Satellite based environmental monitoring: The future standard tool or just a fad

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Tomsk

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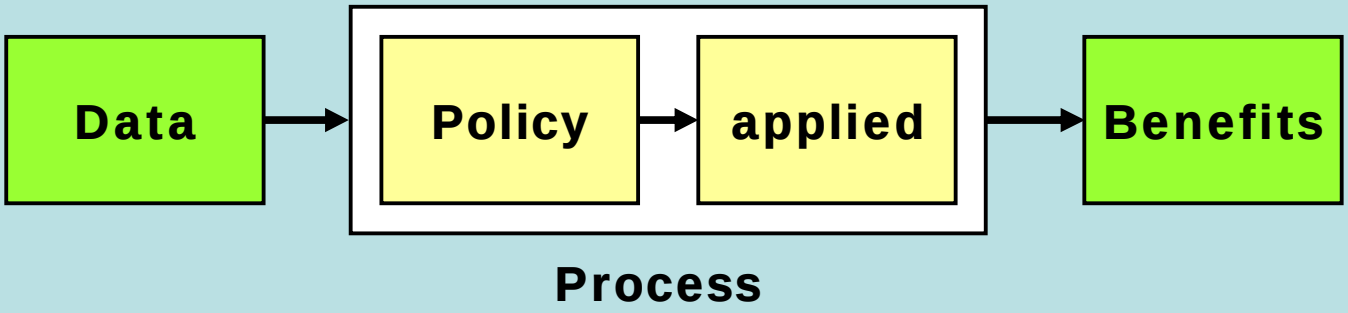
What this talk is about

1. GMES in theory
2. GMES in reality
3. GMES for users

The need for environmental data

- Decision making in environmental policy
  - Well informed through high quality data
- Well defined data collection process
  - Environment Agencies and other organisations
  - collect and interpret data on national and regional levels
  - report to regional, national and supranational bodies, e.g. EEA



Introducing remote sensing

- **Space community: several attempts to establish satellites as data source currently:**
- **GMES: Global Monitoring for Environment and Security**
- **GEO: Group on Earth Observation**
- **GEOSS: Global Earth Observation System of Systems**

GMES

- European Programme: EC and ESA
- Some 2.5 Billion € budget
- One of two flag-ships of European Space Programme
  - other is Galileo (positioning)
- High level political process
- Project work – put to action
  - GSE: Service Elements programme by ESA
  - FP6 / 7: Research Framework Programme by EC
- Aim: establish operational and sustainable services to provide policy relevant data products

GEO and GEOSS

- GEO: some 50 countries
- Aim: establish GEOSS
  - interlinking existing Earth Observation Systems
- no budget
  - except for secretariat
- ambitious work programme
  - volontary contributions
- GMES is European contribution to GEO / GEOSS

The GMES Political Frame

- GMES Action Plan 2004 – 2008
  - … response to data needs of public authorities…
  - … dialogue amongst stakeholders…
- European Space Policy – preliminary Elements
  - … identifying and bringing together user needs (…)
  - … aggregating the political will in support of these …
- Orientations from the second Space Council
  - … benefits of using broadly supported European solutions …
- White Paper – Space
  - … continuous dialogue between providers and users…
  - … federate user requirements at the European level…

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- Conclusion: GMES is a reality – only continuity needs to be established

Is it?

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- The shear number of users is meaningless
- Service Appraisals
  - enthusiasm
  - condemnation
  - detailed answers
  - good, good, good
  - specialist knowledge and experience
  - lacking competence
  - adequate technical infrastructure available
  - technically unable to use products
  - taking project serious
  - reluctant reaction or none at all

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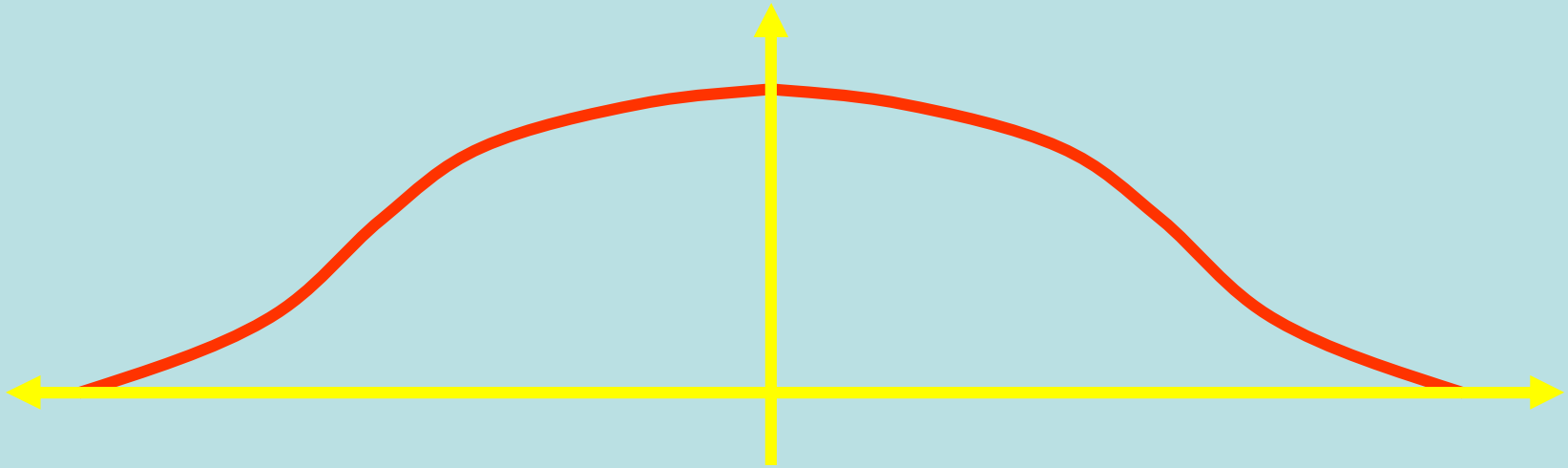
wide Spectrum of different Reactions

Differenciating instead of counting users

- Degree of involvement (how serious they take it)
- How they evaluate data products (beyond good or bad, suitability for day-to-day-work)
- thoroughly understand individual backgrounds



User driven projects

- counting project partners
  - representative listing
- GEMS: 22 Org., 1 user
- MERSEA: 39 Org., 2 users
- RISK-EOS: 15 Org., 3 users
- ICEMON: 24 Org., 4 users
- ROSES: 28 Org., 10 users
- PROMOTE: 34 Org., 13 users
- GeoLand: 58 Org., 20 users
  - group with 6% Budget driving force?

User driven projects

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  - group w

large overall number of users, but not enough users per project to enable transformation of project to sustainable service

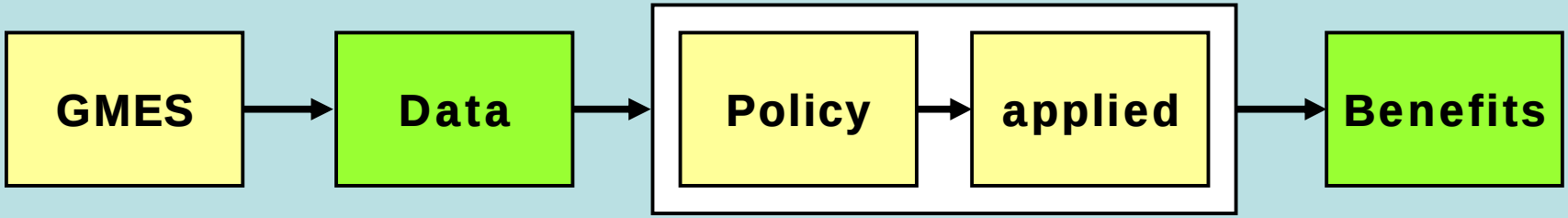
Planning without the future customer

- Claim user driven approach – which does not exist
- Roll out plans ignore time spans needed by users
  - three (four) Fast Track Services
  - supposed to be sustainable in 2008
  - large Investments (Sentinels – generation of Satellites)
- true market potential unknown
  - currently services as projects
  - user / provider integration shows large differences (excellent to unprofessional)
- current market penetration of GMES products
  - infered from involved user organisations
  - penetration within organisations ignored

Selling GMES: PWC

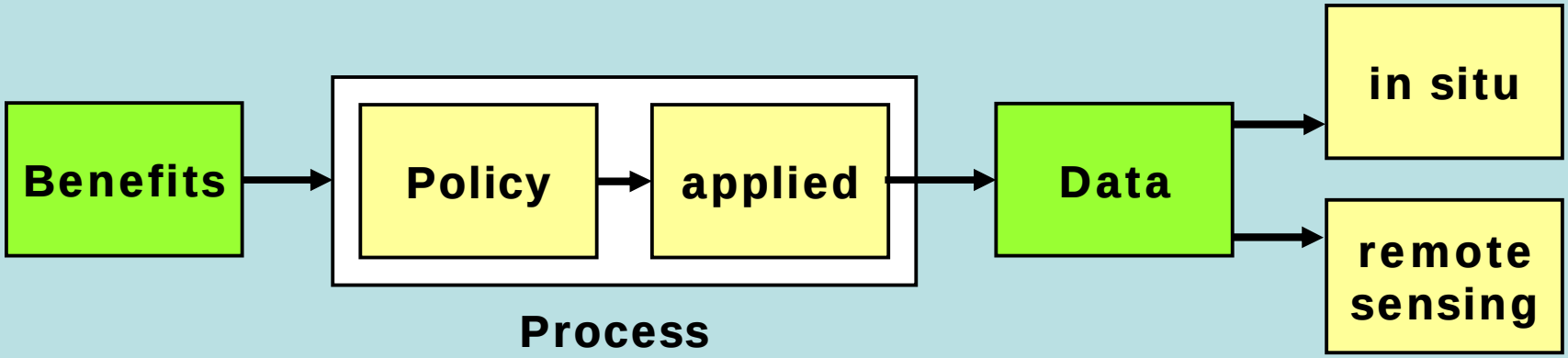
Selling GMES

- Price Waterhouse Coopers GMES Benefit Analysis
- presents benefits of utilisation of environmental data
- in a reverse reasoning, this is used to justify remote sensing
- however a priori restricted to such data that can be produced using remote sensing
- ignores other data sources that could bring about similar benefits



Benefits and data sources

- from user perspective, reasoning the other way round:



- PWC neglects potential benefits of improved in situ methods: stations, networks, surveys
- costs are ignored: each market is an exchange process, therefore, costs to benefits ratio is critical

Overselling GMES

- PWC study implies that GMES will directly produce benefits
  - e.g., “GMES could reduce the rate of global deforestation by 15-20 % through the regulation and verification of measures to curb deforestation”
  - however: deforestation is not the result of a lack of data, but of lacking “measures”
- contains misleading statements
  - e.g., “defining optimum levels of emission reductions and their allocation to key sectors”
  - however: emission by sectors cannot be measured using remote sensing, greenhouse gases not operational

Understanding GMES

- overwhelming amount of papers
- no unbiased information sources
- industry lobbying shapes process
- technology driven rather than user driven

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users feel like outsiders in process

The major obstacle for improvement: The fragmented GMES user community

- Many ongoing and past GMES projects
  - data providers, value adders, researchers, users collaborate
- Segmentary approach
  - topics: forests, spatial planning, air, ocean…
  - political level: European, national, regional
  - reflects complex environmental monitoring practices
- All these projects are led by data providers
- Several have small user federations
  - isolated from each other

- Results for users:
  - impossible to jointly articulate our perspectives
  - not much of a lobby (other than industry)
  - overall process remains supply driven

The GNU approach (1)

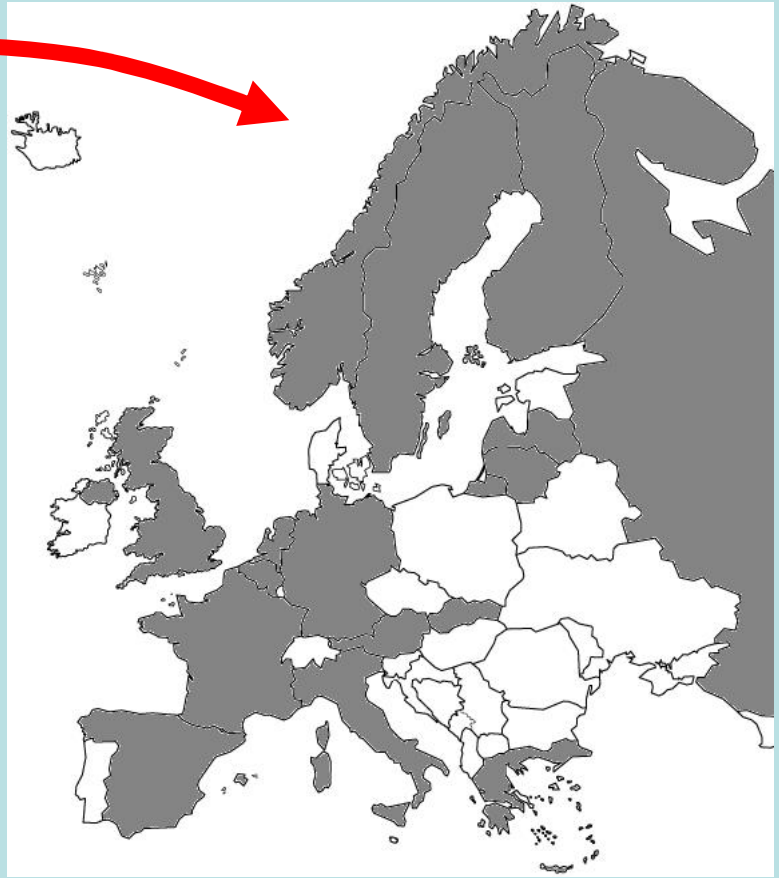
- GMES Network of Users newly founded
  - project led and run by users
  - first independent platform of users – i.e. independent of industry
  - focal point and mouthpiece of user perspectives
  - considering long-term socio-economic development of Europe
- Structuring and defragmenting the user community
  - horizontal integration of user segments
  - stand in for national and regional users
- Added value for existing projects by transfer of experiences and practices

The GNU approach (2)

- Harmonised, yet **differentiated user requirements**
  - cross-linking the various documents
  - synergies, gaps, overlaps of previous GMES-projects
  - potential of data products for day-to-day work
  - prioritising the data products regarding their European Dimension
- **Systematic dialogue with stakeholders**
  - users, providers, policy
  - not all groups at the same time – inefficient
  - stakeholder-constellations: get-togethers in a made up way – purposeful
- **Links** with pertinent networks
  - EIONET, GEO User Interface Committee, EPA-Network, etc.

Partnership

- **Inner Network** – Consortium
  - 20 Users (of environmental data)
    - including 8 EPAs, 1 ETC
  - 3 Science Partners
  - 4 Subcontractors
- **Outer Network** – various organisations relevant to users
  - service providers
  - research institutes
  - networks, initiatives
  - projects
  - further users
- **Target Groups and Audiences** – policy and decision makers and European stakeholders
  - EC, GMES Bureau, EEA, ESA...



How to pronounce GNU

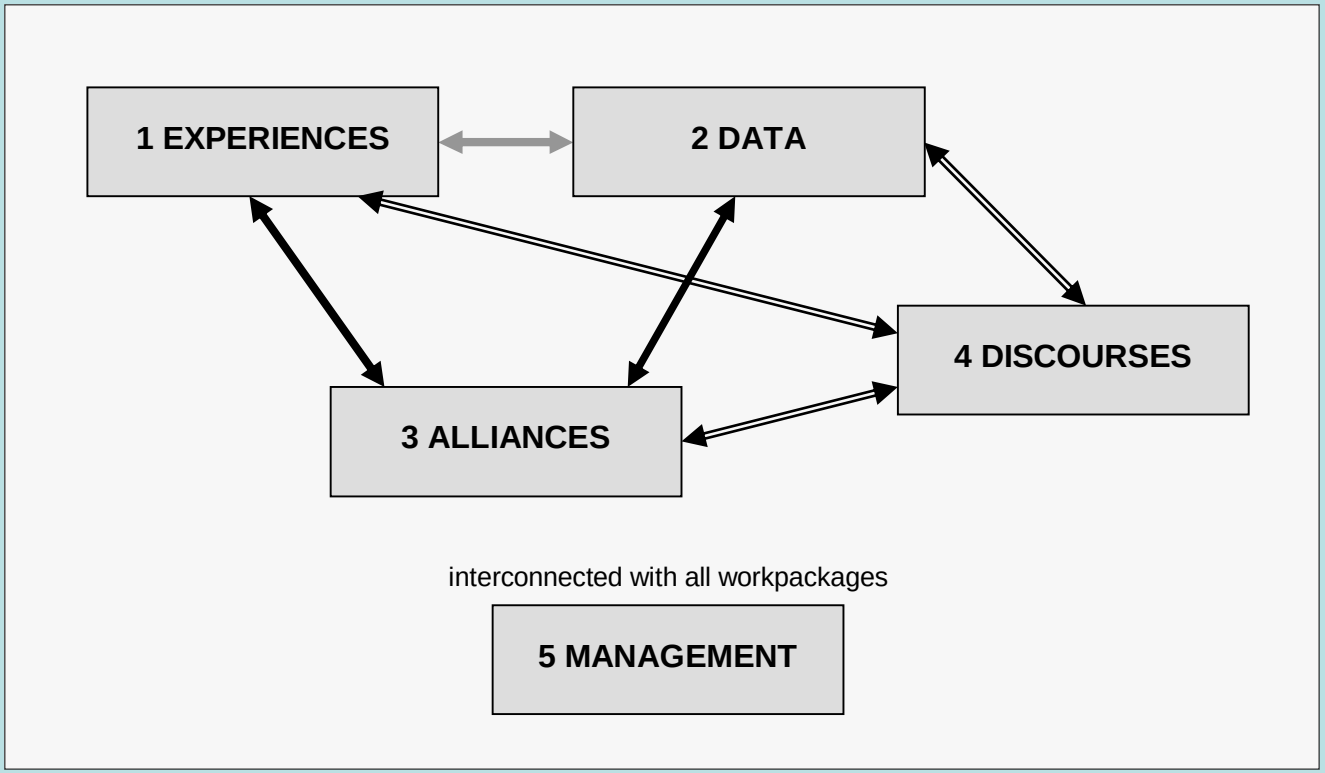
How to pronounce „GNU“

- derives from Khoikhoi language
  - resembles grunting sound of animal when chewing, with audible G
- must be distinguishable from „new“
  - if g is not pronounced it is not
- famous GNU-Song by Flanders & Swann:
  - I‘m a G-nu, how do you do?

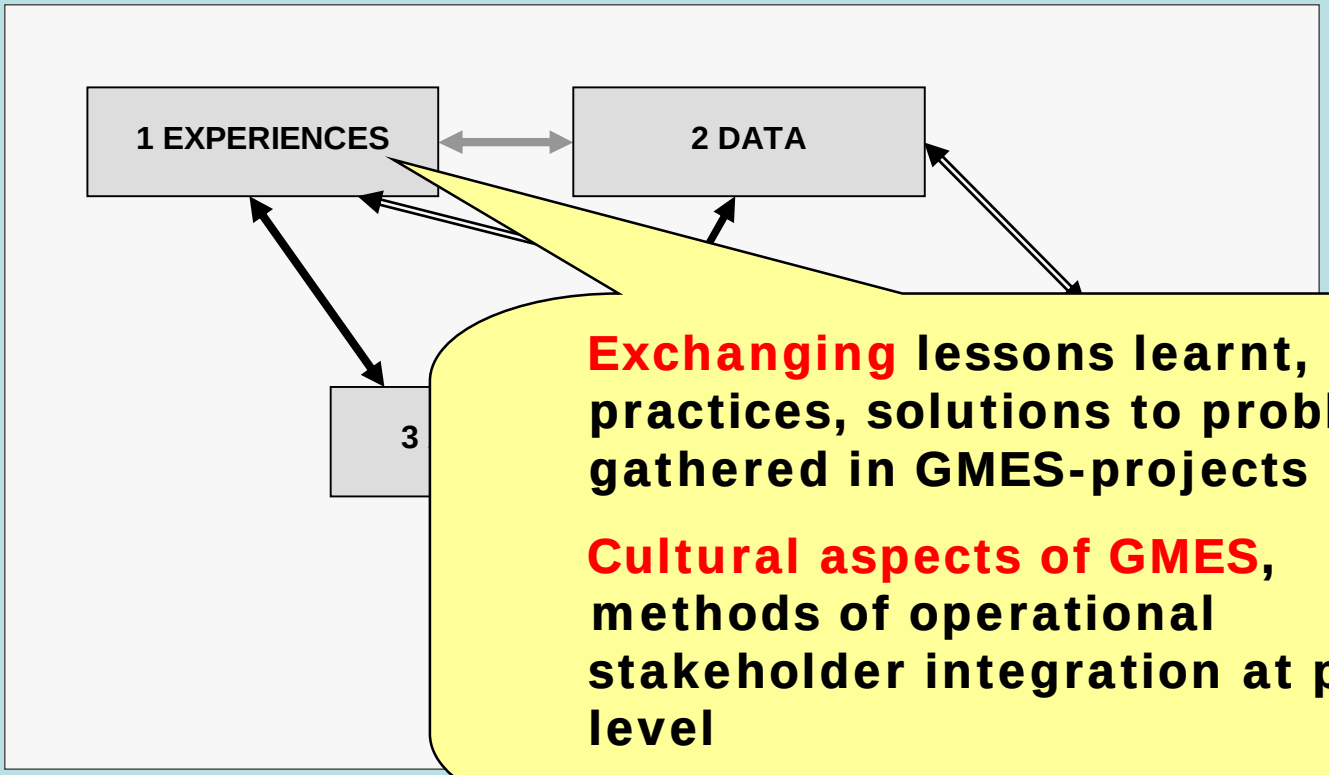
Summary

- The GMES theory and reality show a discrepancy
- ESA claims that GMES is a reality which it isn't
- The true market for GMES products remains unknown
- Dubious benefits are used to (over)sell GMES
- The GMES user side is confused
- GNU (GMES Network of Uses) is the first and only independent network of GMES users
- GNU aims at defragmenting and structuring the GMES user community
- GNU intends to become the mouthpiece of European GMES user needs

Work plan


1 EXPERIENCES
2 DATA
4 DISCOURSES
3 ALLIANCES
interconnected with all workpackages
5 MANAGEMENT

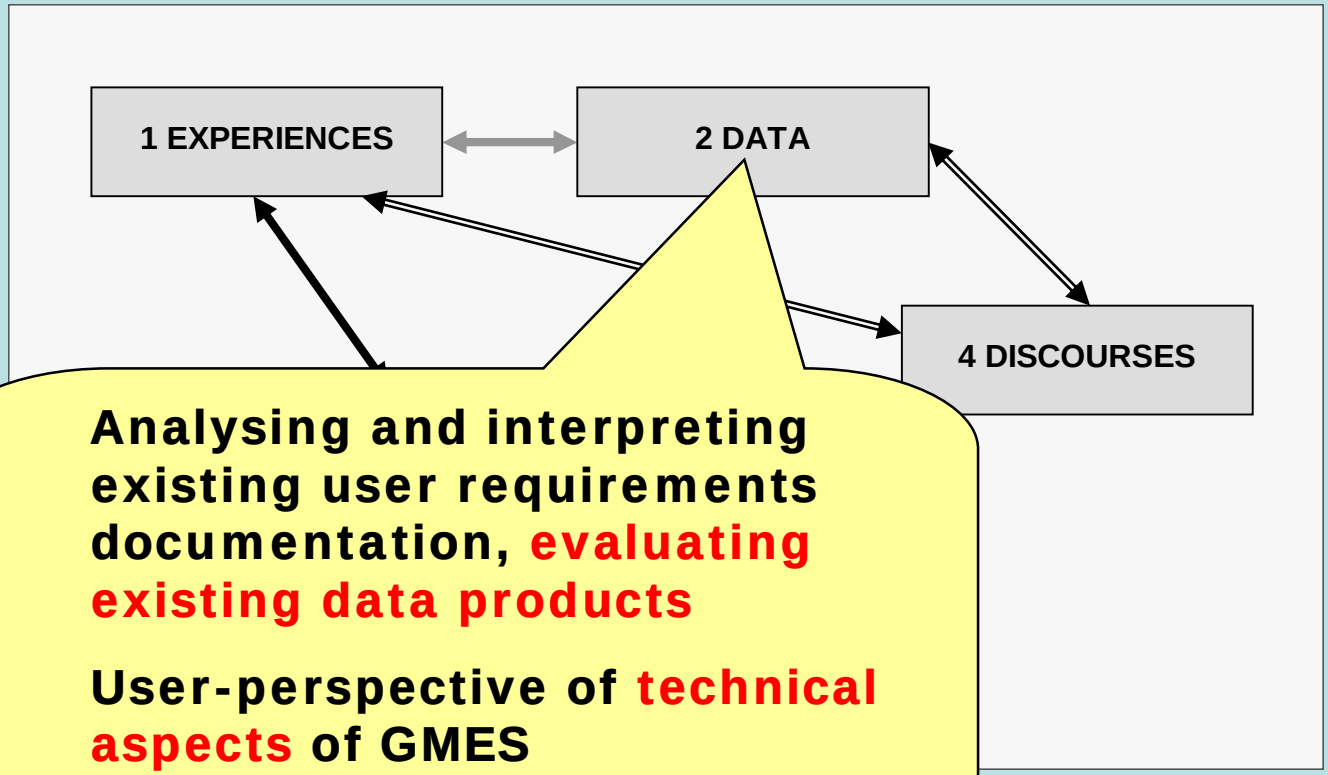
Experiences



Exchanging lessons learnt, practices, solutions to problems gathered in GMES-projects

Cultural aspects of GMES, methods of operational stakeholder integration at project level

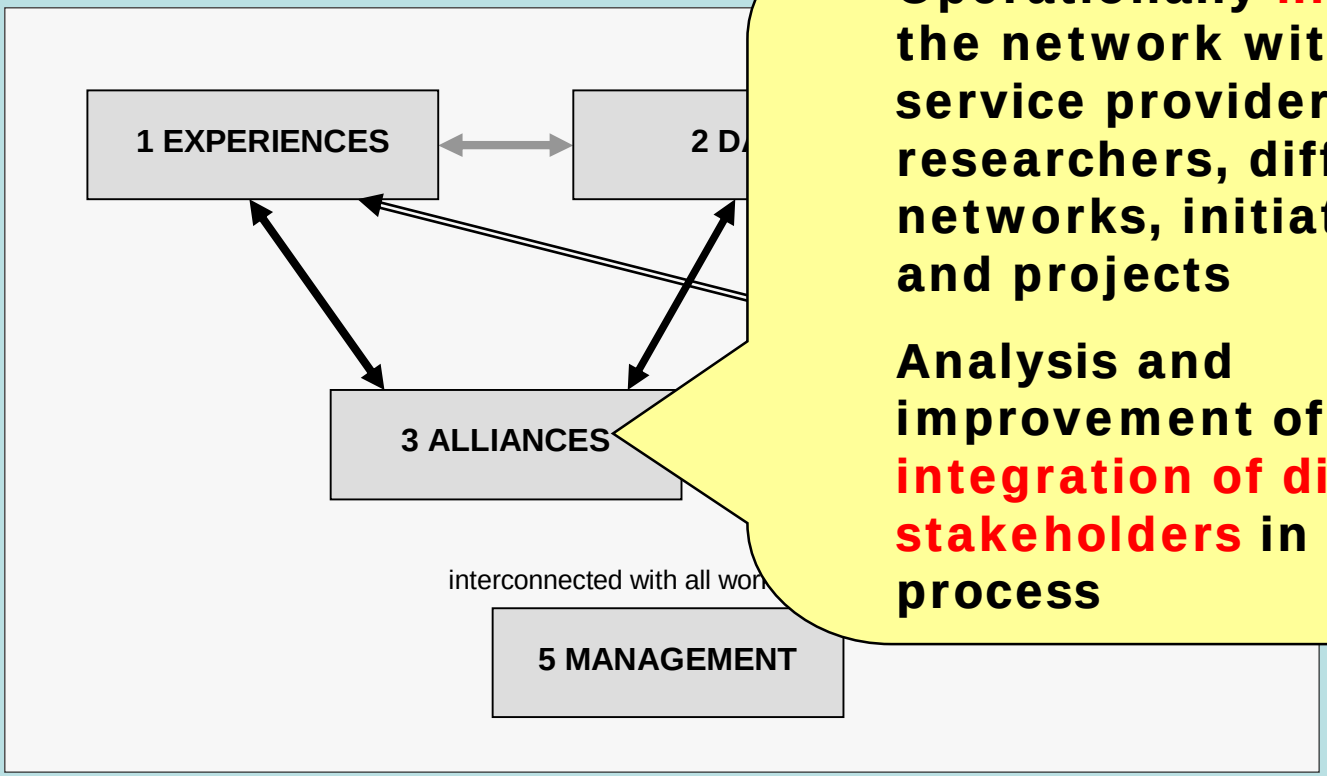
Data



Analysing and interpreting existing user requirements documentation, evaluating existing data products

User-perspective of technical aspects of GMES

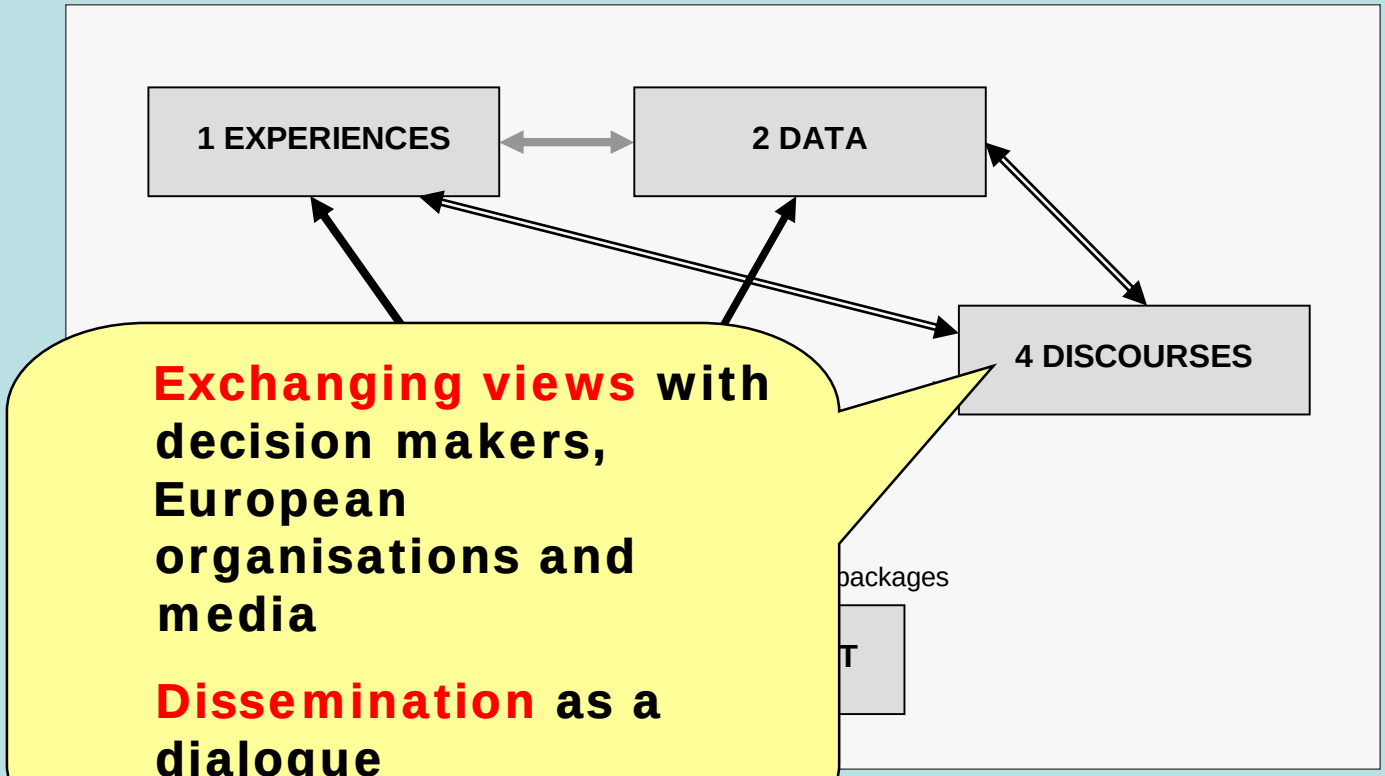
Alliances



Operationally linking the network with service providers, researchers, different networks, initiatives, and projects

Analysis and improvement of the integration of different stakeholders in overall process

Discourses


1 EXPERIENCES
2 DATA
4 DISCOURSES
Exchanging views with decision makers, European organisations and media
Dissemination as a dialogue

Quotes from the review
(independent reviewers appointed by commission)

- "(GNU) is (...) relevant to the GMES Action Plan and other political decisions"
- "The proposed CA is of vital nature to the current state of GMES."
- "This is what GMES needs nowadays to move ahead."

Key administrative data

- Coordination Action (CA)
- funded via FP6 by DG Enterprise
- budget 1,1 M€
- currently contract negotiations
  - start likely this fall
- duration 3 years
- coordinated by Austrian Environment Agency

Partners (I)

Federal Environment Agency	Austria
Flemish Land Agency	Belgium
European Forest Institute	Finland
Ministry of Ecology and Sustainable Development	France
Federal Environmental Agency	Germany
Thuringian State Agency for Forests, Hunting and Fishing	Germany
National Observatory of Athens	Greece
Agency for Environmental Protection and Technical Services	Italy
Latvian Environment, Geology, and Meteorology Agency	Latvia
Environmental Protection Agency	Lithuania
National Geological Survey, part of the Netherlands Organisation for Applied Scientific Research (TNO)	Netherlands
Norwegian Institute for Air Research	Norway

Partners (2)

Irkutsk Regional Agency of Forest Management	Russia
International Socio-Ecological Union	Russia
Slovak Environmental Agency	Slovakia
European Topic Centre on Terrestrial Environment	Spain
Swedish Environmental Protection Agency	Sweden
Swedish Rescue Services Agency (subcontractor of SEPA)	Sweden
British Geological Survey	UK
Environment Agency of England and Wales	UK
Science Partners	
Joanneum Research	Austria
Wuppertal Institute for Climate, Environment, and Energy	Germany
Siberian Centre for Environmental Research and Training	Russia