ESA EO Programmes for CM16

EOEP-5
Block 4

Bilateral meeting with AT Delegation and Industry

Vienna, 24/05/2016

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EOEP-5 Block-5: EO Science for Society

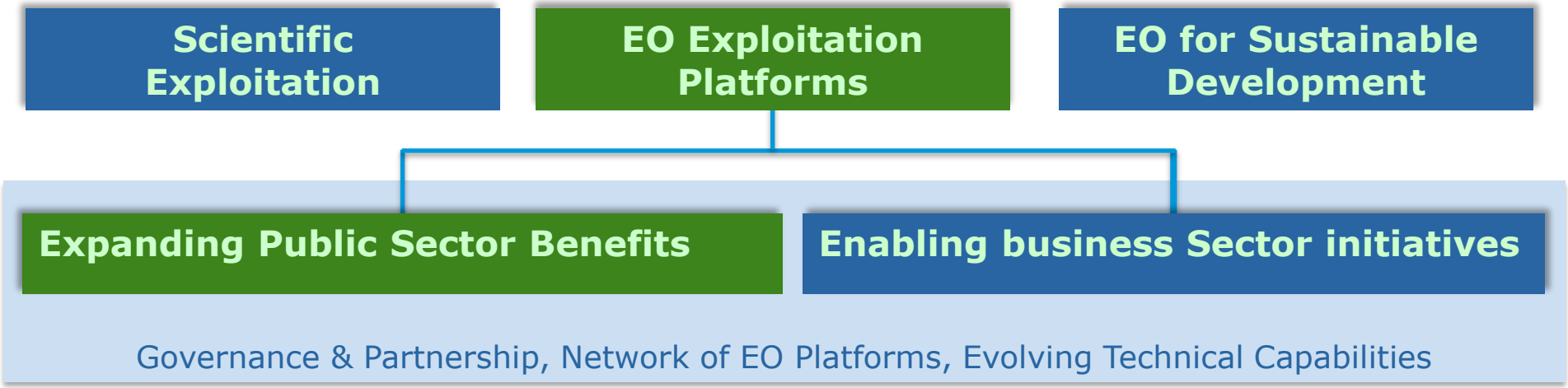
"EO Science for Society" will foster scientific excellence, pioneering new EO applications, stimulating downstream industry growth, and supporting international responses to global societal challenges.

Implementation will be driven by three unifying principles:

- Access and utilization of EO data shall be massively enhanced and democratized by accelerated use of ICT, bringing users to data and scalable hosted processing.
- All activities shall respond to needs of authoritative international user communities and downstream industries, who shall be consulted systematically and participate in co-design, implementation and assessment
- All activities shall be designed to complement, seed, cross-fertilize and enrich relevant activities of ESA Member states' national programmes, the Research and Innovation framework programme of the European Union, and Copernicus.

EOEP-5 Block 4: "EO Science for Society"

❖ Foster scientific excellence ❖ Pioneer new EO applications ❖ Stimulate downstream industry growth ❖ Support international responses to global societal challenges ❖



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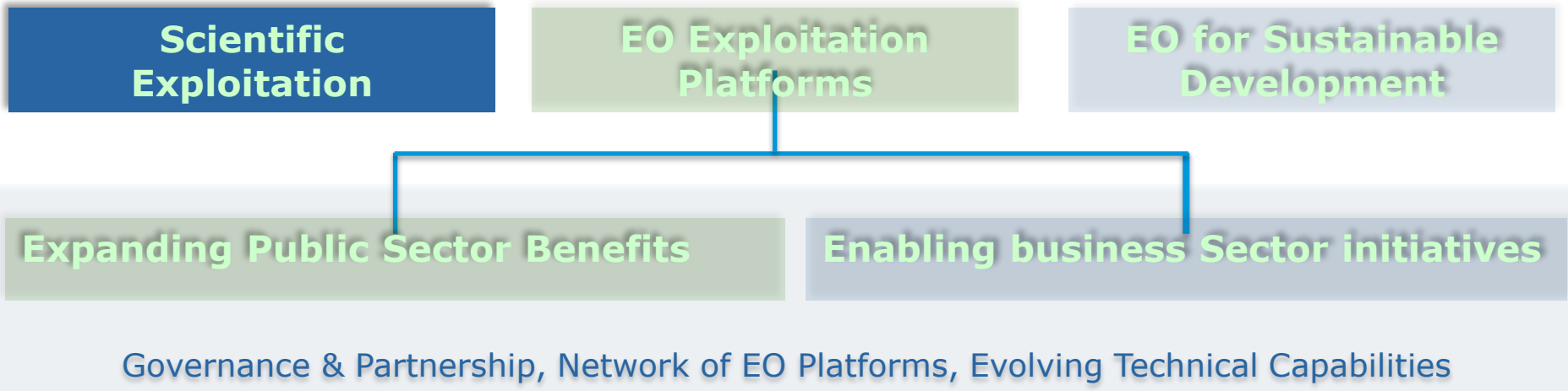

EOEP-5 Block 4: Scientific Exploitation

Addressing the needs of the scientific community in terms of novel observations, new methods, innovative product and leading edge scientific results maximizing the scientific return of ESA and European missions

Engaging international Science community

Organising and contributing to a series of regular international **thematic workshops** for consulting scientists and gathering feedback

Developing Open Science Practices-Tools

Developing Open Science 2.0 activities and practices using latest tools and techniques

Advancing EO methods and Techniques

Launching state-of-the-art **R&D studies** for maximizing scientific exploitation of EO missions in terms of new methods and products;

Advancing Earth System Science

Addressing major **open questions in Earth system science** in close collaboration with major international science efforts.

Translating Exploitation Results into Novel Mission concepts

Reinforcing the role of exploitation results as a driver for **future missions**

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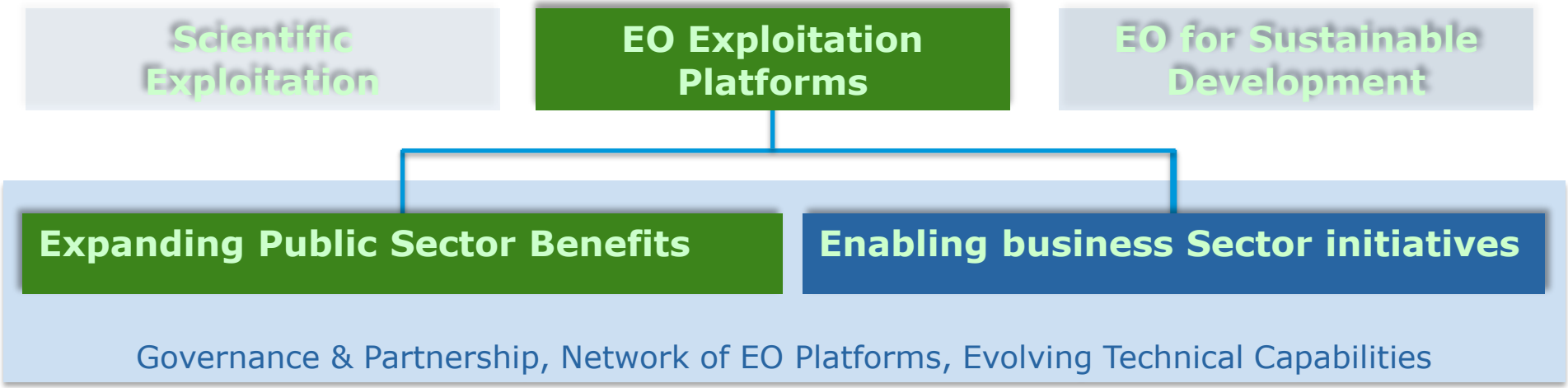


EOEP-5 Block 4: EO Exploitation Platforms

This element will advances both public- and business-sector applications in an innovative framework of EO "platforms".

The objectives of this element are:

1. to further the societal benefit of EO activities in priority areas and to help European business to exploit EO data and other resources in the competitive global market
2. to establish a novel European architecture for providing and using EO data in such activities much more flexibly and efficiently than today.

This element is built upon the Data User and Value-Adding Elements (DUE, VAE) in EOEP-4, as well as ground segment development actions. It will be a major contribution towards implementing ESA's Ground Segment evolution strategy and be an important element of ESA's Digital Agenda.

Significant opportunities for data providers, information service providers, cloud and ICT developers and service providers, science, applications, research institutes, platform developers, platform service providers, EO digital marketplace brokers, users, value adders, SMEs …

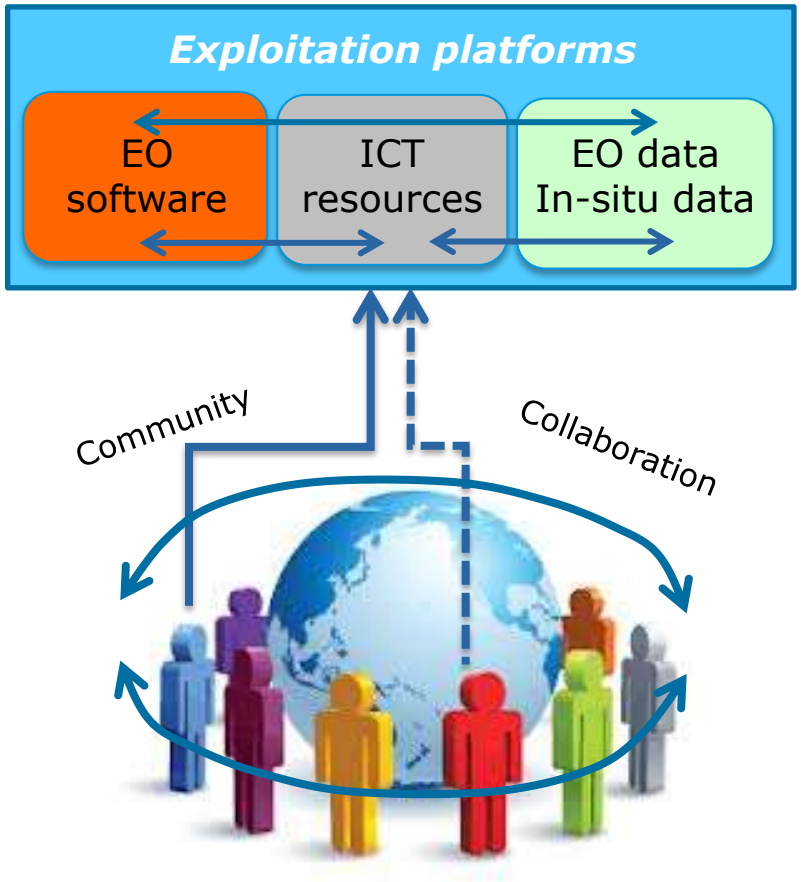
EOEP-5 Block 4: EO Exploitation Platforms

Governance and Partnerships	Building consensus with partners on the principles and processes of governance of the Network of Platforms
Common Architecture and Technology	Definition and Implementation of a common scheme and principles and basic technology for federating capabilities across Europe
Developing Network of EO Platforms	Build the network of platforms through the continuing integration of relevant European capabilities supporting EO data exploitation
Evolving Technical Capabilities	Foster evolution of the technical capabilities of the Network of EO Platforms to capitalize on rapid advances in technologies and innovation
Enabling Public Sector Benefits	Foster an EO responses to societal challenges, with focus on the needs of user communities from public sector at global regional and national levels
Enabling Industry Growth	Foster growth in EO information industry through the development of new user-demand and the generation of novel services

EOEP-5 Block 4: EO Exploitation Platforms

Infrastructure Component

"Move User activities to the Data"



A complementary operations concept: users access a work environment containing the data and resources required, as opposed to downloading and replicating the data 'at home'.

Exploitation platform (or community platform)
=
Virtual open and collaborative environment

bringing together:

- data centre (EO and non-EO data)
- computing resources and hosted processing
- collaborative tools (processing tools, data mining)
- development tools and test bench functions
- application shops and market place functionalities
- communication tools (social network)
- accounting tools to manage resource utilisation

geohazards tep | hydrology tep | polar tep | urban tep | forestry tep | coastal tep

EOEP-5 Block 4: EO Exploitation Platforms

Expanding Public Sector Benefits

Development of innovative user-driven EO data products, methods and tools to support international community responses to global societal challenges, capitalizing on ESA's international reach.

GLOBAL

Development of global EO-based approaches and datasets to support major collaborative international initiatives.

- Int. env. agreements
- GEO Initiatives
- Global Environment Programs

REGIONAL

Enhance and integrate EO within existing regional monitoring and assessment systems in cooperation with regional/ national authorities.

- In Europe and neighbouring countries.
- Atlantic, Baltic, Black Sea, Mediterranean, Alps.

NATIONAL

Foster new EO capacities within existing national environmental & natural resource monitoring and assessment networks.

- In countries without EO national programs.
- In new and small ESA Member States

Best use of "collaborative platforms" adapted to serve user communities

***Primary Users**: international organisations, inter-governmental bodies, national governments and agencies, civil society and NGOs.*

Atmosphere | Marine | Terrestrial

Block 4 : EO Science for Society

- ***Science Data Exploitation***

- ***EO Applications Platforms***
  - Governance and Partnerships
  - Common Architecture and Technology
  - Expanding Public Sector Benefits
  - **Enabling Industry Growth**
  - Developing Network of EO Platforms
  - Evolving Shared Technical Capabilities

- ***EO for Sustainable Development***

Enabling Industry Growth

Overall Framework

- ***Expand Emerging Demand***
  - For user sectors with known requirements that offer significant growth potential enabled by taking advantage of recent ICT developments.
- ***New Opportunities & Actors***
  - Stimulate entrepreneurship / innovation / disruptive ideas.
- ***Consolidate Industrial best-practices***
  - For user sectors with some initial use of EO (project-based), but where there are industrial champions ready to enlarge the use of EO within the sector through trade associations/organizations.

Enabling Industry Growth (1) :

Expand Emerging Demand

-(Define &) Set-up EO Services On-line-Marketplace (led by EARSC)

-Maintain EO Service Industry analysis (EARSC)

-Actions targeted for specific Public & Private user sectors:

- -New opportunities for large-scale/NRT/many data sources,
- -Take advantage of Apps Platform capabilities available now,
- -Study ICT Infrastructure & evolution in User Sectors,
- -Define requirements for Apps Platform developments to be done.
- -Candidate sectors include:
  - -***Oil & Gas***
  - -***Law Enforcement***
  - -***Ports & e-Maritime***
  - -***Renewables (Bio-energy)***
  - -***Utilities***
  - -***Corporate Sustainable Development (Reporting 3.0)***
- -Contracts 750 K Euro, duration 2 years

Enabling Industry Growth (2) :

Consolidate Industrial best-practices

-Develop EO Service Certification / Accreditation schemes.

-Actions targeted for Private Sectors (with industrial champions)

- -Comprehensive mapping EO products vs. business operations,
- -Engage with industry associations/organisations/working groups
- -Demonstrate fitness-for-purpose within industrial context (case examples),
- -Start work on industry guidelines compatible with in-sector practices.
- -Candidate sectors include:
  - -***Agri-Business***
  - -***Re/Insurance***
  - -***Civil Engineering***
  - -***Mining***
  - -***Tourism***

-Contracts 500 K Euro, duration 2 years

Enabling Industry Growth (3) :

New Opportunities & Actors

- Support (co-financed) initiatives proposed by industry to exploit short-term and ad-hoc opportunities (via the Open-Call mechanism), max 75 K Euro ESA financing (400 K total per year)

- 'Start-up Boot-camps' to ignite ideas,
- Maintain Entrepreneurship/Innovation,
  - support industry-led initiatives and entry of new players,
  - aim at 40-50 ideas/year,
  - 15-20 K Euro 'voucher' support.

- Develop a Network of Earth Lab Accelerators (ELA), capitalizing on successful innovation,
- Develop Outreach / MOOC / SPOC Portfolio,

- Contracts : 1 M Euro Innovation/MOOC, 3 M Euro ELA.

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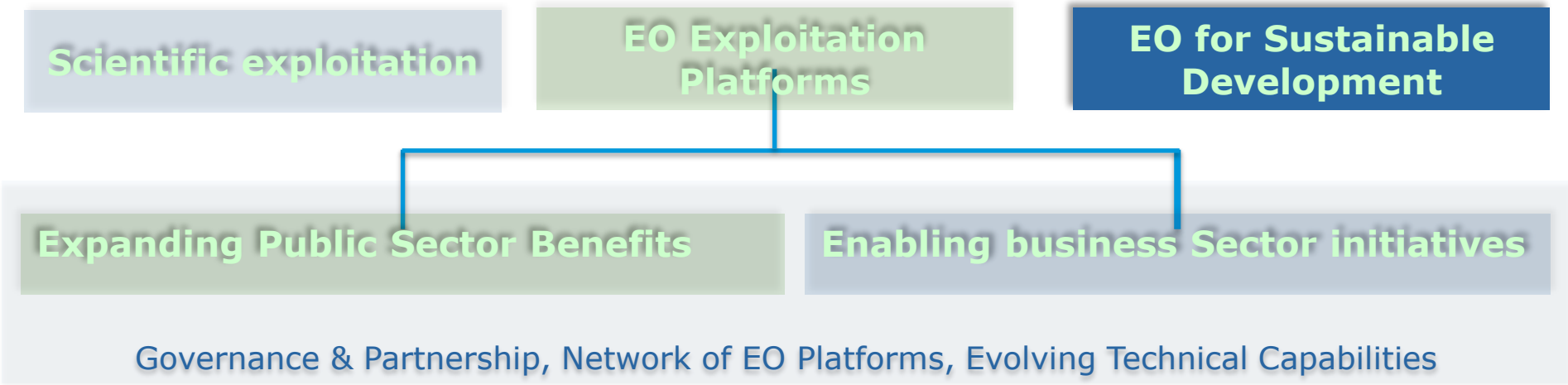
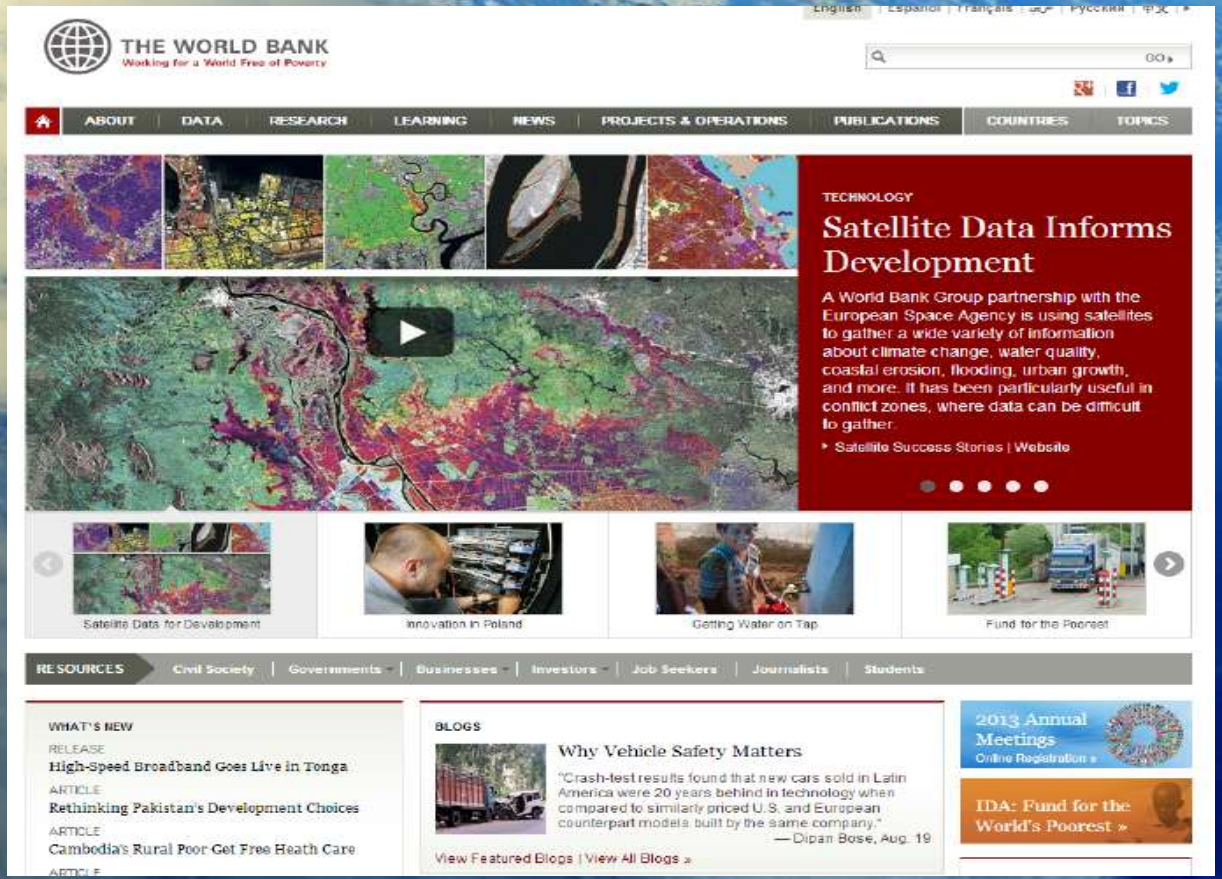


Official Development Assistance (ODA):
An opportunity for EO-based information

- Small-scale demonstrations of EO services in support of International Financing Institution (IFI) projects since 2008,



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Dedicated Programme of Work required
(On-going discussion with ESA Member States, 2014/15)

- 2 key Blue papers to EO Programme Board
  - ESA/PB-EO(2014)10 : 'Implementation Approach for the Development of EO Applications & Services'.
  - ESA/PB-EO(2014)21 : 'Way forward on EO Applications & Services'

- Phase 1 : **Consolidation**, 3 years (2015-2017), **26 M€**
- Phase 2 : **Mainstream & Transfer**, 5 years (2018-2022), **65 M€**

- Additional Subscriptions brought to EOEP-4 at C-MIN/14 in Nov. that have allowed to start 3 Phase 1 (Consolidation) activities in the areas of ***Agriculture, Water, Urban***

- The remaining 7 priority thematic areas are proposed to be started as an element ('EO for Sustainable Development') in EOEP-5 **(2017–19 period)**

- It is the ESA intention to go to the C-MIN/19 with a separate programme proposal for Phase 2 (Mainstream & Transfer) for all 10 thematic areas. Note : EarthWatch programme framework preferred, activities should be ODA-qualified by OECD DAC, committed alignment of co-financing from Banks **a must**.

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EOEP5 Block 4 :
EO for Sustainable Development

- 7 Large-Scale Activities in remaining high-priority thematic domains **(each contract 2 M€, 3 years, all starting in 2017)**
  - ***Marine,***
  - ***Risk Management,***
  - ***Energy,***
  - ***Forest,***
  - ***Ecosystems,***
  - ***Fragile States,***
  - ***Climate Resilience & Proofing.***
- 'EO Walk-in Clinic' for rapid-response, small-scale exploratory uses of EO information in Bank projects/activities **(1 contract 2 M€, 3 years, starting in 2017)**
  - pre-qualified EO information suppliers, 'rotating, fair-chance' scheme of service provision (40 K Euro max units)
- EO for Environmental Safeguards policies, Monitoring & Evaluation Methodologies, Environmental Impact Assessments **(1 contract 0.5 M€, 1.5 years, starting in 2018)**

Implementation : 7 Large-Scale Activities
Preliminary breakdown of work

- **Phased approach**; Set-up phase (1st year) followed by Large-scale regional demonstrations (next 2 years),
- **Phase 1 : Strategic Planning & Stakeholder Engagement**
  - Engage IFI's and prepare cross-IFI exchange network,
  - Engage key stakeholders in IFI client states,
  - Elaborate obstacles for sustainable transfer of EO and define common actions to address issues across the project life-cycle,
  - Elaborate and prepare the EO demonstrations required (European data access, service clusters, support tools, capacity-building).
- **Phase 2 : Service Demonstration & Transfer Preparation**
  - Develop EO service clusters, and execute/scale-up EO service demonstrations,
  - Connect EO based information services to existing international thematic networks and development support initiatives,
  - Implement cooperative training and capacity building, both within IFI (for project preparation) and IFI Client countries (project implementation); priorities : SE Asia, LAC, Africa,
  - Prepare the sustainable transfer of EO services into the routine working practices of large scale international development programmes and projects.

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