

National Space Legislation and the Digital Divide:
Will National Laws on Space Activities Bridge the Gap?

Sylvia Ospina, JD, LL.M.
S. Ospina & Associates - Consultants
International Telecommunications/Space Law
Coral Gables, Florida

Abstract

Many countries have signed and ratified the various outer space treaties, but only a handful has national legislation on the use of outer space, the broader context of satellite communications, and other space activities. Most countries, however, have laws and regulations on access to, and use of space (satellite) communications systems, whether sophisticated national satellite systems, or rudimentary receive-only earth stations. Most of this legislation, however, has a technical slant, and usually is limited to telecommunications issues, since abiding by the International Telecommunication Union's regulations is important to most countries.

Do small non-space-faring nations need to have national laws on activities that are now, and probably will remain, beyond their control and influence? What benefits would accrue to them by enacting laws specific to outer space? Would national legislation improve their chances of joining the "space club"? Is their accession to the United Nations' space treaties not sufficient? How to convince them that they would be better off by having national legislation regarding activities that have little direct impact on their general welfare?

This paper will attempt to provide answers to these and other questions. It will also make some recommendations as to possible courses of action that small countries could take, in order to decrease the digital divide that becomes wider with every new / successive generation of space-based telecommunications systems and other space activities.

Introduction

This paper is divided into 2 parts. The first one will present a general overview of existing international organizations that have helped shape space-related laws, policies, and regulations. The overview includes 3 perspectives: technical (the ITU); economic (WTO and private contractual agreements), and legal (UNCOPUOS). The second section will present a general overview of issues related to drafting national laws on space activities in the Americas.

Space Activities: International Aspects

Technical Issues: the ITU

Since the late 1950s, the International Telecommunication Union (ITU) Convention and Radio regulations have grown in importance in establishing norms for the use of the radio frequency spectrum (RFS) by space objects, whether satellites, launch vehicles, or scientific probes. More than 180 States are members of the ITU, and participate in the periodic World Radio Conferences, which amend the ITU's Radio Regulations (ITU-RR).¹ Most countries abide by the ITU-RR, to minimize harmful interference with their communication systems, whether space-based or terrestrial.

The ITU-RR are applicable to all space and terrestrial systems that utilize the radio

frequency spectrum (RFS), such as microwave systems and communication satellites, radiodetermination, radio navigation systems, earth observation, or remote sensing satellite systems, space probes; all are subject to the ITU's regulations.

The ITU Radio Regulations are applicable on an international, regional and national basis², and in many countries, they are the basis of national legislation and regulations dealing with satellite telecommunications. Most countries have at least one earth station with which to communicate with the rest of the world, and so they usually adhere to the ITU-RR. In some instances, the regulations on satellite communications may be the only ones that are related to space activities. Thus, it could be said that these nations have some space legislation, even though it is of a technical nature and limited to satellite communications.

Economic Policies and Space Activities

The main economic regulator of satellite communications used to be Art. XIV(d) of the 1973 Intelsat Operating Agreement, which required co-ordination with INTELSAT to minimize any "significant economic harm" to that organization.

Various events, however, have led to the virtual demise of economic co-ordination with Intelsat. For one, in the early 1990s Intelsat itself raised the threshold of what it deemed "significant economic harm". Further, in 1997 most countries adopted the World Trade Organization's Annex on Telecommunications, making specific commitments to the economic liberalization of this sector.³ These commitments supersede some multi- and bilateral agreements on international satellite communications services. Thus, the WTO Agreement has become an important economic regulator of space communications, even though it does not refer to issues such as satellites launches and use of the radio frequency spectrum.

At the beginning of the space era governments provided most of the funding, and were in control of satellite systems and operations. At present, the private sector plays a major role, due to the "privatization" of major international satellite organizations (ISOs), such

as Intelsat, Inmarsat,⁴ and Eutelsat, and the "globalization" of corporations, operations and services.

The rise and demise of the non-geostationary satellite systems (e.g., Iridium, Globalstar, ICO, *inter alia*), raise questions as to the growing importance of the private sector in the financing and provision of global telecom services. These systems also raise questions as to the private sector's liability and responsibility in space activities, including financial interests in the RFS and licenses, as proposed in UNIDROIT's draft Protocol on Space Assets.⁵

Should space activities be left in the hands of the private sector, whose major aim is monetary profit? Do governments still have obligations to their citizens, to provide them basic public services, such as low-cost communications? These are but a few of the issues that need to be addressed, both at the international and national levels.

Legal Concerns: the United Nations Treaties and Space Activities

Since its inception in 1958-59, the United Nation's Committee on the Peaceful Uses of Outer Space (COPUOS) has been a key player in formulating treaties and resolutions in regard to outer space activities. The 1967 Outer Space Treaty⁶ remains a seminal document, providing a general framework for undertaking activities in outer space. That these activities are of great importance to an increasing number of countries is reflected in membership in COPUOS: when first established, it had 11 members; in 2004, 65 States are represented at COPUOS, and several others aspire to become members.

Further evidence that more countries believe that space activities need to be regulated is reflected in the growing number of States that have signed and ratified the Outer Space Treaty⁷, the Liability Convention⁸, and the Registration Convention.⁹ At the same time, several of these States are drafting national space laws, and establishing space agencies. Some of these endeavors will be looked at, *infra*.

The above sketch is intended to provide a general context of the international legal, technical, and economic aspects of space activities. In addition to the treaties, principles,

and resolutions drafted by COPUOS, many bilateral and multilateral treaties regulate other aspects of space activities. For example, intellectual property rights and patent laws that may apply to the International Space Station; copyright conventions that protect satellite broadcasting, whether of radio or television signals¹⁰, *inter alia*. In brief, at the international level, there is a fair amount of legal protection of different facets of space activities, especially those undertaken by developed countries.

Regional space legislation

Currently there is no regional space law, although there are incipient regional space policies in the European Union (EU). Both the EU and the European Space Agency (ESA) are unique, in that they are the only supra-national, regional organizations of their kind. While most EU Member States have signed and ratified the UN treaties, not all have subscribed to the ESA Convention.¹¹ Further, there are varying levels of national space legislation among the EU and ESA Member States. Harmonization of national space laws at the European Union level is an important means of providing a general legal framework for pan-European Union space activities. That there is a need for such legislation is evident in the growing number of workshops, conferences, and publications on this subject.¹²

On the one hand, the European Commission (EC) must take into account national legislation and space policies in its formulation of a pan-European space policy. On the other hand, national laws will have to take into account the EC's policies. Until now, there are few space sector-specific Directives or Decisions, except for those related to satellite communications.

This seeming void may be filled with the EC's "White Paper on Space Policy", issued in 2003.¹³ The EC White Paper covers a range of activities: R&D, infrastructure development, services and technology, and amongst its objectives are the allocation of roles and responsibilities for the Member States involved, and establishing annual budgets.

A European Space Policy would be implemented in two phases: the first (2004-2007) will consist of implementing the activities

included in the recent European Community - ESA Framework Agreement¹⁴ on the joint ESA-EU GALILEO and GMES undertakings.¹⁵ The second phase (post 2007) would be carried out once the European Constitutional Treaty enters into force. This treaty would establish space as a shared competence between the Union and its Member States.¹⁶

A treaty-based European Space Policy will have much impact on future space activities, not only in Europe, but world-wide. Several EU Member States, however, will have to draft national laws and bring them into harmony with the Constitutional Treaty and other regional legislation issued by the European Commission.¹⁷ Thus, prior to implementing a space policy, the EU /ESA Member States would do well to harmonize licensing requirements, to ensure that services, such as satellite communications, may be provided at reasonable costs, and without undue hurdles.¹⁸

The EU Member States that have not done so yet should consider ratifying the three principal space treaties.¹⁹ For example, some countries that have launched international / global communication satellite systems, which they own and operate, have not signed or ratified the Registration Convention.²⁰ Signing and ratifying the principal space treaties will give more credence to the Europeans, as they seek to implement their space policies in new Member States, in other countries and continents.²¹

Implementing many of the EC White Paper's recommended actions and policies, while using space technology should lead to "bridging the digital divide at a global level, [and ensuring] that all parts of the world can reap the benefits from the information society."²²

Space Activities: National Aspects

This part of the paper will deal with national aspects of space activities in general terms. It will not offer a close analysis of any particular legislation, but will make a few recommendations as to some issues that should be taken into account in drafting national space legislation. As in the preceding section, the technical, economic and legal aspects of space activities will be reviewed.

Technical Regulations

Most countries have earth stations to access communication satellite systems, and they adhere to the ITU-RR to minimize any harmful technical interference. Most countries also have national regulations related to the technical aspects of the RFS utilization, and to satellite communications.

In the majority of developing countries, "space activities" are limited to satellite communications, which not only provide them access to the rest of the world, but also provide them foreign revenues. Most countries, even those with national satellite systems, are dependent on a few industrialized countries that manufacture hardware (spacecraft and launch vehicles) and other equipment, as most of them do not have native facilities for their production. (There are exceptions, such as Brazil, China, India, Israel, Korea, which have the capability of producing satellite components and launch vehicles).

Furthermore, with the exception of a few island countries or territories, the majority of nations have access to one or more fixed or mobile²³ communication satellite systems.²⁴ One of the goals of the Global Mobile Personal Communication Satellite Systems (GMPCS) was / is to provide global coverage by means of satellite "constellations". These systems have been less successful than anticipated, in part due to the high cost of the terminal equipment, and in some instances, due to regulatory hurdles, e.g., terminals not licensed could not be used in some States.²⁵

In the 1970s, many developing countries joined the "satellite club", and launched their own geostationary satellite systems. India and Indonesia were among the pioneers of national satellite systems. In the Americas, Argentina began studying the feasibility of a national / regional satellite system as early as 1969, while Brazil, Mexico, and the Andean Pact countries started feasibility studies on their systems in the 1970s. Brazil and Mexico launched their first-generation satellites in 1985, Argentina in the early 1990s, and the Andean Pact system is still under consideration.

Several other "developing countries" now have their own satellite system(s), the majority of them for communications, although some satellites are for remote-sensing / earth observation (R/S or E/O). All of them rely on the ITU's co-ordination procedures and the ITU-RR, to ensure the proper operation of their system(s).²⁶

It should be stressed that the satellite system operators are the ones who choose the frequencies to be used, as well as location of satellites in a particular orbit, or orbital positions. These choices are co-ordinated with other existing and planned systems, following the ITU-RR and ITU's guidelines. These seemingly technical decisions and choices have great impact on the economic viability of the system(s).

National Economic Policies and Space Activities

Technical decisions, as noted above, affect the economic viability of any satellite system, and politics and economic policies beyond the national level also influence these decisions. Having a national satellite system does not guarantee an adequate return on the investment, nor the best use of the satellite's capacity. Thus, prior to launching a first satellite, or follow-on spacecraft, countries aspiring to join the "satellite club" should closely examine the economic aspects (e.g., the potential return on the investment) of their proposed system.

The importance of the economics of space-based communication systems, and of private investments in them, whether national or international, is reflected in the 1997 WTO Annex on telecommunications.²⁷ While the majority of nations have made specific commitments to liberalize their telecom sector, few countries have national laws or regulations covering a wider range of space activities, despite their involvement in many of them.²⁸

The situation is further complicated by the fact that all countries are increasingly interdependent on each other, due to the "globalization" of nearly all economic activities, of corporations, even of satellite systems. Developing countries are at a disadvantage, however, as they depend on industrialized

countries, not only for equipment, and hardware, but also look to them for technical standards, as well as for economic assistance to further their national developmental efforts.

Another difficulty is lack of adequate funding, which seems to be a perennial problem, not only for the incipient space agencies, like Brazil's, but also for the US NASA, ESA, the Russians, etc.. Long-term planning (and funding) is needed for most space activities, but governments, which change every four or 6 years, seem to have shorter-term plans and goals. Thus, the budgets of most space agencies are subject to annual review, and perhaps to annual cuts. This lack of economic certainty is bound to affect the space programs of even the most economically solid agencies and countries.

The economic uncertainty also affects international and bilateral space projects, such as participation in the International Space Station, or rebuilding the Alcantara, Brazil, launch pad that was destroyed by an explosion in 2003.²⁹

Additional uncertainty is created by some governments that do not seem quite sure as to which official entity should be in charge of their space activities. In most countries the Ministry of Communications regulates satellite communications and use of the RFS, but other space programs are shifted from one ministry to another. Thus, space activities may be the concern of the Ministry of Defense (e.g., in Chile the Air Force will be in charge of the Chilean Space Agency); or of the Ministry of Science and Technology (Brazil). In some instances, the ministry of Foreign Relations may be in charge,³⁰ or they may be the purview of quasi-independent civilian agencies (e.g., the US NASA, the French CNES, among others). Funding for space activities may also be subject to budgetary largesse or constraints of the ministry overseeing them.

What should developing countries that aspire to have a native space agency and to expand their national space programs do, in view of a rather tenuous economic future? Should they rely only on government funding, or should this sensitive sector be opened to foreign investors? These are economic as well as legal issues, which need to be addressed by the respective authorities.

Should developing countries adopt the economic policies of the industrialized countries that supply them equipment? Should national legislation of space activities be based on laws drafted by and for industrialized countries? It should be recalled that, while national *laws* can be enforced only within a country's borders,³¹ national *policies* do transcend geographic barriers. National policies and politics both play important roles, and have great impact on space activities and initiatives of other countries.

Legal / Policy Aspects of Space Activities in the Americas

The United States is perhaps the country with the most highly developed space-related sector, as well as the country with the most legislation and regulations on a variety of space activities. A plethora of departments (ministries), agencies, and commissions, each with differing scope or reach, is involved in the implementation and regulation of space activities, beginning with the 1958 NASA Act, that created the National Aeronautics and Space Administration (NASA).

Other influential entities include the Federal Communications Commission (FCC), which licenses and regulates satellite systems; the Dept. of State (DOS), the Dept. of Commerce (DOC), even the Treasury Department. The Federal Aviation Administration's Office of Commercial Space (FAA /AST) licenses launch vehicles, while LANDSAT's remote sensing activities are regulated by another agency. Various dependencies of the Dept. of Defense also play a major role in space activities (US Air Force, Navy, in particular.)

The policies of each of these agencies, in turn, may limit the kind of technical and developmental aid that the US will make available to countries aspiring to develop space-related activities and centers. Other limitations, both in the US and in some other countries, are restrictions on foreign ownership and investment in certain sectors, such as telecommunication systems and airlines.

Most of the Latin American countries rely heavily on developed countries' space industries and agencies, not only for hardware but also for technical assistance. Argentina, Brazil, Chile, Ecuador, Mexico are among the

countries that have entered into several bilateral agreements with ESA, NASA, the Canadian Space Agency, the Indian Space Research Organisation (ISRO), as well with the Chinese and Japanese governments. These agreements vary in scope; in some instances, the Latin American countries assist the foreign space agencies with tracking activities (Chile's Easter Island is a potential emergency landing site for the US Space Shuttles). Other countries (Argentina, Brazil and Chile) are involved with the French SPOT and the US LANDSAT remote sensing programs, as well as with the tracking of launches and satellites, and data collection.

Argentina, Brazil, and Mexico have national telecommunication satellite systems, launched to further their national development. These spacecraft have very good coverage of most of the South American continent, yet this regional capacity is underutilized, for a variety of non-technical reasons.

Despite sharing a similar Spanish cultural heritage and language (except for Brazil), attempts at setting up regional co-operative programs in some sectors (telecommunications, air travel) have not been very successful in Latin America. Thus, setting up a regional space agency, similar to ESA, seems to be a remote possibility.³² Countries that already have some native space industries are likely to allocate more time and energy to their national endeavors.

National Space Agencies and/or Commissions in Latin America

In the 1970s and 80s, many countries joined the "space club" and launched national satellite systems. Currently, many countries seem to want to "upgrade" their membership in the "space club" by creating national space agencies.³³

Several of the Latin American countries have commissions and /or centers for space studies and / or research, some recently formed, others dating back several years.³⁴ Argentina and Brazil have the most developed space programs in Latin America, and some of their accomplishments are highlighted.

Argentina

Argentina's Comisión Nacional de Actividades Espaciales (CONAE) was created by National Decree No. 995/91, of 28 May 1991, although Argentina has been involved in space activities since before 1991. CONAE has co-operated in many programs with NASA and ESA, most of them of a scientific nature. Argentina has been quite involved in earth observation, has a small earth observation satellite in orbit, and plans to launch at least one more.³⁵ CONAE's space activities, however, have little to do with NAHUELSAT, the national telecom satellite system. One linkage exists, however: the Secretariat of Communications regulates the radio frequencies that are used by these spacecraft.

Even though it has few national laws relating to space activities, Argentina has signed and ratified the major outer space treaties, and thus is bound by their terms.

Brazil

Brazil's involvement in space activities dates back to 1961, when the Brazilian government established an Organizing Group for the National Commission on Space Activities (GOCNAE), to promote Brazil's space activities.³⁶ The GOCNAE evolved over the years, and in 1984, the Brazilian Space Agency (AEB) was formally established.

Brazil, like Argentina, has a domestic satellite system, whose operations and regulation have little relation to the Brazilian Space Agency's activities or to those of the Institute of Space Research (INPE), except for the regulations related to using the RFS.

Brazil, like Argentina, also has entered into many bilateral agreements with NASA, ESA, the Chinese Space Agency, and with the Ukrainian government. The agreement with the Chinese centers on remote-sensing / data collecting satellites, while the agreement with the Ukrainians is aimed at improving Brazil's launch capabilities at Alcantara, with plans to eventually compete with other countries' launch systems.³⁷ (Brazil's launch sites are in an excellent geographic position to compete with the French /ESA launch center in Kourou, French Guyana, as all three are very near to the Equator.)

Brazil's plans to offer commercial launches suffered a serious setback in August 2003, when a rocket exploded on the launch pad at Alcantara, destroying it, and killing more than 20 persons. Despite this setback, the Brazilian Space Agency plans to revitalize its mission, and go forward with its space programs. Proper funding for these may be problematic, however.³⁸

Conclusions and Recommendations

Most of the countries in Latin America do not have laws or regulations related to space activities, other than those issued by the entity in charge of satellite communications. The latter are usually based on the ITU's Radio Regulations and Recommendations, and thus, limited to technical issues related to satellite communications and use of the RFS by other types of satellites.

Funding for the development and expansion of most sectors is limited, due to budgetary constraints and government priorities; funds for expensive space programs are not always first on the list. For example, even though Brazil wants to continue participating in the International Space Station program, it may have to cut back, because of inadequate funding.³⁹

Developing countries with no space industry or programs face special challenges: do they need legislation for a sector that has yet to develop in their country? Should they decide they need national space laws, they should keep in mind the principles embedded in the main outer space treaties, as well as any regional legislation.⁴⁰ If a country decides to draft some legislation, based on the law of another State, it should also take into consideration differences in legal systems (common law, civil law). Terms such as "liability", "responsibility", "assets", "property" have different meanings under these two different legal systems.⁴¹ On the one hand, should they remain open to the possibility of establishing joint ventures with foreign space agencies and corporations? Or on the other hand, should they enter into arrangements whereby their sense of national sovereignty may be compromised?

One implication of the term "globalization" is the blurring of State boundaries; differences between Nation States tend to disappear, and with them, deference to State sovereignty is likely to diminish. The ever-growing use of the INTERNET and other global telecommunications networks allow for communications across time and space in an unprecedented manner, resulting in the disappearance of borders, at least in "cyberspace".

Countries that try to resist the trend toward globalization may be fighting a losing battle, as their national priorities become less important vis à vis this trend. For example, in the 1970s many States sought to have greater control over the reception of satellite-transmitted television, and succeeded in passing a Resolution at the UN's General Assembly, essentially requiring their consent prior to downlinking the TV programs.⁴² Today, this is a moot point, in part due to technological advances, in part due to their prior consent not being sought by the global BSS / DBS operators.

Some countries also need to consider their own laws which may impede their developing a national space sector or participating in a regional space program. For instance, the Colombian and Ecuadorian Constitutions state that their national sovereignty extends to parts of the geostationary orbit. Since Colombia has not ratified the 3 principal space treaties, it is not bound by their terms. Ecuador, however, has signed and ratified them.⁴³ Thus, how to reconcile their position with other countries in the region⁴⁴, and with the 1967 Outer Space Treaty, which states that "outer space is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means."⁴⁵

Recommendations

Having national space legislation and perhaps a national space agency to draft and enforce regulations might be a noble ideal for some countries, but an unrealistic goal for others. It is submitted that, prior to drafting national space laws, let alone creating a national space agency, a few preliminary measures should be taken.

The first step would be to ensure that the State signs and ratifies the space treaties, thereby

giving notice that it is committed to upholding the principles embodied in them. Then it should study and analyze the need for such legislation. Should a national law be drafted, the State would be in a better position to ensure that there are no discrepancies between provisions in its national law and the international treaties.

Issues of liability and responsibility, as well as mechanisms for indemnifying an injured Party, should be closely analyzed, to ensure that measures that are being proposed would not be in conflict with other national laws and regulations.⁴⁶ Perhaps the insurance sector should be consulted in this regard.

Countries that already have satellites in orbit, but which have not signed or ratified the Registration Convention,⁴⁷ should do so, and also establish a national Register of their space objects, as required by Article II of this Convention. Having a national register of space objects launched, and perhaps of other space activities, may be helpful in securing additional funding from their government; at least the government would know where some of its funds are being expended.

In this regard, two other recommendations will be offered. Firstly, any space agency or program that is envisioned will require adequate funding, which should be available *ab initio*. These funds should be budgeted for a few years, so that initial or start-up operations can be sustained, without the fear of lacking funds in the near future.

Secondly, it is recommended that, prior to setting up a national space agency or center, a thorough survey should be carried out of the different national entities that may be using satellite capacity, as well as data or images obtained from satellites. In some countries, the government itself has no idea how much its various dependencies are paying for satellite images, and in some instances, paying more than once for the same data. Duplication of costs (and efforts) could thus be avoided.

Once an in-depth survey is carried out, and the results properly analyzed, the government would be in a better position to know where it is expending funds, and to determine which entity should be responsible for managing and coordinating space-related activities.

An argument against undertaking this kind of initial survey could be based on lack of trained personnel, and lack of funds for such an endeavor. A counter-argument is that in most countries there are institutions (public and private) that specialize in carrying out surveys, and which could undertake one related to space activities. As to the argument that there are no funds for this basic research, perhaps the government should not even contemplate setting up a national space agency or center. If there are no monies for such a fundamental task, it is questionable whether monies will be available for something on a bigger scale.

Perhaps the developing countries interested in doing an initial survey, prior to creating a space agency or drafting legislation, should request assistance from the United Nations' Office for Outer Space Affairs (OOSA),⁴⁸ and/or from IISL members.

¹ The ITU Constitution and Convention are revised at the Plenipotentiary Conferences.

² The ITU RR, Art. S1 (S1.16 - S1.18) provides specific terminology and definitions: *allocation* (of a frequency band) is done on an international basis; *allotment* of a radio frequency or radio frequency channel, for use by one or more Administrations in one or more identified countries or geographical areas and under specified conditions. [I.e., allotment is regional]. *Assignment* (of a radio frequency or radio frequency channel) is the authorization given by an Administration [i.e., national government] for a radio station to use a radio frequency or by an Administration for a radio station to use a radio frequency or radio frequency channel under specified conditions. [Italics in the original.]

³ The WTO Agreement aims at opening the telecom markets, and are averse to granting "exclusive" rights to any one corporation or service provider. This policy weakens the monopolies that many government-owned service providers and operators used to enjoy. Further, some countries, notably the USA, filed exemptions to the WTO Annex on Telecommunications, so that satellite transmitted TV is not subject to the WTO Agreement. See www.wto.org for a list of the commitments and exemptions.

⁴ INMARSAT was privatized in 2000, and INTELSAT in 2001, under terms set forth in the US'

Public Law 106-180, 17 March 2000, the "Open-market Reorganization for the Betterment of International Telecommunications Act, the ORBIT Act". [Cited hereinafter as the ORBIT Act]. The ORBIT Act essentially did away with the Intelsat 1973 Agreements, including Art. XIV(d), and has led to the restructuring of the international satellite organizations (ISOs) into competitive, privately owned corporations. Under the terms of this Act, Inmarsat and Intelsat must issue an Initial Public Offering (IPO) of their shares. Intelsat hopes to meet this requirement by selling the corporation to a consortium of investors. (Space News, 23 Aug. 2004, pp.1, 4.)

⁵ Draft Protocol to the UNIDROIT Convention On International Interests In Mobile Equipment On Matters Specific To Space Assets. Capetown, 2001 [Cited hereafter as the Space Protocol.] UNIDROIT's Space Protocol and its definitions of "space assets" are of concern to the "spacialists". See www.unidroit.org, for the text of the Draft Convention on Mobile Equipment and various Protocols.

⁶ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. Entered into force 10 October 1967. [Cited as the Outer Space Treaty hereinafter.]

⁷ *Ibid.*

⁸ Convention on International Liability for Damage Caused by Space Objects. Entered into force 1 Sept. 1972. [Cited as the Liability Convention hereinafter.]

⁹ Convention on Registration of Objects Launched into Outer Space. Entered into force 15 Sept. 1976. [Cited as the Registration Convention hereinafter.] These three treaties are the most important, whereas the Agreement on the Rescue of Astronauts is perhaps slightly dated. The Moon Treaty, while in force since 1985, has yet to be signed and ratified by major space powers.

¹⁰ UNGA Report of the Special Political Committee (A/37/646), 100th Plenary Meeting, 10 Dec. 1982. See also the 1984 Brussels Convention on satellite broadcasting. (Issues related to TV broadcasts, copyright, intellectual property rights and patents could be the subject of other articles, and will not be elaborated upon in this paper.)

¹¹ It should be recalled that not all EU Member States participate in ESA activities, while some non-EU States (e.g., Canada) collaborate in ESA projects.

¹² See Project 2001 and Project 2001 Plus, "Global and European Challenges for Air and Space Law at the Edge of the 21st Century." Inst. of Air and Space

Law, Univ. of Cologne; Dr. Stephan Hobe, Bernhard Schmitt-Tedd, Kai-Uwe Schrogl, editors. The Proceedings of the workshops convened by Project 2001+ include papers on various aspects of harmonizing national laws in EU Member States. See "Towards a Harmonised Approach for National Space Legislation in Europe." Proceedings of the Workshop, Berlin, Germany, 29/30 January 2004. [Cited as the Berlin Proceedings hereinafter.]

¹³ The EC White Paper on European Space Policy was presented by the Commission, and was formally adopted in the EU Council of Ministers meeting on Competitiveness on 27 November 2003. EC Publication *COM (2003) 673* (2003). [Cited hereinafter as the EC White Paper.] For the complete text, see <http://europa.eu.int/comm/space/>

¹⁴ This Framework Agreement entered into force on 28 May 2004.

¹⁵ EC White paper. It describes GALILEO as Europe's global radionavigation satellite system, a joint EU/ESA project comprised 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) is also a joint EU/ESA initiative combining space and in-situ observing systems to support EU's goals regarding sustainable development and global governance.

¹⁶ *Ibid.*, p.49.

¹⁷ The Berlin Proceedings, *supra*, note 12 of Project 2001's Workshop offer detailed recommendations of issues that need to be taken into account, and harmonized when drafting European national laws.

¹⁸ Oberst, G., "Via Satellite", Sept. 2004, p.14. Oberst regularly contributes to this publication, focusing on European regulatory issues. He notes in this column that the EU still has "a long way to go" before having a consistent Pan-European [satellite communications] service license.

¹⁹ See Outer Space Treaty, Liability Convention and Registration Convention, notes 6, 8, 9, respectively.

²⁰ According to UN Treaties and Principles on Outer Space, UNGA A/AC/Q05.572/REV.3, (2001), and Addendum ST/SPACE/11/Add.1/Rev.1 (2004), on Status of International agreements relating to activities in outer space, several EU /ESA Member States have not signed or ratified the Registration Convention. [Cited as Status Report hereinafter.]

²¹ EC White Paper, note 13, p.18.

²² *Ibid.*, p.18. (Quote taken out of its context by this author).

²³ The ITU-RR, Ch. S1, Art. S1 provides definitions of various satellite services: Fixed (FSS): point-to-point transmission service (telephony); Broadcast

(BSS /DBS): point-to multi point transmissions (Radio, TV broadcasting); Mobile (MSS) include maritime mobile, aeronautical mobile, land mobile services.

²⁴ Intelsat, Inmarsat, Panamsat, SES-Astra (now SES-Global and/or SES-Americom) are among some of the geostationary satellite systems with nearly global coverage.

²⁵ The reasons for the rise and causes of the demise of the GMPCS systems, are beyond the scope of this paper.

²⁶ Algeria, Argentina, Brazil, Chile China, Egypt, Greece, India, Korea, Malaysia, Mexico, Nigeria, Saudi Arabia, Thailand, Turkey are among the countries "members of the satellite club", having launched their own spacecraft, either for telecoms or remote sensing. Usually the spacecraft are manufactured in one country, and launched from another State.

²⁷ See note 3, www.wto.org for the specific commitments and exemptions taken by each country to the Annex on Telecommunications.

²⁸ The UN's Office of Outer Space Affairs (OOSA), has a listing of national space legislation; when compared with nations that are involved in space endeavors, or that have national satellite systems, it becomes obvious that not all of them have laws related to space activities. Also see Berlin Proceedings, note 12.

²⁹ Space News, 20 Sept. 2004, p.22, interview with the President of the Brazilian Space Agency. He attributes the explosion to lack of adequate funding, in addition to technical problems that may have been the cause.

³⁰ The Colombian Ministry of Foreign Relations is the seat of the Pro-Tempore Secretariat of the IV Pan-American Space Conference, held in Colombia in 2002.

³¹ Exceptions exist, such as the US "ORBIT Act", supra, note 4, which essentially abolished treaty-based international satellite organizations (Intelsat, Inmarsat), compelling them to "privatize."

³² Four Pan-American Space Conferences have been convened, the first one in March 1990 in Costa Rica, and the fourth in 2002, in Colombia. One of their purposes has been to study the feasibility of establishing a regional space agency, but few funds or personnel have been allocated to these efforts.

³³ Space agencies' importance is growing so much that it has become the topic of some symposia. Euroconsult (Paris, France), held a "World Space Agencies Forum" on 10 Sept. 2004, to which more than 26 national space agencies / commissions were invited. It had convened a similar symposium /forum

in previous years.

³⁴ Chile, for example, has at least 2 university-based centers for space studies and/or research, created more than 10 years ago. In 2002, Chile decided to establish a Space Agency, which is still in its initial stage.

³⁵ See www.conae.gov.ar, for an extensive description of Argentina's space activities and long-term plans.

³⁶ J. Monserrat Filho, "Brazilian Launch Licensing Regime." Presentation included in the documents of the UN-sponsored Workshop on Capacity Building, The Hague, NL, November 2002. (Complete text may be found at www.oosa.unvienna.org).

³⁷ Ibid.

³⁸ Space News, 20 Sept. 2004, p.22, interview with the President of the Brazilian Space Agency.

³⁹ Ibid.

⁴⁰ See Berlin Proceedings, note 12.

⁴¹ E.g., the definitions of "space property" (now "space assets") included in the Space Protocol, note 5, have been the subject of much discussion, due to the different import of these terms in the common and civil law systems. In regard to differences in terminology, see S. Ospina, "International Responsibility And State Liability In an Age of Globalization and Privatization." *Annals of Air and Space Law*, Vol. XXVII, 2002, pp. 479 - 493. See also Berlin Proceedings, note 12.

⁴² UNGA Report, note 10.

⁴³ Status Report, note 20.

⁴⁴ These claims to sovereignty, and the fact that the 5 members of the Andean Pact have not ratified the same treaties have impeded the progress of their regional satellite project, the "Simón Bolívar", formerly "Project Condor". This author has written numerous articles on Project Condor.

⁴⁵ Art. II, Outer Space Treaty, note 6. The Equatorial countries' claims to sovereignty over segments of the geostationary orbit have been debated at the UNCOPUOS for years, and have been the subject of numerous writings.

⁴⁶ See note 41, S. Ospina, "International Responsibility And State Liability In an Age of Globalization and Privatization."

⁴⁷ Registration Convention, note 9; Status Report, note 20.

⁴⁸ OOSA, in collaboration with the national government has convened two workshops on capacity building in space law: the first in The Hague (NL) in 2002; the second in Korea in 2003; a third such workshop will be held in November 2004 in Brazil.