

**European Space Research
& Development**



The FP7 Space Programme 4th Space Call

Space Research and Development Unit



European Commission
Enterprise and Industry

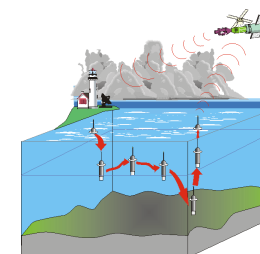
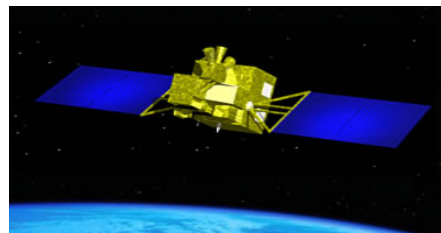
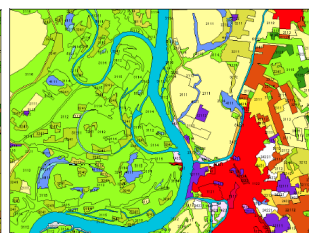
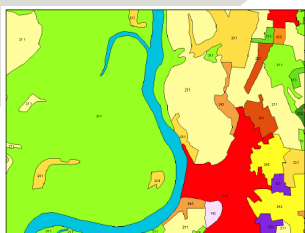
Overview

- **Space in the Framework Programme**
- **FP7 Space Theme**
 - **GMES**
 - **Space Foundations**
 - **Cross-cutting R&D issues**
- **Information on Space Call 4**

European Space Research & Development



The Space theme in FP7



Space in the EU Research Framework Programmes

Space a **new activity**, first introduced by the 6th Framework Programme under the Aeronautics & Space theme - **FP6 (2002-2006)**:

- About € 230 million over five years.
- Earth observation (GMES), Satcom, Satnav
- Focused on applications and services

With own Theme in **FP7 (2007 – 2013)**

- About € 1.4 billion over 7 years
- GMES + Strengthening Space Foundations
- Services, but also technology development

The FP7 Space Programme

Main topics

I. GMES (85% of budget):

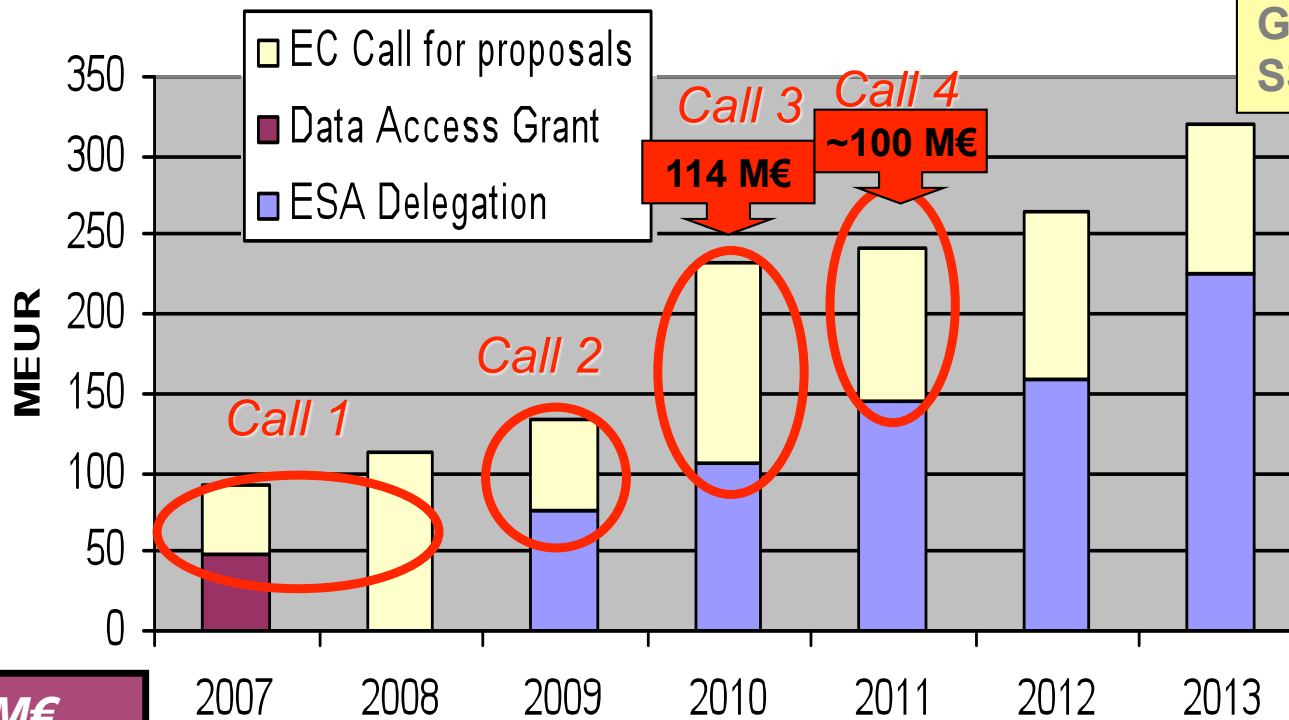
- Land, Marine, Atmosphere, & Emergency, Security, Climate Change
- Major investment in the space component and operational services

II. Strengthening Space Foundations (15% of budget):

- Space Technologies, Exploration, Space Transportation, Space Science
 - Upstream research, downstream research (e.g., data exploitation)

Breakdown of FP7 Space funding

2007-2013 Draft split EC Calls and ESA Delegation Agreement



GMES Services,
SSF R&D

~ 670 M€

48 M€

Space data

710 M€

Space Infrastructure

FP7-Space

**Space-based applications at the service of the European Society
(principally GMES)**

**R&D strengthening
Space foundations**

Cross-cutting issues

GMES Architecture

OBSERVATION
INFRASTRUCTURE

Space Infrastructure

In Situ Infrastructure

GMES (core)
SERVICES

GMES EU-level Services

Land
Marine
Emergency
Atmosphere
Security

DOWNSTREAM
SECTOR

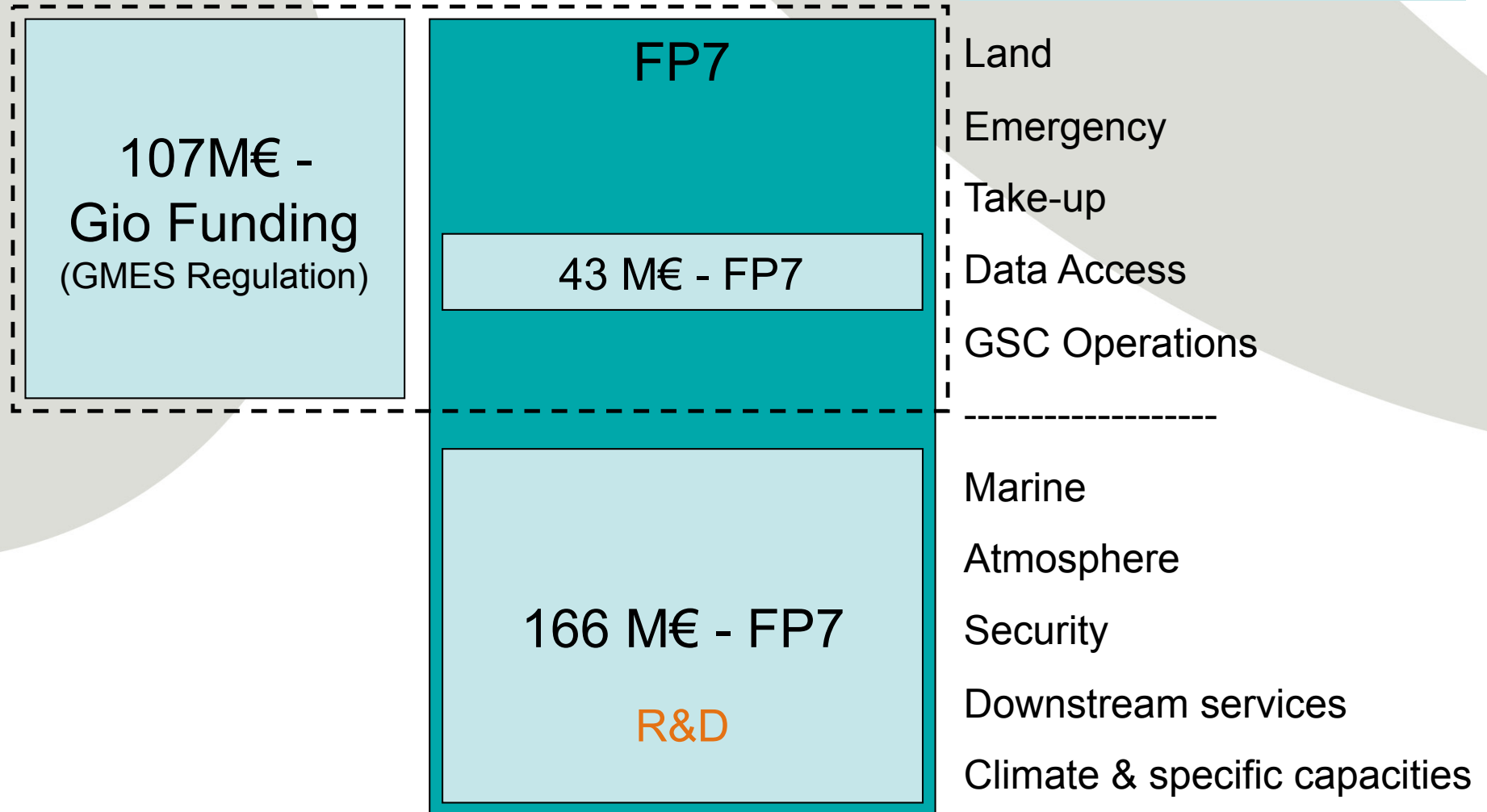
Downstream Services
"the GMES Economy"

Users

GMES: Regulation + FP7 Scenario

combines funding from two legal bases

Operational objectives:



FP7-Space

Space-based applications at the service of the European Society (principally GMES)

**R&D strengthening
Space foundations**

Cross-cutting issues

Strengthening Space Foundations

- Support to research in space science and exploration
 - Technology development enabling exploration (access to planets, moving on planetary surfaces, sample return)
 - Exploitation of data from European missions
- New concepts in space transportation, space technologies
- Critical technologies for European Non-Dependence
- Research into reducing the vulnerability of space-based systems
 - Space weather – forecast, resilience
 - Debris – tracking, mitigation

**To provide opportunities for those actors/
activities which are currently not catered for yet at
ESA or national level, thereby adding value to
these**

FP7-Space

Space-based applications at the service of the European Society (principally GMES)

R&D strengthening
Space foundations

Cross-cutting issues

SME participation



75%

- Priority for FP7, especially DG ENTR
- Whilst (so far) not mandatory in our call topics, regarded always as a plus during evaluations

Last call statistics:

in ranked (successful proposals) list

- 22% of participation
- receiving 18% of EU budget

Opportunities for third countries to participate in FP7

- Space is a **global endeavour**
- Participation in **ALL above areas** is encouraged to researchers and research organisations from **all third countries**
- The active participation of third country partners, e.g. from Russia represents an **added value**
- **Financing is possible**, if the contribution is essential for reaching the objective of the project

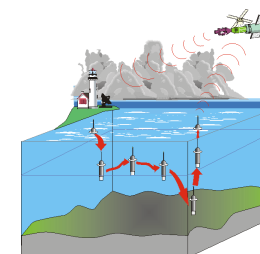
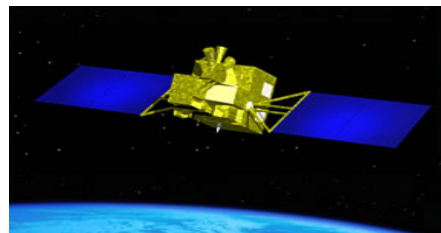
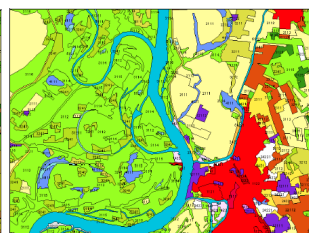
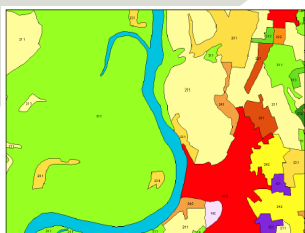
- **Strong focus on cooperation with Russia, South Africa, Latin America (see ICPC* list)**
- **also US, Japan as other important space faring nations**

♣International Cooperation Partner Country

European Space Research & Development



4th Call FP7 Space in 2010



Overall characteristics Call 4

- Work Programme 2011 adopted on 19 July
- **Publication: 20 July 2010**
- Overall budget around M€ 100
 - 60% for GMES
 - 30% for SSF
 - 10% for INCO

Draft budget availability in 2011

mobilised for Call

• GMES area	56 M€	}	99M€
• Strengthening Space Foundations	31 M€		
• International Coop, NCP & Studies	12 M€		

• Communication/conferences/studies:	3.8 M€
• Evaluation:	1.5 M€
• Horizontal activities (Cordis,Eureka, COST):	2.7 M€

• Data Access support to GIO 10 M€

• Third transfer for GSC with ESA 120 M€

237 M€

FP7-Space

**Space-based applications at the service of the European Society
(principally GMES)**

**R&D strengthening
Space foundations**

Cross-cutting issues

9.1



56 M€

Activity 9.1 – topic by topic

- GMES security: governance options
- GMES service continuity
- Long-term R&D for future GMES capacities

Topic: SPA.2011.1.1-01

GMES Security: exploring operational governance options

- Need identification of long-term options for governance (sensitivity issues, data procurement, interfacing with CFSP users)
- Already acknowledgement that EUSC has specific security expertise to contribute
- However, need to **support the dialogue between GMES and EUSC stakeholders (esp. national authorities, EU institutions)** through a *Support Action* providing overview of positions and options
- Note - involvement of stakeholders is key!
- *CSA Project*: EU contribution of EUR 1 million € upper eligibility limit

R&D Topics under GMES

- Focus on **continuity of GMES core service** (fast-track services from Call 1 will finish end 2011).
- Land + emergency will be addressed outside FP under GMES Regulation
- FP7 Space Call 4 will still support **Marine + Atmosphere GMES Services** in two large scale projects
- Aim is to move away from “validation of pre-operational services” and move towards “**setting up of prototype operations**”

Topics: SPA.2011.1.05-01 - SPA.2011.1.05-02

Prototype operations – Marine & Atmosphere

- **Aim: Full operationality by 2014**
- Use of **combined CP-CSA** funding instrument to be able to address actual **operations** (CSA) and limited **R&D coupled to those operations** (CP)
- Supportive R&D with fast response time to meet the short term needs of the operational chain
- Operational results to serve the GMES user community and researchers (“support activity” must support research!)
- *CP-CSA Projects:* EC contribution of EUR 28M€ (Marine) and 19M€ (Atm) upper eligibility limit

Topic: SPA.2011.1.05-03

R&D in support of GMES capabilities

- Innovative research in Marine or Atmosphere domains
- Long-term GMES aims:
 - Improve **quality** of op. services
 - Integrate new **scientific** methodologies
 - Develop new **applications**
 - Improve **user uptake**
- Small-scale projects (CPs)
- Suited to **SME** participation
- *Collaborative Projects* EC contribution of EUR 2 million upper eligibility limit

FP7-Space

Space-based applications at the service of the European Society (principally GMES)

R&D strengthening Space foundations

Cross-cutting issues

9.2

Activity 9.2 – topic by topic

31 M€

- Space science data exploitation
- Space exploration technology R&D
- Space transportation technology R&D
- Space critical technologies
- Prevention of impacts of NEOs

Topic SPA.2011.2.1-01 – Exploitation of space science and exploration data

- data exploitation related to space exploration
 - the focus of knowledge generated should be on robotic exploration and pre-requisites to human exploration, such as biomedical studies
 - use widest range of data sources
 - exploit results from in-space experiments (e.g. ISS) in combination with other data
 - open to international cooperation leading to effective scientific exploitation of existing data
-
- *Collaborative Projects* EC contribution of EUR 2 million upper eligibility limit

Topic SPA.2011.2.1-02 – Research and Development for Space Exploration

- technologies relevant to space exploration, focus on robotic exploration
- research on innovative instrumentation, mobility on planetary surfaces, in-space and from-surface propulsion, in-space power generation, innovative techniques for survivability in space
- suitable micro-propulsion systems
- advanced concepts for autonomous distributed and co-operating systems
- open to international cooperation

- *Collaborative Projects* EC contribution of EUR 2 million upper eligibility limit

Topic SPA.2011.2.2-01 – Space transportation technologies

- To increase the innovation capacity of future developments by proposing and evaluating new concepts and disruptive technologies
 - Launcher concepts
 - Propellants
 - Materials and simulation
 - Power systems
 - Weight reduction

- *Collaborative Projects* EC contribution of EUR 2 million upper eligibility limit

Topic SPA.2011.2.2-02 – Space “critical” technologies

- ... Europe needs non-dependent access to critical space technologies...
 - ... emphasis on medium term impact...
 - ... technologies surveyed by Joint EC-EDA-ESA Task Force...
 - ... technologies not covered by table are out of scope of call...
-
- *Collaborative Projects* EC contribution of EUR 2 million upper eligibility limit

“Critical Technologies” – meaning :

- “Independence” would imply that all needed space technologies are developed in Europe.
- “Non-dependence” refers to the possibility for Europe to have free, unrestricted access to any required space technology.
- **The objective of this action is to contribute to ensure European Non-dependence.**

Further explanations – see document on Cordis Call web page:

CRITICAL ITEM, IMMEDIATE ACTION IS REQUIRED



Technology Domain	Title	Detailed requirement
On-board Data Systems	Core processors for DSP computers	Development of application-specific co-processors: Next Generation DSP, 1 GIPS.
	ASICS (Deep Submicron)	Deep submicron (DSM ASIC): Low power very high performance sub micron technologies for Data path and signal processing applications. Development of rad hard, long life-time libraries for commercial DSM, definition of "platform ASIC architecture" ASIC technology including High Speed Serial Links (as hard macro and standalone chip). Validation and space qualification.
	ASICS (Co-Processors)	Development of application-specific co-processors: CCSDS 122 0-R-1 image compression ASIC.

Topic SPA.2011.2.3-01 – Prevention of impacts from Near Earth Objects (NEOs) on our Planet

- ... to assess the risk of potential threats of **NEOs** as asteroids and comets ...
- ... NEOs **material properties**, their stability and **orbit/position** relative to Earth can be studied...
- ... proposals should explore the feasibility of methodologies and capabilities necessary to prevent collision on Earth...

- *Collaborative Projects* EC contribution of EUR 4 million upper eligibility limit

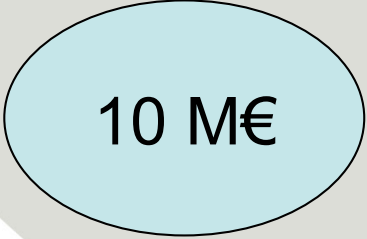
FP7-Space

Space-based applications at the service of the European Society (principally GMES)

R&D strengthening
Space foundations

Cross-cutting issues

9.3



10 M€

Activity 9.3 – topic by topic

- International cooperation
- Transnational FP7 cooperation
- Studies and events supporting ESP

Topic 2011.3.2-01 – Support for « GMES and Africa » initiative

- Support to the « GMES and Africa » action plan
- The action should facilitate the capacity for selected African experts to attend key coordination events and conferences
- It will support the organisation of a major awareness and coordination event in Africa
- It should support in-locu to the African entity responsible to coordinate the implementation of the Action Plan
- Coordination and Support Action with 1M€ upper eligibility limit

Topic 2011.3.2-02 – Facilitating access to space for small scale research missions

- Demonstrate a launch concept and realistic scientific missions affordable to the scientific community
- Active participation of international partners (e.g. ICPC, space-faring nations – as US, Japan, etc.) is mandatory
- Collaborative Project with 8 million € upper eligibility limit

Topic 2011.3.3-01 – Trans-national and international cooperation among NCPs

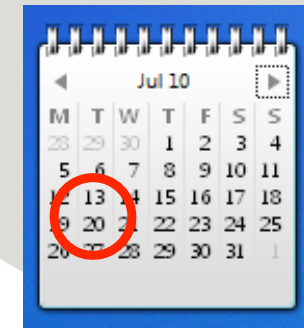
- Support to trans-national and international cooperation by utilising and reinforcing the network of NCPs
- To extend the information provision in the international domain
- The action may also involve FP7 contacts from third countries and the international cooperation partner countries
- Coordination and Support Action with 1 million € upper eligibility limit

Topic 2011.3.5-01 – Studies and Events in support of European Space Policy

- Studies or events supporting implementation of a European Space Policy (and thus programme)
- Educational activities – public awareness and understanding of solar system and co-evolution of life and spaceship Earth
- Coordination of European R&D activities – road-maps, long term perspectives, potential of international cooperation
- Coordination and Support Action with 300 k€ upper eligibility limit

Timeline for the 4th Space call:

- 20 July 2010 publication
 - ec.europa.eu/embrace-space
 - cordis.europa.eu/fp7
- 25 November 2010 deadline
- Dec-Feb 2010/2011 evaluation by REA
- Proposal negotiation in 2011



The Space theme needs you!

- Sign up as an expert-evaluator

<https://cordis.europa.eu/emmfp7/index.cfm>

Learn more about
Space Research
projects funded
under FP7

Please visit

http://ec.europa.eu/enterprise/policies/space/research/index_en.htm



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European Commission

Directorate-General for Enterprise &
Industry

H2 – “Space Research & Development”

Thank you for your attention