

## ANNEX 1

### EUROPEAN SPACE PROGRAMME (*framing the White Paper Action Plan*)

#### First sketch

The “draft Treaty establishing a Constitution for Europe” prepared by the Convention for the future of Europe refers in its article III-155 to a European Space Policy and the corresponding measures to be established, namely a **European space programme**.

The aim of this annex is to outline some essential features of such a programme and to indicate how it should be prepared.

#### 1. DEFINITION

The European Space Programme (ESP) has to be seen as the implementation and benchmarking instrument for the European Space Policy. It should:

- provide a synthetic overview comprising all appropriate public and private space activities performed in Europe which contribute to EU policy objectives;
- constitute a co-ordination and harmonisation platform for the actions derived from the European Space Policy.

In particular, the ESP should:

- provide guidelines for the implementation of the programmatic and technical part of the Action Plan described in this White Paper;
- identify existing technological and financial gaps in the different areas;
- prioritise activities with regard to EU policy objectives;
- define the responsibilities and tasks of the different actors;
- indicate the timetable attached to the different tasks.

The ESP should be elaborated through a process of dialogue and consensus-building including all stakeholders (EU, ESA, Member States with their national space agencies, European organisations such as EUMETSAT, research organisations and European industry) following the “Technology platform” concept promoted by the EU.

#### 2. INITIAL RELEASE

The first release of the ESP should in particular build upon:

- current EU political priorities;
- lessons drawn from the Green Paper consultation process;
- the ESA Executive plan “Agenda 2007”

The template below lists some key rubrics that would have to be considered when preparing the ESP. It (tentatively) allocates roles for carrying out the actions.

For each of the White Paper's main lines of action mention is made of:

- the actors involved in implementation;
- three time periods (ongoing, short and medium);
- EU policies which directly benefit from the corresponding activities.

A number of key stakeholders have been identified who would be in charge of the implementation of the respective lines of action (this list is only preliminary; several other actors should also be considered).

EU	European Union
MS	Member States
EC	European Commission
ESA	European Space Agency
F.A.	The European Commission and ESA implement this line of action in compliance with the Framework Agreement (other actors can also be involved, such as Eumetsat).
Joint Undertaking/ Supervisory Authority	Entity created in accordance with the EU Treaty article 171 under the supervision of a public structure being in charge to protect public interests
Public Private Partnership (PPP)	Joint public/private investment
Private Sector	Manufacturers and service providers
Concessionaire	(Private) Operator identified to be in charge of the maintenance and operation of the infrastructure services considered

LINES OF ACTION		On-Going (2003-2004)	Short Term (2004-2006)	Medium Term (2007-2013)	Policy Objectives covered *
<b>1. SUPPORT OF THE ENLARGED EU</b>					
APPLICATIONS	“digital divide”	<i>EC/ ESA**</i>	<i>EC/ ESA</i>	<i>PPP</i>	1 / 2 / 3
	Global Monitoring for Environment and Security	EC / ESA	EC / ESA	<i>Joint undertaking</i>	1 / 2 / 3 / 4
	Positioning, Navigation and Timing	Joint undertaking/ Supervisory authority	Joint undertaking / Supervisory authority	<i>Concessionaire/ Supervising authority</i>	4
	Security (Contribution to CFSP/ESDP)	<i>EU/ MS</i>	<i>EU/MS</i>	<i>EU/ MS / (ESA)</i>	4
<b>International Partnerships</b>					
Specific Actions for Third Countries (Eastern/Southern neighbours...)		EC / ESA	EC / ESA	EC / ESA	3 / 4
Specific Partnerships (Countries and international Organisations)		EU / ESA	EU / ESA	EU / ESA	1 / 2 / 3 / 4
<b>2. EXTENDING AND STRENGTHENING SPACE POLICY</b>					
<b>Guaranteed and Independent Access to Space</b>					
Contribution to European Space Launch Base Maintenance		MS / ESA	<i>EU/ MS / (ESA)</i>	<i>EU/ MS</i>	All
Launcher R & D		ESA	ESA / <i>EC</i>	ESA / <i>EC</i>	All
Technology		<i>EC/ ESA / MS</i>	<i>EC/ ESA / MS</i>	<i>EC/ ESA / MS</i>	1 / 4
<b>Space Exploration (incl. Aurora and ISS)</b>		MS / ESA	MS / ESA	MS / ESA / <i>EC</i>	1
Vocations, Careers & Education		ESA / EC / MS	ESA / EC / MS	ESA / EC / MS	1 / 2 / 3
<b>3. SPACE SCIENCES</b>					
Sciences of the Universe		<i>ESA</i>	<i>ESA / EC</i>	<i>ESA / EC</i>	1
Earth Sciences		MS / ESA / EC	MS / ESA / EC	MS / ESA / EC	1
Life and Physical Sciences		MS / ESA / EC	MS / ESA / EC	MS / ESA / EC	1
* <b>Policy Objectives</b> as outlined in the White Paper are :      1: Knowledge-Based Society & Economic Growth;      2 : Enlargement;      3 : Sustainable Development; 4 : CFSP/ESDP.					
** Entities mentioned in bold/italic characters are proposed to be assigned an additional role and corresponding resources as defined in the White Paper.					

## ROADMAP

Recommended Actions	Responsibility	Timetable
<b>SUPPORT OF THE ENLARGED EU</b>		
<b>“digital divide”</b>		
<i>Setting-up a forum on Digital Divide</i>	EC	early 2004
<i>Reporting on the results of the forum</i>	EC	Summer 2004
<i>Assessing of possible solutions</i>	EC / MS	by the end of 2004
<i>Setting up of pilot projects</i>	EC	short/medium term
<b>GLOBAL MONITORING FOR ENVIRONMENT AND SECURITY</b>		
<i>Communication on GMES (2004-2008 Action Plan)</i>	EC	January 2004
<i>Proposing scenarios for the interface between civil and security usage</i>	EC	short / medium term
<b>POSITIONING, NAVIGATION AND TIMING</b>		
<i>Negotiating overall agreement for the management of the next phase</i>	JU / SA / C*	short term
<i>Undertaking further research activities for innovative applications</i>	JU*	short / medium term
<i>Ensuring the availability of regulating procedures</i>	JU / SA *	continuous
<b>SECURITY (CONTRIBUTION TO CFSP/ESDP)</b>		
<i>Establishing a report, through an EU dedicated working group</i>	EU / MS / (ESA)	by the end of 2004
<i>Launching of preparatory action on security research: Communication (with work programme)</i>	EC	January 2004
<b>INTERNATIONAL PARTNERSHIP</b>		
<i>Developing a strategy for international space co-operation</i>	EU / ESA	2004
<i>Organising an international conference on space</i>	EC	end 2004
<i>Building specific partnerships (with countries and international organisations)</i>	EU / ESA	continuous
<i>Co-operating with developing countries</i>	EC / ESA	continuous
<b>EXTENDING AND STRENGTHENING SPACE POLICY</b>		
<b>GUARANTEED AND INDEPENDENT ACCESS TO SPACE</b>		
<i>Contribution to European space launch base maintenance</i>	MS / (ESA) / EU	continuous
<i>Launcher R &amp; D</i>	ESA / EC	continuous
<i>Technology, network of centers</i>	EC / ESA / MS	continuous
<b>SPACE TECHNOLOGY</b>		
<i>Reinforcing European Space Technology Master Plan</i>	EU / ESA / MS	continuous
<i>Promoting technology transfer</i>	EU / ESA / MS	continuous
<b>SPACE EXPLORATION</b>		
<i>Setting up of a wise persons group to deliver a vision for space exploration</i>	EC / ESA	early 2004
<i>Accessing/ensuring the availability of core capabilities</i>	EC / ESA	continuous
<b>VOCATIONS, CAREERS &amp; EDUCATION</b>		
<i>Actions in support of education and promotion of careers</i>	EC / ESA / MS	continuous
<i>Organising an information and promotion campaigns</i>	EC / ESA / MS	short / medium term
<b>SPACE SCIENCES</b>		

<i>Scientific research</i>	ESA / EC	continuous
<i>Supporting infrastructure for data acquisition and archiving</i>	EC	continuous
<b>CREATING THE RIGHT ENVIRONMENT FOR INNOVATION AND COMPETITIVENESS</b>		
<i>Progressing towards an harmonised market for space services</i>	<i>EU / MS</i>	<i>continuous</i>
<i>Ensuring the participation of SMEs</i>	<i>EU / ESA / MS</i>	<i>continuous</i>
<i>Shaping guidelines for future public/private financing initiatives</i>	<i>EC</i>	<i>short term</i>
<b>GOVERNANCE AND RESOURCES</b>		
<b>GOVERNANCE</b>		
<i>First phase (implementation under the recently agreed Framework Agreement)</i>	<i>EC / ESA</i>	<i>2004-2007</i>
<i>First draft of the European Space Programme</i>	<i>EC / ESA / MS</i>	<i>end of 2004</i>
<i>Proposals for setting up networks of technical centres</i>	<i>EC / ESA / MS</i>	<i>by the end of 2004</i>
<i>* JU : Joint Undertaking; SA : Supervisory Authority; C : Concessionaire</i>		

## ANNEX 2

### RESOURCES ASSESSMENT

The aim of this annex is to provide an overview of the financial resources which would be required for implementing the European Space Policy presented in this White Paper, preserving the European Space “acquis” while developing future opportunities. After a brief overview of the resources currently earmarked, several key scenarios are presented.

Numerous voices (e.g. through the Green Paper consultation, the recent reports from the European Parliament and European Economic and Social Committee) have stressed that the investment on space has to be seen as a source of innovation.

As such, it contributes to the EU and national initiatives for growth<sup>1</sup>, because the deployment of advanced infrastructures will enable the emergence of new added-value services. Investment in the space sector is also part of the objective of having the EU invest 3% GDP on R&D by 2010<sup>2</sup> (although several dimensions of the space policy address non-R&D aspects)<sup>3</sup>.

A more vigorous investment on space-related activities in Europe in the period to come should be reflected by a proper EU budget appropriation. This should help to exert leverage on other public activities in the space field as well as on the private sector, and to encourage them to intensify their investment.

#### 1. Past and foreseen EC financial expenditure on space (1995-2006)

Table 1 summarises the evolution of EC expenditure on space over the period 1995 to 2006, which shows a significant increase over the years (although the absolute amounts remain modest when compared to the national and inter-governmental efforts).

Most of the investment is to be qualified as R&D resources, either directly drawn from the R&D 5<sup>th</sup> and 6<sup>th</sup> Framework programmes or from the Trans-European networks – Transport budget line. GALILEO is the main application developed during that period.

---

<sup>1</sup> Space applications like GALILEO, GMES are foreseen to be part of the Commission’s “Quick-start” initiative to be presented at the next European Council. A “Digital Divide” initiative is also proposed.

<sup>2</sup> COM(2003) 226 final: Investing in research: an action plan for Europe

<sup>3</sup> in 2003, the total European public investment devoted to space-related activities amounted to 0.06% of the EU GDP

Table 1: EC expenditure on space-related activities – 1995 -> 2006 (in M€)			
	(1995 – 1998)	(1999 – 2002)	(2003-2006)
FRAMEWORK PROGRAMME + JRC	~150	~280	475
GALILEO		270*	280**
TOTAL	~150	~550	755
*: Definition and development **: Development			

## 2. Estimated annual public funding in Europe in 2004

Annual public sector expenditure in space in 2004 in Europe is estimated at the level of 5380 M€, from five main sources:

Table 2: Estimated public expenditure in Space in Europe (M€) (2004)		
European Space Agency	2700**	(national civil activities) (national military activities)
Member States	1600	
	550	
Eumetsat	300	
EC*	230	
<b>TOTAL</b>	<b>5380</b>	
*: corresponding figures only include earmarked budgetary resources **ESA expenditure in recent years: 1999 (2400); 2000 (2299); 2001 (2522); 2002 (2812)		

The EC contribution presented in Table 2 is exclusively composed of resources drawn from the following financial instruments:

- **Trans-European networks** – Transport (5 years): 550 M€/year
- **6<sup>th</sup> Framework programme (2002-2006)**: priority “*information society*”: p.m.; priority “*aeronautics & space*”: 235 M€ ; priority “*sustainable environment, transport and energy*”: 50 M€; Joint Research Centre space-related activities : 50 M€; priority “*nanotechnologies and materials*” or “*research infrastructures*” for an estimated total of 40 M€. The total expenditure is about 475 M€.

Other investments may be used, on an individual project basis: Structural funds, TACIS, FED, MEDA, although there is no pre-determined allocation for space-related activities.

## 3. Possible scenarios (2004-2013)

Following the Green Paper consultation and in line with the European Parliament recommendation, the White Paper highlights the need to develop an ambitious European Space Policy.

In order to reach its objectives, the Union must support in priority space applications. Additional resources will also have to be devoted to the “enablers” of such applications (e.g.

technology and access to space in particular) with special attention given to international co-operations.

For the Policy to be successfully deployed, a programme of actions - which is described in the White Paper - would have to be implemented to complement the ongoing and planned activities in Europe.

Two phases have been identified for the implementation of the European Space Policy, taking into account the current (2000-2006) and future (2007-2013) EU Financial Perspectives:

- first phase (2004-2006), based on existing Financial Perspectives. Resources during this phase will have to be managed through the existing financial instruments and within the current budgetary constraints. Additional budgetary resources might be made available through the sectorial policies on case-by-case basis. Opportunities might also occur under the future initiative for growth to be proposed for endorsement at the next European Council in December 2003;
- second phase (2007-2013), to be part of the future Financial Perspectives, which are currently the subject of initial reflections within the Commission. These could lead to the identification of a “space virtual budget line”, supporting the shared competence between EU and Member States on space granted by the future Constitutional Treaty.

The analysis of global economic factors and of the projections about the future EU growth rate suggest several possible scenarios. These must also take into account considerations which are more specific to the European space sector, in particular:

- the outcome of the Green Paper consultation (including the declared objective of doubling public investment on space in Europe by 2010);
- ESA Executive plans (“Agenda 2007”);
- the analysis of the EC expenditures on space over the last 10 years.

An additional issue concerns whether the EU decides to intervene in security/defence on a larger scale. Variants of the key scenarios are presented in graphic 1 to single out this option.

Last, any progression of the resources must be gradual, to ensure absorption capabilities are developed in a sustainable way.

On that basis, three main scenarios are described, together with an estimate of the resources which they would require.

**Scenario A** is the “Green paper” scenario. It reflects the needs identified during the Green paper consultation. This package represents an annual expenditure growth rate of 4.6% with respect to the overall public level of funding in 2003 (5380 M€). This is an aggressive/ambitious scenario, which would require a high level a global economic growth in order to be sustainable for the public contributors. Scenario A is compliant with all objectives identified, including space exploration and significant security/defence related space developments. This scenario is consistent with the ESA executive objectives described in its “Agenda 2007”.



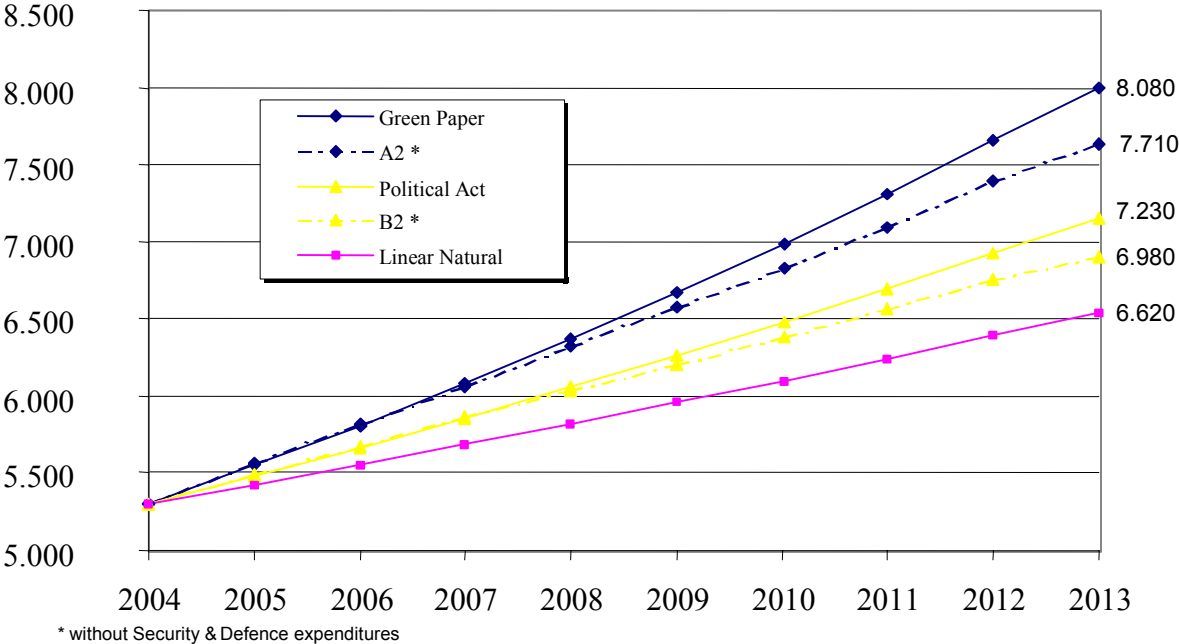
**Scenario B** is the “**political act**” scenario. It corresponds to an annual expenditure growth rate of 3.4% and marks a new departure for space in Europe, with the entry into force of the new Constitutional treaty of the EU. This is an ambitious scenario, with a growth rate higher than the global growth rate of the EU economy. Scenario B is compliant with the overall EU objectives.

**Scenario C** is the “**linear natural**” scenario, built as a linear expansion of the current level of EC expenditures. It corresponds to an annual public expenditure growth rate of 2.3 %. Scenario C does not fully guarantee independence vis-à-vis technology and access to space.

A first estimate of the European public expenditure needed to implement the White paper action plan is presented in Table 3; the evolutions of the different options are shown in Graphic 1 (without inflation). Like for all activities with a long lead time, it is important to embed these expenses in a multi-annual plan and budget.

The corresponding estimated increase in the multi-annual European expenditure is presented in Table 4.

**Evolution of European public expenditure (in M€)**



**Table 3:**  
**Estimated European public annual expenditure on space activities (in M€)**

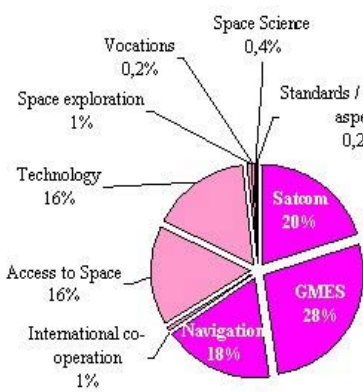
	On-going (2004)	In 2006			In 2013 (projections)		
<i>Scenarios -&gt;</i>		A	B	C	A	B	C
<b>INCREASE IN COMPARISON WITH 2004</b>	-	500	400	300	2700	1850	1240
<b>ANNUAL PUBLIC EXPENDITURE</b>	<b>5380</b>	5880	5780	5680	8080	7710	6620

Scenarios for different annual expenditure growth rates:  
 A) 4.6 %    B) 3.4%    C) 2.3%

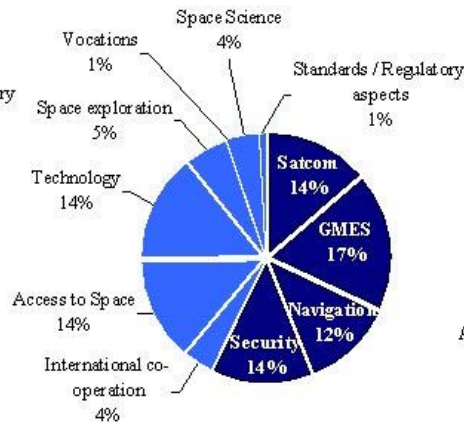
Table 4: Additional* annual public expenditure in 2013 (in M€)				
		scenario A <sup>(i)</sup>	scenario B <sup>(ii)</sup>	scenario C <sup>(iii)</sup>
APPLICATIONS	SATELLITE COMMUNICATION**	250	250	250
	GMES**	340	340	340
	POSITIONING, NAVIGATION, TIMING**	220	220	220
	SECURITY	750	250	0
INTERNATIONAL CO-OPERATION		200	70	10
ACCESS TO SPACE **		250	250	200
TECHNOLOGY **		270	270	200
SPACE EXPLORATION		220	100	10
VOCATIONS		30	20	3
SPACE SCIENCE		140	65	5
LEGISLATION, REGULATORY ASPECTS, STANDARDS		30	15	2
<b>TOTAL</b>		<b>2700</b>	<b>1850</b>	<b>1240</b>

<sup>(i)</sup>: annual expenditure growth rate of 4.6%  
<sup>(ii)</sup>: annual expenditure growth rate of 3.4%  
<sup>(iii)</sup>: annual expenditure growth rate of 2.3%  
\*: additional to the present expenditure of 5380 M€  
\*\*: EIB possible additional intervention under discussion; funding plan already decided for GALILEO

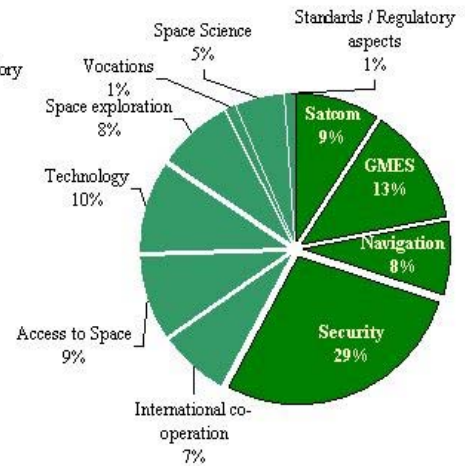
The darker areas of each pie chart show the “applications” while the lighter ones represent the “enablers”.



Linear natural



Political act



Green paper

## Concluding remarks

Whatever scenario is retained, the following remarks apply:

**There should be no simple transfer of funds:** an extra effort from the EU in the field of space, driven by the need to support applications of EU interest at the service of EU policies, should not be considered as a pretext for Member states to “pass the burden” to the EU budget and to reduce accordingly their own expenditures. On the contrary, this should act as an incentive to match EU’s new investments.

Actions undertaken under the EU framework are optimised for the collective benefit of the EU as a whole. The optimisation of national interest is to be sought under national or inter-governmental investments and mechanisms.

**Apply more innovative types of support:** space has, up to now, been mostly confined to R&D budgets, with their inherent limitations. Complementary sources of funding and mechanisms should be more systematically considered in the future such as: Public Private Partnership (already in use for GALILEO, it could be applied for the “Digital divide” initiative); a larger role for the European Investment Bank (cf. “Innovation 2010 initiative”); innovative investments under Structural funds.

Last, **the level of resources devoted to space-related activities cannot grow indefinitely.** Depending on the type of scenario retained for implementing the set of actions recommended in this White paper, one would expect the level of public investment to enter a stabilised “cruising regime” between 2013 and 2020.

The **leverage effect** of the public funding in the space sector represents an added value this sector can generate vis-à-vis other EU policies.

## ANNEX 3

### GREEN PAPER CONSULTATION PROCESS: MAIN MESSAGES

The Green Paper on European Space Policy was adopted by the European Commission on 21 January 2003. Its aim was to initiate a debate on the medium- and long-term future use of space for the benefit of Europe.

The Green Paper process has encompassed a series of events, workshops and meetings spanning the continent and drawing contributions from hundreds of representatives of the space community.

The debate was open from the industrial and institutional players down to the ordinary citizen.

The Joint Task Force composed of representatives of the Commission services and ESA organised joint workshops in several European capitals, focussing on specific themes and communities. The consultation was complemented with an open website forum.

The following table summarises the most relevant messages received:

<b>Consultation workshop/event</b>	<b>Main messages</b>
<b>The Industrial View</b>	Revitalise the current situation for the European space industry Need for a wider institutional market with greater EU engagement Guarantee access to space as a strategic need Stimulate new vocations by new European flagship programmes in space Need for EU regulations (harmonisation) Fill the gaps of strategic space technology
<b>The View of the Scientific Community</b>	Stop the reduction of funding; double the budget for Space sciences Need for a coherent data policy (harmonised dissemination) Support to horizontal and infrastructure activities Support ISS utilisation and operations
<b>The Institutional View</b>	Need for a European Space Policy discussed at the highest political level A legitimate role for the EU in the context of European Space Policy A legitimate role for ESA in the context of European Institutions Support to the shared competence principle (Constitutional Treaty)
<b>Security and Defense Aspects</b>	Space as key element supporting CFSD/ESDP Develop multiple-use capabilities Co-ordinate present activities in view of the future European Armaments Agency
<b>The View of the Operators and Service Providers</b>	Space applications key components of European space policy, bringing concrete benefits to European citizens Need for a joint ESA/EU initiative on broadband communication (bridging the “digital divide”) Importance of Earth observation (a strategic issue) Use of satellite navigation for the benefit of European citizens’ life
<b>The International Context</b>	Space as a contributor to the success of Enlargement Russia and Ukraine as the closest partners of the enlarged Union Space as a strategic tool to develop/implement international co-operation
<b>The Website Forum</b>	Need for flagship programmes in space Support to the exploration of the solar system Need for long-term vision including human spaceflight

The complete EC/ESA report on the outcome of the consultation process is available on the following website: [http://europa.eu.int/comm/space/index\\_en.html](http://europa.eu.int/comm/space/index_en.html)

The list of the contributors having responded or participated to the Green Paper consultation process is enclosed.

**Workshop rapporteurs:**

Mr G. Beretta, president ESOA  
Mr C. Bildt, former Prime Minister of Sweden  
Prof R. Bonnet, former ESA Director of Science  
Lt Col A. Kolovos, Head of National Centre for Space Applications, Greek Ministry of Defence  
Mr R. Loosch, former Department Head at German Federal Ministry for Research  
Ms P. Sourisse, President Eurospace

**Contributors:**  
Col. V. Santoro, EU Council  
Dr. D. Deniozos, General Secretary of Research and Technology, Ministry of Development, Greece  
Dr. F. Merkle, OHB, Director SAR-Lupe Project  
Dr. G. Thiele, European Astronaut Centre, Köln, Germany  
Dr. J.-L. Fellous, member of ESF, IFREMER, Issy-les-Moulineaux, France  
Dr. P. Norsk, member of ESA European Users Board, Rigshospitalet, Copenhagen, Denmark  
Gen (Retired) B. Molard, Defence and Security Advisor for the CEO, EUROSPACE  
Lord Sainsbury, Minister for Science and Technology, U.K.  
Col A. Husniaux, Belgian Ministry of Defence  
Lt Gen D. Gavoty, Head of Bureau Espace, France  
Lt Gen M. Vankeirsbilck, Belgian Defence Staff  
Mr A. Gaubert, Secretary General of Eurospace  
Prof A. Lebeau, former ESA Director of Science  
Mr A. Patacchini, Eutelsat  
Mr B. Andersen, Norwegian Space Center  
Mr B. Lançon, SNECMA  
Mr C. Hicks, Director General, BNSC  
Mr C. Paynter, Paradigm  
Mr D. El Hadani, Director of the Royal Centre for Space Remote Sensing, Morocco  
Mr D. Levesque, SARSAT/COSPAS  
Mr D. Verhulst, Alcatel  
Mr E. Both, Hungarian Space Office  
Mr E. Kuznetsov, Deputy Director General of the National Space Agency of Ukraine  
Mr E. Saggese, Telespazio  
Mr F. Davara, Director, EU Satellite Center  
Mr F. De Winne, European Astronaut, European Space Agency  
Mr F. Huyns, Institut de Recherche pour le Développement, Montpellier, France  
Mr G. Aridon, Senior Vice-President Corporate Development, Alenia Spazio / Finmeccanica  
Mr G. Dahan, Vice-Chairman European Federation of High Tech SMEs  
Mr G. Savary, Vice Chairman of the Committee for Transport, Regional Policy and Tourism, Sky and Space Intergroup  
Mr G. Sawyer, Astrium  
Mr G. Bodrato, Member of the European Parliament, and EP rapporteur on space matters  
Mr H. Diehl, German Ministry of Education and Research  
Mr H. Haubold, United Nations Office for Outer Space Affairs  
Mr I. Shepherd, Member of GMES Security Group  
Mr J. Broquet, Astrium  
Mr J. Davey, former Chairman of the Galileo Security Board

Mr J. Garcia Palacios, Hispasat  
Mr J. Kolar, President of the Czech National Committee for Space Research  
Mr J. Maury, Astrium  
Mr J. Nebrera, Proespacio  
Mr J. Rønneberg, Norwegian Space Center  
Mr J. Storey, Eurocontrol  
Mr J.-L. Dehaene, Vice President of the European Convention  
Mr J.-M. Luton, Chairman of Arianespace  
Mr K. Becher, Associate Research Fellow, EU Institute for Security Studies  
Mr K.-U. Schrogl, German Aerospace Centre DLR, Chairman of the International Relations Committee of ESA  
Mr Kremék, Ministry of Education, Youth and Sports of the Czech Republic  
Mr L. Mayo, GMV  
Mr M. Bartolomey, Arianespace  
Mr M. Dillon, Managing Director, ESYS plc  
Mr M. Kracht, Thales Communications  
Mr M.A. Llorca, EADS/CASA  
Mr M.-I. Piso, Romanian Space Agency  
Mr O. Colaitis, Alcatel Space  
Mr P. Kent, European Maritime Radionavigation Forum  
Mr P. Kompfner, Ertico  
Mr P. Morenés, Secretary of State, Ministry for Science and Technology, Spain  
Mr P. Norris, LogicaCMG  
Mr P. Rudolff, Corporate Affairs, Arianespace  
Mr P.M. Borgeal, Bureau Espace, France  
Mr R. Bausch, SES-Global  
Mr R. Buttiglione, Italian Minister of Community Policies  
Mr K. Madders, Systemics Network International  
Mr R. Olsen, Norwegian Defence Research Establishment  
Mr T. Pirard, Space Information Center  
Mr R. Williams, Eumetsat  
Mr S. Buffetaut, European Economic and Social Committee  
Mr S. Kulik, Head of International Division, Rosaviakosmos  
Mr S. Plattard, Director of International Relations, Centre National d'Etudes Spatiales, France  
Mr S. Vetrella, President of the Italian Space Agency  
Mr T. Dachev, Bulgarian Academy of Sciences  
Mr T. Eltges, Newtech  
Mr V. Gomez, Director General CDTI, Spain  
Mr Y. Papantoniou, Minister of Defence of the Hellenic Republic  
Mr Z. Klos, Polish Space Research Centre  
Mrs C. Haigneré, French Minister for Research and New Technologies  
Mrs F. Ghiron, Esinet  
Mrs L. Moratti, Italian Minister for Education, University and Research  
Mrs M. Flaminia Rossi, Italian Space Agency  
Mr C. Jacob, Eurospace  
Ms C. Noguez, former Conference Originator and Director

Ms E. McNally, Member of European Parliament  
Prof. A. Colombati, University of Udine, Italy  
Prof. F. Rocca, Politecnico Milano, Italy  
Prof. G. Corazza, University of Bologna, Italy  
Prof. G. Haerendel, Ecole Nationale Supérieure de Physique de Strasbourg, Illkirch, France  
Prof. H. Balsinger, Physikalisches Institute, Bern University, Switzerland  
Prof. J.-P. Swings, Institut d'Astrophysique et de Géophysique, Liège, Belgium  
Prof. L. Bengtsson, Max Planck Institute für Meteorologie, Hamburg, Germany  
Prof. M. Grewing, Institut de Radio-Astronomie Millimétrique, Grenoble, France  
Prof. R. Pellinen, Finnish Meteo Institute, Finland  
Prof. S. Hobe, Univeristy of Cologne, Germany  
Prof. C. Cesarsky, European Southern Observatory, Garching, Germany  
Mr R. Gibson, former Director General of ESA  
Mr P. Munier, Spotimage



**Companies and Institutions:**

ACCESS Germany  
 Advisory Board of Global Network Against Weapons and Nuclear Power in Space International  
 AECMA - European Association of Aerospace Ind. Belgium  
 AENA - Aeropuertos Españoles y Navegación Aérea Spain  
 Aeronautical Research and Test Institute Czech Republic  
 Aeronautics and Space Technologies Institute Turkey Turkey  
 Aerospace Institute Germany Germany  
 Aerospace Institute Greece Greece  
 Agencia EFE Spain  
 AGi Agenzia Giornalistica Italia Italy  
 AIAD - The Italian Industries Association for Aerospace Systems and Defence Italy  
 Airclaims United Kingdom  
 AirPresse Italy  
 ALCATEL France  
 Alcatel France  
 Alcatel Espacio Spain  
 Alcatel ETCA Belgium  
 Alcatel Space France  
 Alenia Spazio Italy  
 ALTEC - Advanced Logistics Technology Engineering Center Italy  
 ANSA (Press) Italy  
 ARD - Studio Brüssel Belgium  
 AREA (Press) Italy  
 Argongra Spain  
 Arianespace France  
 Astrium GmbH Germany  
 Astrium Space United Kingdom  
 Astrium-Crisa United Kingdom  
 Astronomy Working Group (FR) France  
 Astrophysikalisches Institut Postdam Germany  
 Aurensa Spain  
 Austrian Federal Ministry for Education and Research Germany  
 Austrian Federal Ministry for Transport, Innovation and Technology Austria  
 Austrian Federal Ministry of Defence Austria  
 Austrian Space Agency Austria  
 B612 Foundation The Netherlands  
 Baden-Wuerttemberg at the European Union Belgium  
 BBC United Kingdom  
 BDLI - German Aerospace Industries Association Germany  
 Belgian Air Force Belgium  
 Belgian Defence Staff Department for Strategic Affairs Belgium

Belgian Federal Office for Scientific Affairs Belgium  
 Belgian Government Space Department Belgium  
 Belgian Institute for Space Aeronomy Belgium  
 Belgian Minister of Defence Belgium  
 United Kingdom Department for Environment Food and Rural Affairs United Kingdom  
 United Kingdom Department of Trade & Industry United Kingdom  
 United Kingdom Embassy in Spain Spain  
 United Kingdom Government United Kingdom  
 United Kingdom Industrial Space Committee United Kingdom  
 United Kingdom Minister for Science and Technology United Kingdom  
 United Kingdom Ministry of Defence/BNSC United Kingdom  
 British National Space Centre United Kingdom  
 British Telecom United Kingdom  
 Bureau Space News - Paris France  
 Cabinet Yvan Ylief Belgium  
 Canadian Embassy in Germany Germany  
 Canadian Embassy in Spain Spain  
 Canadian Mission to the European Union Belgium  
 Canadian National Defence (OCIPEP) Canada  
 Carlo Gavazzi Space SpA Italy  
 CDTI - Centro para el Desarrollo Tecnológico Industrial Spain  
 Cedarwood Associates International Belgium  
 CFE/CGC - Confédération Française de l'Encadrement France  
 Chinese Embassy in Prague Czech Republic  
 CIFOR-INIA - Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria Spain  
 CNES Brussels  
 CNES / CFCIB Belgium  
 CNR Italy  
 Comitato VAS Italian Parliament Italy  
 Comité économique et social européen France  
 Committee Office, House of Lords United Kingdom  
 Contraves Space Switzerland  
 COPItaly-ONLUS Italy  
 Corriere della Sera Italy  
 COSPAS-SARSAT United Kingdom  
 CRO-IRCCS Italy  
 Crystal Science and Technology Institute Czech Republic  
 CS Systemes d'Information France

CVUT - Czech Technical University in Prague Czech Republic  
 Czech Astronomical Institute Czech Republic  
 Czech Ministry of Education, Youth and Sports Czech Republic  
 Czech National Committee for Space Research Czech Republic  
 Czech Space Office Czech Republic  
 Dassault Aviation France  
 Deimos Space SL Spain  
 DEIS/ARCES - Univeristy of Bologna Italy  
 Democritus University of Thrace Greece  
 Demos United Kingdom  
 Deutsche Bundesregierung Germany  
 Deutschland Funk / German Nat'l Radio Hamburg  
 DLR - German Aerospace Centre Belgium/Germany  
 DNV - Det Norske Veritas Norway  
 DOTARS - Department of Transport and Regional Services (AT) Austria  
 Dutch Agency for Aerospace Programmes The Netherlands  
 Dutch Government The Netherlands  
 Dutch Ministry of Economic Affairs The Netherlands  
 Dutch Ministry of Education, Culture and Science The Netherlands  
 Dutch Ministry of Foreign Affairs The Netherlands  
 Dutch Space Research Organization The Netherlands  
 EADS Germany  
 EADS - Astrium Germany  
 EADS CASA Espacio Spain  
 EADS France France  
 EADS Hellas Greece  
 EADS Launch Vehicles France  
 EADS Space Division France  
 EARSC - European Association of Remote Sensing Companies Italy  
 Ecologic Germany  
 European Economic and Social Committee Belgium  
 Edisoft Portugal  
 EGIS France  
 Embassy of Estonia in Greece Greece  
 Energy co / TUB Berlin Germany  
 ERTICO - ItalyS Europe Belgium  
 ESO/EIROforum Germany  
 ESOA European Satellite Operators Association Belgium  
 ESSP - European Satellite Services Provider Belgium  
 ESYS plc United Kingdom

Etat Major des Armées - Bureau Espace	France	GIFAS - Groupement des Industries Françaises Aéronautiques et Spatiales	France	INTELLECT	United Kingdom
EU Council Secretariat General	Belgium	GMV	Spain	International Institute of Applied Technologies IIAT	Belgium
EU Institute for Security Studies	France	GPlus Europe	Belgium	International Space University	France
EU Military Staff	Belgium	Greek Centre of Space Science & Technology	Greece	IRAM - Institut de Recherches et d'Applications des Méthodes de Développement	France
EU Satellite Centre	Spain	Greek National Center for Space Applications	Greece	Istituto Affari Internazionali	Italy
Eumetsat	France	GRICES - Gabinete de Relações Internacionais da Ciência e do Ensino Superior	Portugal	Italian European Policy Gov. Dept.	Italy
Euroconsult	France	GTD	Spain	Italian Institute of Navigation	Italy
Eurocontrol	Belgium	Helios Technology	United Kingdom	Italian Ministry of Defence	Italy
EUROGI	United Kingdom	Hellenic Aerospace Industry	Greece	Italian Ministry of Foreign Affairs	Italy
European Astronaut Centre	Germany	Hellenic Air Force	Greece	Italian Ministry of Internal Affairs	Italy
European Centre for Space and Security	Belgium	Hellenic Foundation for European & Foreign Policy	Greece	Italian Ministry of University and Research	Italy
European Convention Members	EU/Belgium	Hellenic Ministry of Defence	Greece	Italian Space Agency	Italy
European Maritime Radionavigation Forum	United Kingdom	Hellenic Ministry of Development	Greece	Katholieke Universiteit Leuven	Belgium
European Parliament	EU/Belgium	Hellenic Ministry of Foreign Affairs	Greece	Kayser-Threde	Germany
European Satellite Operators Association	Belgium	Hellenic Ministry of Transport and Communication	Greece	La Libre Belgique	Belgium
European Service Network	Belgium	Hellenic National Defence General Staff	Greece	Laboratoire de Météorologie Dynamique	France
European Space Foundation/ESSC	France	Hispasat	Spain	Laboratoire de Physique et Chimie de l'Environnement	France
European Space Imaging	Germany	HiTec Marketing	Austria	L'Echo	Belgium
European Voice	Belgium	Homes International s.a.	Belgium	Lockheed Martin	Belgium
Eurospace	France	HTS Development Limited	United Kingdom	Logica CMG	United Kingdom
Eutelsat	France	Hughes Network Systems	USA	Luxemburg Aerospace Industries	Luxembourg
Fachhochschule Heilbronn	Germany	Hungarian Ministry of Defense	Hungary	Luxemburg Ministry of Culture, High Education and Research	Luxembourg
Fédération Confédérée FO de la Métallurgie	France	Hungarian Space Office	Hungary	Maltepe University	Turkey
Fédération des Travailleurs de la Métallurgie	CGT France	IberEspacio	Spain	MAN Technologie	Germany
FiatAvio	Italy	IFAC - Istituto di Fisica Applicata "Nello Carrara"	Italy	Mars Society Deutschland	Germany
Financial Times	United Kingdom	IFREMER - French Research Institute for Exploitation of the Sea	France	Massachusetts - Institute of Technology	USA
Finmeccanica	Italy	Iguassu Software Systems	Czech Republic	Max Planck Institut	Germany
Finnish Meteorological Institute	Finland	Il Corriere di Roma	Italy	Mersey Reporter / Ukseds	Liverpool
Finnish Ministry of Trade and Industry	Finland	Il Manifesto	Italy	Météo France	France
Flight International	France	il Sole 24 Ore	Italy	Metria Miljöanalys	Sweden
FlugRevue	Germany	Indra Espacio	Spain	Mier Comunicaciones	ES
Foreign and Commonwealth Office	United Kingdom	Industrial Science & Technology	United Kingdom	Ministry of Flanders	BE Belgium
Freitag	Germany	Infoterra	United Kingdom	Mitglied des Deutschen Bundestages	Germany
French Embassy in Germany	Germany	INMARSAT Ventures	United Kingdom	Munich Orientation Convention	Germany
French Embassy in Greece	Greece	Institut de France - Académie des Sciences	France	NASDA - Japanese Space Agency	France
Permanent Representation of France to the EU	Belgium	Institut de Recherche pour le Développement	France	National Audit Office	UK United Kingdom
French Ministry of Defence	France	Institut Français de Navigation	France	National Observatory of Athens	Greece
French Ministry of Research	France	Institut für Quantenoptik	Germany	National Space Agency of Ukraine	United Kingdom
French Ministry of Research and new Technologies	France	Institute for Atmospheric Physics, Czech Acad. Sci.	Czech Republic	NATS - National Air Traffic Services	United Kingdom
Futuraspace Sarl	France	Republik		NERA Satcom	Spain
Galileo Avionica	Italy	Instituto Geografico Nacional	Spain	NERC/UNSC Natural Environment Research Council	United Kingdom
Gebecoma	Belgium	Instituto Geografico Portugues	Portugal	New Skies satellites N.V.	The Netherlands
Geoinformatik FSU Jena	Germany	INTA - Instituto Nacional de Técnica Aeroespacial	Spain	Newtec	Belgium
German Federal Ministry for Education, Science and Culture	Austria/Germany				
GFZ	Germany				

Norwegian Defence Research Establishment	Norway		Sira Electro-Optics	United Kingdom		The Acronym Institute for Disarmament Diplomacy	United Kingdom
Norwegian Ministry of Trade and Industry	Norway		Sky & Space Intergroup of the European Parliament	EU/Belgium		The Heart Centre	Denmark
Norwegian Space Centre	Norway					Top Strategies	Belgium
NPA Satellite mapping and exploitation	United Kingdom		Sky Logic - Eutelsat	Italy		Transplarety	Belgium
Occar - Organisation Conjointe de Coopération en matière d'Armement	Germany		Slovenian Ministry of Education, Science & Sport	Slovenia		Trinity House Lighthouse Service	United Kingdom
OECD	France		Snecma Moteurs	France		UDcast	France
OHB-System	Germany		Solar - Terrestrial Influences Laboratory	BULGARIA		UNIFE Union of European Railway	Belgium
OMNI Communications	United Kingdom		Space Benefit	Germany		United Nations, Office for Outer Space Affairs	Austria
Pagnanelli Risk Solutions	Milan, Italy		Space Imaging	Greece		Universidad Politecnica de Madrid	Spain
People TV	France		Space Information Center	Belgium		University College	United Kingdom
Permanent Representation of Denmark to the EU	Belgium		Space News	Paris		University of Aachen	Germany
Polish Academy of Science	Poland		SpaceChecker	Belgium		University of Aveiro	Portugal
Polish Space Research Centre	Poland		Spanish Ministry for Science & Technology	Spain		University of Berlin	Germany
Politecnico di Milano	Italy		Spanish Ministry of Defence	Spain		University of Bern	Switzerland
Polospace	Poland		Spanish Ministry of Foreign Affairs	Spain		University of Bologna	Italy
Portuguese Embassy in Greece	Greece		Spanish National Space Programme	Spain		University of Bremen	Germany
Portuguese Ministry of Science	Portugal		Spanish Parliament	Spain		University of Cologne	Germany
Portuguese NSA	Portugal		Spotimage	France		University of Cranfield	United Kingdom
Prospace	France		SSTC Services fédéraux des affaires scientifiques, techniques et culturelles / Belgian Space Department	Belgium		University of Darmstadt	Germany
Prudential	United Kingdom		Stato Maggiore Difesa	Italy		University of Greifswald	Germany
Publications UKSEDS	United Kingdom		Stork	Belgium		University of Hamburg	Germany
Puertos del Estado	Spain		Stork Aerospace	The Netherlands		University of Leeds	United Kingdom
Qinetiq Ltd	United Kingdom		Stork Product Engineering	The Netherlands		University of Liège	Belgium
Radiacion y Microondas	Spain		Studio Legale Carnelutti	Italy		University of Marseille	France
RaumfahrtJournalist	Germany		Surrey Satellite Technology	United Kingdom		University of Oxford	United Kingdom
Regional Environmental Center for Central and Eastern Europe	Hungary		Swedish Embassy in Greece	Greece		University of Patras	Greece
Romanyn Space Agency	Romany		Swedish Ministry for Foreign Affairs	Sweden		University of Pisa	Italy
Rosaviakosmos	Russia		Swedish National Space Board	Sweden		University of Reading	United Kingdom
Royal Centre for Space Remote Sensing	Morocco		Swiss Mission to the European Union	Belgium		University of Rome	Italy
Royal Ministry of Trade and Industry	Norway		Swiss Space Office	Switzerland		University of Stuttgart	Germany
Saab Ericsson Space AB	Sweden		Systemics Network International	Belgium		University of Thessaloniki	Greece
Sabca	Belgium		Systems Engineering & Assessment Ltd	United Kingdom		University of Trento	Italy
SAP REG - Satellite Action Plan Regulatory Group	Belgium		TCP Sistemas e Ingenieria	Spain		Vitrociset SpA	Italy
SAT REG Ltd	United Kingdom		Technology Centre AS CR	Czech Republic		Vlaamse Ruimtevaart Industriëlen	Belgium
Satlynx	Luxembourg		Techspace Aero	Belgium		Wallonia Space Logistics	Belgium
SatNavConsult	Germany		Tecnologica	Spain		WDR - Westdeutscher Rundfunk	Germany
SchlumbergerSema	Spain		Telelogic	Spain		World Meteorological Organization	Switzerland
Science's Next Wave	United Kingdom		Telesambre	Belgium		Yuzhnoye SDO (Ukraine)	Belgium
SCISYS	United Kingdom		Telespazio	Italy			
Senat de Belgique	Belgium		Terma A/S	Denmark			
Sener	Spain		Thales	France			
SES Global	Belgium		Thales ATM - Delegate European Affairs	Belgium			
SESO - Société Européenne de Systèmes Optiques	France		Thales Avionics	France			
SGAC - Space Generation Advisory Council	France		Thales Communications	France			

## ANNEX 4

### GLOSSARY

**Aurora:** the European space agency programme for the exploration of the solar system. The objective is to formulate and to implement a European long-term plan for the robotic and human exploration of solar system bodies holding promise for traces of life. The Aurora programme aims at bringing about a coherent European framework for exploration and to progressively develop a unified European approach; it is open to international co-operation.

**CFSP:** Common Foreign and Security Policy.

**Concessionaire:** Operator identified as in charge of the maintenance, operation and viability of public owned infrastructure.

**CSG (Centre Spatial Guyanais):** Europe's spaceport operated by Centre National d'Etudes Spatiales under an agreement with the European Space Agency. Strategic facility aimed at providing Europe with access to space with the optimal geographical conditions for launching.

**Digital Divide:** Inequality in the capability of access by broadband technology connectivity (i.e. Internet services) to knowledge society. It is measurable in terms of widespread availability of the connection or in cost of the connection in comparison to a benchmark.

**EGAS (European Guaranteed Access to Space programme):** Approved by ESA Ministerial Meeting and planned for 2005-2009, the programme provides short and medium term support for the European launcher service both in French Guyane and in continental Europe, and stresses the conditions required for its long-term stability.

**European Space Agency (ESA):** Intergovernmental Organisation constituted in 1975. Currently composed of the following Member States: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

**ESDP:** European Security and Defence Policy.

**European Space Policy:** In order to create a more secure framework for the benefit of space in Europe, the EU seeks to build a European Space Policy which is demand driven and supports other EU policies.

**European Space Programme (ESP):** A multi-annual programme to develop the European Space Policy.

**ESTMP (European Space Technology Master Plan):** This plan consolidates the overall process for space R&D through a joint effort involving ESA, the European Commission and industry, and highlights a number of separate harmonised technology areas. The new ESTMP refers to all the institutional actors, describing technology activities in Europe, strategies and funding approaches, readiness level and relationship with European partners, including a database of technology activities.

**EU (European Union):** Formed by the following twenty five Member States (as of 1<sup>st</sup> May 2004): Austria, Belgium, Cyprus, Czech Republic, Estonia, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Spain, Slovakia, Slovenia, Sweden, and the United Kingdom.

**European Union Satellite Centre (EUSC):** Located in Torrejón de Ardoz in Spain, it is the direct successor of the Western European Union Satellite Centre.**Framework Agreement:** A formal agreement between the European Community and the European Space Agency, defining the principles and mechanisms of a reinforced co-operation on space-related matters.

**GALILEO:** Europe's global radionavigation satellite system. Joint EU/ESA project composed of a constellation of 30 satellites in medium Earth orbit. GALILEO will provide users with highly accurate timing and positioning services.

**GMES (Global Monitoring for the Environment and Security):** GMES is a joint EU/ESA initiative combining space and in-situ observing systems to support EU's goals regarding sustainable development and global governance.**Joint undertaking:** Legal entity created in accordance with Article 171 of the European Community Treaty. A joint undertaking is mandated for the efficient execution of research, technological development and demonstration programmes.

**Networks of centres:** a cost efficient way to associate the various space national actors for the implementation of European activities under the same umbrella. The network encourages integration and improve co-operation; it also increases specialisation and reduction of overall costs.

**PPP (Public Private Partnership):** Structure composed of representatives from the public and private sector for the operation of infrastructure and the provision of services. This structure determines that the responsibilities, roles and risks are shared between the public and private sectors.

**Shared competence:** Field of competence that is shared between the EU and its Member States.

**Supervisory Authority:** Structure created by an EU Council Regulation aiming at managing the public interest in a PPP type of project.

**White Paper:** White papers are documents containing proposals for EU action in a specific area. While Green papers set out a range of ideas presented for public debate, White papers contain an official set of proposals in specific policy areas and are used as vehicles for their development.