ESPI
European Space Policy Institute

ESPI PERSPECTIVES 23

# Towards a UN Space Policy

**Amb. Ciro ARÉVALO YEPES**, Chairman of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) *

*The United Nations are in need for a proper space policy of their own. It has to reflect the changing international space environment and cover issues related to the use of space applications inside the UN System as well as the role of the UN as a driver for international and regional cooperation and as the forum to shape a modern regulatory framework for space activities. I have presented this initiative at the 2009 session of UNCOPUOS, which took place from 2 to 12 June 2009 in Vienna. The initial response by delegations and the first discussions were encouraging and I hope that through the dissemination of my text as this issue of "ESPI Perspectives", the ideas for a UN Space Policy will receive an even broader attention.*

## Introduction

**The international community is entering an era of "shared global utilities from space" in which the global economy and security are increasingly reliant on space activities that support a myriad of applications and utilities on Earth.**

Space-based systems deliver information and services that protect lives and the environment, enhance prosperity and security and stimulate scientific, industrial and economic development. They provide improved weather forecasts, satellite broadcasting and advanced navigation services and open up new opportunities in tele-education and tele-medicine. They are therefore critical to an increasing number of key areas of the economy and the development agenda world wide. Space is thus becoming a "global commons" offering a unique vantage point from which to address many challenges of the 21st century, such as monitoring and better understanding the phenomena of climate change and global warming, as well as supporting sustainable development. Economic globalization in the technological advanced world has result in many cases in the marginalisation of countries with scarce resources. The growing reliance on space technology and the increasing pace of international space activities necessitates a more coordinated and strategic approach to space activities at a global level than is currently the case.

**The United Nations has used space applications increasingly over the years; however the agencies of the UN system have to employ space assets on a larger scale. Space should be more prominently reflected in the UN world conferences.**

Space technology and its applications are increasingly being used within the United Nations system to support a wide range of activities. At least 25 United Nations entities and the World Bank Group routinely use space applications. They make important and sometimes essential contributions to the work of the United Nations, including in the implementation of recommendations of major world conferences in efforts towards sustainable development and in the implementation of the United Nations Millennium Declaration but their role is not prominently recognized. Hence coordination, cooperation and synergy are essential for those activities to be effectively carried out by the United Nations system. The annual Inter-

* The author thanks Annette Froehlich (German Aerospace Center, DLR), Peter Martinez (South African Astronomical Observatory, National Research Foundation of South Africa), Nicolas Peter (European Space Agency, ESA), Kazuto Suzuki (Hokkaido University) for their inputs. This text is based on UN Doc. A/AC105/2009/CRP.12 of 3 June 2009, presented at the 52nd session of UNCOPUOS.

Agency Meeting on Outer Space Activities serves as the focal point for inter-agency coordination and cooperation and for preventing duplication of efforts related to the uses of space applications by the UN.

The United Nations is critically reliant on space systems for its day-to-day operations and effectiveness, but its space activities are fragmented geographically and thematically among different centres. There is therefore a need to strengthen inter-disciplinary cooperation among various public sector institutions and agencies to maximise synergies and to be part of main world conferences in various matters i.a, development, resources and environment. There is also a need to optimize inter-institutional cooperation and promote enhance space awareness at all levels in the UN.

**The space environment is changing rapidly with an internationalization and globalization of the space sector, with a growing number of States seeking to develop or extend their space capabilities, as well as non-state actors extending their involvement in space activities.**

The rapid evolution of the space arena, both in terms of the growing number and diversity of users, underscores the importance of strengthening international legal and policy frameworks for outer space. Besides the United Nations treaties and conventions on the exploration and uses of outer space, the United Nations General Assembly has adopted several resolutions relating to various specific aspects of space activities. However, the changing global context for space activities is bringing into focus the need for the establishment of standards to guarantee the long-term sustainability of space activities, and the necessity to have a United Nations space global approach has never been so important.

However, to adapt to emerging and future challenges, both stability and change are needed and there is therefore the necessity to adapt the United Nations to the needs of the 21st century. In particular, there is a need for increased coordination of United Nations activities to find holistic solutions to current and emerging global problems.

The United Nations space organisations, and particularly the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) that was created at the beginning of the space age, need to evolve and adapt to this new context to still be relevant in the future.

**In order for the United Nations to play its necessary role in the space arena, it will need to be supported by a Space Policy.**

The United Nations has up to now pursued a highly decentralised approach to space amongst its agencies and organisations. This is not considered a tenable option for the future. This proposal for a UN Space Policy charts a course towards the United Nations regaining an important place in the global space context as the current arrangements are not fully satisfactory and a far more proactive approach is necessary to underpin and sustain the UN's capability to play its role in the rapidly evolving space arena of the 21st century. Too much is at stake for the global community for the United Nations to watch from the sidelines and be only passive and reactive. To improve its ability to play a more strategic and purposeful role the United Nations will need to develop a balanced Space Policy that properly addresses the long-term requirements of the global community in its uses of outer space.

It is time to set clear directions. Space can contribute to the cohesion and identity of the United Nations and its stakeholders. A United Nations Space Policy is increasingly necessary to depart from the current ad hoc modus operandi. A sound policy that is relevant to the UN's objectives and priorities is thus essential for promoting the development and application of space activities for the benefit of humankind.

**A United Nations Space Policy would provide over-arching guidance on space activities for UN stakeholders in the space arena; it would inform UN participation in space activities and would promote improved coordination and cooperative governance of outer space activities. A world without a common UN Space Policy will not be able to respond to the challenges of the rapidly evolving space arena in the 21st century.**

## 1. The Need for a UN Space Policy

Acknowledging the current evolution of the space arena in the context of a diversification and multiplication of actors, threats and challenges, there is a growing necessity for the United Nations to take actions providing an overall stewardship to space activities for the

following reasons:

*a) Stable order in orbits.*
The sustainability of space activities in Earth orbits over the long-term is increasingly a matter of concern for space-faring countries and regional space organisations, as well as for emerging space actors and commercial satellite operators alike. The Earth's orbital environment is a true common good for humankind. However, the growing population of space debris poses a major threat to the long-term sustainability of space activities. Improving the safety of space operations is thus one of the most important issues for the long-term sustainable use of orbits. . Particular emphasis should be placed on the agreement reached by COPUOS on the question of the character and utilization of the geostationary orbit and the subsequent endorsement by the UN General Assembly in resolution 55/122 of 8 December 2000 for improved management of orbital slots and electromagnetic frequencies as a measure for promoting more effective use of outer space.

*b) Integrated approach to the use of space.*
The treaties governing the exploration and uses of outer space have been in place for several decades now and have served as the legal framework for space activities. However, many States have not yet acceded to the five core Treaties, including some members of the UNCOPUOS. Nonetheless, for preserving order in outer space, it is desirable that States and international organisations should conduct their space activities under the coverage of these instruments. Moreover, many States develop, own and operate spacecraft without participating in the rule-making process of space law, or without having ratified the existing Treaties and Conventions, but this needs to evolve. There are many bodies (international, regional and national) involved in rule-making on the uses of outer space. There should be, however, an integrated approach under the auspices of the United Nations. The UNCOPUOS will provide an invaluable forum for promoting inter-regional dialogue and coordination among these bodies. In particular, a greater involvement of the United Nations could help to facilitate the legal harmonisation of existing domestic and international legal frameworks for outer space activities.

*c) Necessity to establish a supportive environment for new space users and space-faring countries.*
In the first decades of the Space Age, space activities were the exclusive domain of the world powers. But there is now a rapidly growing number of States involved in space activities. The changing space context, and particularly its growing complexity, is raising the importance of multilateral fora to deal with the long-term sustainability of space activities. A UN Space Policy would therefore help to create a supportive system and a valuable learning tool for emerging space countries.

*d) Utilization of space for the benefit of all humankind.*
Space by its nature is a useful tool for the management of issues that cross national borders. Satellite communication has become the most powerful engine of growth for development. UN-led activities like UN-SPIDER and GNSS among others have to be promoted to deal with transnational issues, such as supporting disaster relief or mitigating the effects of climate change and contributing to the development agenda. There should be similar activities conducted under the auspices of United Nations for improving human lives by sharing the benefits derived from space hardware and services. Space can also be beneficial for assisting developing countries to improve their capability for using their natural resources, optimizing their infrastructure and land use, and for implementing more effective governance. A UN Space Policy would help developing countries to learn and use space systems for their national welfare.

## 2. Guiding principles

The UN Space Policy should be guided by the following principles:

a) Activities in outer space should be conducted for peaceful purposes and for the benefit of all humankind.

b) The space environment should be used in a fair and responsible manner. To this end, all space activities should be conducted in accordance with the relevant international treaties and appropriate international best practices.

c) There should be an integrated international and inter-regional approach to space activities. The international community should support and strengthen international cooperation in the space arena to preserve the space environment and its benefits for all humankind.

d) The international community at large should encourage mechanisms to improve all States'

abilities to access the benefits of the exploration and peaceful uses of outer space.

## 3. From Principles to Practice

***Activities in outer space should be conducted for peaceful purposes and for the benefit of all humankind***

The international space arena of the 21st century is very different from what it was in the early days of the Space Age, when a few States were the only actors. Today there is a great proliferation of governmental and non-governmental actors, operating on national and international levels. Space activities have therefore changed from being the exclusive preserve of a few technologically advanced countries to a large and growing domain providing critical services and data for all countries in the 21st century.

The beneficiaries of space activities are now much more numerous and diverse than previously. Whereas in the beginning of the Space Age, outer space was seen as a domain of scientific and technical activity, today it is a domain for the provision of information and services to people on the ground. Space systems find widespread application in modern daily life in many ways that are so ubiquitous that they are taken for granted by the many millions of people who benefit from such systems. This widespread use of space has led to a new perception of space as a valuable global commons in which a number of systems operate.

The great reliance on space systems means that security on Earth is increasingly linked to security in space. This underscores the importance of preserving the space environment for peaceful uses. Space systems should therefore not be used to undermine international peace and security.

***The space environment should be used in a fair and responsible manner. To this end, all space activities should be conducted in accordance with the relevant international treaties and appropriate international best practices***

Today, many States develop, own and operate spacecraft in orbit without participating in the rule-making processes or ratifying the existing Treaties and Conventions. There are a number of international bodies involved in these rule-making processes, each with their own priorities and embodying different communities of practice. There is a need for a more integrated approach under the auspices of the United Nations.

The space environment is a limited natural resource in terms of certain classes of orbits and the electromagnetic frequency spectrum available for applications. The allocation and utilisation of orbital slots in the geostationary orbit continues to be an issue of concern to many countries, especially those without the direct means to access space.

The near-Earth space environment is becoming crowded, with many operational and defunct spacecraft occupying the same orbital regions. The growing population of man-made objects in space poses a hazard to the future sustainability of space activities. Collisions of space objects often result in fragmentation, which further increases the number of man-made objects in orbit. The intentional production of space debris is of great concern to all users of space systems. For this reason, such activities should be very strongly discouraged by the international community in the interests of preserving the Earth's orbital environment as a safe area in which to operate satellites, free from risk of disruption by space debris.

As more States become actors in the space arena, the orbital environment will become a more crowded and complex environment in which to operate. To date, 29 States have demonstrated sub-orbital launch capability and 11 have demonstrated orbital launch capability. Security in space (just like security on Earth's roadways) will rely on the orderly, safe and predictable behaviour of all users. The international community should consequently develop a set of space traffic management rules to ensure the orderly, predictable and safe conduct of activities in outer space. The adoption of the UN Space Debris Mitigation Guidelines may provide a model for a similar approach to other issues of broad concern.

The UN Treaties and Principles on Outer Space provide the legal framework for space activities, but a significant number of countries becoming active participants in the space arena have not yet ratified these Treaties. Even a number of UNCOPUOS Member States have not ratified the Registration and Liability Conventions. The UN should encourage maximum accession to these international legal instruments to promote fair and responsible use of the space

environment. Another area in which the UN should take a lead is in facilitating the harmonisation of domestic and international legal frameworks relating to outer space.

Although the principles upon which the United Nations Treaties and Principles on Outer Space were developed are as valid today as they were 40 years ago, the space arena is very different, with a much greater number and diversity of actors. The technological possibilities are also much greater. This may open the possibility for situations in which the present international legal instruments are not adequate. Hence there is a need to consider the development of the international legal and political framework in the context of developments likely to occur in the next 50 years of the Space Age.

***There should be an integrated international approach to space activities. The international community should support and strengthen international cooperation in the space arena to preserve and the space environment and its benefits for all humankind***

By its very nature, all space activities are global in character and essence. As more users enter the space environment, it becomes more important to promote and strengthen international cooperation in the peaceful uses of outer space. At present, there are five principal fora at which overarching space issues are discussed in the UN: the UNCOPUOS in Vienna, the Conference on Disarmament in Geneva, the UN General Assembly in New York (and several of its committees, like the Disarmament and International Security Committee and the Special Political and Decolonisation Committee), the UNESCO in Paris and the ITU in Geneva. In addition to these, the World Meteorological Organisation in Geneva makes use of space systems for monitoring and predicting terrestrial weather, and also supports international coordination of space weather activities, an area of growing importance since space weather affects all space systems. One of the objectives of a UN Space Policy would therefore be, respecting their own mandates (particularly with disarmament issues) to improve the coordination among these fora for more effective and coordinated use of outer space by the UN system and all its stakeholders.

The international community should support and strengthen international cooperation to preserve the space environment and its benefits for all humankind. In this regard, the UNCOPUOS should encourage the greatest level of accession and adherence to the international Treaties and Principles on the Peaceful Uses of Outer Space. The creation and implementation of a supportive international regulatory environment for conducting peaceful space activities should thus be encouraged.

Issues of global importance, such as space-based disaster management, space debris mitigation, space traffic management, the safety of nuclear power sources in outer space, and planetary defence from impacts of Near Earth Objects (NEOs) all require a coordinated global response. In the area of space-based disaster management, the UN has, for many years, utilised space assets to support disaster relief operations. With the UN-SPIDER initiative, the focus is on developing capacity to ensure access to and use of space-based solutions during all phases of the disaster, including the risk reduction phase which will contribute to a significant reduction in loss of lives and property. In the area of space debris, work in the UNCOPUOS has already led to the adoption of a set of UN Space Debris Mitigation Guidelines. Although non-binding, these guidelines are widely supported by all the leading actors in the space arena. Likewise, steady progress is being made on the other issues of broad international interest particularly on the Global Satellite Navigations Systems, GNSS. The solutions to such issues can only be found through international cooperation, and the UN is the appropriate inter-governmental forum to pursue such solutions.

***The international community should encourage mechanisms to improve all States' abilities to access the benefits of the exploration and peaceful uses of outer space.***

The past two decades have seen the emergence of a number of space systems that are highly capable global utilities that serve millions of users around the world, every day. However, to maximise the benefits of space technology for developing countries, it is essential to support capacity building in those countries to utilise those technologies. For many years, the United Nations has played a leading role in building capacity in developing countries to harness space applications for progress and development. Now, many of these countries are themselves beginning to enter the space arena as emerging space countries. For

these countries, access to the experience and knowledge gained by more experienced countries is thus very important.

In the early days of the Space Age, the Earth's orbital environment was essentially a boundless resource accessible to only a very limited number of actors. Therefore, avoiding interference or collisions with other users of the orbital environment was a relatively simple matter. Today, this is no longer the case. Emerging space countries need to take into account the many other users of the space environment and they need to take steps to avoid collisions and debris hazards in the space environment, as well as avoiding the accidental introduction of further debris. This can only happen if the necessary information is shared and the necessary capacity is developed in these emerging space countries to utilize such information. Hence international cooperation between advanced and emerging space actors to build capacity is a key to ensuring the long-term sustainability of space activities for all users of space.

Cooperation between established and emerging space countries in the same region is a good way to enhance and accelerate the development of space capabilities among the emerging space countries. Through its very wide reach, the United Nations is in a unique position to encourage and strengthen such regional initiatives. As one example, the five Regional Centres for Space Science and Technology Education affiliated to the United Nations provide a series of platforms for such cooperation.

## 4. Means of a UN Space Policy

The principles and practices of a UN Space Policy cannot be realized if there is no appropriate and adequate means. At the moment, the UNCOPUOS as well as other international organizations do not possess sufficient budgets and institutions to implement a UN Space Policy. It is therefore important to establish credible means for achieving the goals of a UN Space Policy. These means could be achieved if the UN were to:

a) Encourage Member States to cooperate in the establishment of regional space agencies for developing regional space programmes. Regional space agencies and regional space programmes are of particular importance because geographically proximate States can develop and share assets to address the same concerns and issues. For instance, they can share a single satellite in geostationary orbit for satellite communications, broadcasting and meteorology. It would be highly useful to establish a common regional Space Policy for using the same satellites for common purposes, which would promote regional cooperation and maximize the use of limited resources such as orbital slots. Furthermore, regional space agencies can provide satellite images which may be shared by the Member States for cooperative security and confidence building measures. The United Nations could also play a role as an inter-regional forum for exchanging views and interests from these regional space agencies.

b) Strengthen the function to regulate the orbital environment for the fair and responsible use of space. The management of the Earth's orbital environment should not be left up to individual States or agencies. It is the common interest of all humankind, and as such the UN should work towards establishing an international mechanism for monitoring debris creation and the implementation of debris mitigation measures. There should be a discussion for establishing an ad hoc monitoring entity within Office for Outer Space Affairs (OOSA) which should have access to data and catalogues of debris collected by Member States, and would analyze the situation of debris mitigation. This ad hoc entity would monitor compliance by the Member States with the existing international space Treaties and Conventions and relevant recommendations particularly in regard to the UN Space Debris Mitigation Guidelines and would report to COPUOS. Also, this entity should promote greater accession to and compliance with the Registration and Liability Conventions, not only by new actors, but also by established actors in space.

c) Promote dialogue between space-faring States, user States and other organizations. It is the role of the United Nations to foster space activities to promote socio-economic development of developing countries. In order to do so, there should be a forum for discussing the requirements and demands of users and those of space-faring countries which build and operate hardware. International non-governmental organisations, international agencies such as the ITU, and private entities should support this dialogue and develop application programmes for developing countries to use space-derived data and space-based infrastructure.

d) Develop a space-faring caucus and a space-user caucus. Although the United Nations provides forum for all Member States without any prejudice, it would be useful to establish a caucus or working group of space-faring States which have capability for developing, launching and operating spacecraft, and a caucus of space-user States which focus on using space systems for their development. Given that the space-faring States are also the principal space users, the space-user caucus should be open to all Member States. These caucuses would be useful for facilitating communication between users and developers of space hardware.

## 5. The Way Forward

In the unfolding new space era the United Nations cannot afford to miss the opportunity to develop its own long-overdue Space Policy. A world without a UN Space Policy would be lacking a key element to face the future with confidence, to improve current mechanisms for the exploration and uses of outer space, and to ensure the long-term sustainability of space activities. Moreover, the United Nations needs to find a new way of thinking about its role in the world, and space is a crucial element in this context.

Before bringing this topic to the agenda of the UNCOPUOS, informal consultations with the relevant actors can provide a useful forum for exploring a possible international consensus on the content of a UN Space Policy. All countries that are members of the UNCOPUOS will be invited to participate in this process, as well as regional governmental organisations conducting space activities.

European Space Policy Institute

Palais Fanto
Schwarzenbergplatz 6

(Entrance: Zaunergasse 1-3)

A-1030 Vienna, Austria

Tel +43 1 718 1118 -0 / Fax -99

**www.espi.or.at**

The mission of the European Space Policy Institute (ESPI) is to provide decision-makers with an independent view and analysis on mid- to long-term issues relevant to the use of space.

Through its activities, ESPI contributes to facilitate the decision-making process, increases awareness of space technologies and applications with the user communities, opinion leaders and the public at large, and supports researchers and students in their space-related work.

To fulfill these objectives, the Institute supports a network of experts and centres of excellence working with ESPI in-house analysts.

ESPI Perspectives are short and concise thought or position papers prepared by ESPI staff as well as external researchers.

**Available for free download from the ESPI website**
**www.espi.or.at**