



**The Group on Earth Observation (GEO)
and the role of Europe
in the Implementation of the Global Earth
Observation System of Systems (GEOSS)**

**EnvirolInfo2005
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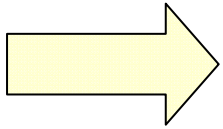
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European Commission, Brussels***

(*DG RTD, Environment and Climate System)

(**DG INFSO, ICT for the Environment)



Outline



1. Earth observations - current situation

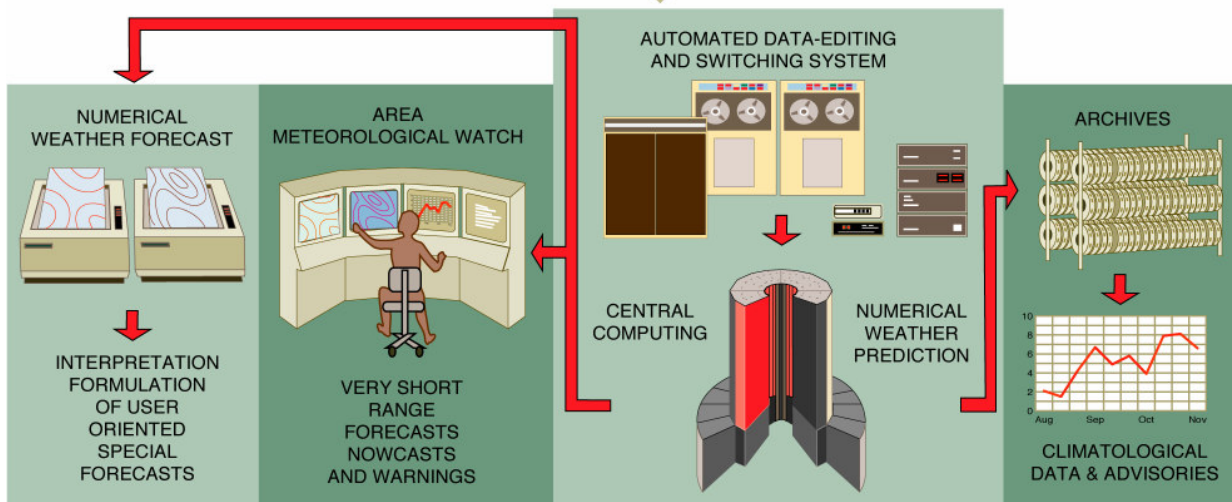
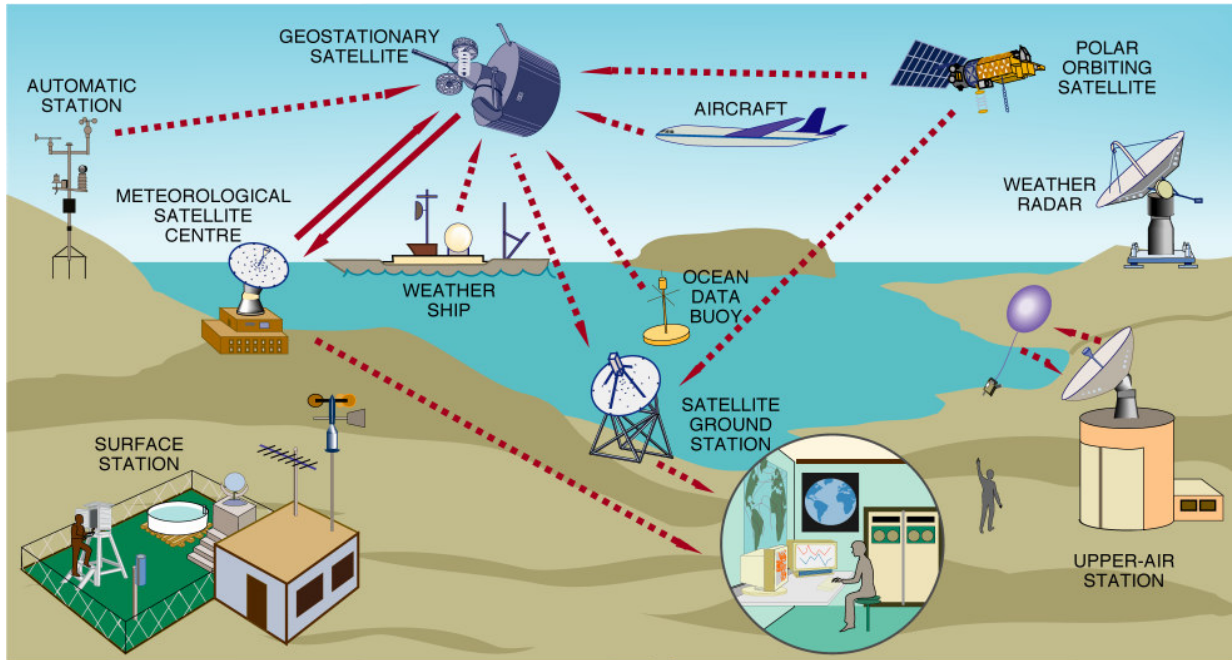
2. Global Earth Observation System of Systems (GEOSS)

- Vision, scope and focus
- Distributed system of systems, architecture, interoperability, data sharing

3. Group on Earth Observations (GEO)

- Partnership
- History, progress
- Structure
- Future challenges
- EU contribution

Concept of Integrated Earth Observations



(WMO illustration)

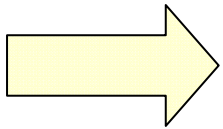


Earth Observations – current situation

- Several temporal and spatial gaps exist in global Earth Observation systems (comprising all satellite, airborne, terrestrial or ocean-based observation platforms);
- National, regional and global EO programmes suffer from lack of coordination and continuity;
- Availability and access to EO-based data, information, products and services, tailored to users needs, is not sufficient in many domains;
- EO programmes and initiatives lacked strong political support and commitment on a global level.



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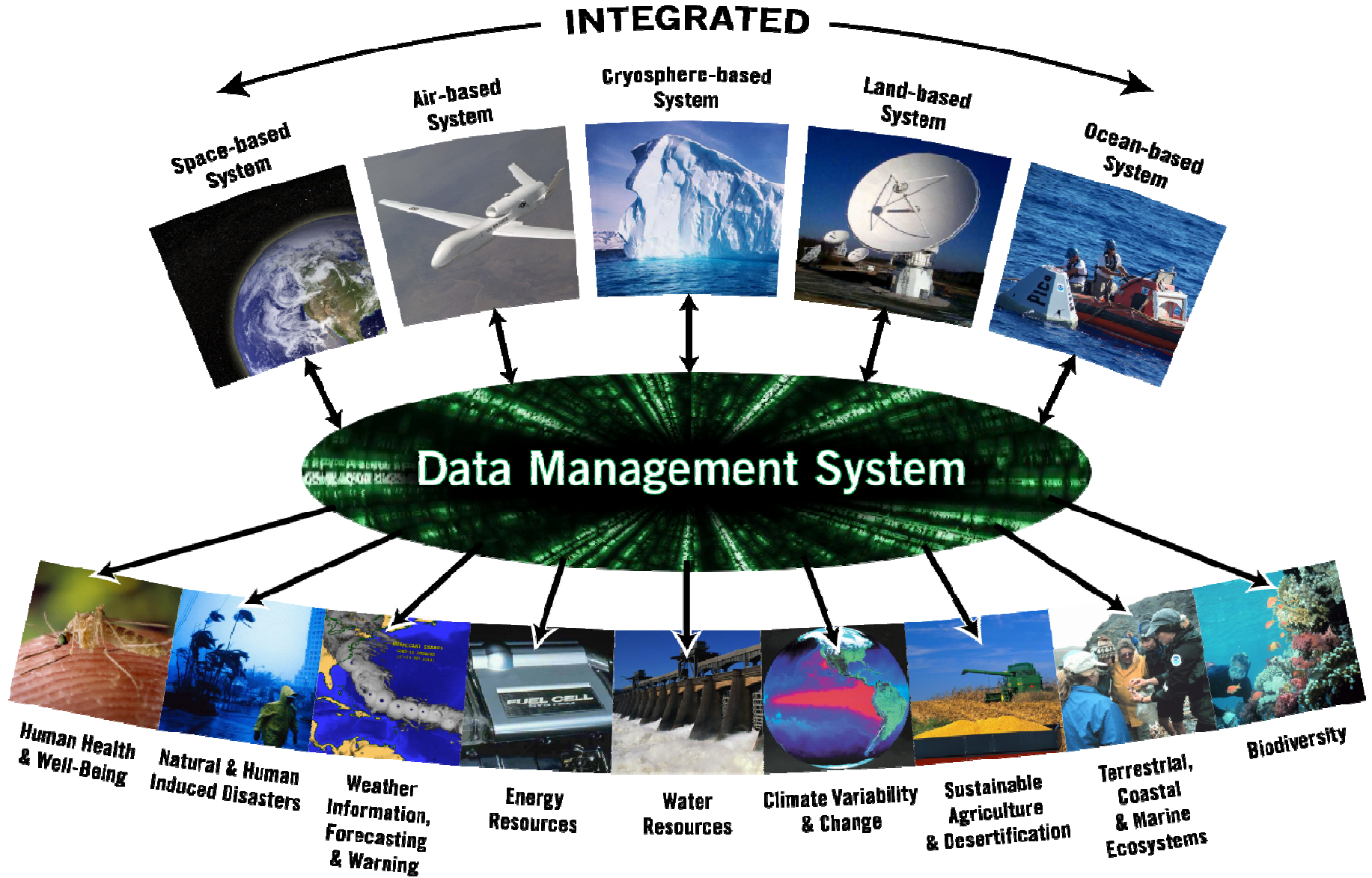
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Towards a **GEOSS**

(Global Earth Observation System of Systems)

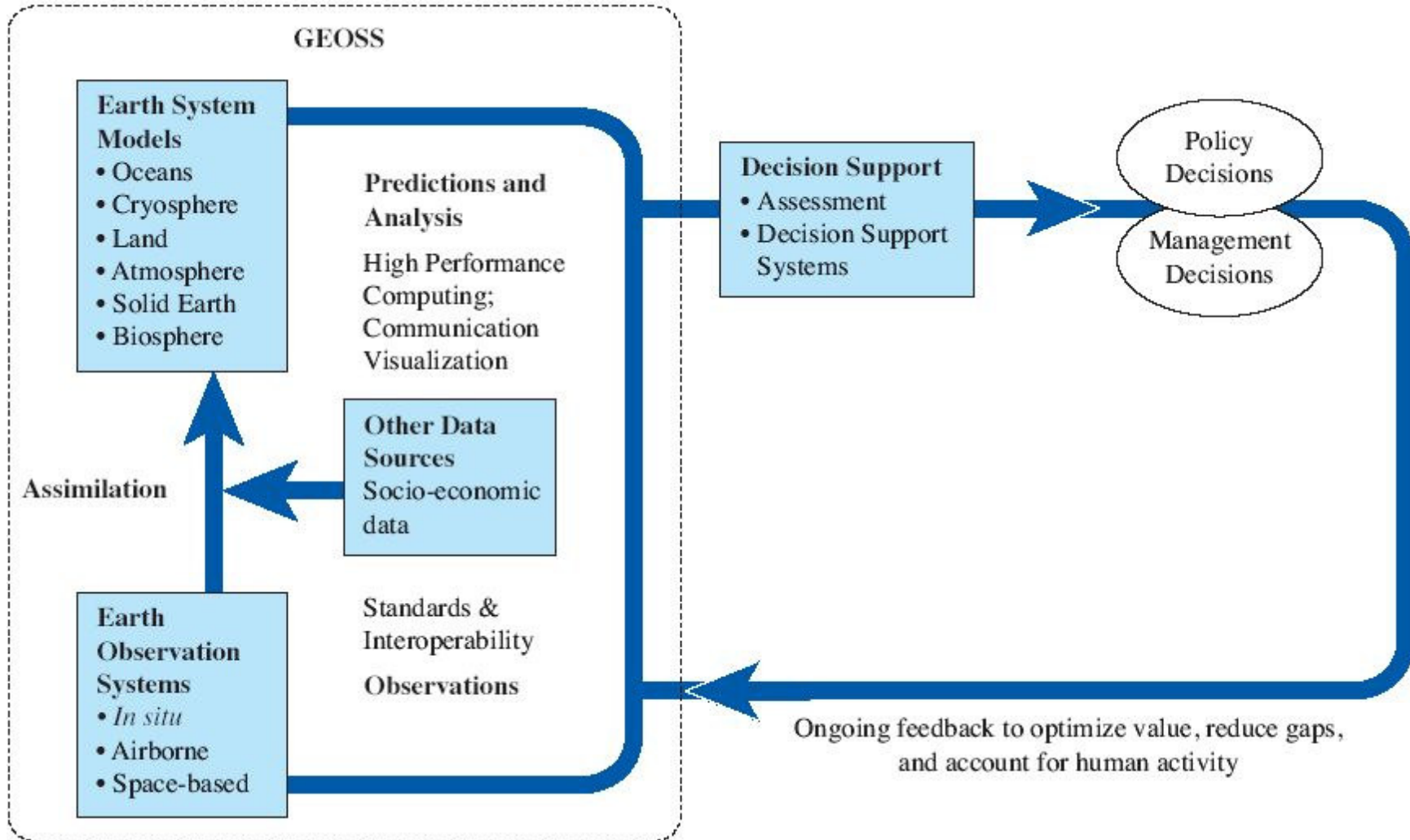




Towards a GEOSS

(Global Earth Observation System of Systems)

Scope and focus of GEOSS





Group on Earth Observations (GEO)

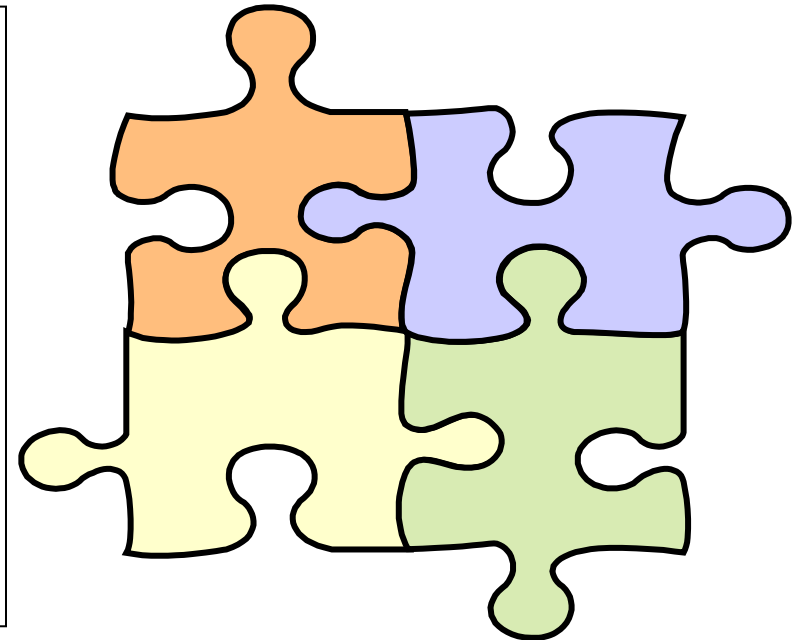
History started in Spring 2003

- *ad hoc* GEO established at the First Earth Observation Summit (EOS-I), held at ministerial level in Washington D.C. in July 2003
- EOS-I declaration created and tasked ad-hoc GEO to prepare a 10-Year Implementation Plan for the development of a Global Earth Observation System of Systems (GEOSS)
- EOS-II in Tokyo in April 2004 agreed a framework for the plan
- EOS III in Brussels in February 2005 endorsed the plan and established GEO on a more formal basis;



GEOSS: a distributed "System of Systems"

GEOSS will be a distributed system of systems, building step-by-step on current cooperation efforts among existing observing and processing systems within their mandates, while encouraging and accommodating new components.



- ➔ **Improves coordination of strategies and observation systems**
- ➔ **Links all platforms: in situ, aircraft, and satellite networks**
- ➔ **Identifies gaps in our global capacity**
- ➔ **Facilitates exchange and processing of data into information**
- ➔ **Improves decision-makers' abilities to address pressing policy issues**



GEOSS architecture: *Interoperability*

☞ **The success of **GEOSS** will depend on:**

- ☞ **Data and information providers accepting and implementing a set of interoperability arrangements**
 - including technical specifications for collecting, processing, storing, and disseminating shared data, metadata, and products
- ☞ **Being based on non-proprietary standards, with preference to formal international standards**
- ☞ **Being sensitive to technology disparities among **GEO** Members and Participating Organizations**



GEOSS architecture: *data sharing*

- ☞ **The societal benefits of Earth observations cannot be achieved without data sharing**
- ☞ **GEOSS data sharing principles:**
 - ☞ **There will be full and open exchange of data, metadata, and products shared within **GEOSS**, while recognizing relevant international instruments and national policies and legislation**
 - ☞ **All shared data, metadata, and products will be made available with minimum time delay and at minimum cost**
 - ☞ **All shared data, metadata, and products free of charge or no more than cost of reproduction will be encouraged for research and education**

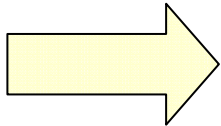


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GEO:
a new
intergovernmental
partnership to
build the **GEOSS**



Group on Earth Observations (GEO)

GEO Member Governments (Status: 3 May 2005)

- Argentina
- Algeria
- Australia
- Belgium
- Belize
- Brazil
- Cameroon
- Canada
- Chile
- **China, co-chair**
- Croatia
- Cyprus
- Denmark
- Egypt
- **European Commission, co-chair**
- Finland
- France
- Germany
- Guinea-Bissau
- Greece
- Honduras
- Iceland
- India
- Indonesia
- Iran
- Ireland
- Israel
- Italy
- Japan
- Kazakhstan
- Luxembourg
- Malaysia
- Mali
- Mexico
- Morocco
- Nepal
- Netherlands
- New Zealand
- Niger
- Nigeria
- Norway
- Portugal
- Republic of the Congo
- Republic of Korea
- Russian Federation
- Slovak Republik
- **South Africa, co-chair**
- Spain
- Sudan
- Sweden
- Switzerland
- Thailand
- Tunisia
- Ukraine
- United Kingdom
- **United States, co-chair**
- Uzbekistan



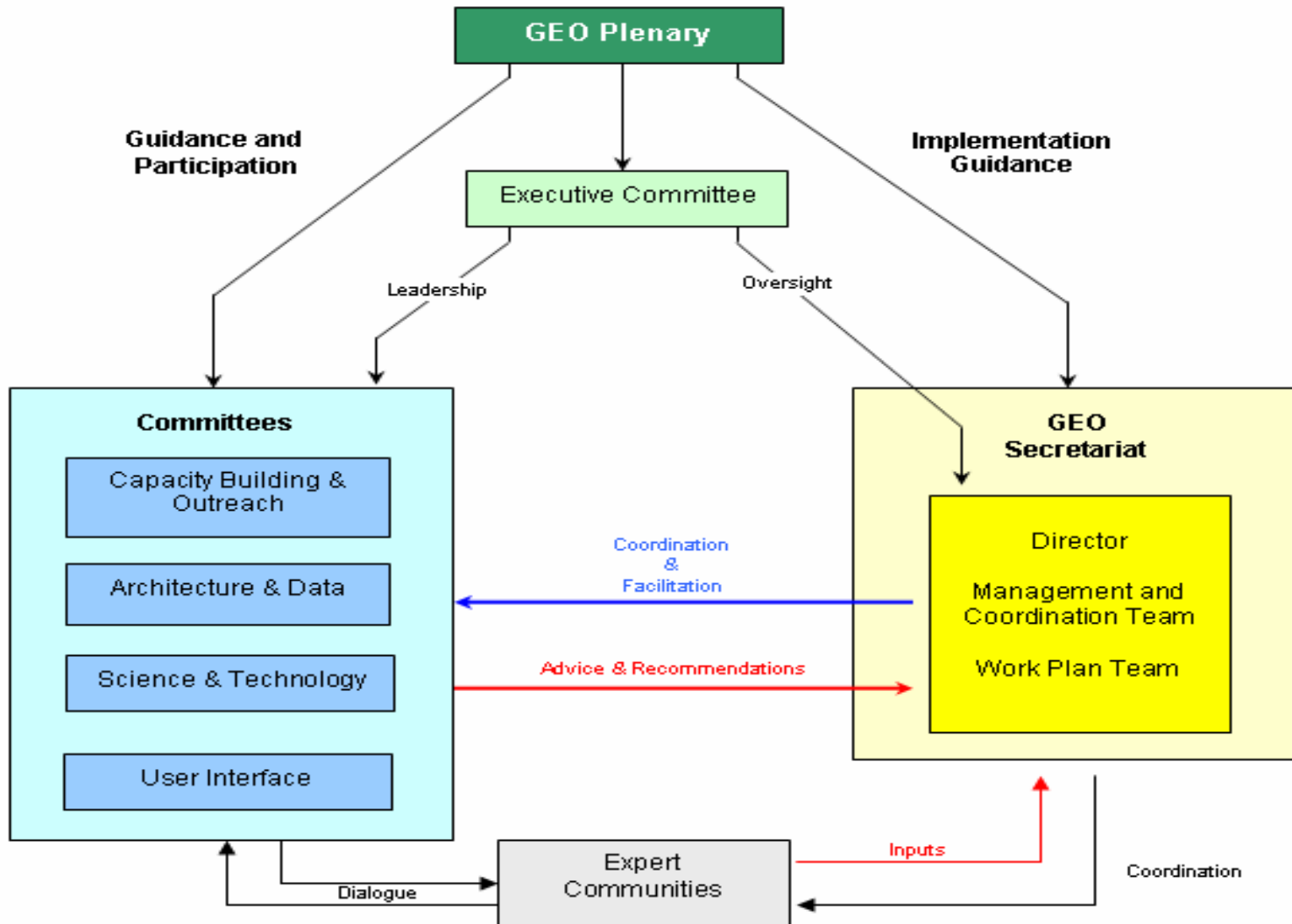
Group on Earth Observations (GEO)

Participating International Organizations (Status: 3 May 2005)

- ☞ African Association of Remote Sensing of the Environment (AARSE)
- ☞ Association for the Development of Environmental Information (ADIE)
- ☞ Asia-Pacific Network for Global Change Research (APN)
- ☞ Central American Commission for the Environment and Development (SICA/CCAD)
- ☞ Committee on Earth Observation Satellites (CEOS)
- ☞ European Centre for Medium-Range Weather Forecasts (ECMWF)
- ☞ European Environmental Agency (EEA)
- ☞ European Space Agency (ESA)
- ☞ European Sea Level Service (ESEAS)
- ☞ Network of European Meteorological Services/Composite Observing System (EUMETNET/EUCOS)
- ☞ European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)
- ☞ The Association of the Geological Surveys of the European Union (EuroGeoSurveys)
- ☞ Food and Agriculture Organization of the United Nations (FAO)
- ☞ Federation of Digital Broad-Band Seismograph Networks (FDSN)
- ☞ Global Climate Observing System (GCOS)
- ☞ Global Ocean Observing System (GOOS)
- ☞ [Global Spatial Data Infrastructure \(GSDI\)](#)
- ☞ Global Terrestrial Observing System (GTOS)
- ☞ [Institute of Electrical and Electronic Engineers \(IEEE\)](#)
- ☞ Integrated Global Observing Strategy Partnership (IGOS-P)
- ☞ Intergovernmental Oceanographic Commission (IOC)
- ☞ International Association of Geodesy (IAG)
- ☞ International Council for Science (ICSU)
- ☞ International Geosphere-Biosphere Program (IGBP)
- ☞ International Group of Funding Agencies for Global Change Research (IGFA)
- ☞ International Institute of Space Law (IISL)
- ☞ [International Council on Systems Engineering \(INCOSE\)](#)
- ☞ International Ozone Commission (IO3C)
- ☞ International Steering Committee for Global Mapping (ISCGM)
- ☞ International Strategy for Disaster Reduction (ISDR)
- ☞ [International Society for Photogrammetry and Remote Sensing \(ISPRS\)](#)
- ☞ [Open Geospatial Consortium \(OGC\)](#)
- ☞ Partnership for Observation of the Global Ocean (POGO)
- ☞ South Pacific Applied Geoscience Commission (SOPAC)
- ☞ UN Convention on Biodiversity (UNCBD)
- ☞ United Nations Educational, Scientific and Cultural Organization (UNESCO)
- ☞ United Nations Environment Programme (UNEP)
- ☞ United Nations Framework Convention on Climate Change (UNFCCC)
- ☞ United Nations Institute for Training and Research (UNITAR)
- ☞ United Nations Office for Outer Space Affairs (UNOOSA)
- ☞ United Nations Institute for Environment and Human security (UNU-EHS)
- ☞ World Climate Research Programme (WCRP)
- ☞ World Meteorological Organization (WMO)



Group on Earth Observations (GEO) Draft GEO Structure (2005)





Group on Earth Observations (GEO)

Future GEO challenges

- ☞ **10-year GEO transition period during year 2005:**
 - Commitments by GEO members to provide resources for GEO Secretariat on a regular basis
 - Installation of permanent GEO Secretariat in Geneva
 - Development of GEOSS Work Plan for 2006
 - Installation of mechanisms for interfaces to users and for gaining appropriate science and technological advice

- ☞ **10-year implementation of GEOSS from 2006 onwards**
 - Development and implementation of annual work plans



EU Contributions to GEOSS implementation (1)

- **The 'Global Monitoring for Environment and Security' (GMES) initiative, developing user-driven, operational, environmental monitoring services based on integrated EO data;**
 - > *The observation component of GMES will constitute a major European contribution to GEOSS*
- **The 'INfrastructure for SPatial InfoRmation in Europe' (INSPIRE) initiative, making available relevant, harmonised and quality geographic information;**
 - > *INSPIRE will be a major European contribution to the GEOSS data management system*
- **Data and information products from many regional and national European Earth observation networks**
(e.g. *in situ* and remote sensing observation networks by NMHSS)



EU Contributions to GEOSS implementation (2)

- **Coordinating the EU input to the GEO initiative**
(European GEO High Level Group) and
**representing the EU GEO members as one of the four GEO
co-chairs in the GEO Executive Committee and Plenary**
- **Participating in GEO Working groups and Standing committees**
- **Providing on behalf of EU GEO members a significant
financial contribution for operation of the GEO Secretariat**
- **Supporting GEOSS implementation by Community research**
(mainly Environment, Space, and IST priority areas)
 - > *Several running FP6 projects already address GEO*
 - > *4th FP6 call on Environment RTD explicitly asking for contributions
to GEOSS in several topics closes on 3 Nov. 2005*
 - > *FP7 will address contributions to GEOSS*



More information

- **Group on Earth Observations (GEO):** <http://earthobservations.org>
- **Global Monitoring of Environment and Security (GMES):**
<http://www.gmes.info>
- **INfrastructure for SPatial InfoRmation in Europe (INSPIRE):**
<http://www.ec-gis.org/inspire/>
- **EU research (2002-2006) - FP6:**
<http://europa.eu.int/comm/research/nfp.html>
 - **Environment:** <http://www.cordis.lu/sustdev/environment/>
 - **Information Society Technologies (ICT for risk and environment):**
<http://www.cordis.lu/ist/so/env-risk-management/home.html>
 - **Space:** <http://www.cordis.lu/fp6/aerospace.htm>
- **Future EU research - FP7:** <http://www.cordis.lu/fp7>

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Thank you for listening