



Space Downstream Services 2010 – May 6-7, 2010,
Tallinn
In Search of Space and Satellite
Business: Doing business in Earth
Observation

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Who we are

- UK SME specialised in supplying software solutions and IT services for the institutional and commercial Space Sector.
- Working for ESA programmes since 1994
- Our software applications have supported various phases of more than 20 ESA missions including: Mars Express, Rosetta, Herschel, Planck, Columbus, ATV, Galileo, Earth Explorer missions, ENVISAT, GOCE, SMOS and many more.
- Core competencies in developing ECSS compliant software tools in the area of Space Project Management and Product Assurance
- More Recently involved in development large geospatial portal solutions
- Active in supporting ESA with their Space Outreach Strategy
- Offices in UK, The Netherlands, Italy



What we do



PM and QA Software & Applications

Space-Standards based,
ESA proven Project and
Quality Management
Software Products
&
Bespoke software

Geo-Spatial Portal Solutions

- Portal Design & E2E
- Satellite imaging data-access and distribution with secure or public access
- Geospatial web portals for Earth monitoring and disaster management

Consultancy

- Technical Feasibility Studies
- E2E IT solutions scoping, design and implementation
- Secure Networks design, implementation, testing and maintenance

Manpower

- For administrative and technical disciplines personnel:
- Quality Assurance
 - Product Assurance
 - Administrative Consultants
 - Project controllers
 - Project Managers
 - Web Content Managers



Space: a key asset for Europe

- Giving European decision-makers the ability to respond to critical challenges such as climate change and global security.
- Contributing to Europe's growth and employment, providing indispensable infrastructure and technologies for the development of new products and services for a knowledge-based society.
- Stimulating innovative solutions that could be applied to the non-space segments (spin-offs of space technologies)
- Answering our need for knowledge and understanding of the Universe and where we come from
- Inspiring young generation to make career in the space industry, indispensable for knowledge transfer from generation to generation



Space market overview

- World governments' expenditures for space programmes grew by 10% in 2009 over 2008, reaching another historical peak of \$ 68 billion.
- Government space program expenditures worldwide are expected to grow at 4.5% per year through 2012, reaching nearly \$70 billion.
- Satellite-related applications clearly driving growth in government programmes worldwide with a large number of countries committing to developing or acquiring satellite systems for their own use in specific programmes.
- Boom of EO projects worldwide, with government spending \$6.7 billion in 2008. Lower cost satellites and ability to address local issues has made EO the top priority application for a number of countries, particularly emerging space programmes.



Space market overview

- Investments in satellite communications programmes have been growing steadily (\$ 6.6 billion spent in 2008 for both defence and civil programmes)
 - >128 satellites to be launched in next decade.
- Satellite navigation, the fastest growing application in terms of public-sector investment (+21% per year over the past five years) with \$2.6 billion spent in 2008:
 - >GPS next generation satellites boost the expenditures to \$3 billion in 2010.
 - >144 satellites to be launched for navigation applications between 2008 and 2017, (double vs. past decade.)



What are the Challenges we are facing?

- Environment protection
- Climate change
- Growing pollution
- Over-exploitation of natural resources
- Impact of intensive agricultural practices
- Management of natural disasters
- Growing security concerns
- Problems of adequate health
- International mobility



Opportunity for the commercial market:

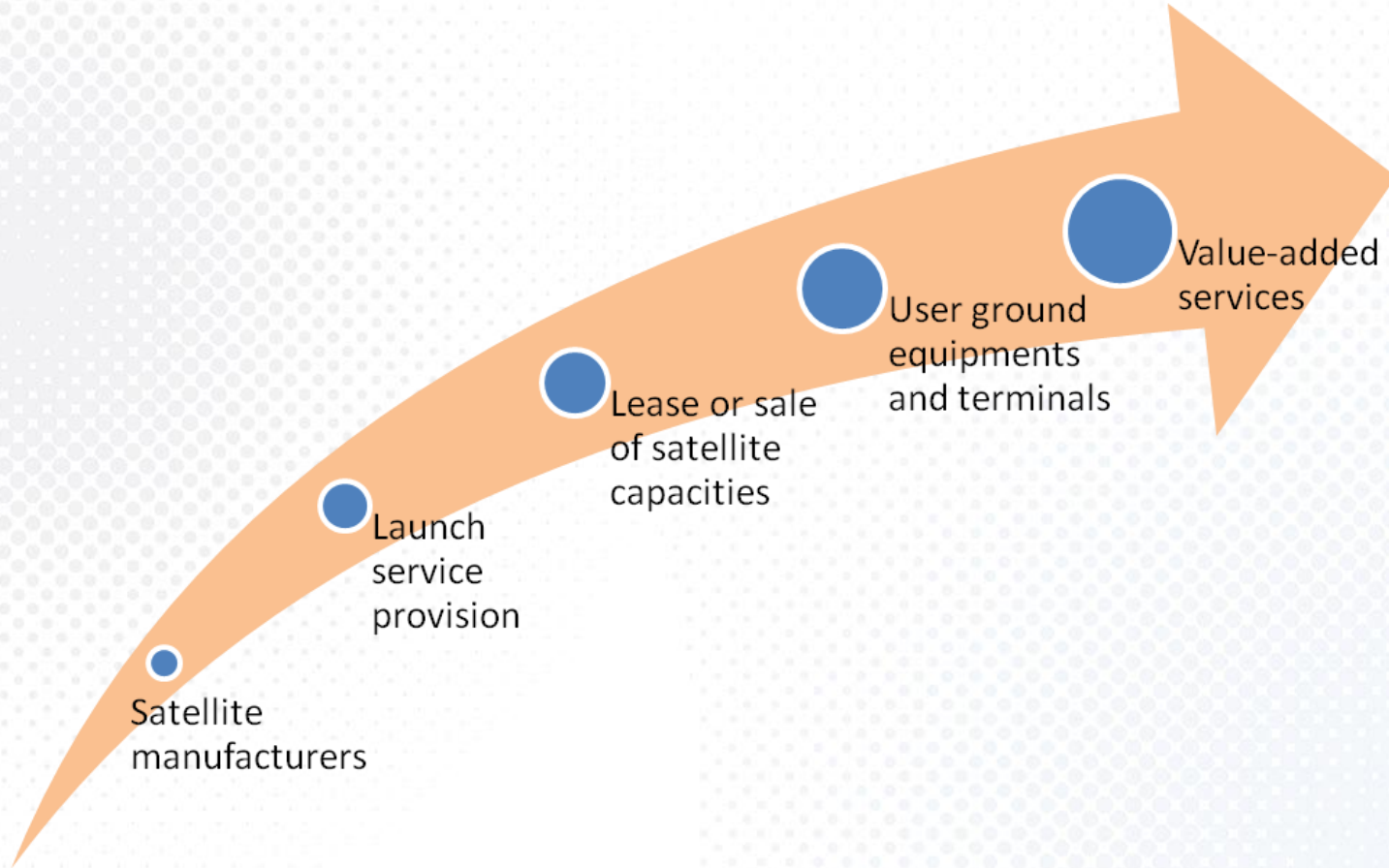
Doing business in Earth Observation



The value added market



The value chain of the EO sector





Industry structure

- the European EO industry is characterised by:
 - a number of universities or public space agency and SMEs with less than 200 people
 - a few large companies, with multi-disciplinary activities, such as EADS (Infoterra and SPOT Image), Telespazio, and TAS dominating the sector .
- European SMEs in the industry fall into 2 broad categories:
 - *Market oriented SMEs*, starting from a service already developed for their customers based on current non space technologies, and proposing improvements that make use of satellite capabilities.
 - *Technology based SMEs*, starting from innovative technologies developed for ground use, and proposing to expand the capabilities of already developed space based services using such innovative technologies.



Market Potential

- Market on the brink of a wide expansion in terms of products and service provision
- Products currently cover image acquisition, data processing, geographical information systems, more and more integration with both navigation and communications technologies
- But Huge potential for Value Added Services and Value Adding Companies
- Economies of scale for suppliers, maturing service offerings and network effects will all combine to increase the value of the service market.



- The EO downstream Value-Added Services sector is an extremely **diverse sector**, as it addresses a wide range of applications:
 - EO products in support of important “public responsibilities”: natural resource management, land cover and urban planning, weather forecast and climate change monitoring.
 - From a commercial perspective, can be used by a growing number of businesses,
 - eg. insurance companies wishing to estimate the cost of a natural disaster
 - farmers willing to use precision farming techniques,
 - Electric power producers etc



Expected size of the geo-information service markets

Worldwide turnover by domain in 2015 (primary markets, total 50 Billion euro)

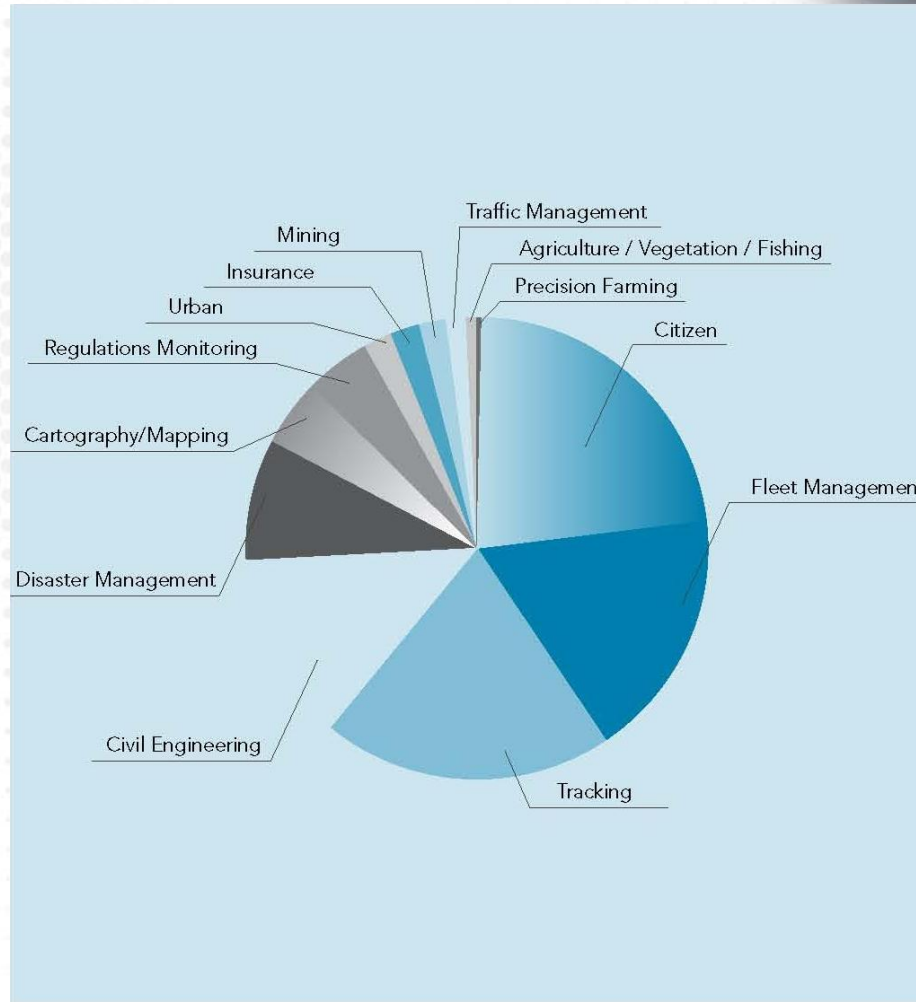


FIGURE 4. Worldwide turnover by domain in 2015 (primary markets, total 50 billion euros. Source: Source: mission study - ISU- MSS)



Maturity of the service markets

- **Infant markets:** commercial services (insurance, travel, real estate), consumer services (web-based applications)
- **Emerging markets:** disaster management, humanitarian relief, environment monitoring, forest resources management, marine engineering/oceanography, etc.
- **Growth markets:** cartography, civil protection, homeland security/law enforcement, border surveillance and professional meteorology, transport
- **Mature markets:** Agriculture and Energy



Key drivers

- GMES
- Development of constellation of small satellites with excellent imaging capabilities
- Growing demand for more service applications drive the technologies towards standardization, interoperability and open applications
- Convergence and integration with other space application domains(Telecom and Navigation) e.g. Location Based Services
- Political and regulatory environment
 - new directives in fisheries policies, environment monitoring, agriculture
 - New measures to enhance public and consumer protection



Barriers to overcome for the private sector

- Today the majority of the demand for EO services is driven by the public sector. Only energy market have a strong private presence.
- Lack of mature organisation of service suppliers – still learning curve
- Insufficient availability and continuity of EO data compared to terrestrial solutions
- Lack of knowledge about the EO potential to tentative customers (marketing cost)
- General awareness about EO service



Case study – Sapienza’s experience

- Raising the awareness of EO services
- Building user interfaces for data discovery, dissemination, visualization and exploitation
- Integrating of open source OGC compliant data catalogue application to manage geospatial referenced resource to improve access and use of spatial data and information for better decision making
- Integration of standard protocols improving interoperability for information exchange, harvesting and management



Example 1: GEOportal:

www.geoportal.org

- **Objectives:**
 - Provide access to remote sensing, geospatial-static and in-situ data, information and services
- **Users:**
 - Policymakers and managers
 - Scientific researchers and engineers
 - Civil society
 - Governmental organizations and NGOs
 - International bodies assisting with the implementation of multilateral environmental agreements
- **Services:**
 - Geospatial Portal Service providing the user interfaces for viewing, discovering data, information and services available in GEOSS
 - Portrayal Viewer Service allowing the display and handling of maps and context information from various sources through WMS services
 - Interfaces to Catalogue Services of the GEOSS Clearinghouse, allowing distributed catalogue search in an interoperable manner.
 - A comprehensive directory of service providers e.g. related to GEO Members and Participating Organizations.
 - Retrieval of capacity building resources





Example 2 GMES DATA access portal : <http://gmesdata.esa.int>

• Objectives:

- To provide interface for accessing the Earth Observation products from the GMES Space Component.

• Users:

- Members of the GMES Service Projects (GSPs), identified by the European Commission (EC) according to the GMES eligibility criteria

• Services:

- To link transparently the different EO Data providers and the various GMES Service Providers
- To Browse Data sets
- To Provide conditions (e.g. ordering mechanisms, processing level, delivery timeliness, data licensing, etc) under which the datasets are made accessible.

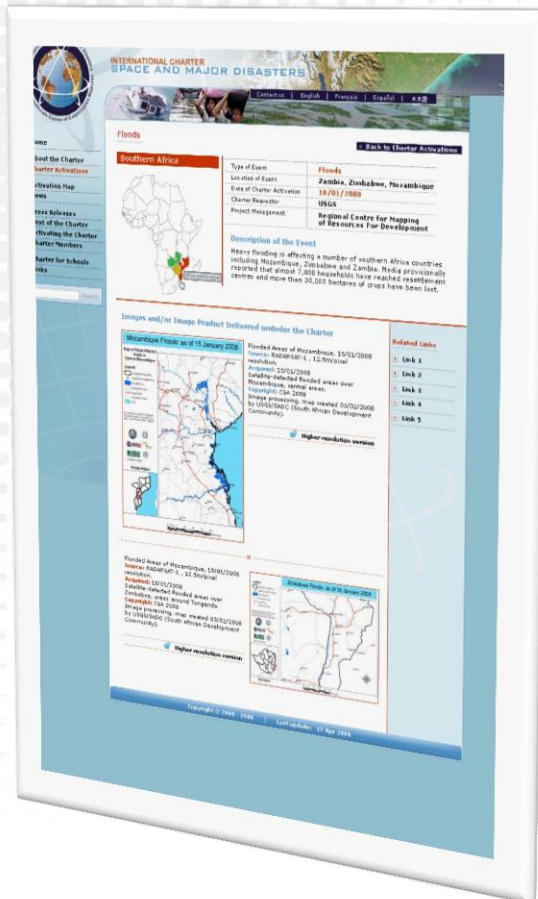
The screenshot shows the GMES Space Component Data Access portal. The header includes the ESA logo and the text 'GMES Space Component Data Access'. The main content area is divided into several sections:

- Left Navigation:** Includes links for 'GSE Data Access', 'GSE Mission Groups', 'GSE Data Portal', 'Terms of Use', and 'Contact Us'.
- Top Navigation:** Shows 'ESA Observing the Earth', 'GMES', and 'GMES Space Component Data'.
- Browse GMES Contributing Missions:** Features three satellite images labeled 'ASIT', 'ENVISAT', and 'MENA'.
- Browse GMES Space Component Data:** Includes a search interface with dropdown menus for 'Service', 'Mission Groups', 'Mission', and 'Instruments', and a 'GO' button.
- Latest News:** Contains a news item titled 'More than 40 Earth Observation missions team up to provide data to the Global Monitoring for Environment and Security programme', with a 'More >' link.
- Right Sidebar:** Titled 'In Depth', it features the 'euromap' logo and a list of 'GMES Space Component Contributors' including ESA, ASI, CNES, CSA, Deimos Imaging, DLR, DMCU, e-GEOS, EUMETSAT, Eurimage, Euromap/Gap, European Space Imaging, ImageSat International, InfoTerra GmbH, MDA, RapidEye, Spot Image, and VITO.
- Bottom Section:** A 'NEWS ARCHIVE' with a link to 'GMES Video News release' and a snippet about a 'Major European programme for the environment under the spotlight in Lille, France'.



Example 3: Disaster Charter

<http://www.disasterscharter.org>



- **Objectives:**
 - To provide a unified system of space data acquisition and delivery to those affected by natural or man-made disasters

- **Users:**
 - Authorized Users

- **Services:**
 - An Authorized User can request the mobilization of the space and associated ground resources (RADARSAT, ERS, ENVISAT, SPOT, IRS, SAC-C, NOAA satellites, LANDSAT, ALOS, DMC satellites and others) of the member agencies to obtain data and information on a disaster occurrence.



Thank you for your attention

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