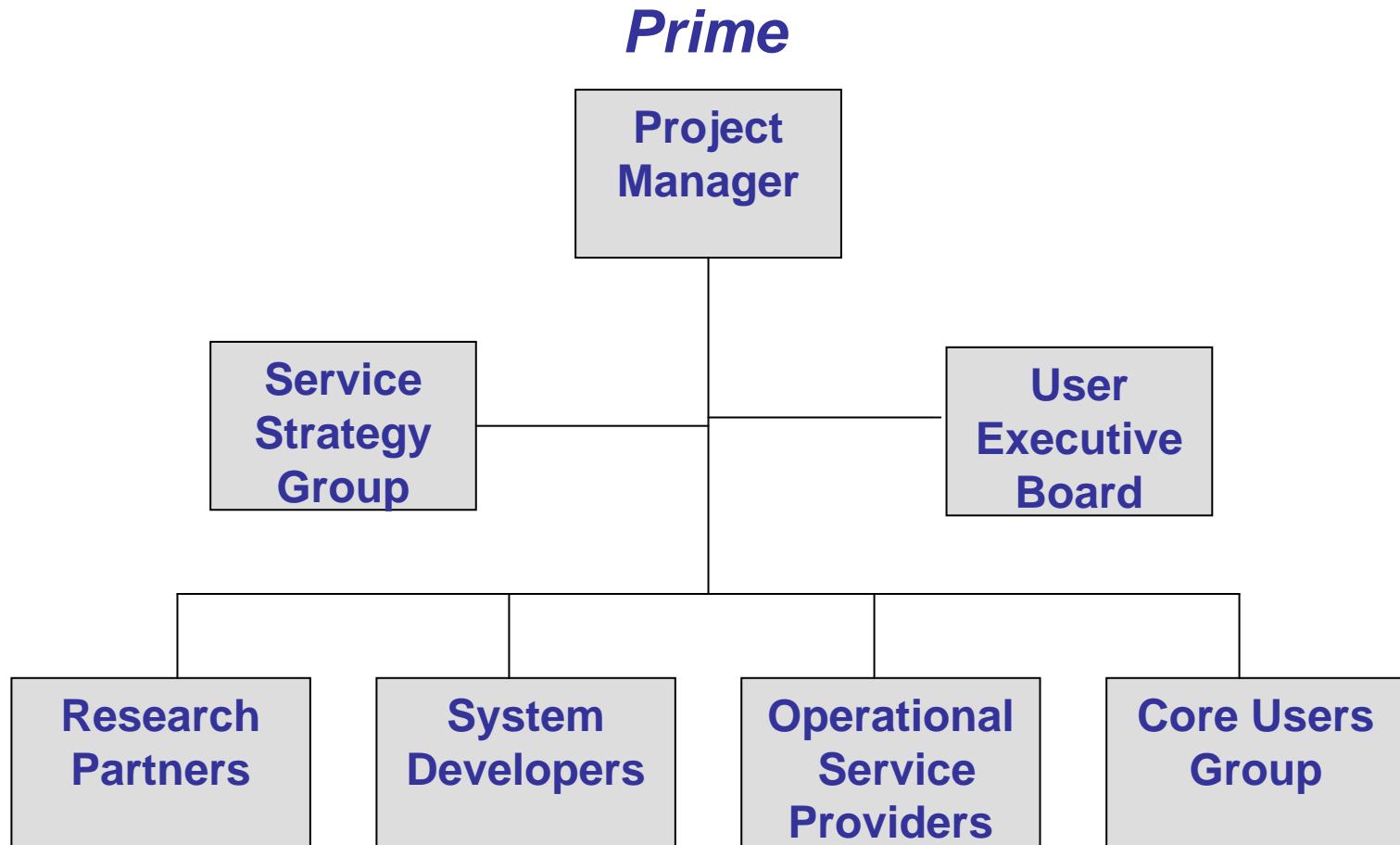
Air quality forecast of central London

CERC, UK.



AERES air-quality forecasts for South-East France

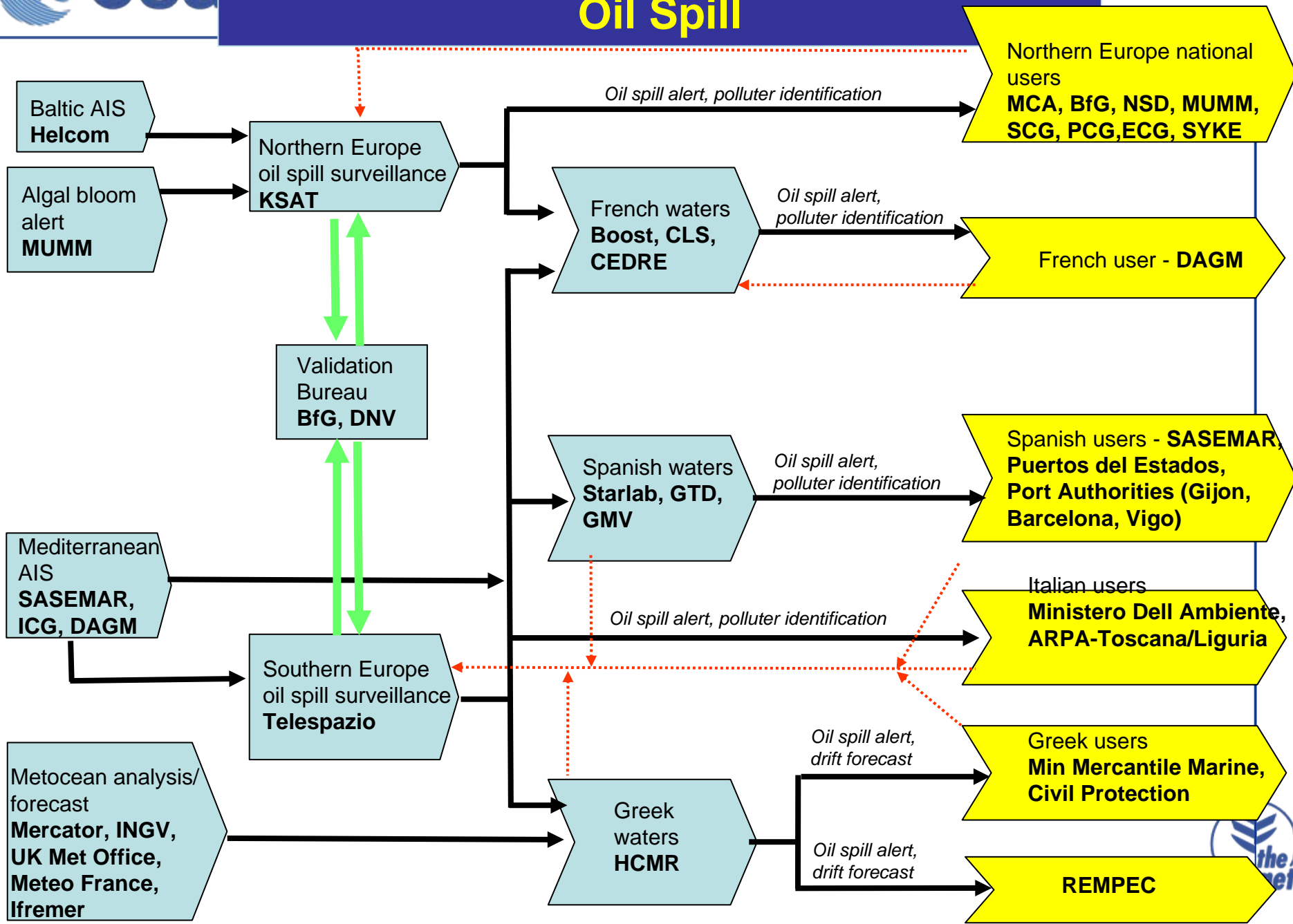
# Transitioning from Project Consortium to Service Network



***Communication – Cooperation - Coordination***

# GSE Service Network Example

## Oil Spill



- **GSE Contributions to Fast Track?**
  - Land, Ocean, **Emergency**, (Atmosphere)
- **Core / Downstream paradigm?**
  - Clarity needed
- **Currently “Left out and lonely...”?**
  - Ice & Polar services
  - Food Security
  - Land motion...
- **GSE Services & Networks post 2008/9?**
- **GMES Service Evolution Study**
- **What can be declared “Operational” in 2008 ?**
  - Operational vs Sustainable..



# GSE contributions to Fast Track Services

	Land Fast Track Service	Marine Fast Track Service	Emergency Management Fast Track
GSE Land	X		
GSE Forest Monitoring	X		
GSE Flood & Fire	X		X
GSE Geo-hazard	X		X
GSE Marine & Coastal		X	X
GSE Polar		X	
GSE Humanitarian			X
GSE Food Security			X
GSE Atmospheric			

# Layered Service Model

LAND	MARINE	EMERGENCY
<p><b>Landsat</b> <b>SPOT / IRS</b> <b>S-2</b></p>	<p><b>ERS / ENVISAT /RSAT</b> <b>T/P - JASON</b> <b>S-3 &amp; S-1</b></p>	<p><b>SPOT / HRO</b> <b>ENVISAT/ RSAT</b> <b>VHR Missions</b> <b>CHARTER</b> <b>S1 &amp; S2</b></p>
<p><b>CLC 2006</b> <b>Pan-Euro Forest Layer</b> <b>Pan-Euro Soil Sealing</b> <b>European Urban Atlas</b></p>	<p><b>Ocean State Variables</b> <b>Nowcasts</b> <b>Forecasts</b></p>	<p><b>RAPID MAPPING</b> <b>BASE MAPPING</b></p>
<p><b>National Land Cover</b> <b>Regional Planning</b> <b>Irrigation</b> <b>Water Quality</b> <b>Forest Management</b></p>	<p><b>Regional Sea State</b> <b>Oil-Slick Detection/Drift</b> <b>Ice Charts</b> <b>HAB Alerts</b></p>	<p><b>Crisis Maps</b> <b>Damage Assesmnt Maps</b> <b>Situation Maps</b> <b>Risk Assessment</b></p>

- **Services defined, used and evaluated by users**
  - “Downstream” services...
- **Documented traceability of user needs and performance**
  - Service Level Agreements,
  - Technical Validation, User Utility Reports,
- **Demonstrable “Fitness for purpose”**
  - Wrt Policy needs
- **Elements that can be declared “operational” in 2008**
  - By users themselves



# GSE Services post-2008

## “Further Development & Consolidation of.. (EC)”

- **Common EC-ESA plan and dedicated actions needed on this issue**
  - Requested by GAC & PBE0

### SCOPE:

- **Maintain & enlarge the established GMES user base**
- **Integrate GSE elements into “Core” Services**
  - Land: e.g. Soil-sealing Layer; Urban Atlas; Forest Layer
  - Marine: e.g. Pan-EU Water Quality (tbc)
  - Emergency Management : LOTS!!! (tbd)
  - Atmosphere.. LOTS!!!
- **Maintain momentum of established GSE Service Networks**
  - They continuously engage, serve and convince the users => sustainability
  - Hard to build – easy to break
- **Expand National-level (Downstream) service deliveries**
  - Continued European leadership & financing is *ESSENTIAL*
  - (will not happen spontaneously in 27 different countries)
  - National & user funding will come progressively & slowly...
- **Extend International active participation in GMES**
  - Users & Service Providers
  - Support, Stimulate, **Structure**

- **Fast Track/Other Service Implementation plan (7 years)**
  - Needed
  - Service “Delivery” or “Service Development” ?
- **Roles of Industry vs Public institutions in GMES Service provision**
  - Is there an industrial policy ?
- **Service Delivery Organization**
  - Monopolies, Cartels, Networks ?
- **GMES Service Development Contracts**
  - Statements of Work ? Calls ?
- **Management of GMES SLAs**
  - Who is the user ?
  - Who is the provider?
  - Who is the Sponsor ?
- **Quality Assurance for GMES Services ?**
  - Key issue
  - Added value of GMES (measurable)

- **Atmospheric Service Workshop**
  - 6-7 December
  - ESA participation planned
  - PROMOTE participation planned
- **Emergency Management Service**
  - Progress in Definition ?
  - Europe vs Rest of World ?
- **GSE Co-location: 6-8 March 2007 ESRIN**
  - Opportunity for **GMES Bureau** to directly address to all GSE Service Networks
  - Explain way forward on GMES Services
- **ENVISAT Symposium: 23-27 April: Montreux Switzerland**
  - Full Day Session on GMES
  - 1000+ Researchers & Application Developers
  - GMES data critical for this community
  - High profile **visibility of EC - ESA cooperation important**

## □ Scope

- Systems Analysis
- Service & Users Segment
- 1.5 Meuro / 12 months

## □ Main Activities

- Analyse services currently under development (GSE, EC FP6, nat)
- Specify system requirements for architecture & infrastructure.

## □ Deliverables

- Requirements for all aspects implementation of GMES in the next phase (including service, G/S & Space components),
- Scenarios for service delivery with focus on EO components,
- Conditions for evolution of services to operational status,
- basic requirements (in longer term) for the overall architectural structure of the GMES implementation.

# Study Logic

## 1. Review current GMES services capabilities & status

Briefing Pack on GMES

## 2. Initial system designs (4 services)

Civilian Risk

Land Cover Monitoring

Marine & Coastal Monitoring

Humanitarian Aid

## 3. Bring New Perspectives

Global Change

Citizen

Industry

Strategic

Security

Technology

Dossiers : issues & implications for GMES services

## 4. Future Vision

2015 Services Portfolio

Services segment  
Operational scenarios

Services Architecture &  
Implementation requirements

Implementation  
Action Plan

Services Roll-out  
Road Map