



Land- und Risikomanagement in GMES - Ergebnisse aus EU - und ESA-Projekten



geoland



GSELand esa

3. GeoForum

„Geoinformation im Dienst von Umwelt und Sicherheit“

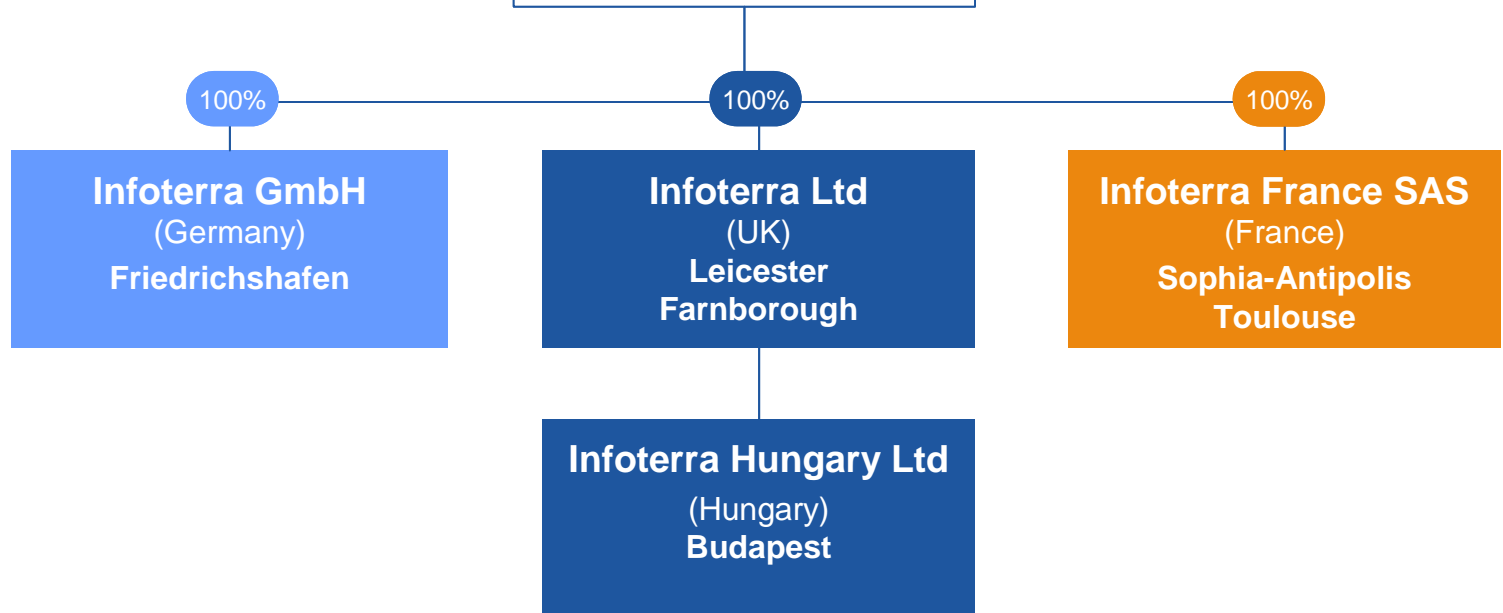
Verein für GeoInformationswirtschaft, Mecklenburg-Vorpommern

Warnemünde, 18./19. April 2007



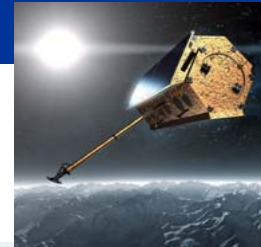
Turnover 2005: 43.5 M€
Staff 2005: 300+

► Consistent European
Management Organisation





Created in 2001 to prepare and commercially exploit TerraSAR-X



**Staff 35 in Friedrichshafen, Germany
Turnover 2,8 M€ (2005)**

Business Focus

TerraSAR-X Commercial Exploitation

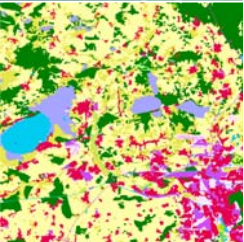
- commercial supply of new-quality radar data after launch and commissioning phase (2007)
- preparation of geo-information products and services and data distribution

Development of European Geo-Information Services

- support European public authorities to fulfil reporting obligations
- focus: Land cover monitoring, flood risk management
- context: European GMES initiative

Operational Radar Mapping

- large-scale mapping projects around the globe
- TSX pre-cursor products and services (airborne sensors)





What is needed ...



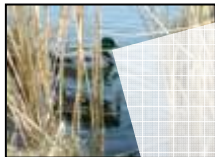
Europe's environment under pressure



Water – 20% of all surface water sources seriously threatened by pollution



Soil Erosion – 17% of total European land area affected, economic loss 35 € per ha



Biodiversity – 335 species threatened in Europe



Agricultural intensification leads to water stress, soil erosion and biodiversity decline



Urban Settlements and transport networks growing - leads to soil sealing and fragmentation of landscape

**climate variability -
need for up-to-date information**

Responsible management requires adequate geo-information



GMES Land Services – Overall Objectives



GMES Land Services will provide support to these challenges through reliable and affordable information by use of Earth observation data through development and implementation of

- **Core Mapping Services and**
- **Down Stream Information Services**



Policy Drivers & GMES priorities addressed



Policies / Directives / Conventions

Habitats
ESDP, ESPON
Natura 2000
Wetland Directive
Water Framework
Directive
Soil Thematic Strategy
Sustainable Developm.
Fight against Poverty
Global Change
Kyoto
Global Environment
Protection



European and Global Monitoring Service Portfolio

Core Services

- Generic Land Cover
- Bio-geophysical Parameters

Observatories – Down Stream Services

- Nature Protection
- Water & Soil
- Spatial Planning
- Global Land Cover & Forest Change
- Food Security & Crop Monitoring
- Natural Carbon Fluxes

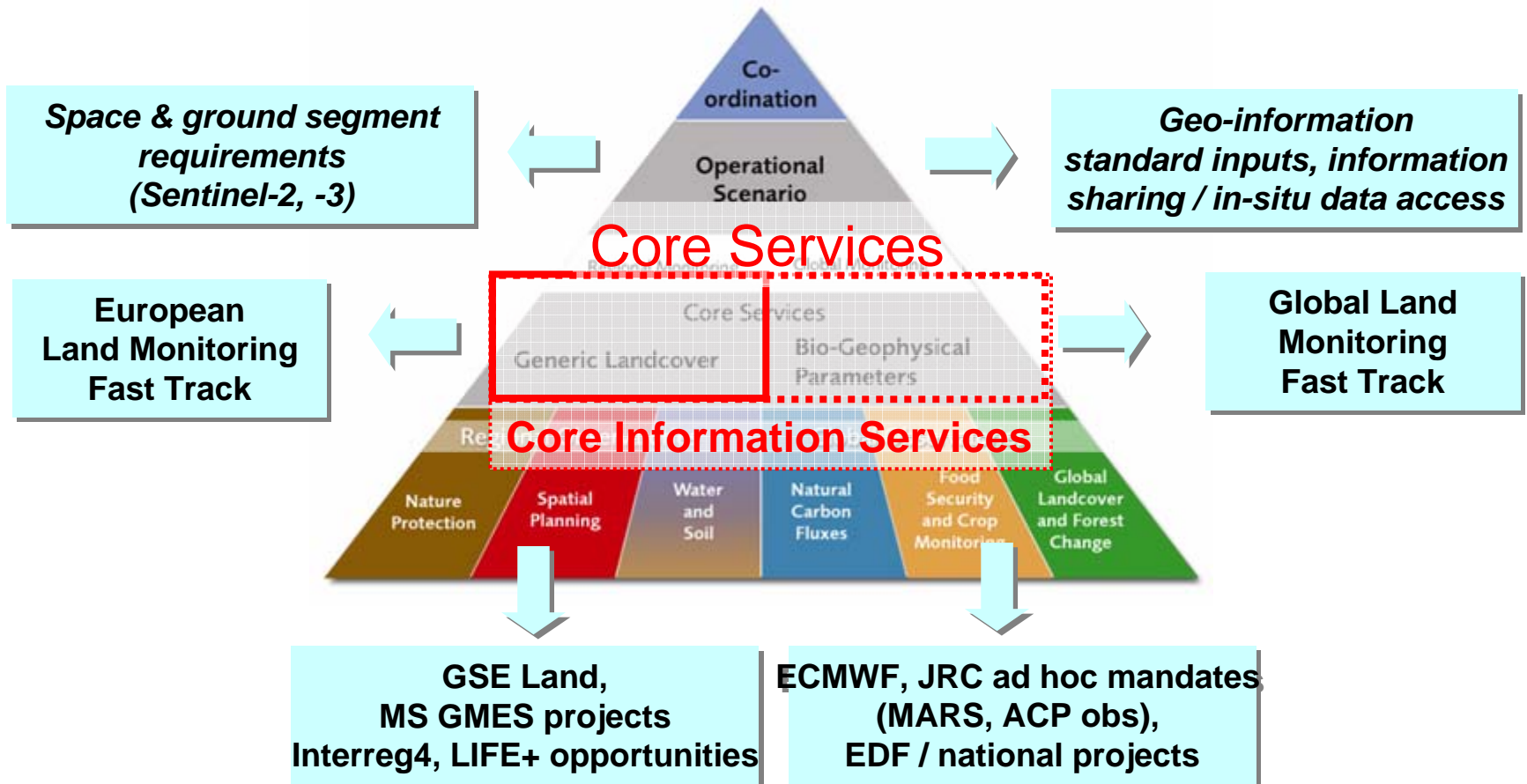




How geoland was organised ...



... and promising implementation routes



Institutional committment & operational programmes to be achieved



GMES Land Products – from CLC via LMCS to Down Stream Services



Corine Land Cover 2000 (CLC2000)



MMU 25 ha

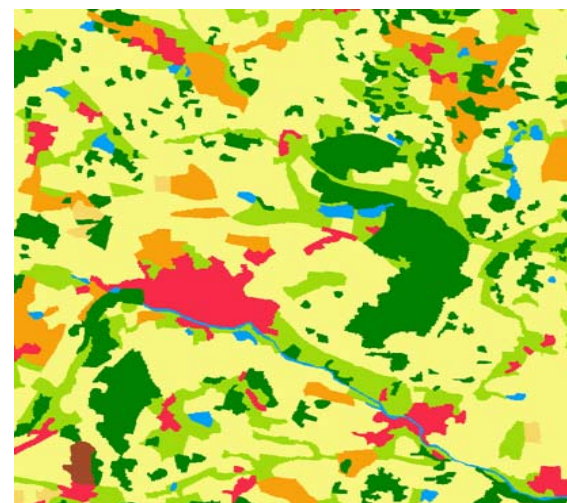
44 classes

Update every 10 years

European (MS) use

Land Monitoring Core Service (LMCS)

geoland CSL consolidated



MMU 1 ... 5 ha

21 classes

Update every 3 – 5 years

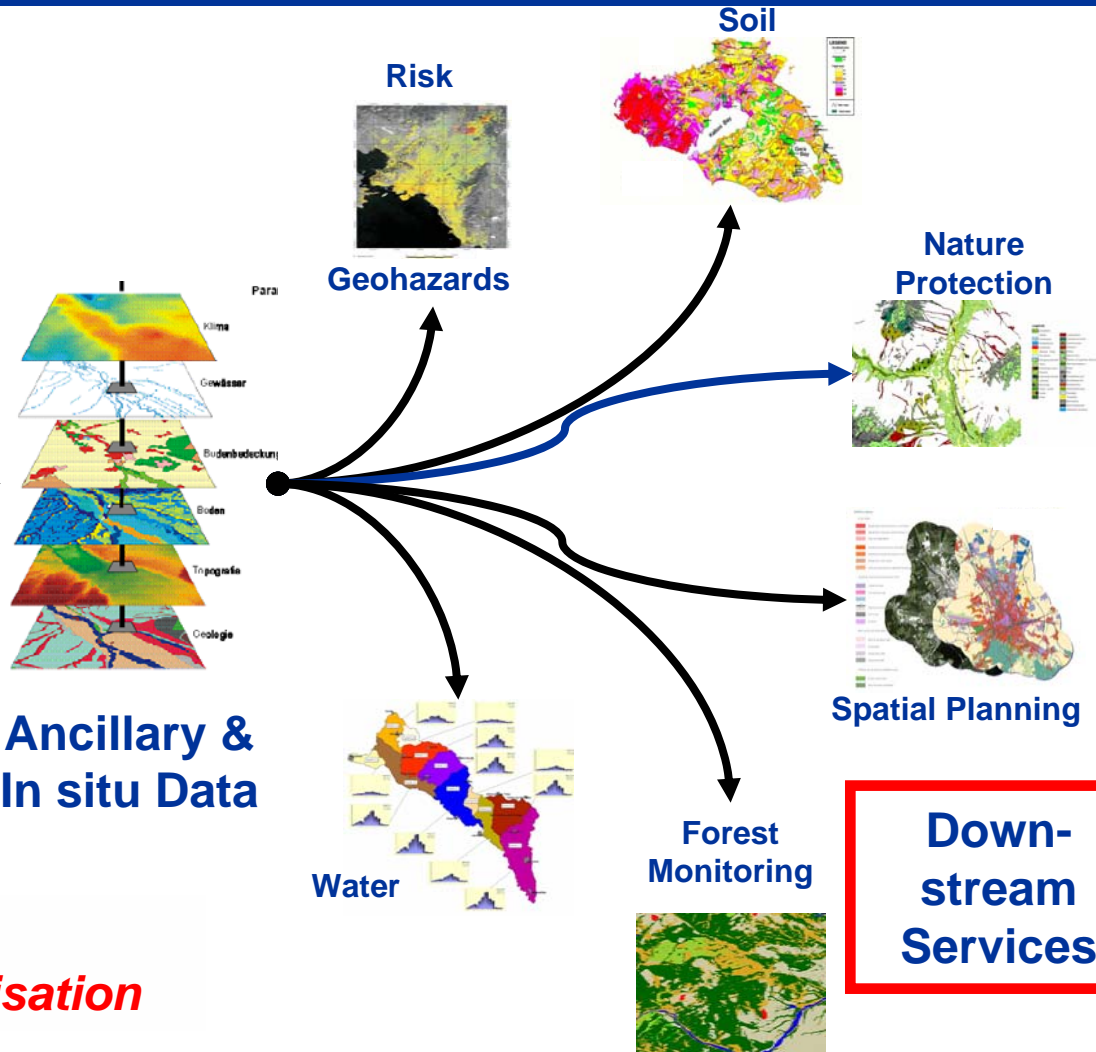
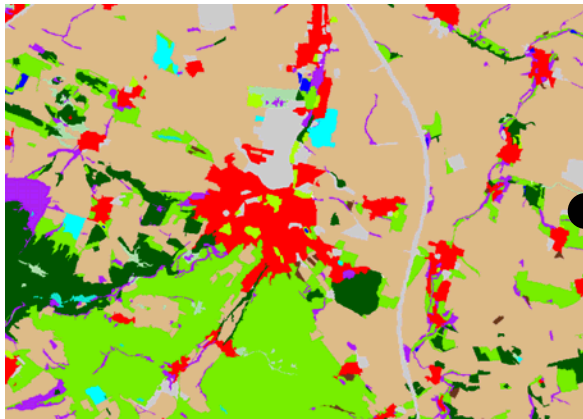
European + MS + regional use



GMES LMCS – relevance for Down Stream Services



GMES Land Monitoring Core Service



Geo-information Standards & data harmonisation

Down-stream Services



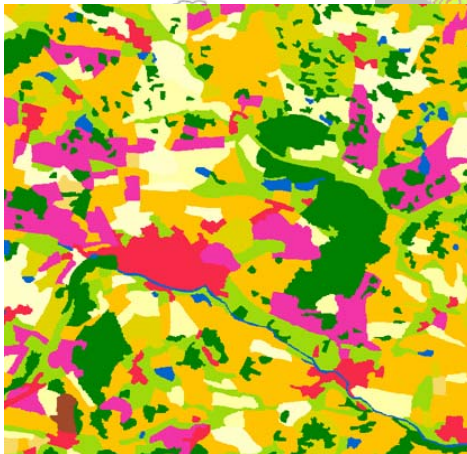
What geoland could provide ...



Validation and demonstration of services

Add-on mapping example:

crop types uron (March)
Example GSE SAGE



Soil Erosion Risk
(Chania, Crete)
geoland OWS-W

MMU 1...5 ha

21 + 6 agriculture classes

to 0.002 g ha⁻¹

Update each year Instrut catchment,

0.005 - 0.01 g ha⁻¹

MS + regional use (Germany)

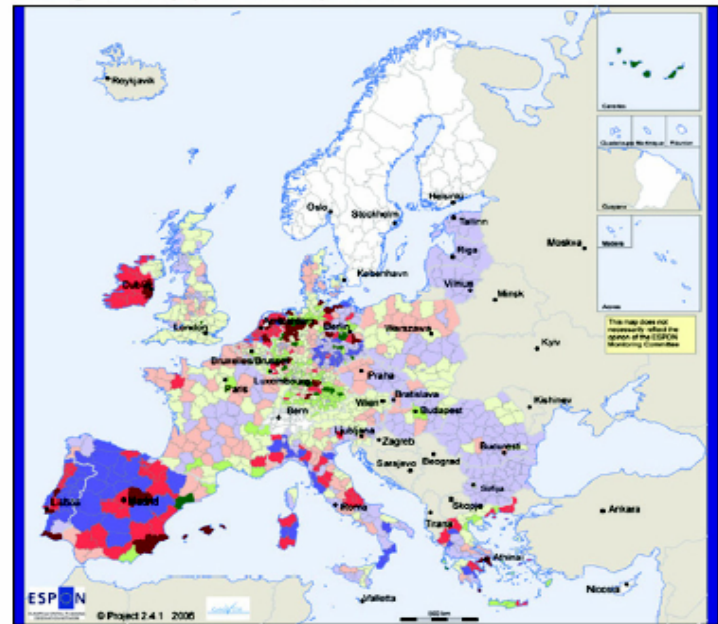
> 0.02 g ha⁻¹

geoland OWS-W

Kilometers

50

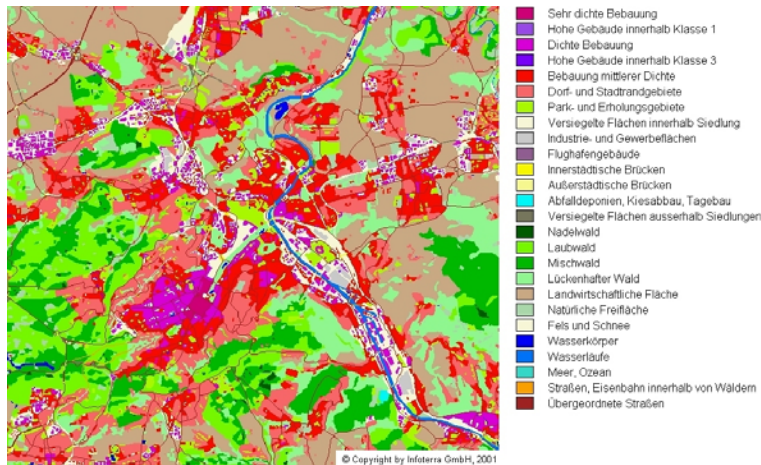
Urban growth and population development 1990 - 2000



Urban growth vs.
Population growth
geoland OSP
& ESPON 2.4.1 project

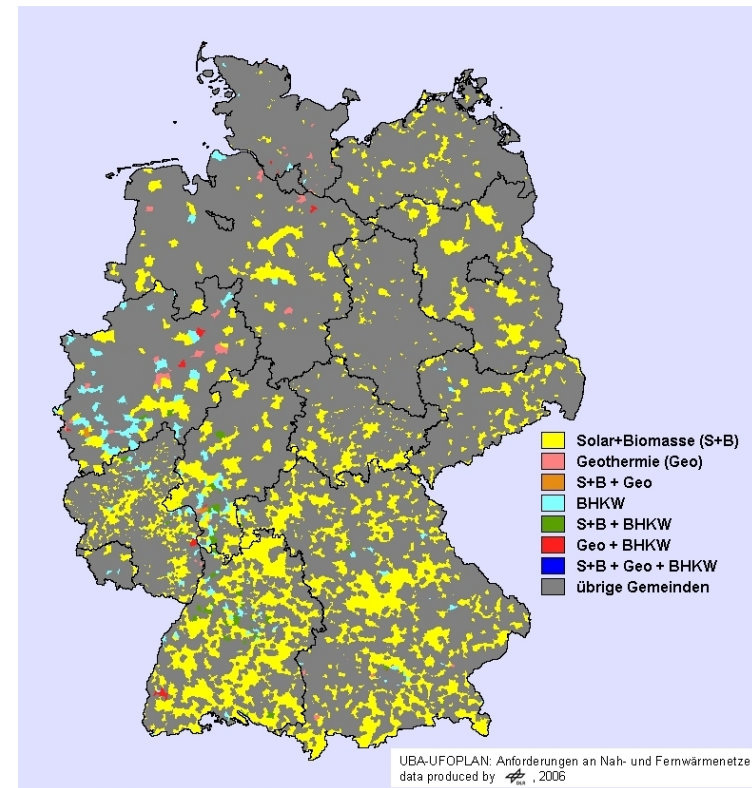


GMES Core Service for Population Dynamics - Potential for New Heating Concepts



Input: high resolution land use maps –
Example Stuttgart

**Contribution of
Core Service
~ 10 %**



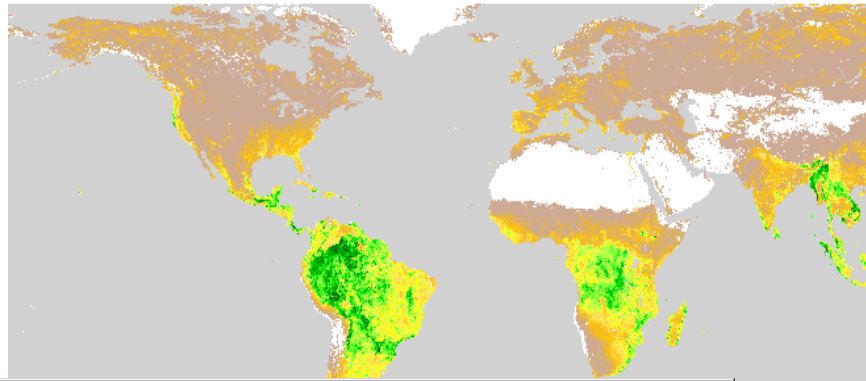
Output: identified municipalities best
suited for local heating supply



What geoland could provide ...



Validation and demonstration of services



Geoland Analysis Tool

Region: Resolution: 1 Km (FullRes) 10 Km 1 Degree Processing Type:

Study Area:

- Algeria
- Angola
- Benin
- Botswana
- Burkina Faso
- Burundi
- Cameroun
- Cape Verde

Selected: Burkina Faso, Gambia

Buttons: Remove, Reset

Sample:

Buttons: Quit, < Back, Next >

Spada
SPatial Data Analysis tool

winter-wheat 12-Oct-2006

Crop indicator: Water-limited Above Ground Biomass
Status at: Dekad 15, 2006 (21-May up till 31-May)

Province	Yield (kg/ha)
Beijing	5633.7
Tianjin	5424.7
Shanxi	8870.9
Hebei	7149.9
Shandong	7320.7
Henan	10040.6

Units: kg/ha

Crop Yield Forecast Map
Hubei province, China
geoland OFM
& European Development Fund

Information: www.gmes-geoland.info/OS/OFM/

Observatory Food Security & Crop Monitoring

- Forest
- Frost/S
- Azimutl
- artefact



Geoland in a nutshell



53

Users

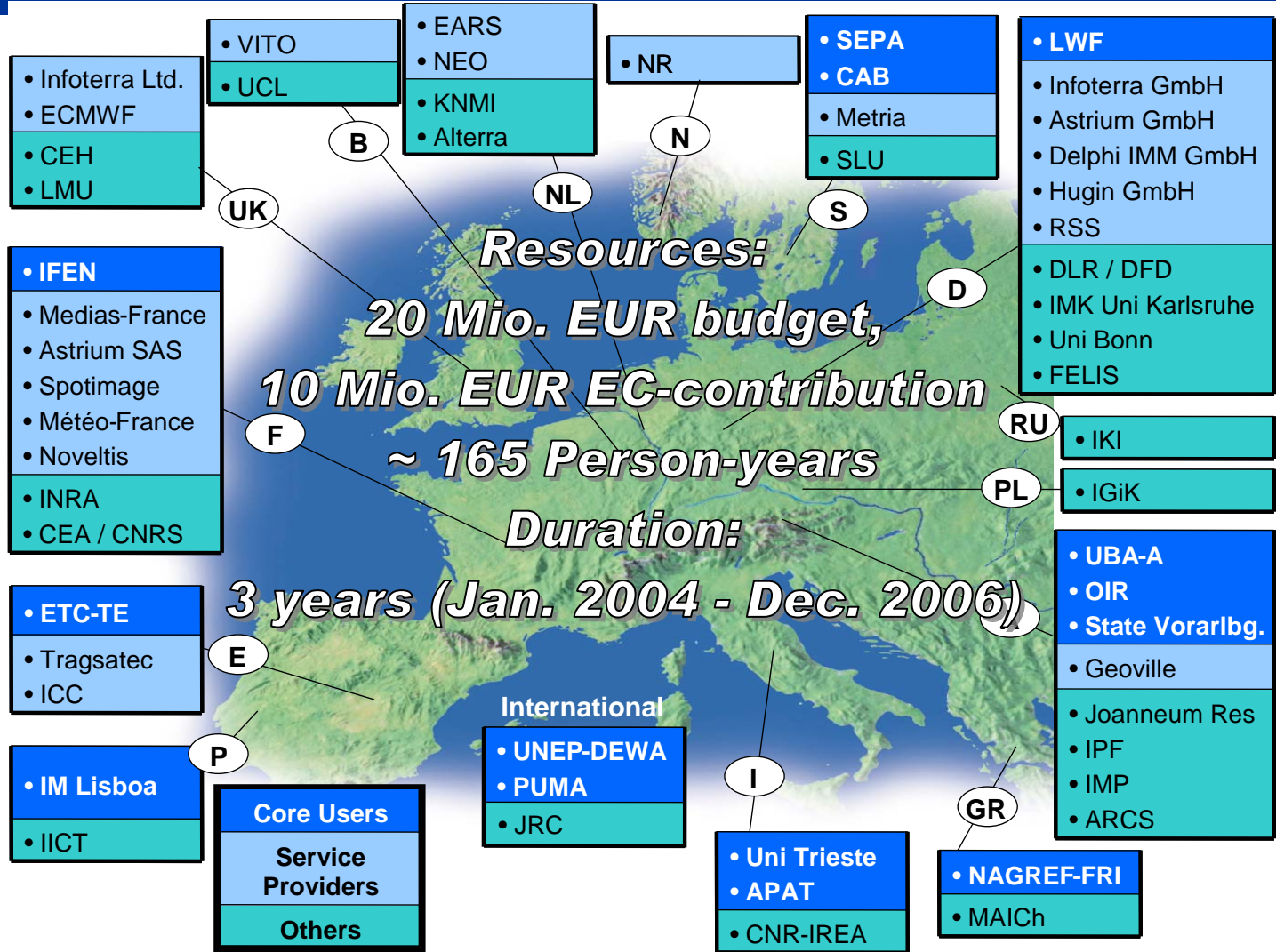
(20 consortium members, 33 letters of committment)

59

Consortium Members

15

Nations





Risk Management – The Flood Directive



The Flood Directive aims to reduce the risk of damages to human health, environment and infrastructure.

Flood Directive Requirements

- „... description of the flood which have occurred in the past ...“ (Preliminary Flood Risk Assessment / Article 4)
- „Members States shall ... prepare flood maps and indicative flood damage maps, hereinafter „flood risk maps“, ...“ (Article 7)
- „Member States shall make the preliminary flood risk assessment, the flood risk maps and ... available to the public ...“ (Article 14)

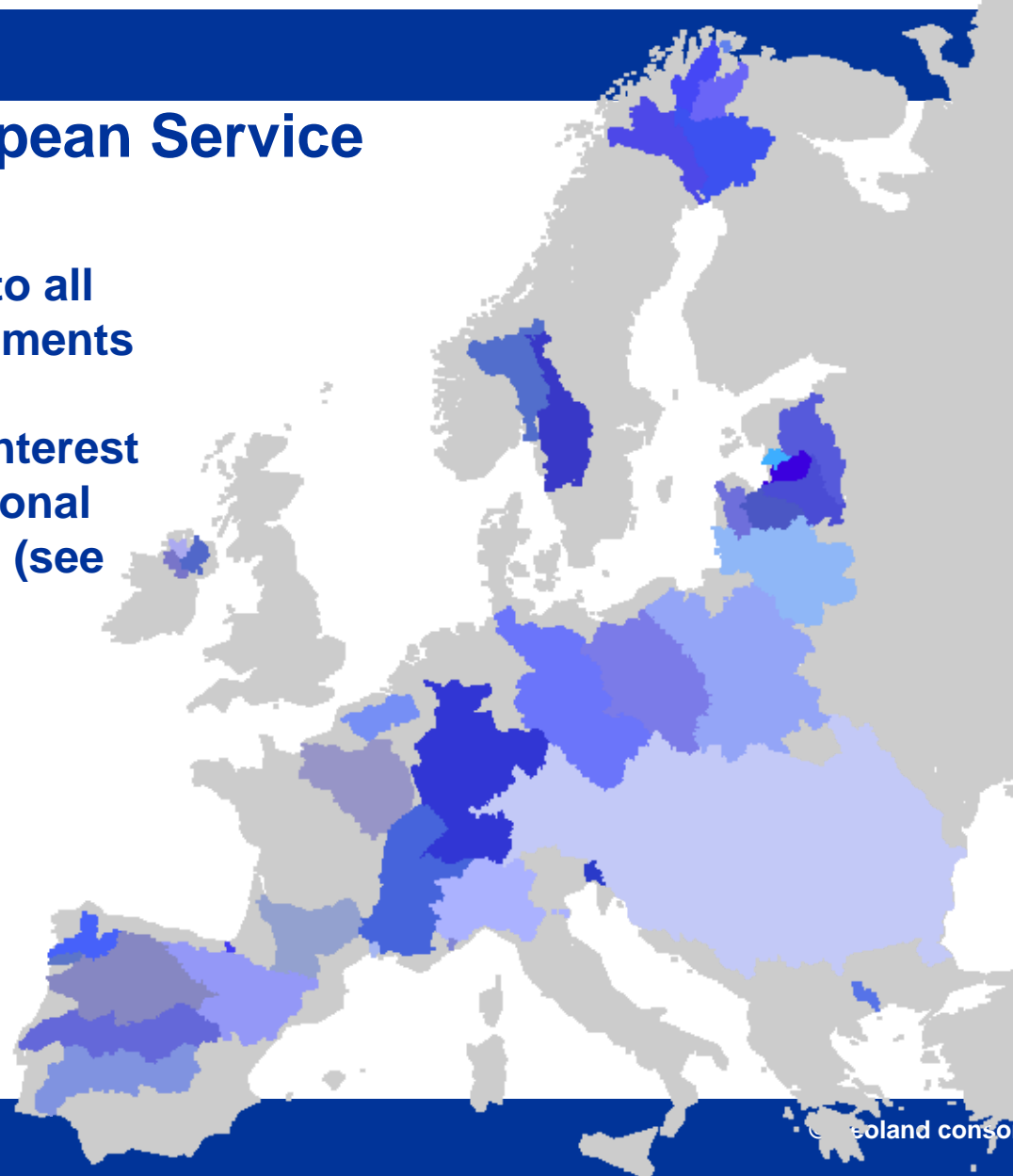
Risk EOS Service Portfolio

Mapping of Past Flood events
Flood Risk Maps
Potential Flood Damage Maps
Flood Information Service



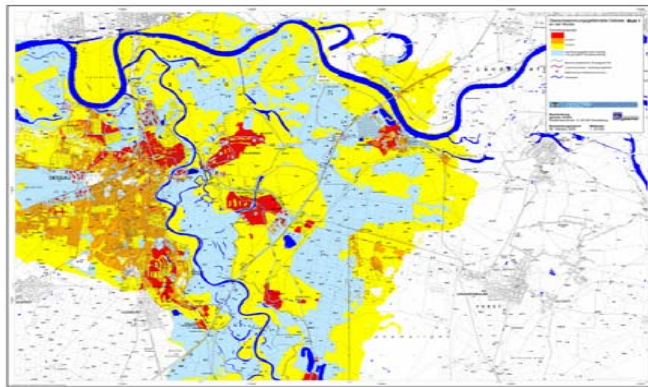
a truly European Service

- **Applicable to all major catchments in Europe**
- **Of special interest for international river basins (see map)**

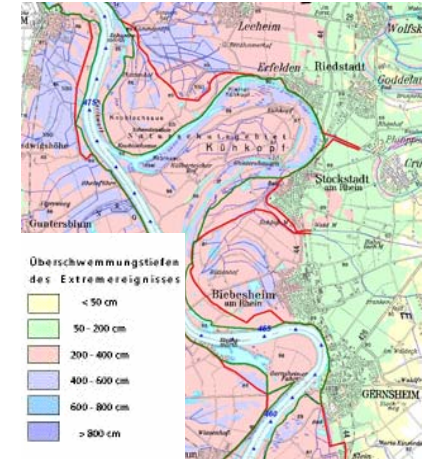




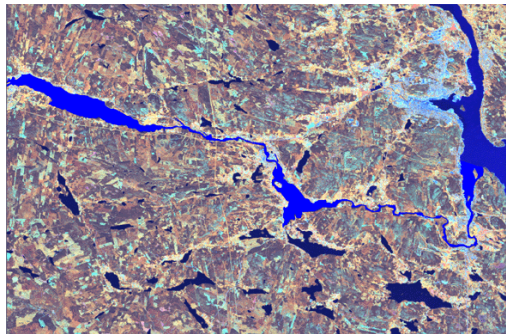
Flood Risk Analysis Service Portfolio



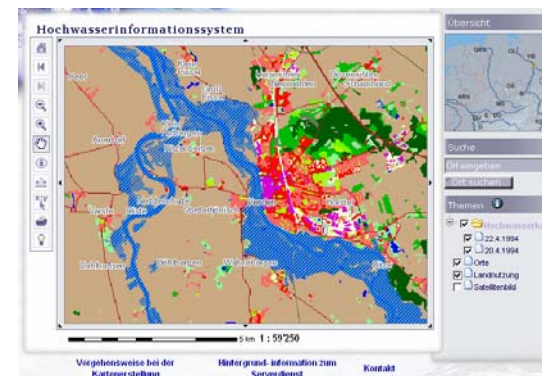
Potential Flood Damage Maps



Flood Risk Maps



Mapping of Past Flood events



Flood Information Service



Overall product maturity

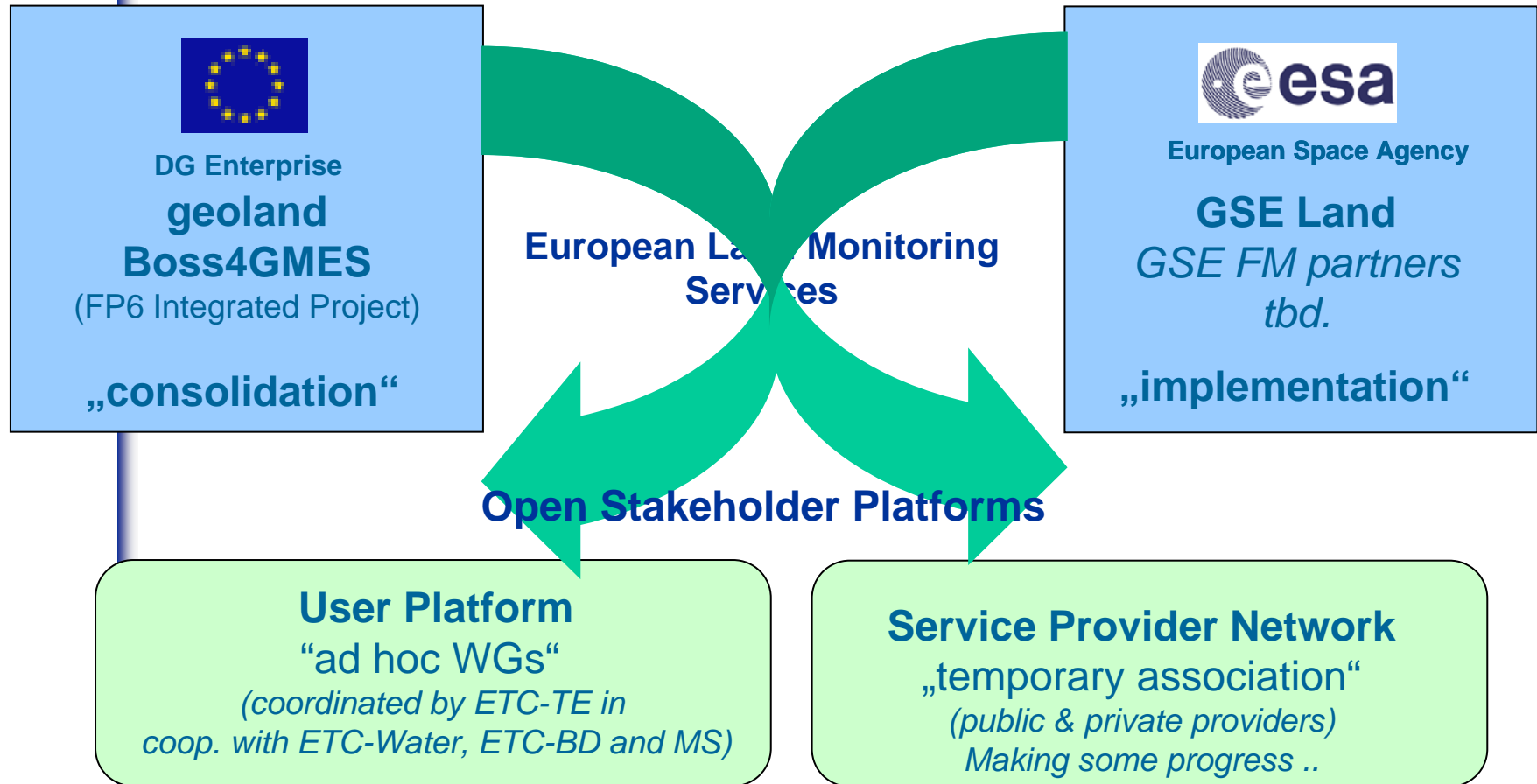
- ~80 products validated more than 50 user organisations
- 65% successfully validated and user accepted
- 32% acquired additional implementation funding (sponsors)
- 12% achieved (limited) operational user funding

Tangible technical results:

- Service demonstrations, user acceptance & feedback
- Processor Prototypes and process lines validated
- R&D and Implementation plans

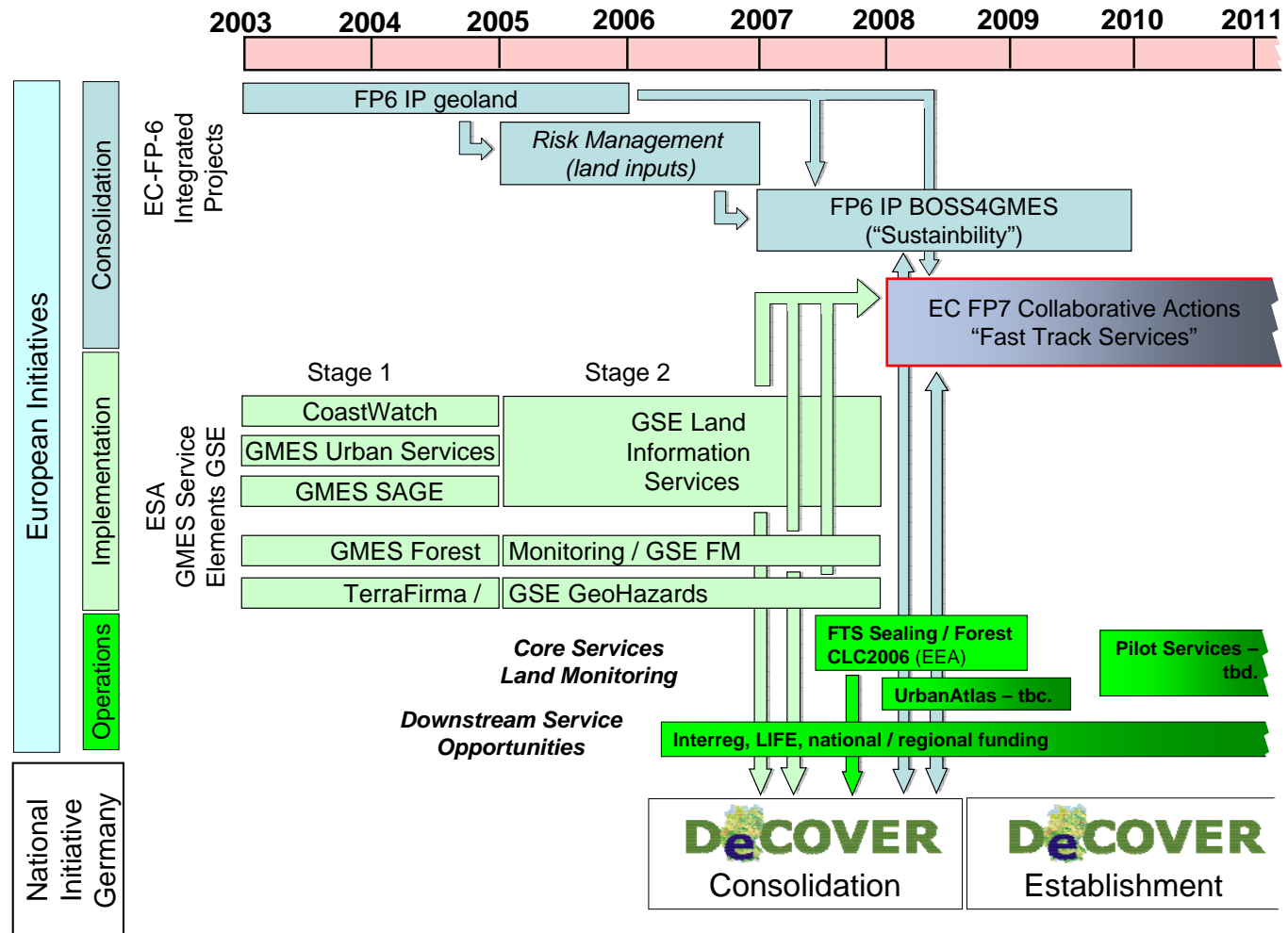


geoland - Stakeholder Group Achievements





GMES Land Outlook





„Core Services“

- Systematic road-map visible
- Institutional commitment critical for return-on-investment perspective on FP7 (**Munich Road-Map?**)
- New Pilot Services –to be created- in order to
 - do, what is already mature today
 - complement pan-European demonstration

„Downstream Services“

- Interreg4 / LIFE+ key selective implementation national level
- No system road map visible
- Need to bridge 3-4 year gap (GSE → FP7)?

DG Regio ⇒ Regions for Economic Change



Furhter questions - contact



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