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

3. GeoForum
„Geoinformation im Dienst von Umwelt und Sicherheit“
Verein für Geoinformationswirtschaft, Mecklenburg-Vorpommern
Warnemünde, 18./19. April 2007
Infoterra

Consistent European Management Organisation

Turnover 2005: 43.5 M€
Staff 2005: 300+

Infoterra GmbH
(Germany)
Friedrichshafen

Infoterra Ltd
(UK)
Leicester
Farnborough

Infoterra France SAS
(France)
Sophia-Antipolis
Toulouse

Infoterra Hungary Ltd
(Hungary)
Budapest
Infoterra GmbH

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)
Europe’s environment under pressure

What is needed …

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

Soil Erosion – 17% of total European land area affected. Economic loss around 85 € per ha

Biodiversity – 335 species highly endangered in Europe

Agriculture – intensification leads to water stress, soil erosion and biodiversity decline

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

Responsible management requires adequate geo-information

climatic variability - need for up-to-date information
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

Space & ground segment requirements (Sentinel-2, -3)

European Land Monitoring Fast Track

Geo-information standard inputs, information sharing / in-situ data access

Global Land Monitoring Fast Track

Institutional commitment & 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

Ancillary & In situ Data

Geo-information Standards & data harmonisation

Risk

Soil

Nature Protection

Spatial Planning

Forest Monitoring

Water

Down-stream Services
What geoland could provide ...

Validation and demonstration of services

Add-on mapping example:

- Crop types: uron (March) Example GSE SAGE

MMU 1...5 ha

21 + 6 agriculture classes

Update each year

Instruct catchment, (Chania, Crete) geoland OWS-W

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

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

Update each year MS + regional use

> 0.02 g ha⁻¹
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

Crop Yield Forecast Map
Huabei province, China

geland OFM & European Development Fund

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

- Forest
- Frost/Severe
- Azimuth artefact
Geoland in a nutshell

Resources:
- 20 Mio. EUR budget,
- 10 Mio. EUR EC-contribution
- ~ 165 Person-years
- Duration:
  - 3 years (Jan. 2004 - Dec. 2006)

Core Users
- EARS
- SEPA
- LWF
- VITO
- CAB

Service Providers
- Infoterra Ltd.
- CEH
- KNMI
- alterra

Others
- NR
- Metria
- SEPA

International
- INRA
- CEA / CNRS
- UCL
- Infoterra GmbH
- Astrium GmbH
- Delphi IMM GmbH
- Hugin GmbH
- RSS
- DLR / DFD
- IMK Uni Karlsruhe
- Uni Bonn
- FELIS
- DLR / DFD
- IMK Uni Karlsruhe
- Uni Bonn
- FELIS
- DLR / DFD
- IMK Uni Karlsruhe
- Uni Bonn
- FELIS

Users
- (20 consortium members, 33 letters of commitment)

Consortium Members
- 53

Nations
- 59

15

18/04/2007
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
GSE Risk EOS Flood Risk Analysis (FRA) …

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

Mapping of Past Flood events

Flood Risk Maps

Flood Information Service
geoland - success in consolidation ...

... more than expected

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

DG Enterprise
geoland
Boss4GMES
(FP6 Integrated Project)
„consolidation“

European Space Agency
GSE Land
GSE FM partners tbd.
„implementation“

Open Stakeholder Platforms

European Land Monitoring Services

User Platform
“ad hoc WGs“
(coordinated by ETC-TE in coop. with ETC-Water, ETC-BD and MS)

Service Provider Network
„temporary association“
(public & private providers)
Making some progress ..
GMES Land Outlook

- **EC-FP-6 Integrated Projects**
  - FP6 IP geoland
  - Risk Management (land inputs)
  - FP6 IP BOSS4GMES ("Sustainability")

- **European Initiatives**
  - Consolidation
  - Implementation

- **ESA**
  - GMES Service Elements GSE
    - Stage 1: CoastWatch, GMES Urban Services, GMES SAGE
    - Stage 2: GSE Land Information Services, GMES Forest Monitoring / GSE FM, TerraFirma / GSE GeoHazards

- **Operations**
  - Core Services Land Monitoring
  - Downstream Service Opportunities
    - FTS Sealing / Forest CLC2006 (EEA)
    - Interreg, LIFE, national / regional funding
    - Pilot Services – tbd.

- **National Initiative Germany**
  - DeCOVER Consolidation
  - DeCOVER Establishment

- **FP6 IP BOSS4GMES**
  - "Sustainability"
  - "Fast Track Services"
GMES Land Outlook

„Core Services“
• Systematic road-map visible
• Institutional committment 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 opportunity for first selective implementation on regional / national level
• No systematic road-map visible
• Need to bridge 3-4 year gap (GSE → FP7)?
Further questions - contact

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