

RESPONSE
TO
EC GREEN PAPER ON “EUROPEAN SPACE POLICY”
FROM
STUDENTS AND YOUNG SPACE PROFESSIONALS

D R A F T

13.5.03



Coordinated by the European Region of the
Space Generation Advisory Council
In support of the
United Nations Programme on Space Applications



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FURTHER INFORMATION

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Related Documents:

- Vienna Declaration (<http://www.oosa.unvienna.org/unisp-3/res/pdf/viennadec1E.pdf>)
- Recommendations of the Space Generation Forum (<http://www.oosa.unvienna.org/unisp-3/docs/rep3.pdf> p.104)
- “SGAC input to Space Policy Summit”, <http://www.unsgac.org/sgs/papers/> pg. ???

To Do

- Add Space Policy Summit ideas, especially 5 key ones. (in particular CBA?)
- Check through ESA/EU Joint Task Force document “Towards a European Space Policy” – to check to overlap on ideas. + re-read Green paper with this paper.

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Resources Used: SGS, SPS, SGF, UKSGAC doc



I. Executive Summary

“Space should be used to improve quality of life, inspire young people to learn about science and enhance international cooperation and peace”

Introduction

This document outlines the response of students and young space professionals, as coordinated by SGAC-Europe, to the EU's Green Paper *"European Space Policy"*. It follows consultation of our community through a series of meetings and online discussions involving XX people over the period of the last 2 months and follows the previous input made to the Space Policy Summit in Houston 2002 and many national level contributions.

As is stated in the recent EU Green Paper on space, “Europe faces a rapidly widening investment gap between what it spends on research in comparison to the US”. Turnover ranges between 5.5-6B in Europe and around 35B in the US. This threatens European ambition. To counter this threat, Europe should invest in space considerably to narrow the growing US monopoly.

Space should be seen for what it provides Europe: Increasing governmental lead space programmes will aid the EU to enhance its capabilities to ensure a peaceful future; economic growth; continuous learning; science; affordable development and many more. All of which are an integral part of an advanced knowledge based society.

We believe the ideas and recommendations of young people should be heard during this consultation process since we represent the future of the space industry. Our recommendations combine the idealism and vision of young people, with the realism gained from our first steps within the space sector during our studies and employment. With falling numbers of students within science and engineering in tertiary level education across most of the EU, we also represent the link to the next generation. We have developed recommendations that aim to facilitate a stronger EU, and most crucially, allowing for the realisation of Europe's goal of being the most advanced knowledge-based society in the world.

Key Objectives:

Using space to benefit European citizens by improving:

- A. *Welfare: using space technologies to aid health care, boost the economy and enhance the information society. Including:*
 - i. *Education: using space to maintain and promote interest in science in children's education to ensure an adequate supply of the science, technology and engineering skills that underpin the EU knowledge base*
 - ii. *Sustainable Development: using space technology to aid sustainable development on a global scale*
- B. *Security: using passive space systems to enhance peace and international space programmes to promote cooperation.*
- C. *Science: using space to advance the boundaries of human understanding of Nature, and of our origins.*

Key Recommendations:

In addition to maintaining European strengths in space science and communications, three main areas need significant development:

- Space security capability
- Launch vehicles
- Human space flight.

Specifically we recommend that the EU:

1. Substantially increase the scope of common EU space programmes to enable a comparable output to the US in all space fields by (a) increasing investment all round, (b) integrating national space defense programmes and (c) the continued efficient use of resources.
2. Work to strengthen international space law and in particular develop a treaty prohibiting space weapons.
3. Re-scale programmes to develop a cheap launch capability for Europe, concentrating on non-conventional launchers.
4. Substantially increase the public visibility of European space activities by better coordination, through establishing a norm that 1% of all space programmes budget should be spent on education and outreach and by increasing exciting programmes such as Human Spaceflight and advanced launchers to curb the “Brain Drain”.



II. Principle Objectives of EU Space

“Space should be used to improve quality of life, inspire young people to learn about science and enhance international cooperation and peace”

What can Space Provide the EU?

In addition to the assumption that “space must, by nature, be considered at the global level” and the premise that “the effectiveness of Europe in space can drive the success of certain of its policies” of the EU Green Paper, with which we agree and base our contribution around, our paper is also based on the premise that *space capabilities should be used for the benefit of citizens*. We feel this is split into three areas:

1. Welfare

“Developing innovative space systems to deliver sustainable improvements in quality of life both in the EU and in developing countries”

a. For the EU

- Information Society: space based communications and navigation capabilities are central to the European objective of being “the most advanced knowledge based society”.

i. Education:

“Using space to maintain and promote interest in science in children’s education to ensure an adequate supply of the science, technology and engineering skills that underpin the EU knowledge base”

- Education: space is a great motivator for interest in science and technology, as demonstrated by the popularity of TV and films about space, and the success of space exhibition centres in many nations. Harnessing these interests can and should have a cascading effect on interests in other areas of science and technology (e.g. during the Apollo programme in the US take up of science and technology increased dramatically in tertiary level education). However, in spite of the inspirational nature of space, European space companies are having difficulty attracting good calibre graduates and the numbers of young people taking up science at a tertiary level are dropping. In order to harness the motivational aspects of space to increase take up on science courses, as well as increase awareness of the opportunities available to graduates in European space industry amongst present students, outreach on space programmes should be better resourced. Exciting programmes should receive higher profiles and more funding, in particular human space flight.

i.i. Economy:

“Developing the capability to allow the EU to exploit the resources of space”

- Economy: space pushes the frontier of human knowledge and technology, and consistently outputs technology spin-offs which provide society both with direct benefits to quality of life in terms of improvements in health care, and indirect via the increasing of economic strength since technology provides the backbone of the modern economy. To ensure that the EU does not miss out on future opportunities that will inevitably arise in the space sector in the long-term, it is crucial that we maintain a high level of competition with other nations. Repercussive benefits of this investment include promotion of science and engineering and assistance in retaining scientists and engineers within the EU, and increased quality of life through technology spin-offs.

b. Globally

ii. Sustainable Development:

Using space technology to aid the needs of people in developing countries

- Technology Transfer: many of the same technologies that we develop to improve quality of life in the EU can easily be adapted to the needs of those in developing countries, allow them to leapfrog technologies to provide large increases in welfare. This small effort is both worthwhile, and our responsibility as part of the EU foreign aid programme.
- Climate Change: space capabilities can be used to monitor and help implement measures, such as the Kyoto Treaty, to enable sustainable development worldwide.

2. Security

“Using space projects to promote international peace and security through passive space systems and cooperation”

a. For the EU:



- Military capability: space is a keystone to modern military capability for the EU. Reconnaissance, communication and navigation capabilities are central to providing the EU with the capability to have the military power necessary for a stable political world. Independent launch facility underlies this capability. Key factors for this are:
 - The possibility for EU and for any other European agency of fast procurement of spacecraft and payload by means of a dedicated procurement agency.
 - The availability of independent, economically affordable and easily accessible launch facility facilities
 - Monitoring: space capabilities can be used to monitor global security threats, treaty compliance by non-EU states, and to develop a system for early warning of natural/manmade disasters and crisis management.
- b. Globally
 - Monitoring: the above concept can be applied to monitor global security threats, treaty compliance by non-EU states, to support the planning, deployment and action of EU forces for peace keeping and peace enforcing actions under UN mandate, and assist developing countries with early warning of natural disasters.
 - Cooperation: enhance cooperation between nations through international programmes.
 - Law: using space law to allow efficient and peaceful use of space.
- 3. Science
 - Space instrumentation can allow the existence of whole new fields with which to deepen our understanding of nature. From X-ray astronomy, to Climatology to Planetary Evolution, space based technology has lead to rapid advances in our understanding of the universe, including our own planet. The EU has a strong tradition and capability here.

Major Shortcomings of EU Space Capability

Technology and innovation are the dominant drivers of economic growth in the developed world. It is essential that the EU take a full part in the space endeavour since without it we shall miss an important historical opportunity that our fellow world partners shall exploit. The EU is a world leader in many space fields in particular in space based science and economical launch capability. However, four areas need sustained increased investment:

1. Common Defence Programmes

Firstly, as noted on p. 24 of the Green Paper, currently most military space systems are developed by nations on an individual basis: there is little coordination, much overlap and as a result, the overall value for money is low in this area. Moreover, EU capability is far outstripped by that of the US. Thus, (1) we need to establish a common defence programme to reduce redundancy, and (2) we need increased overall investment.

2. New Launchers Technology

There is no current cheap access to space. This is the most fundamental 'bottleneck' of the space sector world-wide. Critically, investment is needed in non-conventional launcher areas many of which are thus far ill explored. Investment here is likely to pay off – by allowing the EU to capture a part of the expanded space market that would result from cheap access to space. Due to the EU's low investment in this area in the past, it currently has a huge strategic advantage over its competitors to concentrate on next generation launch capabilities that would leapfrog current technology help alleviate the space bottleneck, though this window of opportunity is rapidly closing.

3. Space Law

With increasing dependency on space assets, and with the long-term exploration of this domain in mind, it is high time that a more thorough international legal framework for space activities be developed. We feel that it is vital that a strong international space law is devised and that the EU plays a significant role in its creation. First and foremost the EU should support the development of an international treaty to prohibit all space weapons.

4. Human Spaceflight

As a key driver of the EU image as a foremost developer of space-based systems and as a prolific producer of spin-off technologies, as well as a key motivator of youth interest in science and technology, human space flight is another vital component that is underdeveloped from the EU space programme. Human space flight is possibly the most technically challenging human endeavour, and as such is a potentially powerful motivator for scientific and technological advancement. HSF has also historically been a symbol of economic and technological dominance. It is worth stressing that in relation to the severe decline in take-up of science and engineering at tertiary level education for the EU at large, a strong HSF programme is the one project most able to rectify this; historically human spaceflight has made a tremendous impact on take up of science and technology in tertiary level education, for example during the Apollo programme in the US.



III. List of Recommendations and Targets

Here we shall have a list of 'one-liner' recommendations (that are detailed below) and try to identify specific targets for these ideas.

Key Recommendations

A. Welfare Recommendations

- i. Education**
- ii. Development**

B. Security Recommendations

C. Science Recommendations



IV. Detailed Recommendations for EU Space

Our discussions have investigated what realistic steps could be taken to achieve our long-term goals for the space sector, as well looking at as what the space sector can bring back to the people of the EU.

Speaking as a group whose academic backgrounds are mainly in science and engineering, we nevertheless recognise that space has a role that is much broader than just these areas. Our recommendations try to address the areas where the EU, wishing to improve education, economy and security (as well as science), should seek to take part in space.

Recommendations Section by Section through the Green Paper:

SECTION 1. EUROPEAN SPACE IN A CHANGING GLOBAL CONTEXT

Section 1.1.1. Independent access to space

1. **Develop Next Generation Launchers:** the operation of Vega and Soyouz in Kourou in addition to Ariane conventional launching capabilities will enable an interesting range of launchers for the EU. However, fundamentally, chemical launchers are a mature technology which offer no room for large scale improvements for cheap access to space. It is thus critical that the EU initiate sustained and substantial investment into developing a next generation launch capability for Europe, in particular focussing on non-conventional launch vehicles. The current launch capability consists exclusively of non-air-breathing rockets using chemical propellants. These types of vehicle perform close to their theoretical capability and have done so for 30 years with no real reduction in cost or increase in reliability. Future improvements, especially those that will reduce the cost of launch by an order of magnitude or more will come from less traditional approaches. The lack of alternative launch concepts and low investment in alternatives has led to the self-fulfilling prophecy that no alternatives exist. This situation is currently hindering access to space and development of space technology at all levels – it cannot be allowed to continue. We recommend that the paucity of existing launcher development be rescaled in the Future Launchers Technologies Programme, with particular emphasis on aggressive, non-incremental, non-traditional approaches. It is worth noting that the EU has little vested interest in the chemical launcher industry with respect to the US, and therefore should feel greater flexibility in pursuing alternative approaches.
2. **Increase partnerships with Russia and the Ukraine** to facilitate cheap near-term launchers for the EU (and further international cooperation).

Section 1.1.2. Maintaining Scientific Excellence

3. EU should collaborate with all national and international science institutions to guarantee the required funding to European researchers to develop a Network of Centers dedicated to space based research activities. EU should guarantee the access to this Network for all European scientists.
4. EU should operate in order to preserve recognized European scientific leaderships, in particular those related to space based science projects (examples being high energy astrophysics with missions like BeppoSAX, INTEGRAL, AGILE). EU should also strategically act in order to provide the European scientific community with the means to acquire scientific leadership positions wrt non European scientific communities.

Section 1.1.3. The industrial and technological base Industry

Technology

5. **Increase overall technology investment:** in general the EU has a lower level of space technological capability compared to the US, especially in military applications. Technology is higher in the US due to lead governmental support which allows for high-risk and long-term research and development. The EU must increase investment and coordinate these technical programmes in order to be competitive.
6. **Enhance Cross-Sector Research & Development Coordination:** within the next two decades, it is likely that the balance between reliability engineering and innovation within the global space industry will shift towards greater innovation and production, as price to orbit is reduced. Those organisation within Europe undertaking space science or



engineering R&D need to further engage with other sectors and spin-in more effective research methodology to reduce programme lead times and costs.

Section 1.1.4. The commercial market and the institutional demand

7. **Stimulate Entrepreneurial Growth by increasing seed funding for R&D in companies.** The nature of space business and its position relative to terrestrial based competition has been changing and will continue to do so. A range of failed large-scale commercial programmes have occurred as a result of application of outdated methods and objectives. Commercial innovation underpins the engine of economic growth within Europe and the space sector needs to systematically recognise and nurture new companies within the space sector to innovate with a more dynamic risk/revenue balance.

Section 1.1.5. International cooperation

8. **Increase cooperation with Russia and China.** The value of international cooperation cannot be underestimated and we would consider this one of the primary motivations for EU investment in the space sector. Russia and other former Soviet nations will be increasingly valuable to enhance relations, especially with the EU expansion into the East. In addition the EU stands to gain technology whilst Russia stands to gain fiscally. As mentioned in section 1.1.1., Russia could also be key to enabling cheap launch capability in the short term. China is increasingly ambitious space plans with which the EU should aim to collaborate.

Section 1.1.6. Manned Spaceflight

9. **The EU should expand its human space flight programme,** which in combination with next generation launcher capability, should in the long-term enable an independent human spaceflight programme. To portray a fully structured European human space-flight programme as a symbol for EU excellence in technical expertise, commerce, efficiency and creativity to the rest of the world. This might also serve to retain expertise in the country thus reducing the need for people to seek employment in the space industry in other countries.
10. **Increase outreach on the European Astronaut Corps** since it is largely unknown to European citizens and yet could be leveraged to enhance interest in science and technology amongst children. Thus, a large outreach should be made on this programme in particular.
11. **Continue current level of investment in the ISS** in order to continue to increase its human spaceflight and space infrastructure capability, in addition to continue the valuable international cooperation benefits.

Section 1.2. Budgetary and financial resources

Investment in the space sector from member states is often limited to short-term market benefits, and fails to take into account the underlying importance of innovation to the growth and strength of Europe at large, in the long-term. Largely, as mentioned in the Forward to the Green Paper outlines, the EU must recognise the massive underinvestment in space with respect to US investment. This must be countered by:

12. **Substantially increase the scope of common EU space programmes** to enable a comparable output to the US in all space fields by (a) increasing investment all round, (b) integrating national space defense programmes and (c) the continued efficient use of resources.
13. **Enhance coordination and collaboration of national programmes into larger EU programmes** so as to reduce redundancy. As mentioned as a premise to the paper, “space must, by nature, be considered at the global level”, and as such, there is little place for national projects. Thus there should be:

Section 1.3. Vocation and competencies

As representatives of the community of young space professionals in Europe, we take very seriously the threat to Europe from the falling take up of science and engineering in tertiary level education. It threatens European ambition of being the foremost knowledge based society. We recommend:

14. **Development of an independent human space flight programme** to inspire and encourage interest in science to all parts of society
15. **Increased education and outreach of the ESA.** Substantially increase the public visibility of European space activities by better coordination, through establishing a norm that 1% of all space programmes budget should be spent on education



and outreach and by increasing exciting programmes such as Human Spaceflight and advanced launchers to curb the “Brain Drain”.

16. **Forge closer ties between the ESA and national education departments** (1% of all programmes on education and outreach). Establish a link between ESA and the national Education departments. This would aim to maximise the potential of space to inspire students to study science, engineering and maths at tertiary level education, and enhance awareness of career opportunities in European space industry. Such a link might enable projects which:
 - a. Increase the scope of space related subjects in the national curriculum to improve awareness of the role of space technology in our lives and the benefits accruing there from
 - b. EU should increase the investments for students mobility within the Union setting up a dedicated programme for space science and technology mobility, in cooperation with ESA and the national space agencies (examples are ESA’s YGT Programme, EU’s SOCRATES, ERASMUS and LEONARDO programmes).
 - c. Emphasise the theme of space exploration in the mandatory curriculum for science, technology and maths
 - d. Encourage outreach, in collaboration with ESA's Education Office
17. **Create a central network of space-industry job opportunities** to increase mobility.

SECTION 2. PLACING SPACE MORE AT THE SERVICE OF EUROPE AND ITS CITIZENS

Section 2.1. Contributing to the emerging knowledge society and the competitiveness of European industry

18. Using space to facilitate precision farming, agricultural studies and forest fire science

Section 2.2. Supporting sustainable development

19. **Initiate a Space and Sustainable Development Institute** in order to:
 - a. Enable Technology Transfer to aid development aid programmes and to work directly with developing country governments to help them to leap-frog technologies to enable large developments in welfare.
 - b. Use space to monitor implementation of the Kyoto Treaty and other international agreements

Section 2.3. Improving security for citizens

Space is a keystone to modern military capability for the EU to enable security for citizens. Reconnaissance, communication and navigation capabilities are central to providing the EU with the capability to have the military power necessary for a stable political world. Independent launch facility underlies this capability. Space capabilities can be used to monitor global security threats, treaty compliance by non-EU states and assist developing countries with early warning of natural disasters

20. **Increase investment in common space security programmes** including reconnaissance, navigation, communications in an independent launch capability.
21. EU, in collaboration with other European institutions, should initiate a taskforce to analyse the use of space to counter asymmetric threats.
22. EU and ESA should implement the recommendations of the UK-Government Task Force on NEOs.

SECTION 3. TOWARDS A MORE EFFICIENT AND AMBITIOUS ORGANISATION AND FRAMEWORK

Section 3.1. Union, ESA and Member States: roles and relationships

23. **Establish a European Agency for Armament and Strategic Research.** This body, recommended by the European Convention working group on defence, would develop technology across all fields needed for defense. It would provide the **principle EU research agency for military space** and in the space field would concentrate on the development of cheap launchers and on common European military space programmes (and would help to coordinate existing national military space programmes).
24. **The European Space Agency** will remain with all of its current functions and be the **principle operations agency for space**.
25. **Establish a youth advisory council to the EU on space policy.** In order to represent the vision and recommendations of young people from over Europe on space issues to the EU.
26. **Initiate an institutional debate** to understand the future roles of the European Space Agency and of all the EU Members national space agencies to develop efficient cooperation and to coordinate the the development of common European space policy, for instance concerning issues like defence, immigration, security, foreign affairs.
27. The next EU Science Framework Programme should have a dedicated chapter to Space Activities.



Section 3.2. Space policy and programming frameworks

Section 3.3. Developing space industry within a transport and stable regulatory framework
Evolution in the industrial landscape

Regulation and standardisation

Contemplating the inevitable expansion of humans more permanently into space and deeply concerned about the weaponisation of this domain we urge that

28. **Prohibit Space Weapons:** the EU develop with its international partners an agreement that prohibits the deployment of space weapons with enforcement of international sanctions against states who fail to observe the space treaties; and given the stalemate in the discussions in the UN Conference on Disarmament, support efforts to convene an international conference for this purpose (following the Ottawa Process which led to the ban on land mines).
29. **Work to strengthen international space law**

Other Recommendations

30. **Set up a programme to provide seed funding for new commercial opportunities such as space tourism,**
31. **Establish links between ESA, Law Societies and national education departments** to ensure that Universities offer Space related qualifying law programmes which goes hand in hand with the development and increased participation of the EU's space activities.
32. **Create an annual Space Industry Awards scheme** to stimulate best practice and competition. Create an annual Space Industry Awards scheme to stimulate best practice and competition This could take the form of a 'Space Awards' scheme (open to both commercial business & academic institutions and similar to UK DTI's 'Smart awards'), with opportunities for further development, particularly where a likely revenue stream can be identified
33. **Fund a Global Space Prize** to be awarded in recognition of outstanding achievement in the area of peaceful applications of outer space for the benefit of society.
34. **Establish a specific fund of approximately 10M Euro to assist UN COPUOS** in the implementation of UNISPACE-III recommendations.
35. EU and ESA should collaborate to set up a European Procurement Office as it is with NASA Rapid Spacecraft Development Office, responsible for the management and direction of a programme directing the definition, competition, and acquisition of multiple Indefinite Delivery/Indefinite Quantity (IDIQ) contracts which would offer EU and any organization, extremely fast procurement of spacecraft and payload space for future missions.
36. EU should immediately help the European space industry to face the actual great economic crisis which is affecting this market. There is the need for a reorganization capable of saving and to set off the top skills gained by European SME and LSI. EU has to lead a process which main aim is to give new energies to this industry, contributing to increase the European competitiveness wrt to US space industries. These goals can be reached by starting new space programmes, new R&D activities, and by setting new challenging objectives that can be easily recognized being worthy by the public opinion, which consider them important, prestigious, noble, useful, EU action is essential in the fields of:
37. EU should establish a European Technology Transfer and Training Programme to aid the use of space technology in developing countries, first of all in the Mediterranean Basin.
38. Use space to verify implementation of the Kyoto treaty to help sustainable development worldwide.
39. Using space to enhance environmental issues on Earth (water cycle study, climate change role of cryosphere, pollution of any kinds) and space debris limitation.



IV. Answers to Specific Questions

Q1. Should Europe maintain, until 2020 and beyond, its independent access to space, based on the development of a family of European launchers and their preferential use by institutional users?

Certainly. However, we should not concentrate research on conventional launcher technologies but instead look ahead to increase investment in next generation launcher technologies and infrastructure.

(i) What should be the formula for a wished-for evolution in the sharing of responsibilities between the public authorities and the private sector in the economic balance of the use of these launchers and in the finance of new developments?

Equal Partnership. This will be beneficial to both private and public authorities, as it is an opportunity to expand industry, as well as consolidating industry areas, resulting in a stronger efficient industry base, enhancing profitability of launchers by reducing launch/payload costs.

[See recommendations X and XX (launchers and Russia cooperation)]

Q2. In which fields – including those concerned with space systems used for security and defence – does Europe have critical technology and industrial short-comings, and how to redress the balance?

[See Section III, under “Major Shortcomings of European Space Capability”]

Q3. What is the outlook for growth in the European institutional market? In parallel, is it necessary to seek agreement with key international partners (US and Russia) to establish more balanced market conditions?

Probably yes, but depends on what a 'balanced market' is!

Does it mean a more fair market, thus to retain competitiveness?

Q4. From a European point of view, do the results eventually expected from the experimental programme on board the ISS correspond to the level of investment and the running costs?

Science on the ISS can for the most part be performed more cheaply and more accurately on non-human based platforms. Thus, clearly the experimental programme does not justify the projects' costs. However, increasing international cooperation and developing human spaceflight capabilities do and should justify the investment. Investment should be considered in light of the long-term ambitions of EU human exploration programmes.

Q5. How may the financing of space activities at a European level be organized in a more coherent matter, avoiding that an increase of resources at European level is accompanied by an equivalent reduction of investment at national level?

The EU should encourage centralisation of space as this will increase efficiency and the EU must recognise massive under investment in space. We recommend new resources be allocated for space, concentrating on more central programmes and that national programmes be coordinated more centrally.

[See recommendations on common space policy body]

Q6. What action should be taken in space professions and associated field to make them more attractive, in particular to young people?

[See recommendations on prizes, education and outreach and HSF]

Q7. What are the conditions for the emergence of economically viable and competitive applications and space services for citizens and industries? Will political actions be justified, and if this is the case, to what extent could public support be considered necessary?

There should be an increase in investment within space infrastructure and launchers. To coincide with this expenditure good regulations are needed to maintain and regulate competitiveness for citizens and industries – the regulation should be minimalistic whilst encouraging industry led standards for telecoms, airworthiness and space debris regulation is vital. Limited public support required but public and politicians should be informed that reduced regulation will stimulate growth and innovation.

Q8. How better to define and clarify, as part of a coherent whole (including framework and time-scale): the nature and scale of space capacities required to achieve the political objectives of the PESC? Within what context could the possible new space capability be placed at the service of citizens?



The EU should set policy on space and make clear the organisational arrangements.

Q9. What is the most efficient manner to exploit the space “acquis” in Europe for the benefit of Union policies?

Setting up a new space directorate within the EU which directs programmes and expenditure of ESA and the European Agency for Armament and Strategic Research, will help to exploit a consensual space program within member states. This will help to define the responsibilities within the space sector amongst institutional actors in space and their respective relationship to the private sector, as well as the opportunity to obtain more uniformity of decisions and convergence of contributions regarding common objectives, within civilian, security and defence aspects amongst member states

[See recommendations on Organisations]

Q10. How may the political and juridical bases necessary for an efficient action by the union and Europe in the space field, in particular with regard to the definition of the future treaty if the union be reinforced?

Q11. Economic pressures are driving aerospace Industries in Europe and elsewhere to restructure. What are the consequences of such restructuring? How many the actions of the public bodies be best organized to support the competitiveness of the space industry?

The consequences could be too much consolidating may lead to the creation of monopolies within the space industry which would adversely affect smaller space businesses. The actions of public bodies is to support areas where Europe has technological and industrial shortcomings. (e.g. see Q2) Thus Europe can maintain its competitiveness within the world space market and prevent monopolies forming.

Many organisations have undergone multinational mergers over the last ten years in an attempt to increase competitiveness. Overall, this has proved less successful than envisioned with only 25% of mergers of the last ten years providing an increase in shareholder value. The current difficulties of the industry and recent restructuring is a reflection of poor post merger performance. It is likely that the next phase of restructuring will be along the boundary between process and intellectual capability. Public bodies will play a vital role in recognising this trend and monitoring the process of this organisational mitosis so that support bodies can be in place to assist large industry make these changes effectively.

Q12. Are there regulatory barriers, which slow the development of new space communications services? What are the measures likely to improve regulatory environment notably with a view to development of the information society?

Intensify efforts for member states to act jointly with European Conference of Postal and Telecommunications Administrations (CEPT) thus enabling Europe to act jointly with international bodies such as ITU in the allocation of frequencies and orbital positions of satellites.

Help reduce the barriers for spectrum allocation and regulation. Ensure that the terrestrial equipment manufacturers have full insight into the Galileo programme. Encourage entrepreneurial growth for Galileo related downstream services ahead of time.



APPENDIX A: HISTORY OF SGAC

The Space Generation Forum (SGF) was a technical forum of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE-III) held in Vienna in July 1999. It gathered 160 young space professionals from all over the world to formulate the visions and recommendations of youth on the exploration and peaceful uses of space.

The SGF was immensely successful. Because of the efforts of these young people and their organisers, the results of their deliberations became part of the results of the Conference. Some of their recommendations were incorporated into "The Space Millennium: Vienna Declaration on Space and Development" adopted by UNISPACE-III and endorsed by the United Nations General Assembly in December 1999. One of the recommendations of the Vienna Declaration was that a mechanism to bring the views of young people to the attention of the Committee on the Peaceful Uses of Outer Space (COPUOS) should be established. In response to that recommendation, the Space Generation Advisory Council, to the United Nations Programme on Space Applications (SGAC) was formally established and has been granted observer status within the Committee.

The SGAC has begun to implement ideas and recommendations from the conference – including "Yuri's Night" - a World Space Party, "Under African Skies" - a grass-roots science teaching project in Africa, an "Association for the Development of Aerospace Medicine", and a "Global Space Education Curriculum".

Further information on SGAC and its projects can be found at: <http://www.unsgac.org>

INITIATIVES OF SGAC

The SGAC has assisted the Space Generation community to conduct projects which relate to our aims of using space to enhance life and which help to facilitate the recommendations of UNISPACE-III. Recent successful projects which illustrate the wide-ranging areas covered by these projects, include:

Space Policy Projects

1. Space Policy Summit: <http://www.unsgac.org/sgs/papers>
2. UK Space Policy: <http://europe.unsgac.org/uk/projects/BNSC/UKSpaceStrategy.pdf>

Space Action Projects

3. Under African Skies: <http://www.cosmoseducation.org>
4. Yuri's Night – the World Space Party: <http://www.yurisnight.net>
5. The Space Generation Summit: <http://www.unsgac.org/sgs>
- Our next conference is planned for Bremen, Germany, in October 2003: <http://bremen.unsgac.org>
6. Peace in Space - Keeping Space Free of Military Conflict: <http://www.noweapons.org>
7. Association for the Development of Aerospace medicine: <http://ssmu.mcgill.ca/adam/>
8. Space Generation Network: <http://www.space-generation.org>
9. United Nation Action Teams for UNISPACE-III Recommendations: <http://www.unsgac.org>
10. Permission to Dream: <http://www.permissiontodream.org>

Note on Support from ESA: In addition to backing from the United Nations, many of these projects have received support from the ESA. For example, ESA supported the founding and coordinating conferences of the SGAC – SGF and its follow-on conferences in Graz (2000, 2001, 2002) and Houston (2002). In addition, ESA has supported the Under African Skies project which conducts science teaching African schools, and is in the process of setting up an exchange network between European and African schools. ESA has also supported the "Yuri's Night" project which is a series of over a hundred parties around the world every year on 12th of April to celebrate for space outreach.

More about these and other initiatives at the SGAC website in the "Projects" section.